

ASIP, ESD, TSS, TVS

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Россия +7(495)268-04-70

Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Киргизия +996(312)-96-26-47

Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Саранск (8342)22-96-24
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Казахстан +7(7172)727-132

Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Protections and EMI filters

Overview

Integrated circuits are exposed to several possible sources of stress coming from power and or data lines which can result in malfunctions or even lead to dramatic failures. To ensure that these circuits are remain reliable and operate correctly, it is important to include protection mechanisms.

ST's Protection and EMI filter portfolio offers a unique and comprehensive choice of high-performance components to ensure safe electronic system operation and immunity from electromagnetic interference (EMI).

Our rich portfolio protects integrated circuits against all types of electrical stress including:

- Power surges thanks to our high power-density Transient Voltage Suppressor (TVS) series
- High power surges thanks to our thyristor surge suppressor (TSS) series
- Electromagnetic noise thanks to our application-specific integrated products (ASIP) including common-mode filters (CMF) with integrated ESD protection and EMI suppression mechanisms using low-pass filters
- Electrostatic discharge (ESD) surges thanks to our low clamping ESD technologies

Produced with ST's technologies, they ensure the best protection and filtering performance for demanding systems.

Our solutions are housed in industry standard packages in addition to cost-effective alternatives such as high power density packages for TVS diodes, ultra-small and multi-line WLCSP devices for ESD and EMI filters.

From 5000 W SMC packages to 01005 and smaller, we help engineers with design simplification, space savings and cost optimization.

Our ASIP technology enables the horizontal integration of passive components into high-reliability silicon circuits and is compatible with the latest vertical integration trends such as SIP (System In Package) systems thanks to ultra-thin packages down to 80 μm .

Automotive-grade qualification for smart mobility applications

Automotive grade qualification (AEC Q101) and Automotive surge compatibility is available for our Automotive line-up that is rapidly expanding to meet the latest EV and Autonomous driving challenges.

All ST production sites adhere to the internationally recognized quality management standards ISO 9001 and IATF (international Automotive Task Force) 16949.



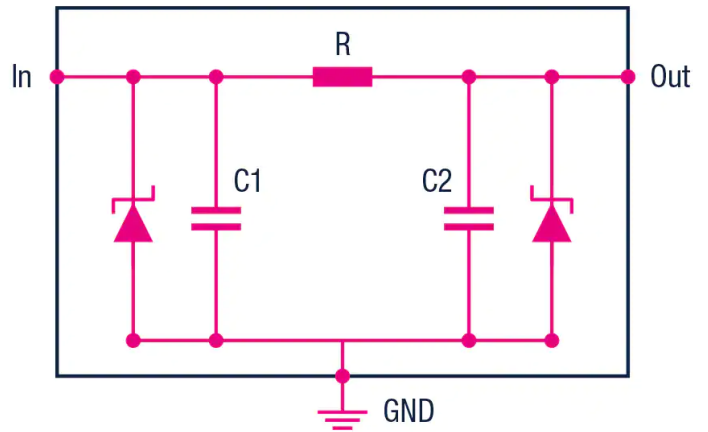
EMI filters and Application-Specific Integrated Products (ASIP)

Overview

An electromagnetic interference (EMI) filter is used in electronic circuits to improve system immunity against unwanted external electromagnetic signals from neighboring circuits and to avoid emitting radiation ("noise") that may disturb the same nearby circuits by canceling unwanted frequencies.

EMI noise can adversely affect useful data line signals, possibly altering their functionality, either by coupling (capacitive or magnetic), conduction (common or differential mode), or electromagnetic field coupling (antenna effect).

ST's EMI filters help electronic designers reduce their design time and achieve required performance levels.



Main applications for EMI filters and ASIP technology

For EMI filters:



memory cards



microphones



speakers



parallel displays



keypads

For ASIP technology:



SerDes,
HDMI 2.0,
HDMI 2.1,
MIPI DSI,
CSI communications



DisplayPort 2.0



USB 3.2,
USB 4.0



SD-Card 4.2

EMI filter and ASIP product types

Our EMI filter and ASIP portfolio includes 4 main types of solutions designed to reduce high-frequency electromagnetic noise present on power and signal lines. These flexible and highly integrated solutions help electronic engineers meet their main design challenges, while reducing development time and costs.



EMI filters with ESD protection

For low-speed digital interfaces or analog application, ST provides EMI filters with integrated ESD protection, targeted to protect lines of memory cards, microphones, speakers, parallel displays, and keypads.



Common Mode Filters with integrated ESD protection (ECMF)

For high-speed data lines such as HDMI 2.0, HDMI 2.1, USB3.2, USB4.0, Display Port 2.0, SD-Card 4.2, MIPI DSI or CSI communications, ST's Common Mode Filters with integrated ESD protection (ECMF) are tailored to reject a wide range of frequency bands (5G, LTE, 2.4 GHz Bluetooth, and 2.4 and 5 GHz Wi-Fi, to name a few).



Application Specific Integrated Product (ASIP)

For specific applications requiring more integration for space-saving and improved performance, ST has developed integrated circuits using its Application Specific Integrated Product (ASIP) technology. It combines ESD protection at system level (IEC 61000-4-2) with discretes (R, L, C) and over voltage, over current protections, and other IPs such as low-drop-out regulators, deglitch filters and signal conditioning such as multiplexers and level translators among others. ST's ASIPs reduce system size, complexity, and cost while improving the Failures In Time (FIT) rate for increased longevity.



EMI filters, ECMF and ASIPs for automotive applications

ST's EMI filters, ECMF and ASIPs for automotive applications are qualified as per AEC-Q101 and are compliant with IEC 61000-4-2 and ISO 10605. They are useful in SerDes applications including FPD-link, GMSL, and MIPI DSI or CSI to avoid radiation in vehicle to everything (V2X) (5.9 GHz) and global navigation satellite system (GPS, Glonass, BeiDou, Galileo, and IRNSS) frequencies.

Benefits of ST's EMI filters and ASIP technology

ST's EMI filters and ECMF provide a monolithic integration of the required ESD protection at system-level (according to standard IEC 61000-4-2 level 4 +8kV contact) along with a filter that reduces EMI noise on digital or analog communication lines for space-saving purposes.

Main benefits:

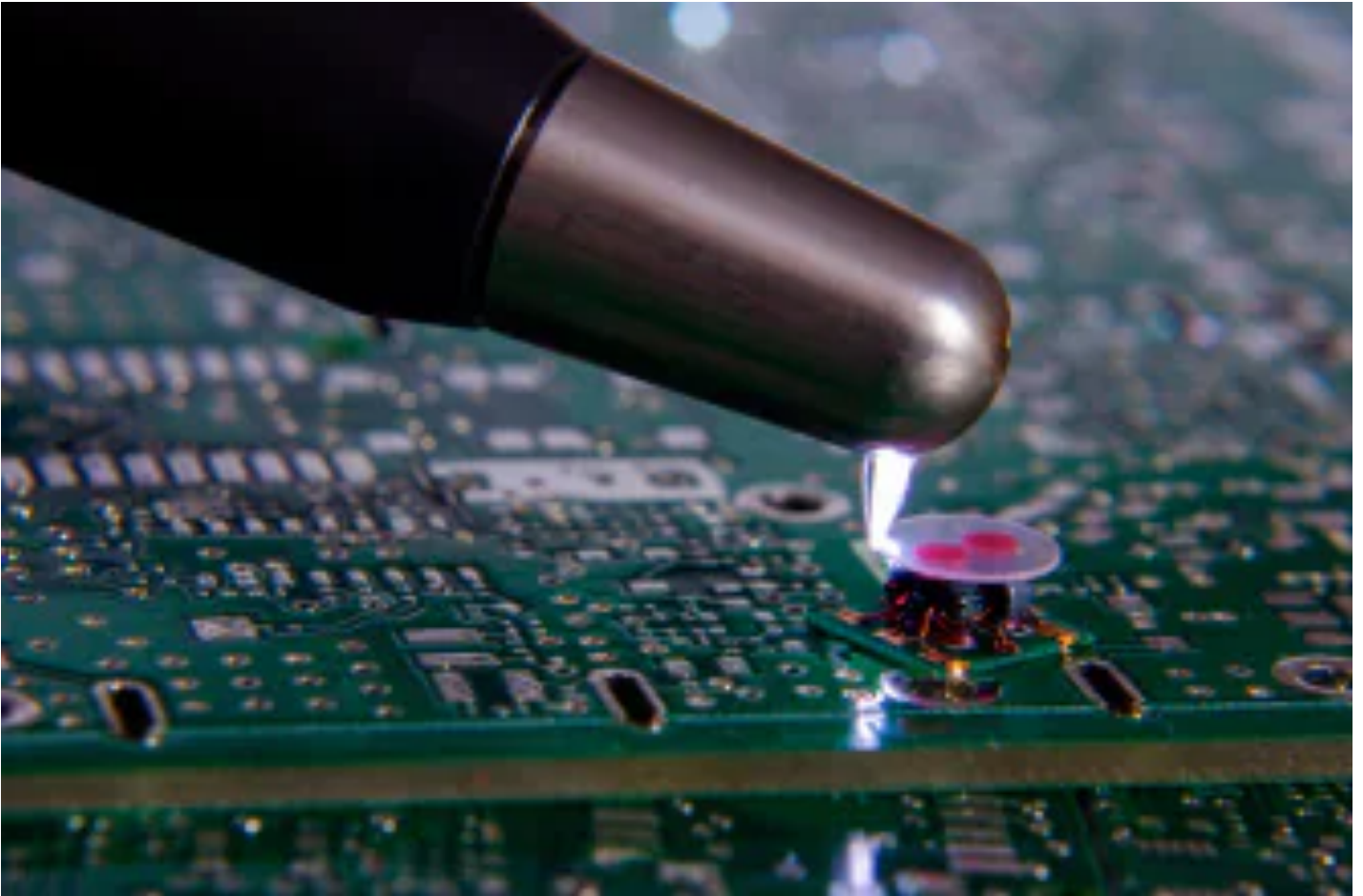
- Requires less PCB space compared to equivalent discrete solutions
- Increases application robustness against electrostatic discharges and EMI / common-mode noise.
- Offers a wider frequency range rejection thanks to a lower parasitic inductance compared with discrete solutions.
- Improved design flexibility as the filter's resonant frequency is not modified when designers need to slightly change the PCB layout (unlike with discrete solutions).
- EMI filters are available in first order (R-C) or second order (L-C)

Protections and EMI Filters/EM Filters and Application-Specific Integrated Products (ASIP)

Part Number	General Description	Application Type	Features set	Other Features	Breakdown Voltage (V) min	Directionality	V _{DC} (V) max	Package	IEC 60060-4-2 (kV) (Contact Discharge) min	Number of protected lines	Grade	Snagpack Protection	SCC1 (kV) (0-700MHz) typ	SCC2 (kV) (0-100MHz) typ	SCC3 (kV) (0-1500MHz) typ	SCC4 (kV) (0-2400MHz) typ	SCC5 (kV) (0-3000MHz) typ	SCC6 (kV) (0-5000MHz) typ	SC7 (kV) (0-100MHz) typ	SC8 (kV) (0-300MHz) typ	Clamping Voltage (V) (0-100MHz) typ	Package size (mm)	Capacitance (pF) (0-10V DC) (20V) typ	Operating Junction Temperature (°C) max	Operating Junction Temperature (°C) min	ISO 10605 (kV) (0-300MHz, Contact Discharge) max	ISO 10605 (kV) (0-300MHz, Contact Discharge) min	R _{in} (Ω) typ	Leakage Current (μA) max		
BP8889-0556	12dB/100V/2000V low impedance matching with ESD protection (SOT23)	GNSS	Impedance Matching	Signal Conditioning	-	-	-	SOT23-6L	8	1	Industrial	No	-	-	-	-	-	-	-	-	1.58	2.9 x 2.8 x 1.2	-	-	125	-	-	-	-		
BTV2412-1F3	Circuit breaker with transient voltage suppressor	Charging Port	-	DCP	12	Uni-Directional	10	CSP P 0.4 mm	10	1	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	0.77 x 0.77 x 0.50	180	-	-	-	-	-		
BTV2416-1F3	TVS Clamping Array, ESD Suppressor	Charging Port	-	DCP	16	Uni-Directional	12	CSP P 0.4 mm	12	1	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	0.77 x 0.77 x 0.50	180	-	-	-	-	-		
CLT03-3854	High speed protected digital termination array	Industrial Digital Input	-	Current Limiter	-	-	-	TSSOP-38L	-	8	Industrial	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CLT03-38527	High speed digital input current limiter	Industrial Digital Input	-	Current Limiter	-	-	-	QFN-48L	-	8	Industrial	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CLT03-15C3	Single line self powered digital input current limiter (SOT23)	Industrial Digital Input	-	Current Limiter	-	-	-	SOT23-6L	-	1	Industrial	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CLT03-20C3	Self powered digital input current limiter	Industrial Digital Input	-	Current Limiter	-	-	-	QFN-16L	2	2	Industrial	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CLT3-4B	CURRENT LIMITED OVER-VOLTAGE PROTECTED QUAD DIGITAL TERMINATION	Industrial Digital Input	-	Current Limiter	-	-	-	TSSOP-20	-	4	Industrial	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ECMFD0-24AM36	Common mode filter with ESD protection for USB 2.0 and MINI/MICRO interfaces	USB	2 Differential Lines	Common Mode Filter	6	Uni-Directional	1.5	QFN-6L	8	2	Industrial	No	-16	-24	-25	-25	-15	-20	-10	-4.5	-	-	1.7 x 1.3	-	-	55	125	-	1.8	100	
ECMFD0-28F3	Common mode filter with ESD protection for high speed serial interface	USB	2 Differential Lines	Common Mode Filter	6	Bi-Directional	3	CSP P 0.4 mm	10	2	Industrial	No	-13	-23	-27	-32	-37	-8	-8	5	-	-	1.25 x 0.85	-	-	105	-	-	3	100	
ECMFD0-29SM06	ESD protected common mode filter for USB 3.0 interface	Display Port, HDMI, MHL, USB	2 Differential Lines	Common Mode Filter	6	Uni-Directional	3	QFN-6L	8	2	Industrial	No	-20	-25	-33	-26	-20	-20	-18	3.2	-	-	1.7 x 1.5	-	-	140	125	-	-	7	100
ECMFD0-40CM06	Common mode filter with ESD protection for USB 3.0 interface	USB	2 Differential Lines, Vbus and ID	Common Mode Filter	6	Uni-Directional	5.5	QFN-8L	10	4	Industrial	No	-14	-27	-33	-27	-15	-4	-5	6	-	-	2.5 x 1.2	-	-	120	-	-	3	100	
ECMFD0-40DM10	Common mode filter with ESD protection in QFN 10L	Display Port, HDMI, MHL, USB	4 Differential Lines	Common Mode Filter	6	Uni-Directional	3	QFN-10L	8	4	Industrial	No	-20	-33	-14	-12	-7	-4	-4	2.5	-	-	2.6 x 1.35	-	-	55	125	-	-	5	100
ECMFD0-40DM10D3	Automotive CMP with ESD protection and 2.2 GHz bandwidth in QFN 10L	ADAL, Automotive	4 Differential Lines	Common Mode Filter	6	Uni-Directional	3	QFN-10L, WP	8	4	Automotive	No	-20	-33	-14	-12	-7	-4	-4	2.5	37	-	2.6 x 1.35	-	-	55	125	15	8	5.5	100
ECMFD0-40DM10D3D	Common mode filter with ESD protection in QFN 10L	Display Port, HDMI, MHL, USB	4 Differential Lines	Common Mode Filter	4.5	Uni-Directional	3	QFN-10L	8	4	Industrial	No	-13	-17	-24	-34	-28	-14	-12	4.2	-	-	2.6 x 1.35	-	-	140	85	-	-	5	100
ECMFD0-40DM10D3D2	Automotive CMP with ESD protection and 3.5 GHz bandwidth in QFN 10L	ADAL, Automotive	4 Differential Lines	Common Mode Filter	4.5	Uni-Directional	3	QFN-10L, WP	8	4	Automotive	No	-13	-16	-24	-35	-30	-17	-17	4.2	37	-	2.6 x 1.35	-	-	140	125	15	8	5.5	100
ECMFD0-40DM10D6	2-line Common mode filter with ESD protection for High Speed Serial interface	Display Port, Ethernet, HDMI, MHL, PLSD, Coax, USB	2 Differential Lines	Common Mode Filter	5.3	Uni-Directional	5	QFN-6L	9	2	Industrial	No	-3	-5	-8	-11	-16	-12	-18	10.7	20.5	-	2.2 x 1.35	0.25	55	125	-	-	3	70	
ECMFD0-20M42N10	Common mode filter with ESD protection	Display Port, HDMI, MHL, USB	4 Differential Lines	Common Mode Filter	4.5	Uni-Directional	3	QFN-10L	8	4	Industrial	No	-13	-16	-23	-37	-25	-13	-12	5	15.2	-	2.2 x 1.35	0.35	140	85	-	-	5.5	100	
ECMFD0-24M42N10M3	Common mode filter with ESD protection for high speed serial interfaces	HDMI	4 Differential Lines, with additional differential filter	Common Mode Filter	4.5	Uni-Directional	3	QFN-10L	8	4	Industrial	No	-11	-14	-22	-30	-38	-8	9	1.7	-	-	2.6 x 1.35	0.35	140	85	-	-	5.5	100	
ECMFD0-24M42N10D10	Common mode filter with ESD protection for high speed serial interface	Display Port, HDMI, MHL, USB	4 Differential Lines	Common Mode Filter	5.3	Uni-Directional	5	QFN-10L	10	4	Industrial	No	-5	-7	-13	-17	-32	-16	-14	6.4	20	-	2.2 x 1.35	0.25	55	125	-	-	5	70	
ECMFD0-40DM10D10D3	Automotive CMP with ESD protection and 5 GHz bandwidth in QFN 10L	ADAL, Automotive	4 Differential Lines	Common Mode Filter	5.3	Uni-Directional	5	QFN-10L, WP	8	4	Automotive	No	-5	-7	-13	-18	-34	-4	-20	9	20	-	2.6 x 1.35	-	-	15	8	5	70		
ECMFD0-40DM10D10D3D	4-line Common mode filter with ESD protection for high speed serial interface	Display Port, Ethernet	4 Differential Lines	Common Mode Filter	5.3	Uni-Directional	5	QFN-10L, WP	10	4	Automotive	No	-3	-5	-8	-11	-16	-12	-18	10.7	20.5	-	2.2 x 1.35	0.25	55	125	-	-	3	70	
EMF02-32005	2-line EMI filter and ESD protection	General Purpose	-	Low Pass Filter	6.1	Uni-Directional	3	SOT23-5L	9	2	Industrial	No	-	-	-	-	-	-	-	-	0.1	7	2.00 x 2.30 x 1.05	50	-	125	-	-	100	1000	
EMF02-02Q48R7	Automotive EMI filter and ESD protection for Intra-Back 7.0 GHz	Ethernet	-	Low Pass Filter	6	Bi-Directional	3	QFN-6L, WP	15	2	Automotive	No	-	-	-	-	-	-	-	-	0.25	-	1.2	-	-	-	-	-	-	100	
EMF02-02Q30R4	2-line EMI filter and ESD protection	General Purpose	-	Low Pass Filter	4	Uni-Directional	3	QFN-6L	8	2	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	1.45 x 1.00 x 0.55	30	-	-	-	-	100		
EMF02-02C03F2	2-line EMI filter and ESD protection for microphones	Microphones	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	8	2	Industrial	No	-	-	-	-	-	-	-	-	0	10	1.47 x 1.07 x 0.65	100	-	-	-	-	68	500	
EMF02-SPK02F2	2-line EMI filter and ESD protection	Speakers	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	30	2	Industrial	No	-	-	-	-	-	-	-	-	0.02	51	1.26 x 0.89 x 0.65	250	-	-	-	-	135	450	
EMF02-SPK03F2	2-channel EMI filter and ESD protection for speaker phone	Speakers	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	30	2	Industrial	No	-	-	-	-	-	-	-	-	0.02	10.8	1.26 x 0.89 x 0.65	250	-	-	-	-	107	300	
EMF02-USB03F2	2-line EMI filter and ESD protection with R pull-up for USB interfaces	USB	-	Low Pass Filter	14	Bi-Directional	3	CSP P 0.5 mm	8	2	Industrial	No	-	-	-	-	-	-	-	-	0.25	-	1.94 x 1.44 x 0.65	15	-	-	-	-	33	200	
EMF02-SM02M8	2-line EMI filter and ESD protection for SIM card interfaces	SIM	-	Low Pass Filter	6	Uni-Directional	3	QFN-6L	8	3	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	1.70 x 1.50 x 0.55	17	-	-	-	-	47	200	
EMF02-1005M8	4-line low capacitance EMI filter and ESD protection	General Purpose	-	Low Pass Filter	6	Uni-Directional	3	QFN-6L	15	4	Industrial	No	-	-	-	-	-	-	-	-	0.11	-	1.70 x 1.50 x 0.55	15	-	-	-	-	100	200	
EMF02-1005M12	4-line low capacitance EMI filter and ESD protection	General Purpose	-	Low Pass Filter	6	Uni-Directional	3	QFN-12L	15	6	Industrial	No	-	-	-	-	-	-	-	-	0.11	-	2.50 x 1.50 x 0.55	40	-	-	-	-	100	200	
EMF02-3005M12V2	Automotive grade low loss capacitance EMI filter and ESD protection	General Purpose	-	Low Pass Filter	6	Uni-Directional	3	QFN-12L	15	6	Automotive	No	-	-	-	-	-	-	-	-	0.11	-	3.00 x 1.35 x 0.75	45	-	-	11	11	100	200	
EMF02-HM02C22	2-line EMI filter and ESD protection for mini and micro SD card interfaces	SD Card	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	8	6	Industrial	No	-	-	-	-	-	-	-	-	0.35	7.3	1.89 x 1.89 x 0.65	15	-	-	-	-	50	100	
EMF02-HSD03F1	3-line EMI filter with integrated ESD protection for micro SD cards	SD Card	-	Low Pass Filter	5	Uni-Directional	3	CSP P 0.4 mm	18	6	Industrial	No	-	-	-	-	-	-	-	-	3	19.2	2.40 x 1.10 x 0.61	2.5	-	30	125	-	-	1	20
EMF02-MSD02E16	3-line EMI filter and ESD protection for T-flash and micro SD card interfaces	SD Card	-	Low Pass Filter	5	Uni-Directional	3	QFN-16L	8	6	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	1.50 x 1.20 x 0.50	14	-	-	-	-	45	200	
EMF02-MSD03F1	3-line EMI filter and ESD protection for mini and micro SD card interfaces	SD Card	-	Low Pass Filter	14	Uni-Directional	3	CSP P 0.4 mm	8	6	Industrial	No	-	-	-	-	-	-	-	-	0.55	23	1.54 x 1.54 x 0.61	20	-	-	-	-	100	100	
EMF02-VSD01F2	3-line EMI filter and ESD protection for display interfaces	Display Port	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	8	6	Industrial	No	-	-	-	-	-	-	-	-	0.19	-	1.93 x 1.29 x 0.65	15	-	-	-	-	40	500	
EMF02-MSD01F2	3-line EMI filter and ESD protection for mini and micro SD card interfaces	SD Card	-	Low Pass Filter	14	Bi-Directional	3	CSP P 0.5 mm	25	6	Industrial	No	-	-	-	-	-	-	-	-	0.3	-	1.92 x 1.92 x 0.65	17	-	-	-	-	40	100	
EMF02-3005M16	3-line low capacitance EMI filter and ESD protection	General Purpose	-	Low Pass Filter	6	Uni-Directional	3	QFN-16L	15	8	Industrial	No	-	-	-	-	-	-	-	-	0.11	-	3.30 x 1.50 x 0.55	45	-	-	-	-	100	200	
EMF02-LCD04M16	3-line L.C. EMI filter and ESD protection for display interfaces	Display Port	-	Low Pass Filter	6	Uni-Directional	3	QFN-16L	15	8	Industrial	No	-	-	-	-	-	-	-	-	0.21	-	3.30 x 1.50 x 0.55	32	-	-	-	-	12.5	100	
EMF02-VSD01F2	3-line EMI filter and ESD protection for display interfaces	Display Port	-	Low Pass Filter	6	Bi-Directional	3	CSP P 0.5 mm	8	8	Industrial	No	-	-	-	-	-	-	-	-	0.18	-	1.92 x 1.29 x 0.65	25.5	-	-	-	-	100	500	
EMF02-VSD01F3	3-line low capacitance EMI filter and ESD protection	Display Port	-	Low Pass Filter	5.8	Uni-Directional	3.5	CSP P 0.4 mm	20	8	Industrial	No	-	-	-	-	-	-	-	-	0.1	4.5	1.54 x 1.05 x 0.60	-	-	-	-	-	100	500	
HDM02-CLD3F1	2-line signal conditioning and ESD protection for HDMI interfaces	HDMI	Control Lines, Pull-up/down Resistor, Sink Source	Signal Conditioning	6	-	5.5	CSP P 0.4 mm	10	5	Industrial	No	-14	-27	-33	-27	-15	-4	-5	6	-	-	2.5 x 1.2	-	-	125	-	-	3	100	
HDM02-14H05	ESD																														

ESD Protection

Overview



What is ESD?

Protection against electrostatic discharges (ESD) is part of EMC Immunity (Electro Magnetic Compatibility) requirements. It is the ability for equipment to properly operate in its electromagnetic environment by limiting the reception of electromagnetic energy that may cause physical damage. ESD can be either conducted under the form of a transient voltage or can be radiated due to its fast rising time: powerful harmonics will generate erratic behavior by the application by coupling with other signals. Printed circuit boards must be protected against the effects of electrostatic discharge.

As the safe operating area of today's CMOS processes becomes narrower, they are increasingly sensitive to ESD. Silicon manufacturers commonly use the human-body model (HBM) characterize ESD susceptibility in a controlled environment, however it is much higher in the real world at system level. Therefore, IOs and power rails in real-world applications need external ESD protections rated as per IEC 61000-4-2 and IEC61000-4-5 specifications.

ST's ESD protection portfolio

To ensure that your applications meet the most stringent requirements for the latest applications, ST's ESD protection devices comply with IEC 61000-4-2 Electrostatic Discharge (ESD) standards. Specifically tailored for automotive applications, our portfolio ensures high efficiency with low clamping voltage, reliability with low leakage current and signal integrity with ultra-low capacitance and ultra-wide bandwidth.

ST's ESD protection portfolio includes:

- General-purpose ESD protection
- Low capacitance (< 1 pF) ESD protection
- Automotive ESD protection

To help you find the best ESD protection solution for your designs, ST offers several tools:

- Online TVS smart selector helps designers select the right TVS for their application with just a few clicks. Only two application parameters are necessary for device selection.
- Protection finder mobile app lets you to explore the ST TVS portfolio using portable devices. You can easily define the device that best fits your application using the parametric or series search engine.

Compliance with ESD protection standards

To protect electrical or electronic parts, assemblies, and equipment susceptible to ESD damage, external ESD protection devices must observe two main items in order to comply with national and international regulations and safety standards:

- Transparency: the external ESD protection device must not impact system performance including operating voltage, bandwidth and power consumption.
- Efficiency: the external ESD protection device must protect the circuit against system-level ESD events by clamping the ESD surge transients.

Compliance with the most stringent ESD requirements

To ensure compliance with the most stringent requirements, ST's ESD protection devices combine:

- Protection efficiency with low clamping voltage (V_{CL})
- Protection transparency with low leakage current (I_{RM})
- Signal integrity with ultra-low capacitance and ultra-wide bandwidth

Standard packaging options are available as well as advanced options which include single- and multiple-line, compact, flat, and flow-through versions to optimize space constraints.

They guarantee quality and service performance thanks to ST's high-volume production capacity, integrated front-end and multiple back-end lines, as well as our partnerships with major players in the semiconductor industry.

FAQ related to ESD protection

What is ESD protection?

ESD stands for electrostatic discharge. ESD is defined by the ESD association as *the rapid, spontaneous transfer of electrostatic charge induced by a high electrostatic field*.

It is the result of static electricity discharge. Static electricity is the collection of electrically charged particles on the surface of a material.

Various materials have a tendency of either:

- Giving up electrons and gaining positive (+) charges
- Attracting electrons and gaining negative (-) charges

Electrostatic discharge will cause potential failure on the integrated circuits of your PCB.

These failures are called electrical over stress (EOS), resulting in silicon melting, oxide punch-through, junction damage, metallization damage or degradation affecting the long-term reliability of your electronic system.

A survey from the EOS industry council shows that 30% of customer claims are due to ESD or EOS (electrical over stress). Furthermore, the miniaturization of the components is increasing the integrated circuits sensitivity to ESD.

Where can I get more information about eye diagram integrity?

Eye diagram information is defined by standards like USB, HDMI etc.

The ESD protection device compliancy with eye diagram is specified in the related datasheet, for example in HSP051-4M10.

What about other USB requirements related to ESD? (TD 4.1.2 or TD 4.12.2)

Eye diagrams can be negatively impacted by wrong ESD protection selection. An extremely high capacitance ESD protection may cause the eye diagram test to fail.

On the other hand requirements like attach / detach requirements (more functional) cannot be impacted by the ESD protection because ESD protection is transparent (high impedance and low capacitance in parallel with datalines) in normal operation.

TD 4.1.2 is related to USB Type-C test for R_p that must not be present for source application when source is OFF. ESD protection will be transparent in this test.

TD 4.12.2 is related to USB Type-C test checking if there is only one upstream port in a hub port device.

How to select the V_{CL} ? (what is the maximum transient voltage accepted by my circuit and if I can assume the maximum absolute voltage of my ICs or is there a better approach to follow?)

The absolute maximum rating (AMR) voltage value is not relevant because it is a DC measured voltage and not measured for a transient voltage, hence an intrinsically

pessimistic value (AMR value is too low).

In the presented example the AMR value is too low, $AMR = 5.5\text{ V}$ while the ESD destruction value is 12 V . The best approach to select the V_{CL} is to apply the SEED methodology described in our ESD Webinar.

If any TLP information is available for the IC to be protected, the lower V_{CL} will ensure the better protection.

Which ST specific part do you recommend to protect the RF port of a transceiver working at 868 MHz with 14 dBm output power? (it must have very low capacitance and low clamping voltage)

14 dBm corresponds to 1.6 V max on $50\ \Omega$ load. As a consequence, ESDARF02-1BU2CK matches the requirement at 868 MHz (no RF losses, $V_{MAX} < V_{RM}$ and bi-directional for RF signaling).

What about protecting a power line? (V_{BUS} in USB on slide 37 of our expert webinar)

Power lines require high current capability surge protection because lightning and switching transients are present on these lines (cf IEC61000-4-5) as well as some functional events generating inrush currents (full-load unplugged, adapter failure, etc). STMicroelectronics protection devices against IEC61000-4-5 surges are available.

Which part do you recommend for protecting 12 V DC outputs?

ESDA15P60-1U1M fits 12 V DC outputs protection for both ESD (IEC61000-4-2) and switching transients (cf IEC61000-4-5).

Which ESD protection component do you recommend when differential current measurement is used?

The original question during the webinar was: *My design is analogic measurement current in an isolated high tension (25 kV) system. Sometimes, we have breakdowns, and we have damage (aop 1st stage AD4610 or a voltage regulator (+5 V or -15 V or +15 V). I tried to insert protective components without performance loss. I measured 5 nA current and some TVS diodes have leakage current 1 or 10 or 100 nA. Any useful reference in future can be test, it might be differential measurement.*

For that specific case, 2 ESD protections on common mode may be better than a single ESD protection in differential. We recommend ESDZV5H-1BU2 for +/-5 V and ESDLC20-1BF4 for +/-20 V.

Do we need ESD for the RS-485 transceivers or is it included?

Check the ESD specification for your RS-485 transceiver: if it is only rated per HBM, then system-level ESD is needed (IEC61000-4-2). To protect RS485 transceiver, ESDA14V2BP6 is recommended.

Please check schematic in figure *ESDA14V2BP6 protection device schematic* in AN5245.

ST485 transceiver can be split in 2 families:

- with system ESD protection (ST485E series)
- without system ESD protection (ST485 series)

When ST485E series cannot be placed close to the ESD source, it is required to use external ESD protections in order to avoid any EMI coupling with internal PCB tracks. EMI coupling induced by ESD can generate latch-up failures in your system.

Do I need additional ESD protection if I use digital isolators for I/Os (like Si86xx)?

Yes, this specific product requires an external ESD protection. For 1 Mbps signal with 5.5 V AMR, we recommend USBLC6-2SC6 or USBLC6-4SC6 according to the number of lines to be protected.

Can I use the circuits for PSpice simulations and real test setups or is something missing?

Yes, it is a simplified but functional schematic. Real schematic is more complex with serial inductors.

Is the track on the PCB from the ESD source to the ESD protection device rated for the ESD maximum discharge current defined by the ESD level required?

The track maximum DC current is not critical due to the ESD event duration ($\approx 100\text{ ns}$).

Have ST all PSpice models of their portfolio?

You can find ST PSpice ESD protection models under SPICE models.

How do you connect the shield of the connector to the PCB?

We usually connect it to the GND of the system.

Should we connect ESD protection ground to 0 V or GND?

ESD protection ground must be connected to the reference GND plane of the protected I/O to limit or avoid any parasitic inductance effect due to multiple ground planes connection.

Where is the current going on slide 17 of our EMC expert webinar?

The current is flowing to the ground.

Is it really necessary to provide external ESD protection in case of no ESD protection for GPIO pins of a microcontroller built in?

It is only necessary to protect GPIO exposed to system-level ESD (connector, button) otherwise embedded HBM is enough.

Can you explain why ESD protection is needed with a USB-C connector housed in a plastic case?

ESD cannot be assimilated to simple conduction through a metal track, it is a charge equilibrium between 2 systems. As a consequence, air discharge can appear and non-conductive materials can let the charge flow (e.g. side key buttons on smartphone need to be protected).

Are there other types of ESD protection without using TVS?

Other types of ESD protection can be: MOV, polymer and PCB spark gap. All of them present very high clamping voltage and reliability issues that are not compatible with ESD protection of sensitive ICs.

When the use of TVS is not enough for protection (for example when voltage or current is exceeded), do you recommend serial resistor or other type of components?

Adding a serial resistor can be recommended because it will decrease the clamping voltage on protected IC I/O. But for some interfaces, adding a serial resistor may exceed the line impedance specified in the standard or decrease the bandwidth.

Can TVS diode and Zener diode be in parallel (Zener to protect from DC overvoltage and TVS to protect from transients)?

TVS protects against transient over-voltage while Zener is for voltage regulation, because not rated against surges nor over-voltages. To protect against DC over-voltage, an over-voltage protection (OVP) is required. OVP and TVS can be used together with TVS maximum clamping voltage slightly below OVP AMR.

Are there any easier rules to apply to choose the key parameters?

Secure margin between AMR and maximum ESD clamping voltage before destruction can be very scattered. To select the best ESD protection, bandwidth must not be oversized, V_{RM} must be just slightly higher than line voltage in order to lower the clamping voltage.

Regarding on the question about protecting a IO power line, the decoupling capacitor also lowers the voltage when a charge is injected, but are there specific requirements for this capacitor?

On power line, capacitor are selected to fit power requirement. The capacitor rated voltage must be higher than the clamping voltage of the TVS to avoid capacitor degradation or destruction when surge event occurs.

If I choose for the next version the ESDLIN1524BJ close to input current, can I place it at power inputs also to protect voltage regulators?

Power inputs are usually protected using TVS rather than ESD protection components.

Automotive TVS portfolio is available here.

Industrial TVS portfolio is available here.

Is there any protection related to LEDs?

Standard ESD protection (ESD051-1BF4) can be used for LED protection. Bidirectional protection is recommended to test LED mounted on reverse.

What affordable and cheap ESD gun can you recommend?

We use Tesseq ESD gun. We do not have any ESD gun benchmark.

What would you recommend for clothing when handling ESD sensitive devices?

In an ESD-controlled environment, a conductive lab coat with ESD wrist connected to the ground are recommended.

In terms of ESD certification of an electronic circuit board, can you recommend a provider of this service in France?

EMITECH is a French Lab.

Can you tell something about protection during soldering (ie: solder connector wires to a board)?

During soldering (connector as example), only HBM is relevant but the environment must be under control (operator with wrist connected to ground, solder iron connected to ground).

How do you protect multiple MCU pins that do not go outside the PCB and is it necessary? (boards can be completely damaged from accidental touching of a PCB pad)

PINS that do not go outside the PCB do not require specific ESD protection but special care is mandatory for handling (conductive lab coat with ESD wrist connected to the ground).

Is it possible to expose my problem with an application engineer in next days?

Feel free to reach us via our local support.

How do you measure ESD signals? Do you use scopes?

We use a high bandwidth, high sample rate oscilloscope on 50Ω with 40dB external input attenuation. See STMicroelectronics AN3353.

Can I use a Zener diode to clamp an ESD over-voltage?

A Zener diode is used for voltage regulation under DC-current condition but neither their silicon nor their package is rated for transient surge dissipation.

Only ESD or transient voltage suppressor (TVS) specify the transient surge they can dissipate.

Is a 30 kV ESD diode better for protection?

The best parameter to qualify the efficiency of an ESD protection is the clamping voltage because if your 30 kV ESD diode has a poor clamping voltage it means your application will be more sensitive to transient voltages.

ESD robustness higher than 8 kV has to be taken into account only if your application requires it like in automotive standard ISO10605.

How can I select the ESD protection based on my IC electrical parameters?

Because TLP data are not specified by ICs suppliers, you can only rely on the V_{RM} of the line to be protected to select your ESD protection. In this case the clamping voltage after an 8 kV ESD contact discharge can help you to compare ESD protection efficiency.

I need to populate different interfaces with ESD protection, can I use the same ESD protection for all these interfaces?

Yes, but keep in mind that each interface has its own requirement. For example you may choose a low capacitance ESD in a 2-line package to protect D_{plus} and D_{minus} pins of an USB connector in order to keep the best signal integrity on these datalines whereas you may choose a single line ESD protection with high capacitance for a touch button to lower signal bouncing.

Is external ESD protection needed for CDM (charged device model)?

No, ESD protection according to CDM is granted for all ICs because it is related to component level protection like HBM.

What is exactly the V_{RM} parameter of an ESD protection and what is it good for?

V_{RM} is the maximal operating voltage of the protection to ensure a good transparency of the application voltage signal in the normal operation. The V_{RM} of the ESD protection must be higher than the normal signal voltage amplitude. If the signal is negative and positive, the protection must be bi-directional to avoid rectifier phenomenon. If the signal to be protected is only positive, an unidirectional protection is preferred. Along with the V_{RM} voltage there is also the protection current leakage parameter called I_{RM} . A too high leakage current can affect the system overall consumption but it can also change a data line voltage. Usually, the leakage current is below 1 μA at V_{RM} (ESDZV5 has I_{RM} e.g. at 100 nA maximum).

What does is meant with snap-back ESD protection?

Standard ESD protections activate at breakdown voltage (called V_{BR}) and their voltage increases with the current linearly to clamping voltage. The snap-back protection instead has a snap-back effect which means that it lowers its clamping voltage after the protection is triggered. The holding voltage (V_H) is the lowest voltage when the snap-back protection has turned on. The lower is the holding voltage, the better is the clamping voltage.

The figures below show on the left the I/V characteristics of a standard ESD protection and on the right the I/V characteristics of a snapback ESD protection.

Figure 1. Electrical characteristics (definitions, standard ESD protection)

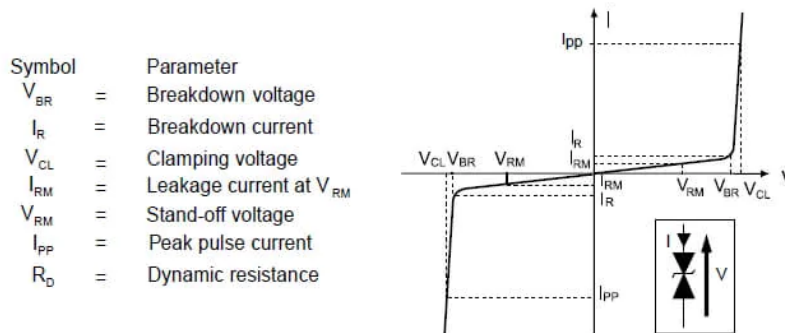
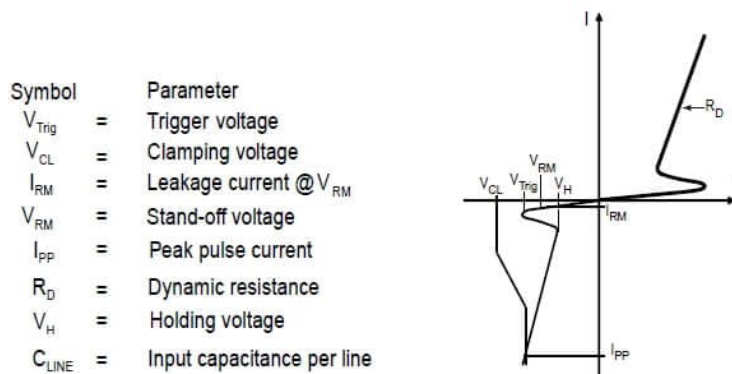


Figure 2. Electrical characteristics (definitions, snapback ESD protection)



Protections and EMI filters/ESD Protection

Part Number	General Description	Grade	Snapback Protection	Package	Package size (mm)	Directionality	Breakdown Voltage (V) min	VT (V) min	Capacitance (pF) (@ 0 V, I/O to GND) typ	IEC 61000-4-2 (kV) (Contact Discharge) min	Clamping Voltage (V) (@ TLP 16A) typ	V _{RM} (V) max	Number of protected lines	Peak pulse current (A) (@ 8/20µs) max	Leakage Current (nA) max
DA108S1	DIODE ARRAY of 8 diodes	Industrial	No	SO-8	6.0 x 4.9	Uni-Directional	1.2	-	-	8	-	15	4	-	2000
DA112S1	DIODE ARRAY	Industrial	No	SO-8	6.0 x 4.9	Uni-Directional	1.2	-	-	8	-	15	6	-	2000
DALC112	LOW CAPACITANCE DIODE ARRAY FOR ESD PROTECTION	Industrial	No	SO-8	6.0 x 4.9	Uni-Directional	1.3	-	7	6	-	15	6	-	2000
DALC208	LOW CAPACITANCE DIODE ARRAY	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	1.2	-	7	8	-	5	4	-	1000
DALC208SC6Y	Automotive low capacitance diode array for ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	1.2	-	7	8	-	1.2	4	-	1000
DSILC6-4xx	ESD Protection for high speed interface	Industrial	No	CSP P 0.5 mm,SOT666	1.6 x 1.6	Uni-Directional	6	-	1.5,1.8	8	-	5	4	-	500
DVIULC6-4SC6	Ultralow capacitance ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	0.8	8	-	5	4	-	500
DVIULC6-4SC6Y	Automotive ultra low capacitance ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	0.85	-	-	5	4	-	500
ESD051-1BF4	Low clamping single line bidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5.8	-	45	30	-	5	1	-	70
ESD051-1F4	Low clamping single line unidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Uni-Directional	5.8	-	110	30	-	5.5	1	-	100
ESDA-1K	EOS and ESD Transil™ protection for charger and battery port	Industrial	No	SOD-523	1.6 x 0.8 x 0.6	Uni-Directional	12,18	-	-	-	-	10,15	1	12,16	500
ESDA041-1JY	Automotive single line 4 V TVS for BMS in SOD323	Automotive	No	SOD323	1.66 x 1.28 x 1.1	Uni-Directional	6.2	-	190	30	-	4	1	20	100
ESDA041-2W3Y	Automotive dual lines 4 V TVS for BMS in SOT323	Automotive	No	SOT323	1.66 x 1.26 x 1.2	Uni-Directional	6.2	-	190	30	-	4	2	20	100
ESDA051-1JY	Automotive single line 5V TVS in SOD323	Automotive	No	SOD323	1.66 x 1.28 x 1.1	Uni-Directional	6.2	-	190	30	-	5	1	20	3000
ESDA14V2-2BF3	Dual bidirectional Transil array for ESD protection	Industrial	No	CSP P 0.4 mm		Bi-Directional	14.2	-	12	8	-	12	2	-	500
ESDA14V2-4BF3	QUAD BIDIRECTIONAL TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	CSP P 0.4 mm		Bi-Directional	14.2	-	15	8	-	12	4	-	500
ESDA14V2BP6	4 line ESD protection, 14.2 V VBR, in SOT666	Industrial	No	SOT666	1.6 x 1.6	Bi-Directional	14.2	-	25	8	-	12	4	-	1000
ESDA14V2SC5	Quad Transil™ array for ESD protection	Industrial	No	SOT23-5L	2.8 x 1.5	Uni-Directional	14.2	-	100	30	-	12	5	-	5000
ESDA14V2SC5Y	Automotive quad-line TVS for ESD protection	Automotive	No	SOT23-5L	2.8 x 1.5	Uni-Directional	14.2	-	100	30	-	12	4	14	5000
ESDA14V2SC6	Quad Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	14.2	-	100	30	-	12	5	-	5000
ESDA14V2SC6Y	Automotive quad-line TVS for ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	14.2	-	100	-	-	-	4	14	5000
ESDA17-5SC6	Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	17	-	33	8	-	14	5	-	75
ESDA19SC6	Quad Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	19	-	80	30	-	15	5	-	100
ESDA25-4BP6	4 line ESD protection, 25 V VBR, in SOT666	Industrial	No	SOT666	1.6 x 1.6	Bi-Directional	25	-	22	8	-	24	4	-	1000
ESDA25B1	TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	SO-8	6.0 x 4.9	Bi-Directional	25	-	15	8	-	24	6	-	2000
ESDA25SC6	Quad Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	25	-	60	30	-	24	5	-	1000
ESDA25SC6Y	Automotive Quad-line TVS for ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	25	-	60	-	-	24	4	-	1000
ESDA37W	Dual Transil™ array for ESD protection	Industrial	No	SOT323	2 x 1.25 x 0.95	Uni-Directional	37	-	48	25	-	36	2	6.3	1000
ESDA37WY	Automotive dual Transil™ array for ESD protection	Automotive	No	SOT323	2 x 1.25 x 0.95	Uni-Directional	37	-	48	25	-	36	2	6.3	1000
ESDA5V3SC5	Quad Transil™ array for ESD protection	Industrial	No	SOT23-5L	2.8 x 1.5	Uni-Directional	5.3	-	320	30	-	3	5	-	2000
ESDA5V3SC6	Quad Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	5.3	-	280	30	-	3	5	-	2000
ESDA5V3SC6Y	Automotive quad-line TVS for ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	5.3	-	280	-	-	3	4	22	2000
ESDA6V1-4BC6	QUAD BIDIRECTIONAL TRANSIL SUPPRESSOR FOR ESD PROTECTION	Industrial	No	SOT23-6L	2.8 x 1.5	Bi-Directional	6.1	-	45	8	-	3	4	-	1000
ESDA6V1-5M6	TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	QFN-6L	1.45 x 1.0	Uni-Directional	6.1	-	70	8	-	3	5	-	500
ESDA6V1-5P6	5 line ESD protection, 6.1 V VBR, in SOT666	Industrial	No	SOT666	1.6 x 1.6	Uni-Directional	6.1	-	70	8	-	3	5	-	500
ESDA6V1-5SC6	Transil™ (TVS) array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6.1	-	50	15	-	3	5	-	1000
ESDA6V1-5SC6Y	Automotive 5-line 5.2 V TVS in SOT23-6L	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6.1	-	50	18	-	5.2	5	7	1000
ESDA6V1BC6	QUAD BIDIRECTIONAL TRANSIL SUPPRESSOR FOR ESD PROTECTION	Industrial	No	SOT23-6L	2.8 x 1.5	Bi-Directional	6.1	-	20	8	-	5	4	-	1000
ESDA6V1P6	4 line ESD protection, 6.1 V VBR, in SOT666	Industrial	No	SOT666	1.6 x 1.6	Uni-Directional	6.1	-	70	8	-	3	4	-	500
ESDA6V1SC5	Quad Transil™ array for ESD protection	Industrial	No	SOT23-5L	2.8 x 1.5	Uni-Directional	6.1	-	190	30	-	5.25	5	-	2000
ESDA6V1SC6	Quad Transil™ array for ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6.1	-	190	30	-	5.25	5	-	2000

ESDA6V1SC6Y	Automotive quad-line TVS for ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6.1	-	190	-	-	5.2	4	-	2000
ESDA6V1U1	TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	SO-8	6.0 x 4.9	Uni-Directional	6.1	-	100	8	-	5	6	-	2000
ESDA8V2-1J	EOS and ESD Transil™ protection for charger and battery port	Industrial	No	SOD323	1.66 x 1.28 x 1.1	Uni-Directional	8.2	-	210	30	-	5	1	-	500
ESDAL	DUAL TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	SOT 23,SOT-23,SOT23-3L	2.75 x 1.2,2.8 x 1.5	Uni-Directional	14.2,25,37,5.3,6.1	-	10,140,220,50,90	9	-	12,24,3.5,25	2	-	1000,2000,20000,5000
ESDALC12-1T2	Single line transient surge voltage suppressor (TVS) for data and power line	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Uni-Directional	12	-	15	20	-	10	1	-	200
ESDALC14-1BF4	Low clamping and low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	13	-	22	25	-	12	1	-	100
ESDALC14-1BU2	Low clamping and low capacitance bidirectional single line ESD protection	Industrial	No	CSPS BUMPLESS COATING	0.6 x 0.3	Bi-Directional	13	-	22	20	-	12	1	-	100
ESDALC14V2-1U2	Single-line low capacitance Transil™ for ESD protection	Industrial	No	ST0201	0.6 x 0.3	Uni-Directional	14.2	-	6	8	-	12	1	-	100
ESDALC20-1BF4	Low clamping, low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	22	-	10.5	20	-	20	1	-	10
ESDALC5-1BF4	Low clamping and low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5.8	-	10	16	-	5	1	2.5	100
ESDALC5-1BM2	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS) for ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	5	-	26	30	-	5	1	-	60
ESDALC5-1BT2	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS) for ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	5	-	26	30	-	5	1	-	60
ESDALC5-1BT2Y	Automotive 5 V TVS in 0402	Automotive	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	5.8	-	26	30	-	5	1	-	60
ESDALC6V1-1BU2	Single-line low capacitance Transil™ for bidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	6.1	-	5	8	-	3	1	-	100
ESDALC6V1-1M2	Single line low capacitance Transil™, transient surge voltage suppressor (TVS) for ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Uni-Directional	6.1	-	22	30	-	3	1	-	100
ESDALC6V1-1U2	Single-line low capacitance Transil™ for ESD protection	Industrial	No	ST0201	0.6 x 0.3	Uni-Directional	6.1	-	12	8	-	3	1	-	100
ESDALC6V1-5M6	5-line low capacitance Transil™ arrays for ESD protection	Industrial	No	QFN-6L	1.45 x 1.0	Uni-Directional	6.1	-	12	8	-	3	5	-	70
ESDALC6V1-5P6	ESD Protection for high speed interface	Industrial	No	SOT666	1.6 x 1.6	Uni-Directional	6.1	-	12	8	-	3	5	-	70
ESDALC6V1M3	DUAL LOW CAPACITANCE TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	SOT883		Uni-Directional	6.1	-	11	11	-	5	2	-	500
ESDALC6V1Px	Low capacitance TRANSIL array for ESD protection	Industrial	No	SOT-665,SOT666	1.6 x 1.2,1.6 x 1.6	Uni-Directional	6.1	-	7.5	8	-	3	4	-	10
ESDALC6V1W	QUAD TRANSIL ARRAY FOR ESD PROTECTION	Industrial	No	SOT323-5L	2 x 1.25 x 0.95	Uni-Directional	6.1	-	7.5	8	-	3	4	-	1000
ESDALC8-1BF4	Low clamping single line bidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	7	-	30	20	-	6	1	-	50
ESDALCL5-1BM2	Single-line low capacitance and low leakage current ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	5	-	26	30	-	3	1	-	10
ESDALCL6-2SC6	Very low capacitance and low leakage current ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	2.5	15	-	1	2	-	10
ESDALCL6-4P6A	Multi-line low capacitance and low leakage current ESD protection	Industrial	No	SOT666	1.6 x 1.6	Uni-Directional	6	-	-	15	-	1	4	-	1
ESDALY	Automotive dual Transil™ array for ESD protection	Automotive, Industrial	No	SOT 23,SOT-23,SOT23-3L	2.8 x 1.5	Uni-Directional	14.2,25,5.25,5.3	-	10,140,220,50,90	30	-	12,24,3.5,25	2	6.3	1000,2000,20000,5000
ESDARF02-1BU2CK	Single Line Bidirectional ESD Protection for High Speed Interface	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5	-	0.2	8	-	3.6	1	-	100
ESDAULC5-1BF4	Low clamping & ultra low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5.8	-	1.5	30	-	3	1	-	70
ESDAULC6-1U2	Single-line unidirectional ESD protection for high speed interface	Industrial	No	ST0201	0.6 x 0.3	Uni-Directional	6	-	0.8	17	-	3	1	-	100
ESDAULC6-3BP6	ESD Protection for high speed interface	Industrial	No	SOT666	1.6 x 1.6	Bi-Directional	6	-	-	15	-	5	3	-	500
ESDAVLC5-1BF4	Low clamping, very low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5.8	-	5	12	-	5	1	-	100
ESDAVLC5-4BX4	4-line bidirectional Transil™, transient surge voltage suppressor for ESD protection	Industrial	No	ST0201		Bi-Directional	5.5	-	8	16	-	3	4	-	50

ESDAVLC6-1BF4	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS)	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	6	-	6	15	-	3	1	-	100
ESDAVLC6-2BLY	Automotive dual-line Transil, transient voltage suppressor (TVS)	Automotive	No	SOT23-3L	2.8 x 1.5	Bi-Directional	7	-	0.95	10	-	5	2	-	100
ESDAVLC8-1BM2	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS) for ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	8.5	-	4.5	17	-	3	1	-	50
ESDAVLC8-1BT2	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS) for ESD protection	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	8.5	-	4.5	17	-	3	1	-	50
ESDAVLC8-1BT2Y	Automotive 3 V TVS in 0402	Automotive	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	8	-	4.5	-	-	3	1	-	50
ESDAVLC8-1BU2	Single-line low capacitance Transil™, transient surge voltage suppressor (TVS) for bidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	8.5	-	5	8	-	3	1	-	100
ESDAXLC18-1BF4	Ultra Low Capacitance Single Line Bidirectional ESD Protection	Industrial	Soft	ST0201	0.6 x 0.3	Bi-Directional	19	19	0.45	12	-	18	1	-	30
ESDAXLC5-1U2	Low clamping, Single Line Unidirectional ESD Protection for high speed interface	Industrial	No	ST0201	0.6 x 0.3	Uni-Directional	5.5	-	0.55	16	-	3.6	1	-	100
ESDAXLC6-1BT2	Single-line bidirectional ESD protection for high speed interface	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	6	-	0.4	16	-	3	1	-	50
ESDAXLC6-1BT2Y	Automotive 3 V extra low capacitance TVS in 0402	Automotive	No	SOD-882	1.0 x 0.6 x 0.5	Bi-Directional	6	-	0.4	16	-	3	1	-	50
ESDAXLC6-1BU2	Single-line bidirectional ESD protection for high speed interface	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	6	-	0.4	16	-	3	1	-	70
ESDAXLC6-1MY2	Extra low capacitance single line TVS	Industrial	No	SOD-882	1.0 x 0.6 x 0.5	Uni-Directional	6	-	0.6	8	-	3	1	-	100
ESDAxxxP6	TRANSIL ARRAY FOR ESD PROTECTION	Industrial	-	SOT 666	-	-	-	-	-	-	-	-	-	-	-
ESDAxxxWx	TRANSIL array for data protection	Industrial	No	SOT323,SOT323-	2 x 1.25 x 0.95	Uni-Directional	25,6.1	-	30,50,65,90	8	-	24,3	2,4,5	-	1000
ESDCAN01-2BLY	Automotive dual-line TVS in SOT23-3L for CAN bus (12 V system)	Automotive	No	SOT23-3L	2.8 x 1.5	Bi-Directional	25	-	25	30	-	24	2	5.5	100
ESDCAN02-2BWY	Automotive dual-line TVS in SOT323-3L for CAN bus (12 V system)	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	28.5	-	3	30	-	26.5	2	3.7	10
ESDCAN03-2BM3Y	Automotive dual-line TVS in DFN for CAN bus protection (12 V system)	Automotive	Soft	QFN-3L WF	1.1 x 1.0	Bi-Directional	28	28	3.3	15	37	24	2	3.3	50
ESDCAN03-2BWY	Automotive dual-line TVS in SOT323-3L for CAN bus (12 V system)	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	26.5	-	3	30	-	24	2	250	10
ESDCAN04-2BLY	Automotive dual-line TVS in SOT23-3L for CAN bus (12 V system)	Automotive	No	SOT-23	2.8 x 1.5	Bi-Directional	27.5	-	17	30	-	25.5	2	3.7	50
ESDCAN04-2BWY	Automotive dual-line TVS in SOT323-3L for CAN bus (12 V system)	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	27.5	-	17	30	-	25.5	2	-	50
ESDCAN05-2BWY	Automotive dual-line TVS in SOT323-3L for CAN bus (24 V system)	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	39	-	3	30	-	36	2	3	10
ESDCAN06-2BLY	Automotive dual-line TVS in SOT23-3L for CAN bus (24 V system)	Automotive	No	SOT-23	2.8 x 1.5	Bi-Directional	38	-	13	30	-	35	2	3	100
ESDCAN06-2BWY	Automotive dual-line TVS in SOT323-3L for CAN bus (24 V system)	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	38	-	13	30	-	35	2	3	10
ESDCAN24-2BLY	Automotive dual-line TVS in SOT23-3L for CAN bus (12 V system)	Automotive	No	SOT23-3L	2.8 x 1.5	Bi-Directional	27	-	25	30	-	24	2	5.5	100
ESDL031-1BF4	Ultra-low clamping single line bidirectional ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5	-	10	25	6.3	3.3	1	7	100
ESDL20-1BF4	Low clamping, low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	22	-	13	20	36	20	1	2.4	10
ESDLIN03-1BWY	Automotive 26.5 V TVS for LIN bus in SOT323-3L	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Bi-Directional	28.5	-	3	30	-	26.5	1	-	10
ESDLIN1524BJ	Automotive single line ESD protection for LIN bus in SOD323	Automotive	No	SOD323	1.66 x 1.28, 1.66 x 1.28 x 1.1	Bi-Directional	25.4	-	16	30	-	24	1	3	50
ESDU401-1BF4	40 V single line ESD protection with ultra-low capacitance	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	41	-	1.1	9.5	-	40	1	0.7	50
ESDV5-1BF4	Low clamping, very low capacitance bidirectional single line ESD protection	Industrial	No	ST0201	0.6 x 0.3	Bi-Directional	5.8	-	5	12	18	5.5	1	1.7	100
ESDX051-2BU3	Dual line bidirectional ESD protection for high speed interface	Industrial	No	CSPS BUMPLESS COATING	0.62 x 0.32	Bi-Directional	6	-	0.13	8	35	5	2	1	100

ESDZLS-1F4	Low clamping, low capacitance unidirectional single line ESD protection	Industrial	Soft	ST0201	0.6 x 0.3	Uni-Directional	5.8	5.8	7.5	15	8.5	5.5	1	7	100
ESDZV053-1BF5	Ultra low clamping single line bidirectional ESD protection in extra small 01005 package	Industrial	Soft	ST01005	0.455 x 0.245	Bi-Directional	9	9	4.5	16	9.2	5.5	1	5.5	25
ESDZV18-1BF4	Low clamping, low capacitance bidirectional single line ESD protection	Industrial	Soft	ST0201	0.6 x 0.3	Bi-Directional	18	18	3	30	21.5	16	1	6	100
ESDZV201-1BF4	Low clamping, low capacitance bidirectional single line ESD protection	Industrial	Soft	ST0201	0.6 x 0.3	Bi-Directional	23	23	3	8	31	20	1	4.5	300
ESDZV5-1BF4	Ultra Low clamping single line bidirectional ESD protection	Industrial	Soft	ST0201	0.6 x 0.3	Bi-Directional	5.8	5.8	6	18	7	5.5	1	7	100
ESDZV5-1BU2	Ultra Low clamping single line bidirectional ESD protection	Industrial	Soft	CSPS BUMPLESS COATING	0.6 x 0.3	Bi-Directional	5.8	5.8	6	18	7	5.5	1	7	50
ESDZV5-1BV2	Ultra Low clamping single line bidirectional ESD protection in extra small 01005 package	Industrial	Soft	ST01005	0.455 x 0.245	Bi-Directional	5.8	5.8	5	15	7.8	5.5	1	5	100
ESDZV5H-1BU2	Ultra Low clamping single line bidirectional ESD protection	Industrial	Soft	CSPS BUMPLESS COATING	0.6 x 0.3	Bi-Directional	5.8	6.5	4	14	10	5.5	1	4	50
ESDZV5HS-1BF4	Ultra-low clamping single line bidirectional ESD protection	Industrial	Soft	ST0201	0.6 x 0.3	Bi-Directional	10	10	4	10	10.2	5.5	1	4	100
HDMIULC6-4SC6	Ultra large bandwidth ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	0.8	8	-	5	4	-	500
HDMIULC6-4SC6Y	Automotive ultra large bandwidth ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	0.6	8	-	5	4	-	500
HSP051-2W3Y	Automotive 2-line ESD protection for high speed lines	Automotive	No	SOT323	1.8 x 1.15 x 0.8	Uni-Directional	5	-	0.7	12	17.5	5	2	1.8	150
HSP051-4M10	4-line ESD protection for high speed lines	Industrial	No	QFN-10L	2.5 x 1.0	Uni-Directional	4.5	-	0.35	8	15	3.6	4	-	100
HSP051-4M5	4-line ESD protection for high-speed lines	Industrial	No	QFN-5L	1.3 x 0.8	Uni-Directional	5.7	-	0.35	20	13.7	5	4	3	70
HSP051-4N10	4-line ESD protection for high speed lines	Industrial	No	QFN-4L	1.9 x 1.0	Uni-Directional	4.5	-	0.35	8	15	3.6	4	-	100
HSP053-4M5	4-line ESD protection for high-speed lines	Industrial	No	QFN-5L	1.3 x 0.8	Uni-Directional	5.3	-	0.25	10	19	5	4	-	70
HSP061-4M10	4-line ESD protection for high speed lines	Industrial	No	QFN-10L	2.5 x 1.0	Uni-Directional	6	-	0.6	8	-	3	4	-	70
HSP061-4M10Y	Automotive 4-line ESD protection for high speed lines	Automotive	No	QFN-10L	2.5 x 1.0	Uni-Directional	6	-	0.6	8	-	3	4	-	70
HSP061-4NY8	4-line ESD protection for high speed lines	Industrial	No	QFN-8L	2.0 x 1.0	Uni-Directional	6	-	0.5	8	-	3	4	3	100
HSP062-2	2-line ESD protection for high speed lines	Industrial	No	QFN-6L	1.45 x 1.0	Uni-Directional	6	-	0.6	8	-	3	2	3	100
HSP181-2W3Y	Automotive grade 18V dual-line high speed port protection	Automotive	No	SOT323	2 x 1.25 x 0.95	Uni-Directional	21.5	-	2.1	12	33	18	2	2	50
USB6B1	Unidirectional 2 lines Filter + ESD + Vbus	Industrial	No	SO-8	6.0 x 4.9	Uni-Directional	6	-	2.5	8	-	5.25	2	25	10000
USBLC6-2	ESD Protection for USB 2.0 High Speed	Industrial	No	SOT23-6L,SOT666	1.6 x 1.6,2.8 x 1.5	Uni-Directional	6	-	2.5	15	-	5.25	2	-	150
USBLC6-2SC6Y	Automotive very low capacitance ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	2.5	15	-	5.25	2	5	150
USBLC6-4	Very low capacitance ESD protection	Industrial	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	3	15	-	5.25	4	-	150
USBLC6-4SC6Y	Automotive very low capacitance ESD protection	Automotive	No	SOT23-6L	2.8 x 1.5	Uni-Directional	6	-	3	15	-	5.25	4	5	150
USBULC6-2M6	Ultra large bandwidth ESD protection	Industrial	No	QFN-6L	1.45 x 1.0	Uni-Directional	6	-	0.65	15	-	5	2	5	500
DVIULC6-2x6	Ultra Low capacitance 2 lines ESD protection	Industrial	No	QFN-6L	1.45 x 1.0	Uni-Directional	6	-	0.8	8	-	3	2	-	500
ESDA14V2-1BF3	Single-line bidirectional Transil® array for ESD protection	Industrial	No	CSP P 0.4 mm		Bi-Directional	14.2	-	10	8	-	12	1	-	500

Thyristor surge suppressor (TSS)

Overview

What is a Thyristor Surge Suppressor or crowbar protection component?

When protecting parallel (double) circuit transmission lines, devices have two main functions in transient mode: clipping the voltage and drifting the current due to overload.

If the first function is perfectly filled using an avalanche diode which confirms the success of the TVS, the second is limited by the permanent presence of the voltage at the diode's terminals. The use of increasingly sophisticated electronic components is also increasingly fragile and the publication of new standards no longer allows the use of diodes in certain applications.

To solve this issue, designers use semiconductor devices having two conduction states such as a thyristor (or triac in the bidirectional version).

By switching from a blocked state (at rest) to a passing state with low voltage drop (speed transient overload) Thyristor Surge Suppressors, a semiconductor component, makes it possible to protect circuits against high overload currents and protect the circuit terminals from any risk of overvoltage.

A Thyristor Surge Suppressor (TSS) prevents overvoltages or power surges from damaging power supplies. When a Transient Voltage Suppressor (TVS) is not strong enough to ensure compliance with high surge criteria defined in ITU-T K series, GR-1089 and TIA-968-A requirements, a TSS, or Trisil™, in a crowbar protection topology is recommended.

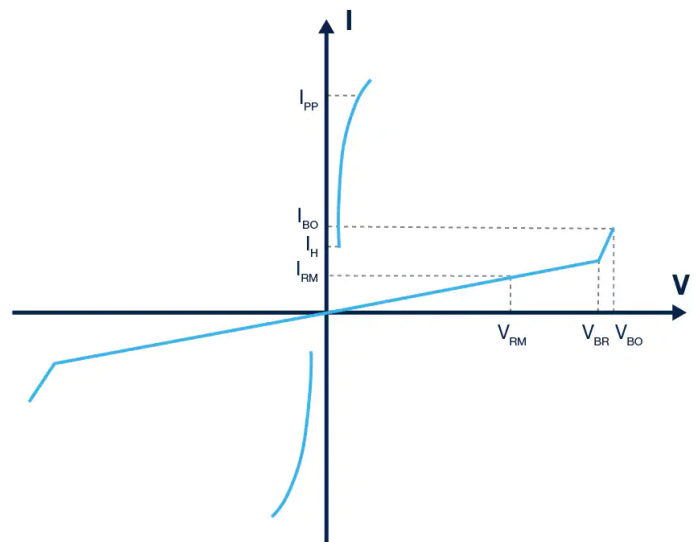
Designed to protect new high-voltage digital line cards as well as classical subscriber line interface cards (SLIC) against transient overvoltages, these components present a very low gate triggering current (I_{GT}) in order to reduce the current consumption on printed circuit board during the firing phase.

Advantages of thyristor surge protection devices (TSPDs)

Like a TVS in normal operation, the TSS is transparent for the application but then acts a short circuit during surges.

TSS brings many advantages over traditional Gas Discharge Tube (GDT) surge arrestors including stability over time (no ageing phenomenon) and turn-on without parasitic oscillation or ringing.

TSS are designed for telecom network applications such as xDSL, T1/E1, Ethernet, EPON, and GPON applications and voice band protection in line cards and telephony equipment in both infrastructure and residential installations.



Symbol parameter

V_{RM} Stand-off voltage
 V_{BR} Breakdown voltage
 V_{BO} Breakover voltage

I_{RM} Leakage current
 I_{BO} Breakover current
 I_{PP} Peak pulse current

I_H Holding current

Protections and EMI filters/Thyristor surge suppressor (TSS)

Part Number	General Description	Grade	Package	Directionality	Number of protected lines	V _{RM} (V) max	Peak pulse current (A) (@ 10/1000µs) max	Peak pulse current (A) (@ 8/20µs) max	Peak pulse current (A) (@ 5/310µs) max	Negative Operating Voltage (V) min	Positive Operating Voltage (V) max	Capacitance (pF) (@ 0 V, 1/0 to 1/0) max	Breakdown Voltage (V) max
DSL01-xxxSC5	Secondary protection for DSL lines	Industrial	SOT23-5L	Bi-Directional	2	10,5,8	-	30	-	-	-	17,20	-
DSL03	Low capacitance TVS for high speed lines such as xDSL	Industrial	SOT23-6L	Bi-Directional	2	10,22,24	-	16	-	-	-	3	-
DSL04	Low capacitance TVS for high speed lines such as xDSL	Industrial	SOT23-6L	Bi-Directional	2	12	-	15	-	-	-	3	-
DSL05-012SC6	Low capacitance TVS for VDSL2 and G.FAST	Industrial	SOT23-6L	Bi-Directional	2	12	-	30	-	-	-	1.5	-
DSL05-016SC6	Low capacitance TVS for VDSL2 and G.FAST	Industrial	SOT23-6L	Bi-Directional	2	16	-	30	-	-	-	1.5	-
DSL05-024SC6	Low capacitance TVS for VDSL2 and G.FAST	Industrial	SOT23-6L	Bi-Directional	2	24	-	30	-	-	-	1.5	-
ETP01-1621	Protection for Ethernet lines	Industrial	SO-8	Bi-Directional	2	16	100	100	40	-	-	13	-
ETP01-2821	Protection for Ethernet lines	Industrial	SO-8	Bi-Directional	2	28	-	100	40	-	-	13	-
LCDP1521S	Dual line programmable TVS for SLIC protection	Industrial	SO-8	Uni-Directional	4	-150	25	90	40	175	0	-	-
LCP02	Protection IC for ringing SLICs	Industrial	SO-8W	Bi-Directional	2	-120	30	-	45	120	120	-	-
LCP1521S	Programmable transient voltage suppressor for SLIC protection	Industrial	SO-8	Uni-Directional	2	-175	30	120	40	175	0	-	-
LCP1531	Protection for single voltage SLICs	Industrial	SO-8	-	2	-75	25	65	37.5	175	0	-	-
LCP154DJF	Programmable transient voltage suppressor for SLIC protection	Industrial	PowerFLAT 5x6	Uni-Directional	2	-175	100	400	150	175	0	-	-
LCP22	Protection IC for ringing SLICs	Industrial	SO-8W	Bi-Directional	2	-120	50	-	80	120	120	-	-
LCP3121RL	Programmable transient voltage suppressor for SLIC protection	Industrial	SO-8	Uni-Directional	4	-60	100	-	150	100	100	-	-
SMP100LC	Trisil™ for telecom equipment protection	Industrial	SMB	Bi-Directional	1	126,144,180,207,22,24 3,32,360,55,6,81	100	400	150	-	-	-	140,160,200,230,25,270 ,35,400,65,8,90
SMP100MC	Trisil™ for telecom equipment protection	Industrial	SMB	Bi-Directional	1	126,144,180,243,360	80	200	120	-	-	-	140,160,200,270,400
SMP30	Trisil Std 30A	Industrial	SMA	Bi-Directional	1	216,243,56,61	30	70	40	-	-	-	240,270,62,68
SMP50	Trisil Std 50A	Industrial	SMA	Bi-Directional	1	117,162,180,198,243,6 1,90	50	150	65	-	-	-	100,130,180,200,220,27 0,68
SMP75	Trisil Std 75A	Industrial	SMB	Bi-Directional	1	6	75	250	120	-	-	60	8
SMP80MC	Trisil™ for telecom equipment protection	Industrial	SMB	Bi-Directional	1	180,243	80	200	120	-	-	-	200,270
SMPA	Trisil Std 50A	Industrial	SMB	Bi-Directional	1	108,117,162,180,198,2 16,243,290,56,61,90	50	150	65	-	-	-	100,120,130,180,200,22 0,240,270,320,62,68
TPA	Trisil™ for telecom equipment protection	Industrial	DO-15	Bi-Directional	1	198	50	150	65	-	-	-	220
TPI	Tripolar protection for ISDN interfaces	Industrial	SO-8	Bi-Directional	2	70	30	-	40	-	-	30	-
TPN3021	Tripolar overvoltage protection for network interfaces	Industrial	SO-8	Bi-Directional	2	28	30	100	50	-	-	-	-

Transient Voltage Suppressors (TVS)

Overview

What is a Transient Voltage Suppressor (TVS) diode?

A transient voltage suppressor (TVS) is an avalanche diode specially designed to clamp overvoltages and dissipate high transient power surges. ST's Transil™ protection devices are able to shunt a high current surge for a short duration.

Solid-state, monolithic PN junction devices, transient voltage suppressors are used alongside sensitive semiconductors in a parallel protection configuration to ensure protection against electrical overstress (EOS) or electrostatic discharges (ESD).

TVS devices offer many advantages compared to a metal-oxide varistor (MOV) because there are no ageing effects, which ensures stability over time for better reliability.

Providing higher quality and robustness, TVS designs are preferred over Zener solutions, which are rated with low DC current and are not specified for surges.

High-performance TVS devices

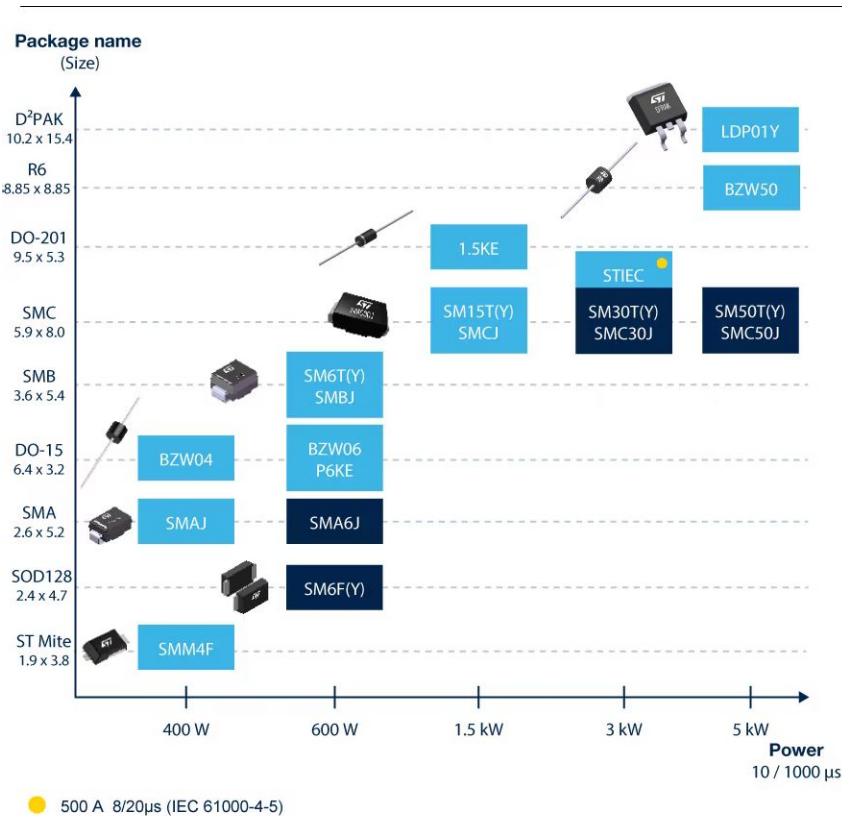
ST's TVS portfolio provides a unique choice of high-performance devices, available in industrial- and automotive-grade (AEC-Q101) versions, to ensure compliance with all regulatory requirements and standards.

Our latest generation of TVS diodes delivers market-leading power density, designed for a large diversity of industrial and automotive applications.

TVS: two operating modes to best fit your application

Transient voltage suppressors have one of two different operating modes:

- **Normal mode**, where the device is transparent for the application (low leakage current)
- **Surge suppression mode**, where the over-voltage is cut at the clamping voltage value



Protections and EMI filters/Transient Voltage Suppressors (TVS)

Part Number	General Description	Grade	Power (W) (10/1000µs @ 25°C) max	Package	Package size (mm)	Directionality	Number of protected lines	V _{RM} (V) max	Breakdown Voltage (V) min	Breakdown Voltage (V) nom	Peak pulse current (A) (@ 10/1000µs) max	Peak pulse current (A) (@ 8/20µs) max
1.5KE100CA	1500 W, 70.1 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	85.5	95	100	11	56
1.5KE120A	1500 W, 102 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	102	114	120	9.1	47
1.5KE12CA	1500 W, 10.2 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	10.2	11.4	12	90	461
1.5KE150A	1500 W, 128 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	128	143	150	7.2	38
1.5KE15A	1500 W, 12.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	12.8	14.3	15	71	368
1.5KE15CA	1500 W, 12.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	12.8	14.3	15	71	368
1.5KE180A	1500 W, 128 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	154	171	180	6.1	31.5
1.5KE180CA	1500 W, 128 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	154	171	180	6.1	31.5
1.5KE18A	1500 W, 15.3 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	15.3	17.1	18	59.5	308
1.5KE18CA	1500 W, 15.3 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	15.3	17.1	18	59.5	308
1.5KE200A	1500 W, 171 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	171	190	200	5.5	28
1.5KE200CA	1500 W, 171 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	171	190	200	5.5	28
1.5KE220A	1500 W, 188 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	188	209	220	4.6	26
1.5KE220CA	1500 W, 188 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	188	209	220	4.6	26
1.5KE24CA	1500 W, 20.5 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	20.5	22.8	24	45	234
1.5KE250A	1500 W, 213 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	213	237	250	5	23
1.5KE250CA	1500 W, 213 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	213	237	250	5	23
1.5KE27A	1500 W, 23.1 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	23.1	25.7	27	40	207
1.5KE300A	1500 W, 256 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	256	285	300	5	19
1.5KE300CA	1500 W, 256 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	256	285	300	5	19
1.5KE30A	1500 W, 25.6 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	25.6	28.5	30	36	187
1.5KE30CA	1500 W, 25.6 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	25.6	28.5	30	36	187
1.5KE33A	1500 W, 28.2 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	28.2	31.4	33	33	169
1.5KE33CA	1500 W, 28.2 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	28.2	31.4	33	33	169
1.5KE350A	1500 W, 299 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	299	332	350	4	16
1.5KE350CA	1500 W, 299 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	299	332	350	4	16
1.5KE36A	1500 W, 30.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	30.8	34.2	36	30	156
1.5KE36CA	1500 W, 30.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	30.8	34.2	36	30	156
1.5KE39A	1500 W, 33.3 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	33.3	37.1	39	28	143
1.5KE39CA	1500 W, 33.3 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	33.3	37.1	39	28	143
1.5KE400A	1500 W, 342 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	342	380	400	4	14
1.5KE400CA	1500 W, 342 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	342	380	400	4	14
1.5KE440A	1500 W, 376 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	376	418	440	3.5	13
1.5KE440CA	1500 W, 376 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	376	418	440	3.5	13
1.5KE47A	1500 W, 40.2 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	40.2	44.7	47	23.2	119
1.5KE47CA	1500 W, 40.2 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	40.2	44.7	47	23.2	119
1.5KE56A	1500 W, 47.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	47.8	53.2	56	19.5	100
1.5KE62A	1500 W, 53 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	53	58.9	62	17.7	90
1.5KE62CA	1500 W, 53 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	53	58.9	62	17.7	90
1.5KE68A	1500 W, 58.1 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	58.1	64.6	68	16.3	83
1.5KE68CA	1500 W, 58.1 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	58.1	64.6	68	16.3	83
1.5KE6V8A	1500 W, 5.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	5.8	6.45	6.8	143	746
1.5KE6V8CA	1500 W, 5.8 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Bi-Directional	1	5.8	6.45	6.8	143	746
1.5KE82A	1500 W, 70.1 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	70.1	77.9	82	13.3	69

1N5908	1500 W, 5 V TVS in DO-201	Industrial	1500	DO-201	9 x 5.05	Uni-Directional	1	5	6	6.3	60	-
BZW04-28B	400 W, 28.2 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Bi-Directional	1	28.2	31.4	33	8.8	39
BZW04-299	400 W, 299 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Uni-Directional	1	299	332	350	0.9	3.7
BZW04-376B	400 W, 376 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Bi-Directional	1	376	421	443.1	0.8	3
BZW04-48B	400 W, 47.8 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Bi-Directional	1	47.8	53.2	56	5.2	23
BZW04-58	400 W, 58.1 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Uni-Directional	1	58.1	64.6	68	4.3	19
BZW04-5V8	400 W, 5.8 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Uni-Directional	1	5.8	6.45	6.8	38	174
BZW04-5V8B	400 W, 5.8 V TVS in DO-15	Industrial	400	DO-15	6.4 x 3.45	Bi-Directional	1	5.8	6.45	6.8	38	174
BZW06-15B	600 W, 15 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	15	17.1	18	24	123
BZW06-28	600 W, 28 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	28	31.4	33	13.1	68
BZW06-28B	600 W, 28 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	28	31.4	33	13.1	68
BZW06-31	600 W, 31 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	31	34.2	36	12	62
BZW06-33	600 W, 33 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	33	37.1	39	11.1	57
BZW06-33B	600 W, 33 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	33	37.1	39	11.1	57
BZW06-342B	600 W, 342 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	342	380	400	1.1	5.7
BZW06-376B	600 W, 376 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	376	418	440	1	5.7
BZW06-37B	600 W, 37 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	36.8	40.9	43	10.1	53
BZW06-58B	600 W, 58 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	58	64.6	68	6.5	33
BZW06-5V8	600 W, 5.8 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	5.8	6.45	6.8	57	298
BZW50-100B	5000 W, 100 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	100	111	116.84,117	28	263
BZW50-120B	5000 W, 120 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	120	133	139.6	23	219
BZW50-12B	5000 W, 12 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	12	13.3	14	227	2143
BZW50-15	5000 W, 15 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	15	16.6	17.5	186	1714
BZW50-150	5000 W, 150 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	150	166	174.7	19	175
BZW50-150B	5000 W, 150 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	150	166	174.7	19	175
BZW50-15B	5000 W, 15 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	15	16.6	17.5	186	1714
BZW50-18	5000 W, 18 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	18	20	21.1	155	1446
BZW50-180	5000 W, 180 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	180	200	210.5	16	146
BZW50-180B	5000 W, 180 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	180	200	210.5	16	146
BZW50-22	5000 W, 22 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	22	24.4	25.7	127	1177
BZW50-27	5000 W, 27 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	27	30	31.5	103	968
BZW50-27B	5000 W, 27 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	27	30	31.5	103	968
BZW50-33	5000 W, 33 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	33	36.6	38.6	85	789
BZW50-33B	5000 W, 33 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	33	36.6	38.6	85	789
BZW50-39	5000 W, 39 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	39	43.3	45.6	72	667
BZW50-39B	5000 W, 39 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	39	43.3	45.6	72	667
BZW50-47B	5000 W, 47 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	47	52	54.6	60.1	556
BZW50-56	5000 W, 56 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	56	62.2	65.5	50	465
BZW50-56B	5000 W, 56 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	56	62.2	65.5	50	465
BZW50-68	5000 W, 68 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	68	75.6	79.5	41	382
BZW50-68B	5000 W, 68 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	68	75.6	79.5	41	382
BZW50-82	5000 W, 82 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	82	91	95.8	34	317
BZW50-82B	5000 W, 82 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	82	91	95.8	34	317
ESDA13P70-1U1M	60 A - 8/20 us, 12 V TVS in QFN-2L	Industrial	100	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	12	12.5	13	-	60
ESDA15P60-1U1M	57 A - 8/20 us, 13.2 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	13.2	13.6	14.3	-	57

ESDA17P100-1U2M	100 A - 8/20 us, 15 V TVS in QFN-6L	Industrial	-	QFN-6L	2 x 1.8 x 0.55	Uni-Directional	1	15	15.7	16.5	-	160
ESDA17P20-1F2	20 A - 8/20 us, 15 V TVS in SOD882T	Industrial	-	CSP P 0.5 mm	1 x 0.6 x 0.35	Uni-Directional	1	15	15.6	16.7	-	20
ESDA17P50-1U1M	46 A - 8/20 us, 15 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	15	15.6	16.4	-	46
ESDA22P150-1U3M	150 A - 8/20 us, 20 V TVS in QFN-3L	Industrial	330	QFN-3L	2 x 2 x 0.55	Uni-Directional	1	20	21	22	11	150
ESDA24P140-1U3M	140 A - 8/20 us, 22 V TVS in QFN-3L	Industrial	330	QFN-3L	2 x 2 x 0.55	Uni-Directional	1	22	22.7	24	10	140
ESDA25P35-1U1M	35 A - 8/20 us, 22 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	22	23.3	24.6	-	35
ESDA7P120-1U1M	120 A - 8/20 us, 5.5 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	5.5	6.4	6.8	-	120
ESDA7P60-1U1M	60 A - 8/20 us, 5 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	5	6.4	6.8	-	60
ESDA8P30-1T2	30 A - 8/20 us, 6.3 V TVS in SOD882T	Industrial	-	SOD882T	1.6 x 1 x 0.35	Uni-Directional	1	6.3	6.9	7.3	-	30
ESDA8P80-1U1M	80 A - 8/20 us, 5.5 V TVS in QFN-2L	Industrial	-	QFN-2L	1.6 x 1 x 0.55	Uni-Directional	1	5.5	6.9	7.3	-	80
ESDA9P25-1T2	24 A - 8/20 us, 7.9 V TVS in SOD882T	Industrial	-	SOD882T	1.6 x 1 x 0.35	Uni-Directional	1	7.9	8.1	8.7	-	24
ITAxXB1	Bidirectional TVS array for data line protection	Industrial	200	SO-8	6 x 4.9 x 1.75	Bi-Directional	4	15,24,5	18,25,6.5	18.7,28,6.8	-	25
ITAxXU1	TRANSIL ARRAY FOR DATALINE PROTECTION	Industrial	140	SO-8	6 x 4.9 x 1.75	Uni-Directional	6	5	6.51	6.8	-	25
LDP01-26AY	Automotive 22 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	22	24.4	26	140	1400
LDP01-28AY	Automotive 24 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	24	26.7	28	120	1250
LDP01-30AY	Automotive 27 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	27	28.9	30	125	1400
LDP01-33AY	Automotive 28 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	28	31.1	33	110	1250
LDP01-35AY	Automotive 30 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	30	33.3	35	95	1150
LDP01-39AY	Automotive 33 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	33	36.7	39	85	1050
LDP01-42AY	Automotive 36 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	36	40	42	77	1000
LDP01-47AY	Automotive 40 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	40	44.4	47	65	950
LDP01-50AY	Automotive 43 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	43	47.8	50	55	900
LDP01-56AY	Automotive 48 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	48	53.3	56	48	770
LDP01-68AY	Automotive 58 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	58	64.4	68	42	620

LDP01-82AY	Automotive 70 V TVS for load dump in D2PAK	Automotive	5000	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	70	77.8	82	35	550
LDP24A	24 V TVS for load dump in R6	Industrial	5000	R6	8.85 x 8.85	Uni-Directional	1	24	25	28	130	40
LDP35CA	35 V TVS for load dump in R6	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	35	36	38	-	1150
LFTVS18-1F3	Low forward voltage Transil™, transient voltage suppressor	Industrial	100	CSP P 0.4 mm	0.77 x 0.77 x 0.605	Uni-Directional	1	12	16	16.8	-	20
LNBTVS4	Transil for low noise block protection	Industrial	1500,3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20,28	22,30	23.1,31.5	143,90	334
LNBTVS6	Transil for low noise block protection	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	30	31.5	67	500
P6KE12CA	600 W, 10 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	10	11.4	12	36	184
P6KE150A	600 W, 128 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	128	143	150	2.9	15
P6KE15A	600 W, 13 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	13	14.3	15	28	147
P6KE180A	600 W, 154 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	154	171	180	2.4	12.6
P6KE18A	600 W, 15 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	15	17.1	18	24	123
P6KE18CA	600 W, 15 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	15	17.1	18	24	123
P6KE200A	600 W, 154 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	171	190	200	2.2	11.3
P6KE200CA	600 W, 154 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	171	190	200	2.2	11.3
P6KE220CA	600 W, 188 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	188	209	220	1.85	10.3
P6KE250A	600 W, 213 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	213	237	250	1.75	9
P6KE250CA	600 W, 213 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	213	237	250	1.75	9
P6KE27A	600 W, 23 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	23	25.7	27	16	83
P6KE27CA	600 W, 23 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	23	25.7	27	16	83
P6KE300A	600 W, 256 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	256	285	300	1.45	7.6
P6KE30A	600 W, 26 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	26	28.5	30	14.5	75
P6KE30CA	600 W, 26 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	26	28.5	30	14.5	75
P6KE33CA	600 W, 28 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	28	31.4	33	13.1	68
P6KE36A	600 W, 31 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	31	34.2	36	12	62
P6KE36CA	600 W, 31 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	31	34.2	36	12	62
P6KE39A	600 W, 33 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	33	37.1	39	11.1	57
P6KE39CA	600 W, 33 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	33	37.1	39	11.1	57
P6KE400A	600 W, 342 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	342	380	400	1.1	5.7
P6KE400CA	600 W, 342 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	342	380	400	1.1	5.7
P6KE440A	600 W, 376 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	376	418	440	1	5.2
P6KE440CA	600 W, 376 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	376	418	440	1	5.2
P6KE47CA	600 W, 40 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	40	44.7	47	9.3	48
P6KE6V8A	600 W, 5.8 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Uni-Directional	1	5.8	6.45	6.8	57	298
P6KE6V8CA	600 W, 5.8 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	5.8	6.45	6.8	57	298
PEP01-5841	Quad 58 V TVS for PoE supplies in SO-8	Industrial	-	SO-8	6 x 4.9 x 1.75	Uni-Directional	4	58	64.4	67.8	-	24
RBO40	REVERSED BATTERY AND OVERVOLTAGE PROTECTION CIRCUIT (RBO)	Industrial	1500	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	20	24	28	20	300
SLVU2.8	Low Voltage Unit for Gigabit Ethernet protection	Industrial	-	SO-8	6 x 4.9 x 1.75	Bi-Directional	4,8	2.8	-	-	-	24
SM15T100A	1500 W, 85.5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	85.5	95	100	11	56
SM15T100CA	1500 W, 85.5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	85.5	95	100	11	56

SM15T10AY	Automotive 1500 W, 8.55 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	8.55	9.5	10	103	538
SM15T10CA	1500 W, 8.55 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	8.55	9.5	10	103	538
SM15T10CAY	Automotive 1500 W, 8.55 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	8.55	9.5	10	103	538
SM15T12A	1500 W, 10.2 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	10.2	11.4	12	90	461
SM15T12AY	Automotive 1500 W, 10.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	10.2	11.4	12	90	461
SM15T12CA	1500 W, 10.2 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	10.2	11.4	12	90	461
SM15T12CAY	Automotive 1500 W, 10.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	10.2	11.4	12	90	461
SM15T150CA	1500 W, 12.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	12.8	14.3	15	7.2	38
SM15T15A	1500 W, 12.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12.8	14.3	15	71	368
SM15T15AY	Automotive 1500 W, 12.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12.8	14.3	15	71	368
SM15T15CA	1500 W, 12.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	12.8	14.3	15	71	368
SM15T15CAY	Automotive 1500 W, 12.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	12.8	14.3	15	71	368
SM15T18A	1500 W, 15.3 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15.3	17.1	18	59.5	308
SM15T18AY	Automotive 1500 W, 15.3 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15.3	17.1	18	59.5	308
SM15T18CA	1500 W, 15.3 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15.3	17.1	18	59.5	308
SM15T18CAY	Automotive 1500 W, 15.3 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15.3	17.1	18	59.5	308
SM15T200A	1500 W, 171 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	171	190	200	5.5	28
SM15T200CA	1500 W, 171 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	171	190	200	5.5	28
SM15T220A	1500 W, 188 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	188	209	220	4.6	26
SM15T220CA	1500 W, 188 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	188	209	220	4.6	26
SM15T22A	1500 W, 18.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18.8	20.9	22	49	254
SM15T22AY	Automotive 1500 W, 18.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18.8	20.9	22	49	254
SM15T22CA	1500 W, 18.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18.8	20.9	22	49	254
SM15T22CAY	Automotive 1500 W, 18.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18.8	20.9	22	49	254
SM15T24A	1500 W, 20.5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20.5	22.8	24	45	234
SM15T24AY	Automotive 1500 W, 20.5 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20.5	22.8	24	45	234
SM15T24CA	1500 W, 20.5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	20.5	22.8	24	45	234
SM15T24CAY	Automotive 1500 W, 20.5 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	20.5	22.8	24	45	234
SM15T27A	1500 W, 23.1 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	23.1	25.7	27	40	207
SM15T27AY	Automotive 1500 W, 23.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	23.1	25.7	27	40	207
SM15T27CAY	Automotive 1500 W, 23.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	23.1	25.7	27	40	207
SM15T30A	1500 W, 25.6 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	25.6	28.5	30	36	187
SM15T30AY	Automotive 1500 W, 25.6 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	25.6	28.5	30	36	187

SM15T30CA	1500 W, 25.6 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	25.6	28.5	30	36	187
SM15T30CAY	Automotive 1500 W, 25.6 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	25.6	28.5	30	36	187
SM15T33A	1500 W, 28.2 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28.2	31.4	33	33	169
SM15T33AY	Automotive 1500 W, 28.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28.2	31.4	33	33	169
SM15T33CA	1500 W, 28.2 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	28.2	31.4	33	33	169
SM15T33CAY	Automotive 1500 W, 28.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	28.2	31.4	33	33	169
SM15T36A	1500 W, 30.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30.8	34.2	36	30	156
SM15T36AY	Automotive 1500 W, 30.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30.8	34.2	36	30	156
SM15T36CA	1500 W, 30.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30.8	34.2	36	30	156
SM15T36CAY	Automotive 1500 W, 30.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30.8	34.2	36	30	156
SM15T39A	1500 W, 33.3 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33.3	37.1	39	28	143
SM15T39AY	Automotive 1500 W, 33.3 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33.3	37.1	39	28	143
SM15T39CA	1500 W, 33.3 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33.3	37.1	39	28	143
SM15T39CAY	Automotive 1500 W, 33.3 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33.3	37.1	39	28	143
SM15T47AY	Automotive 1500 W, 40.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40.2	44.7	47	23.2	119
SM15T47CAY	Automotive 1500 W, 40.2 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	40.2	44.7	47	23.2	119
SM15T56AY	Automotive 1500 W, 48 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	48	53.3	56	20	100
SM15T56CAY	Automotive 1500 W, 48 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	48	53.3	56	20	100
SM15T68A	1500 W, 58.1 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	58.1	64.6	68	16.3	83
SM15T68AY	Automotive 1500 W, 58.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	58.1	64.6	68	16.3	83
SM15T68CA	1500 W, 58.1 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	58.1	64.6	68	16.3	83
SM15T68CAY	Automotive 1500 W, 58.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	58.1	64.6	68	16.3	83
SM15T6V8A	1500 W, 5.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5.8	6.45	6.8	143	746
SM15T6V8AY	Automotive 1500 W, 5.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5.8	6.45	6.8	143	746
SM15T6V8CA	1500 W, 5.8 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5.8	6.45	6.8	143	746
SM15T6V8CAY	Automotive 1500 W, 5.8 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5.8	6.45	6.8	143	746
SM15T75AY	Automotive 1500 W, 64.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	64.1	71.3	75	14.6	75
SM15T75CAY	Automotive 1500 W, 64.1 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	64.1	71.3	75	14.6	75
SM15T7V5A	1500 W, 6.4 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.4	7.13	7.5	132	690
SM15T7V5AY	Automotive 1500 W, 6.4 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.4	7.13	7.5	132	690

SM15T7V5CAY	Automotive 1500 W, 6.4 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6.4	7.13	7.5	132	690
SM15T82AY	Automotive 1500 W, 70 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	70	77.8	82	13.9	69
SM15T82CAY	Automotive 1500 W, 70 V TVS in SMC	Automotive	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	70	77.8	82	13.9	69
SM2T	200 W TVS in STmite	Industrial	200	STmite	3.75 x 1.9 x 1	Uni-Directional	1	16,5	17.1,6.4	18,6.7	19,6.7	30
SM2T3V3A	200 W, 3.3 V TVS in STmite	Industrial	200	STmite	3.75 x 1.9 x 1	Uni-Directional	1	3.3	3.6	3.8	30	-
SM30T100AY	Automotive 3000 W, 85 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	85	95	100	22	205
SM30T100CAY	Automotive 3000 W, 85 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	85	95	100	22	205
SM30T10AY	Automotive 3000 W, 8.5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	8.5	9.4	10	208	1280
SM30T10CAY	Automotive 3000 W, 8.5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	8.5	9.4	10	208	1280
SM30T117AY	Automotive 3000 W, 100 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	100	111	117	19	170
SM30T117CAY	Automotive 3000 W, 100 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	100	111	117	19	170
SM30T12AY	Automotive 3000 W, 10 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	10	11.1	12	176	1170
SM30T12CAY	Automotive 3000 W, 10 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	10	11.1	12	176	1170
SM30T152AY	Automotive 3000 W, 130 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	130	144	152	14	125
SM30T152CAY	Automotive 3000 W, 130 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	130	144	152	14	125
SM30T15AY	Automotive 3000 W, 13 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	13	14.4	15	140	993
SM30T15CAY	Automotive 3000 W, 13 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	13	14.4	15	140	993
SM30T180AY	Automotive 3000 W, 154 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	154	171	180	12	102
SM30T180CAY	Automotive 3000 W, 154 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	154	171	180	12	102
SM30T18AY	Automotive 3000 W, 15 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15	16.7	17.6	123	926
SM30T18CAY	Automotive 3000 W, 15 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15	16.7	17.6	123	926
SM30T19AY	Automotive 3000 W, 16 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	16	17.8	18.7	115.4	868
SM30T19CAY	Automotive 3000 W, 16 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	16	17.8	18.7	115.4	868
SM30T200AY	Automotive 3000 W, 170 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	170	190	200	11	90
SM30T200CAY	Automotive 3000 W, 170 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	170	190	200	11	90

SM30T21AY	Automotive 3000 W, 18 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18	20	21.1	102.7	800
SM30T21CAY	Automotive 3000 W, 18 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18	20	21.1	102.7	800
SM30T220AY	Automotive 3000 W, 188 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	188	209	220	9	80
SM30T220CAY	Automotive 3000 W, 188 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	188	209	220	9	80
SM30T23AY	Automotive 3000 W, 20 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20	22.2	23.4	92.6	747
SM30T23CAY	Automotive 3000 W, 20 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	20	22.2	23.4	92.6	747
SM30T26AY	Automotive 3000 W, 22 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	22	24.4	25.7	84.5	701
SM30T26CAY	Automotive 3000 W, 22 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	22	24.4	25.7	84.5	701
SM30T28AY	Automotive 3000 W, 24 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	24	26.7	28.1	77.1	660
SM30T28CAY	Automotive 3000 W, 24 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	24	26.7	28.1	77.1	660
SM30T30AY	Automotive 3000 W, 26 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.4	71.3	626
SM30T30CAY	Automotive 3000 W, 26 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	26	28.9	30.4	71.3	626
SM30T33AY	Automotive 3000 W, 28 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	31.1	32.7	66.1	596
SM30T33CAY	Automotive 3000 W, 28 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	28	31.1	32.7	66.1	596
SM30T35AY	Automotive 3000 W, 30 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.3	35.1	62	569
SM30T35CAY	Automotive 3000 W, 30 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30	33.3	35.1	62	569
SM30T39AY	Automotive 3000 W, 33 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	56.3	526
SM30T39CAY	Automotive 3000 W, 33 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33	36.7	38.6	56.3	526
SM30T42AY	Automotive 3000 W, 36 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	36	40	42.1	48.4	503
SM30T42CAY	Automotive 3000 W, 36 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	36	40	42.1	48.4	503
SM30T47AY	Automotive 3000 W, 40 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40	44.4	46.7	43.5	469
SM30T47CAY	Automotive 3000 W, 40 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	40	44.4	46.7	43.5	469
SM30T56AY	Automotive 3000 W, 48 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	48	53.2	56	38	409
SM30T56CAY	Automotive 3000 W, 48 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	48	53.2	56	38	409

SM30T6.8AY	Automotive 3000 W, 5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6.4	6.8	327	1610
SM30T6.8CAY	Automotive 3000 W, 5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5	6.4	6.8	327	1610
SM30T68AY	Automotive 3000 W, 58 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	-	64.6	68	32	325
SM30T68CAY	Automotive 3000 W, 58 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	-	64.6	68	32	325
SM30T7.5AY	Automotive 3000 W, 6.5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.5	7.2	7.5	268	1530
SM30T7.5CAY	Automotive 3000 W, 6.5 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6.5	7.2	7.5	268	1530
SM30T75AY	Automotive 3000 W, 64 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	64	71.3	75	29.1	289
SM30T75CAY	Automotive 3000 W, 64 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	64	71.3	75	29.1	289
SM30T82AY	Automotive 3000 W, 70 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	-	77.9	82	26.5	256
SM30T82CAY	Automotive 3000 W, 70 V TVS in SMC	Automotive	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	-	77.9	82	26.5	256
SM4T10AY	Automotive 400 W, 8.5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	8.5	9.4	9.9	27.7	124
SM4T10CAY	Automotive 400 W, 8.5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	8.5	9.4	9.9	27.7	124
SM4T12AY	Automotive 400 W, 10 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	10	11.1	11.7	23.5	106
SM4T12CAY	Automotive 400 W, 10 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	10	11.1	11.7	23.5	106
SM4T14AY	Automotive 400 W, 12 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	12	13.3	14	20.1	91
SM4T14CAY	Automotive 400 W, 12 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	12	13.3	14	20.1	91
SM4T15AY	Automotive 400 W, 13 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	13	14.4	15.2	18.6	85
SM4T15CAY	Automotive 400 W, 13 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	13	14.4	15.2	18.6	85
SM4T18AY	Automotive 400 W, 15 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	15	16.7	17.6	16.4	71
SM4T18CAY	Automotive 400 W, 15 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	15	16.7	17.6	16.4	71
SM4T21AY	Automotive 400 W, 18 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	18	20	21.1	13.7	59
SM4T21CAY	Automotive 400 W, 18 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	18	20	21.1	13.7	59
SM4T23AY	Automotive 400 W, 20 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	20	22.2	23.4	12.3	54
SM4T23CAY	Automotive 400 W, 20 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	20	22.2	23.4	12.3	54

SM4T26AY	Automotive 400 W, 22 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	22	24.4	25.7	11.2	48
SM4T26CAY	Automotive 400 W, 22 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	22	24.4	25.7	11.2	48
SM4T28AY	Automotive 400 W, 24 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	24	26.7	28.1	10.3	46
SM4T28CAY	Automotive 400 W, 24 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	24	26.7	28.1	10.3	46
SM4T30AY	Automotive 400 W, 26 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	26	28.9	30.4	9.5	43
SM4T30CAY	Automotive 400 W, 26 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	26	28.9	30.4	9.5	43
SM4T33AY	Automotive 400 W, 28 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	28	31.1	32.7	8.8	39
SM4T33CAY	Automotive 400 W, 28 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	28	31.1	32.7	8.8	39
SM4T35AY	Automotive 400 W, 30 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	30	33.3	35.1	8.3	36
SM4T35CAY	Automotive 400 W, 30 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	30	33.3	35.1	8.3	36
SM4T39AY	Automotive 400 W, 33 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	33	36.7	38.6	7.5	33
SM4T39CAY	Automotive 400 W, 33 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	33	36.7	38.6	7.5	33
SM4T47AY	Automotive 400 W, 40 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	40	44.4	46.7	6.2	27
SM4T47CAY	Automotive 400 W, 40 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	40	44.4	46.7	6.2	27
SM4T50AY	Automotive 400 W, 43 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	43	47.8	50.3	5.7	25
SM4T50CAY	Automotive 400 W, 43 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	43	47.8	50.3	5.7	25
SM4T56AY	Automotive 400 W, 48 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	48	53.3	56.1	5.2	23
SM4T56CAY	Automotive 400 W, 48 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	48	53.3	56.1	5.2	23
SM4T68AY	Automotive 400 W, 58 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	58	64.4	67.8	4.3	19
SM4T68CAY	Automotive 400 W, 58 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	58	64.4	67.8	4.3	19
SM4T6V7AY	Automotive 400 W, 5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	5	6.4	6.74	43.5	174
SM4T6V7CAY	Automotive 400 W, 5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	5	6.4	6.74	43.5	174
SM4T7V6AY	Automotive 400 W, 6.5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6.5	7.2	7.58	35.7	160
SM4T7V6CAY	Automotive 400 W, 6.5 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6.5	7.2	7.58	35.7	160

SM4T82AY	Automotive 400 W, 70 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	70	77.8	81.9	3.5	16
SM4T82CAY	Automotive 400 W, 70 V TVS in SMA	Automotive	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	70	77.8	81.9	3.5	16
SM50T100AY	Automotive 5000 W, 85 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	85	95	100	32	265
SM50T10AY	Automotive 5000 W, 8.5 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	8.5	9.4	9.9	348	1710
SM50T117AY	Automotive 5000 W, 100 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	100	111	117	28	227
SM50T12AY	Automotive 5000 W, 10 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	10	11.1	11.7	295	1505
SM50T13AY	Automotive 5000 W, 11 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	11	12.3	13	275	1387
SM50T14AY	Automotive 5000 W, 12 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12	13.3	14	252	1309
SM50T15AY	Automotive 5000 W, 13 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	13	14.4	15.2	233	1227
SM50T16AY	Automotive 5000 W, 14 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	14	15.7	16.5	216	1151
SM50T18AY	Automotive 5000 W, 15 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15	16.7	17.6	205	1095
SM50T19AY	Automotive 5000 W, 16 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	16	17.9	18.8	192	1040
SM50T21AY	Automotive 5000 W, 18 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18	20	21.1	171	950
SM50T23AY	Automotive 5000 W, 20 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20	22.2	23.4	155	876
SM50T26AY	Automotive 5000 W, 22 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	22	24.4	25.7	141	815
SM50T27AY	Automotive 5000 W, 23 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	23	25.7	27	135	784
SM50T28AY	Automotive 5000 W, 24 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	24	26.7	28.1	129	760
SM50T30AY	Automotive 5000 W, 26 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.4	119	715
SM50T33AY	Automotive 5000 W, 28 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	31.1	32.7	110	675
SM50T35AY	Automotive 5000 W, 30 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.2	35	103	640
SM50T36AY	Automotive 5000 W, 31 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	31	34.2	36	100	626
SM50T39AY	Automotive 5000 W, 33 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	94	593
SM50T42AY	Automotive 5000 W, 36 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	36	40	42.1	86	550
SM50T47AY	Automotive 5000 W, 40 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40	44.4	46.7	78	511

SM50T56AY	Automotive 5000 W, 48 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	48	53.2	56	65	444
SM50T68AY	Automotive 5000 W, 58 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	58	64.6	68	53	381
SM50T6V8AY	Automotive 5000 W, 5 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6.4	6.74	544	2136
SM50T75AY	Automotive 5000 W, 64 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	64	71.1	74.8	47	353
SM50T7V0AY	Automotive 5000 W, 6 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6	6.7	7.05	486	2042
SM50T7V5AY	Automotive 5000 W, 6.5 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.5	7.2	7.58	447	1986
SM50T82AY	Automotive 5000 W, 70 V TVS in SMC	Automotive	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	70	77.9	82	42	345
SM5908	1500 W, 5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6	6.3	60	-
SM6F10AY	Automotive 600 W, 10 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	10	11.1	11.7	37	184
SM6F11AY	Automotive 600 W, 11 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	11	12.3	13	33.8	165
SM6F12AY	Automotive 600 W, 12 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	12	13.3	11	31	157
SM6F13AY	Automotive 600 W, 13 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	13	14.4	15.2	29	147
SM6F14AY	Automotive 600 W, 14 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	14	15.7	16.5	26	136
SM6F15AY	Automotive 600 W, 15 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	15	16.7	17.6	25.1	123
SM6F16AY	Automotive 600 W, 16 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	16	17.9	18.8	23.1	115
SM6F18AY	Automotive 600 W, 18 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	18	20	21.1	21.5	102
SM6F20AY	Automotive 600 W, 20 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	20	22.2	23.4	19.4	93
SM6F22AY	Automotive 600 W, 22 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	22	24.4	25.7	17.7	83
SM6F23AY	Automotive 600 W, 23 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	23	25.7	27	16.4	81
SM6F24AY	Automotive 600 W, 24 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	24	26.7	28.1	16	80
SM6F26AY	Automotive 600 W, 26 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	26	28.9	30.4	14.9	75
SM6F28AY	Automotive 600 W, 28 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	28	31.1	32.7	13.8	68
SM6F30AY	Automotive 600 W, 30 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	30	33.2	35	13	62
SM6F31AY	Automotive 600 W, 31 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	31	34.2	36	12.3	61

SM6F33AY	Automotive 600 W, 33 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	33	36.7	38.6	11.8	57
SM6F36AY	Automotive 600 W, 36 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	36	40	42.1	10.3	52
SM6F5.0AY	Automotive 600 W, 5 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	5	6.4	6.74	68	298
SM6F6.0AY	Automotive 600 W, 6 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	6	6.7	7.05	61	290
SM6F6.5AY	Automotive 600 W, 6.5 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	6.5	7.2	7.58	56	276
SM6F8.5AY	Automotive 600 W, 8.5 V TVS in SOD128 Flat	Automotive	600	SOD128 Flat	4.7 x 2.4 x 0.98	Uni-Directional	1	8.5	9.4	9.9	41.7	205
SM6T100A	600 W, 85.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	85.5	95	100	4.4	22.5
SM6T100CA	600 W, 85.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	85.5	95	100	4.4	22.5
SM6T10A	600 W, 8.55 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	8.55	9.5	10	41	215
SM6T10AY	Automotive 600 W, 8.55 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	8.55	9.5	10	41	215
SM6T10CA	600 W, 8.55 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	8.55	9.5	10	41	215
SM6T10CAY	Automotive 600 W, 8.55 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	8.55	9.5	10	41	215
SM6T12A	600 W, 10.2 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	10.2	11.4	12	36	184
SM6T12AY	Automotive 600 W, 10.2 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	10.2	11.4	12	36	184
SM6T12CA	600 W, 10.2 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	10.2	11.4	12	36	184
SM6T12CAY	Automotive 600 W, 10.2 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	10.2	11.4	12	36	184
SM6T150A	600 W, 128 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	128	143	150	2.9	15
SM6T150CA	600 W, 128 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	128	143	150	2.9	15
SM6T15A	600 W, 12.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	12.8	14.3	15	28	147
SM6T15AY	Automotive 600 W, 12.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	12.8	14.3	15	28	147
SM6T15CA	600 W, 12.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	12.8	14.3	15	28	147
SM6T15CAY	Automotive 600 W, 12.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	12.8	14.3	15	28	147
SM6T16V5AY	Automotive 600 W, 14.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	14.1	15.7	16.5	26	136
SM6T16V5CA	Automotive 600 W, 14.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	14.1	15.7	16.5	26	136
SM6T18A	600 W, 15.3 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	15.3	17.1	18	24	123
SM6T18AY	Automotive 600 W, 15.3 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	15.3	17.1	18	24	123
SM6T18CA	600 W, 15.3 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	15.3	17.1	18	24	123
SM6T18CAY	Automotive 600 W, 15.3 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	15.3	17.1	18	24	123
SM6T200A	600 W, 171 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	171	190	200	2.2	11.3
SM6T200CA	600 W, 171 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	171	190	200	2.2	11.3
SM6T220A	600 W, 188 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	188	209	220	2	10.3
SM6T220CA	600 W, 188 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	188	209	220	2	10.3

SM6T22A	600 W, 18.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	18.8	20.9	22	20	102
SM6T22AY	Automotive 600 W, 18.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	18.8	20.9	22	20	102
SM6T22CA	600 W, 18.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	18.8	20.9	22	20	102
SM6T22CAY	Automotive 600 W, 18.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	18.8	20.9	22	20	102
SM6T24A	600 W, 20.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	20.5	22.8	24	18	93
SM6T24AY	Automotive 600 W, 20.5 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	20.5	22.8	24	18	93
SM6T24CA	600 W, 20.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	20.5	22.8	24	18	93
SM6T24CAY	Automotive 600 W, 20.5 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	20.5	22.8	24	18	93
SM6T250CAY	Automotive 600 W, 213 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	213	237	250	1.75	10
SM6T27A	600 W, 23.1 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	23.1	25.7	27	16	83
SM6T27AY	Automotive 600 W, 23.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	23.1	25.7	27	16	83
SM6T27CA	600 W, 23.1 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	23.1	25.7	27	16	83
SM6T27CAY	Automotive 600 W, 23.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	23.1	25.7	27	16	83
SM6T30A	600 W, 25.6 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	25.6	28.5	30	14.5	75
SM6T30AY	Automotive 600 W, 25.6 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	25.6	28.5	30	14.5	75
SM6T30CA	600 W, 25.6 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	25.6	28.5	30	14.5	75
SM6T30CAY	Automotive 600 W, 25.6 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	25.6	28.5	30	14.5	75
SM6T33A	600 W, 28.2 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	28.2	31.4	33	13.1	68
SM6T33AY	Automotive 600 W, 28.2 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	28.2	31.4	33	13.1	68
SM6T33CA	600 W, 28.2 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	28.2	31.4	33	13.1	68
SM6T33CAY	Automotive 600 W, 28.2 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	28.2	31.4	33	13.1	68
SM6T36A	600 W, 30.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	30.8	34.2	36	12	62
SM6T36AY	Automotive 600 W, 30.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	30.8	34.2	36	12	62
SM6T36CA	600 W, 30.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	30.8	34.2	36	12	62
SM6T36CAY	Automotive 600 W, 30.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	30.8	34.2	36	12	62
SM6T39A	600 W, 33.3 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	33.3	37.1	39	11.1	57
SM6T39AY	Automotive 600 W, 33.3 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	33.3	37.1	39	11.1	57
SM6T39CA	600 W, 33.3 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	33.3	37.1	39	11.1	57
SM6T39CAY	Automotive 600 W, 33.3 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	33.3	37.1	39	11.1	57
SM6T42AY	Automotive 600 W, 36 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	36	40	42.1	10.3	52
SM6T42CAY	Automotive 600 W, 36 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	36	40	42.1	10.3	52

SM6T47AY	Automotive 600 W, 40 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	40	44	46.7	9.7	48
SM6T47CAY	Automotive 600 W, 40 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	40	44	46.7	9.7	48
SM6T56AY	Automotive 600 W, 47.6 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	47.6	53.2	56	7.8	40
SM6T56CA	600 W, 47.6 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	47.6	53.2	56	7.8	40
SM6T56CAY	Automotive 600 W, 47.6 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	47.6	53.2	56	7.8	40
SM6T68A	600 W, 58.1 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	58.1	64.6	68	6.5	33
SM6T68AY	Automotive 600 W, 58.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	58.1	64.6	68	6.5	33
SM6T68CA	600 W, 58.1 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	58.1	64.6	68	6.5	33
SM6T68CAY	Automotive 600 W, 58.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	58.1	64.6	68	6.5	33
SM6T6V8A	600 W, 5.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	5.8	6.45	6.8	57	275
SM6T6V8AY	Automotive 600 W, 5.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	5.8	6.45	6.8	57	275
SM6T6V8CA	600 W, 5.8 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	5.8	6.45	6.8	57	275
SM6T6V8CAY	Automotive 600 W, 5.8 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	5.8	6.45	6.8	57	275
SM6T75AY	Automotive 600 W, 64.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	64.1	71.3	75	5.8	30
SM6T75CAY	Automotive 600 W, 64.1 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	64.1	71.3	75	5.8	30
SM6T7V5A	600 W, 6.4 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	6.4	7.13	7.5	53	266
SM6T7V5AY	Automotive 600 W, 6.4 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	6.4	7.13	7.5	53	266
SM6T7V5CA	600 W, 6.4 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	6.4	7.13	7.5	53	266
SM6T7V5CAY	Automotive 600 W, 6.4 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	6.4	7.13	7.5	53	266
SM6T82AY	Automotive 600 W, 70 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	70	77.8	81.9	5.5	27
SM6T82CAY	Automotive 600 W, 70 V TVS in SMB	Automotive	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	70	77.8	81.9	5.5	27
SMA6J10A	600 W, 10 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	10	11.1	11.7	37	184
SMA6J10CA	600 W, 10 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	10	11.1	11.7	37	184
SMA6J12A	600 W, 12 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	12	13.3	14	31	157
SMA6J12CA	600 W, 12 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	12	13.3	14	31	157
SMA6J13A	600 W, 13 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	13	14.4	15.2	29	147
SMA6J13CA	600 W, 13 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	13	14.4	15.2	29	147
SMA6J15A	600 W, 15 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	15	16.7	17.6	25.1	123
SMA6J15CA	600 W, 15 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	15	16.7	17.6	25.1	123
SMA6J18A	600 W, 18 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	18	20	21.1	21.5	102
SMA6J18CA	600 W, 18 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	18	20	21.1	21.5	102
SMA6J20A	600 W, 20 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	20	22.2	23.4	19.4	93
SMA6J20CA	600 W, 20 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	20	22.2	23.4	19.4	93
SMA6J24A	600 W, 24 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	24	26.7	28.1	16	80

SMA6J24CA	600 W, 24 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	24	26.7	28.1	16	80
SMA6J26A	600 W, 26 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	26	28.9	30.4	14.9	75
SMA6J26CA	600 W, 26 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	26	28.9	30.4	14.9	75
SMA6J28A	600 W, 28 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	28	31.1	32.7	13.8	68
SMA6J28CA	600 W, 28 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	28	31.1	32.7	13.8	68
SMA6J33A	600 W, 33 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	33	36.7	38.6	11.8	57
SMA6J33CA	600 W, 33 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	33	36.7	38.6	11.8	57
SMA6J40A	600 W, 40 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	40	44.4	46.7	9.7	48
SMA6J40CA	600 W, 40 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	40	44.4	46.7	9.7	48
SMA6J48A	600 W, 48 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	48	53.3	56.1	8.1	40
SMA6J48CA	600 W, 48 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	48	53.3	56.1	8.1	40
SMA6J5.0A	600 W, 5 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	5	6.4	6.74	68	275
SMA6J5.0CA	600 W, 5 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	5	6.4	6.74	68	275
SMA6J58A	600 W, 58 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	58	64.4	67.8	6.7	33
SMA6J58CA	600 W, 58 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	58	64.4	67.8	6.7	33
SMA6J6.0A	600 W, 6 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6	6.7	7.05	61	270
SMA6J6.0CA	600 W, 6 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6	6.7	7.05	61	270
SMA6J6.5A	600 W, 6.5 V TVS in SMA	Industrial	1500	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6.5	190	200	5.5	266
SMA6J6.5CA	600 W, 6.5 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6.5	7.2	7.58	56	266
SMA6J70A	600 W, 70 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	70	77.8	81.9	5.5	27
SMA6J70CA	600 W, 70 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	70	77.8	81.9	5.5	27
SMA6J8.5A	600 W, 8.5 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	8.5	9.4	9.9	41.7	205
SMA6J8.5CA	600 W, 8.5 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	8.5	9.4	9.9	41.7	205
SMA6J85A	600 W, 85 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	85	94	99	4.6	22.5
SMA6J85CA	600 W, 85 V TVS in SMA	Industrial	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	85	94	99	4.6	22.5
SMA6T10AY	Automotive 600 W, 8.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	8.6	9.5	10	41	215
SMA6T10CAY	Automotive 600 W, 8.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	8.6	9.5	10	41	215
SMA6T12AY	Automotive 600 W, 10.2 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	10.2	11.4	12	36	184
SMA6T12CAY	Automotive 600 W, 10.2 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	10.2	11.4	12	36	184
SMA6T14AY	Automotive 600 W, 12 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	12	13.3	14	31	157
SMA6T14CAY	Automotive 600 W, 12 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	12	13.3	14	31	157
SMA6T15AY	Automotive 600 W, 12.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	12.8	14.3	15	28	147
SMA6T15CAY	Automotive 600 W, 12.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	12.8	14.3	15	28	147
SMA6T18AY	Automotive 600 W, 15.3 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	15.3	17.1	18	24	123
SMA6T18CAY	Automotive 600 W, 15.3 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	15.3	17.1	18	24	123
SMA6T22AY	Automotive 600 W, 18.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	18.8	20.9	22	20	102

SMA6T22CAY	Automotive 600 W, 18.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	18.8	20.9	22	20	102
SMA6T24AY	Automotive 600 W, 20.5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	20.5	22.8	24	18	93
SMA6T24CAY	Automotive 600 W, 20.5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	20.5	22.8	24	18	93
SMA6T28AY	Automotive 600 W, 24 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	24	26.7	28.1	16	80
SMA6T28CAY	Automotive 600 W, 24 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	24	26.7	28.1	16	80
SMA6T30AY	Automotive 600 W, 25.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	25.6	28.5	30	14.5	75
SMA6T30CAY	Automotive 600 W, 25.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	25.6	28.5	30	14.5	75
SMA6T33AY	Automotive 600 W, 28.2 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	28.2	31.4	33	13.1	68
SMA6T33CAY	Automotive 600 W, 28.2 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	28.2	31.4	33	13.1	68
SMA6T36AY	Automotive 600 W, 30.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	30.8	34.2	36	12	62
SMA6T36CAY	Automotive 600 W, 30.8 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	30.8	34.2	36	12	62
SMA6T39AY	Automotive 600 W, 33.3 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	33.3	37.1	39	11.1	57
SMA6T39CAY	Automotive 600 W, 33.3 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	33.3	37.1	39	11.1	57
SMA6T47AY	Automotive 600 W, 40 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	40	44.4	46.7	9.7	48
SMA6T47CAY	Automotive 600 W, 40 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	40	44.4	46.7	9.7	48
SMA6T56AY	Automotive 600 W, 47.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	47.6	53.2	56	7.8	40
SMA6T56CAY	Automotive 600 W, 47.6 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	47.6	53.2	56	7.8	40
SMA6T68AY	Automotive 600 W, 58.1 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	58.1	64.6	68	6.5	33
SMA6T68CAY	Automotive 600 W, 58.1 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	58.1	64.6	68	6.5	33
SMA6T6V7AY	Automotive 600 W, 5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	5	6.4	6.4	68	275
SMA6T6V7CAY	Automotive 600 W, 5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	5	6.4	6.4	68	275
SMA6T7V6AY	Automotive 600 W, 6.5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6.5	7.2	7.6	56	266
SMA6T7V6CAY	Automotive 600 W, 6.5 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6.5	7.2	7.6	56	266
SMA6T82AY	Automotive 600 W, 70 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	70	77.8	81.9	5.5	27

SMA6T82CAY	Automotive 600 W, 70 V TVS in SMA	Automotive	600	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	70	77.8	81.9	5.5	27
SMAJ10CA	400 W, 10 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	10	11.1	11.7	23.5	106
SMAJ12A	400 W, 12 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	12	13.3	14	20.1	91
SMAJ12CA	400 W, 12 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	12	13.3	14	20.1	91
SMAJ130CA	400 W, 130 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	130	144	152	1.9	9
SMAJ13A	400 W, 13 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	13	14.4	15.2	18.6	85
SMAJ13CA	400 W, 13 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	13	14.4	15.2	18.6	85
SMAJ154A	400 W, 154 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	154	171	180	1.6	7
SMAJ15A	400 W, 15 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	15	16.7	17.6	16.4	71
SMAJ15CA	400 W, 15 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	15	16.7	17.6	16.4	71
SMAJ170A	400 W, 170 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	170	189	199	1.4	6.5
SMAJ170CA	400 W, 170 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	170	189	199	1.4	6.5
SMAJ188A	400 W, 188 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	188	209	220	1.4	6
SMAJ188CA	400 W, 188 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	188	209	220	1.4	6
SMAJ18A	400 W, 18 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	18	20	21.1	13.7	59
SMAJ18CA	400 W, 18 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	18	20	21.1	13.7	59
SMAJ20A	400 W, 20 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	20	22.2	23.4	12.3	54
SMAJ24A	400 W, 24 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	24	26.7	28.1	10.3	46
SMAJ24CA	400 W, 24 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	24	26.7	28.1	10.3	46
SMAJ26A	400 W, 26 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	26	28.9	30.4	9.5	43
SMAJ26CA	400 W, 26 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	26	28.9	30.4	9.5	43
SMAJ28A	400 W, 28 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	28	31.1	32.7	8.8	39
SMAJ28CA	400 W, 28 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	28	31.1	32.7	8.8	39
SMAJ30A	400 W, 30 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	30	33.3	35.1	8.3	36
SMAJ30CA	400 W, 30 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	30	33.3	35.1	8.3	36
SMAJ33A	400 W, 33 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	33	36.7	38.6	7.5	33
SMAJ33CA	400 W, 33 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	33	36.7	38.6	7.5	33
SMAJ40A	400 W, 40 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	40	44.4	46.7	6.2	27
SMAJ40CA	400 W, 40 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	40	44.4	46.7	6.2	27
SMAJ43A	400 W, 43 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	43	47.8	50.3	5.7	25
SMAJ43CA	400 W, 43 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	43	47.8	50.3	5.7	25
SMAJ48A	400 W, 48 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	48	53.3	56.1	5.2	23
SMAJ48CA	400 W, 48 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	48	53.3	56.1	5.2	23
SMAJ5.0A	400 W, 5 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	5	6.4	6.74	43.5	174
SMAJ5.0CA	400 W, 5 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	5	6.4	6.74	43.5	174
SMAJ58A	400 W, 58 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	58	64.4	67.8	4.3	19
SMAJ58CA	400 W, 58 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	58	64.4	67.8	4.3	19
SMAJ6.0A	400 W, 6 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6	6.7	7.05	38.8	170
SMAJ6.0CA	400 W, 6 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6	6.7	7.05	38.8	170
SMAJ6.5A	400 W, 6.5 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	6.5	7.2	7.58	35.7	160
SMAJ6.5CA	400 W, 6.5 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	6.5	7.2	7.58	35.7	160
SMAJ70A	400 W, 70 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Uni-Directional	1	70	77.8	81.9	3.5	16
SMAJ70CA	400 W, 70 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	70	77.8	81.9	3.5	16
SMAJ8.5CA	400 W, 8.5 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	8.5	9.4	9.9	27.7	124
SMAJ85CA	400 W, 85 V TVS in SMA	Industrial	400	SMA	5.08 x 2.57 x 2.17	Bi-Directional	1	85	94	99	2.9	13
SMBJ100CA	600 W, 100 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	100	111	117	3.8	19
SMBJ10A	600 W, 10 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	10	11.1	11.7	37	184

SMBJ10CA	600 W, 10 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	10	11.1	11.7	37	184
SMBJ12A	600 W, 12 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	12	13.3	14	31	157
SMBJ12CA	600 W, 12 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	12	13.3	14	31	157
SMBJ130A	600 W, 130 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	130	144	152	3	15
SMBJ13A	600 W, 13 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	13	14.4	15.2	29	147
SMBJ13CA	600 W, 13 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	13	14.4	15.2	29	147
SMBJ154A	600 W, 154 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	154	171	180	2.4	12.6
SMBJ15A	600 W, 15 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	15	16.7	17.6	25.1	123
SMBJ15CA	600 W, 15 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	15	16.7	17.6	25.1	123
SMBJ16A	600 W, 16 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	16	17.8	18.7	23.1	116
SMBJ170A	600 W, 170 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	170	189	199	2.2	11.3
SMBJ170CA	600 W, 170 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	170	189	199	2.2	11.3
SMBJ18A	600 W, 18 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	18	20	21.1	21.5	102
SMBJ18CA	600 W, 18 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	18	20	21.1	21.5	102
SMBJ20A	600 W, 20 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	20	22.2	23.4	19.4	93
SMBJ20CA	600 W, 20 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	20	22.2	23.4	19.4	93
SMBJ22A	600 W, 22 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	22	24.4	25.7	17.7	83
SMBJ22CA	600 W, 22 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	22	24.4	25.7	17.7	83
SMBJ24A	600 W, 24 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	24	26.7	28.1	16	80
SMBJ24CA	600 W, 24 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	24	26.7	28.1	16	80
SMBJ26A	600 W, 26 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	26	28.9	30.4	14.9	75
SMBJ26CA	600 W, 26 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	26	28.9	30.4	14.9	75
SMBJ28A	600 W, 28 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	28	31.1	32.7	13.8	68
SMBJ28CA	600 W, 28 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	28	31.1	32.7	13.8	68
SMBJ30A	600 W, 30 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	30	33.3	35.1	13	62
SMBJ30CA	600 W, 30 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	30	33.3	35.1	13	62
SMBJ33A	600 W, 33 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	33	36.7	38.6	11.8	57
SMBJ33CA	600 W, 33 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	33	36.7	38.6	11.8	57
SMBJ36CA	600 W, 36 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	36	40	42.1	10.3	52
SMBJ40A	600 W, 40 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	40	44.4	46.7	9.7	48
SMBJ40CA	600 W, 40 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	40	44.4	46.7	9.7	48
SMBJ48A	600 W, 48 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	48	53.3	56.1	8.1	40
SMBJ48CA	600 W, 48 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	48	53.3	56.1	8.1	40
SMBJ5.0A	600 W, 5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	5	6.4	6.74	68	275
SMBJ5.0CA	600 W, 5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	5	6.4	6.74	68	275
SMBJ58A	600 W, 58 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	58	64.4	67.8	6.7	33
SMBJ58CA	600 W, 58 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	58	64.4	67.8	6.7	33
SMBJ6.0A	600 W, 6 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	6	6.7	7.05	61	270
SMBJ6.0CA	600 W, 6 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	6	6.7	7.05	61	270
SMBJ6.5A	600 W, 6.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	6.5	7.2	7.58	56	266
SMBJ6.5CA	600 W, 6.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	6.5	7.2	7.58	56	266
SMBJ64A	600 W, 64 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	64	71.1	74.8	5.8	30
SMBJ64CA	600 W, 64 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	64	71.1	74.8	5.8	30
SMBJ70A	600 W, 70 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	70	77.8	81.9	5.5	27
SMBJ70CA	600 W, 70 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	70	77.8	81.9	5.5	27
SMBJ8.5CA	600 W, 8.5 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	8.5	9.4	9.9	41.7	205
SMBJ85CA	600 W, 85 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Bi-Directional	1	85	94	99	4.6	22.5
SMC30J100A	3000 W, 100 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	100	111	117	18.5	170

SMC30J100CA	3000 W, 100 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	100	111	117	19	170
SMC30J10A	3000 W, 10 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	10	11.1	11.7	176	1170
SMC30J10CA	3000 W, 10 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	10	11.1	11.7	176	1170
SMC30J12A	3000 W, 12 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12	13.3	14	151	1045
SMC30J12CA	3000 W, 12 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	12	13.3	14	151	1045
SMC30J130A	3000 W, 130 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	130	144	152	14	125
SMC30J130CA	3000 W, 130 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	130	144	152	14	125
SMC30J13A	3000 W, 13 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	13	14.4	15.2	140	993
SMC30J13CA	3000 W, 13 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	13	14.4	15.2	140	993
SMC30J154A	3000 W, 154 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	154	171	180	12	102
SMC30J154CA	3000 W, 154 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	154	171	180	12	102
SMC30J15A	3000 W, 15 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15	16.7	17.6	123	926
SMC30J15CA	3000 W, 15 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15	16.7	17.6	123	926
SMC30J16A	3000 W, 16 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	16	17.8	18.7	115	868
SMC30J16CA	3000 W, 16 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	16	17.8	18.7	115	868
SMC30J170A	3000 W, 170 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	170	190	200	11	90
SMC30J170CA	3000 W, 170 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	170	190	200	11	90
SMC30J188A	3000 W, 188 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	188	209	220	9	80
SMC30J188CA	3000 W, 188 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	188	209	220	9	80
SMC30J18A	3000 W, 18 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18	20	21.1	103	800
SMC30J18CA	3000 W, 18 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18	20	21.1	103	800
SMC30J20A	3000 W, 20 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20	22.2	23.4	93	747
SMC30J20CA	3000 W, 20 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	20	22.2	23.4	93	747
SMC30J22A	3000 W, 22 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	22	24.4	25.7	85	701
SMC30J22CA	3000 W, 22 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	22	24.4	25.7	85	701
SMC30J24A	3000 W, 24 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	24	26.7	28.1	77	660
SMC30J24CA	3000 W, 24 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	24	26.7	28.1	77	660
SMC30J26A	3000 W, 26 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.4	71	626
SMC30J26CA	3000 W, 26 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	26	28.9	30.4	71	626
SMC30J28A	3000 W, 28 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	31.1	32.7	66	596
SMC30J28CA	3000 W, 28 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	28	31.1	32.7	66	596
SMC30J30A	3000 W, 30 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.3	35.1	62	569
SMC30J30CA	3000 W, 30 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30	33.3	35.1	62	569
SMC30J33A	3000 W, 33 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	56	526
SMC30J33CA	3000 W, 33 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33	36.7	38.6	56	526
SMC30J36A	3000 W, 36 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	36	40	42.1	48.41	503
SMC30J36CA	3000 W, 36 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	36	40	42.1	48.41	503
SMC30J40A	3000 W, 40 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40	44.4	46.7	43.5	469
SMC30J40CA	3000 W, 40 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	40	44.4	46.7	43.5	469
SMC30J48A	3000 W, 48 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	48	53.2	56	38	409
SMC30J48CA	3000 W, 48 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	48	53.2	56	38	409
SMC30J5.0A	3000 W, 5 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6.4	6.74	327	1610
SMC30J5.0CA	3000 W, 5 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5	6.4	6.74	327	1610
SMC30J58A	3000 W, 58 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	58	64.6	68	32	325
SMC30J58CA	3000 W, 58 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	58	64.6	68	32	325
SMC30J6.0A	3000 W, 6 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6	6.7	7.05	291	1580
SMC30J6.0CA	3000 W, 6 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6	6.7	7.05	291	1580
SMC30J6.5A	3000 W, 6.5 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.5	7.2	7.58	268	1530

SMC30J6.5CA	3000 W, 6.5 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6.5	7.2	7.58	268	1530
SMC30J64A	3000 W, 64 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	64	71.3	75	29.1	289
SMC30J64CA	3000 W, 64 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	64	71.3	75	29.1	289
SMC30J70A	3000 W, 70 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	70	77.9	82	26.5	256
SMC30J70CA	3000 W, 70 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	70	77.9	82	11	256
SMC30J8.5A	3000 W, 8.5V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	8.5	9.4	9.9	208	1280
SMC30J8.5CA	3000 W, 8.5V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	8.5	9.4	9.9	208	1280
SMC30J85A	3000 W, 85 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	85	95	100	21.9	205
SMC30J85CA	3000 W, 85 V TVS in SMC	Industrial	3000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	85	95	100	22	205
SMC50J100A	5000 W, 100 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	100	111	117	28	227
SMC50J100CA	5000 W, 100 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	100	111	117	28	227
SMC50J10A	5000 W, 10 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	11.1	11.7	295	1505
SMC50J11A	5000 W, 11 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	11	12.3	13	275	1387
SMC50J11CA	5000 W, 11 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	11	12.3	13	275	1387
SMC50J12A	5000 W, 12 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12	13.3	14	252	1309
SMC50J12CA	5000 W, 12 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	12	13.3	14	252	1309
SMC50J13A	5000 W, 13 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	13	14.4	15.2	233	1227
SMC50J13CA	5000 W, 13 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	13	14.4	15.2	233	1227
SMC50J14A	5000 W, 14 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	14	15.7	16.5	216	1151
SMC50J14CA	5000 W, 14 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	14	15.7	16.5	216	1151
SMC50J15A	5000 W, 15 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15	16.7	17.6	205	1095
SMC50J15CA	5000 W, 15 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15	16.7	17.6	205	1095
SMC50J16A	5000 W, 16 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	16	17.9	18.8	192	1040
SMC50J16CA	5000 W, 16 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	16	17.9	18.8	192	1040
SMC50J18A	5000 W, 18 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	18	20	21.1	171	950
SMC50J18CA	5000 W, 18 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18	20	21.1	171	950
SMC50J20A	5000 W, 20 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20	22.2	23.4	155	876
SMC50J20CA	5000 W, 20 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	20	22.2	23.4	155	876
SMC50J22A	5000 W, 22 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	22	24.4	25.7	141	815
SMC50J22CA	5000 W, 22 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	22	24.4	25.7	141	815
SMC50J23A	5000 W, 23 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	23	25.7	27	135	784
SMC50J23CA	5000 W, 23 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	23	25.7	27	135	784
SMC50J24A	5000 W, 24 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	24	26.7	28.1	129	760
SMC50J24CA	5000 W, 24 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	24	26.7	28.1	129	760
SMC50J26A	5000 W, 26 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.4	119	715
SMC50J26CA	5000 W, 26 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	26	28.9	30.4	119	715
SMC50J28A	5000 W, 28 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	31.1	32.7	110	675
SMC50J28CA	5000 W, 28 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	28	31.1	32.7	110	675
SMC50J30A	5000 W, 30 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.2	35	103	640
SMC50J30CA	5000 W, 30 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30	33.2	35	103	640
SMC50J31A	5000 W, 31 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	31	34.2	36	100	626
SMC50J31CA	5000 W, 31 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	31	34.2	36	100	626
SMC50J33A	5000 W, 33 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	94	593
SMC50J33CA	5000 W, 33 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33	36.7	38.6	94	593
SMC50J36A	5000 W, 36 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	36	40	42.1	86	550
SMC50J36CA	5000 W, 36 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	36	40	42.1	86	550
SMC50J40A	5000 W, 40 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40	44.4	46.7	78	511
SMC50J40CA	5000 W, 40 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	40	44.4	46.7	78	511

SMC50J48A	5000 W, 48 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	48	53.2	56	65	444
SMC50J48CA	5000 W, 48 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	48	53.2	56	65	444
SMC50J5.0A	5000 W, 5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6.4	6.74	544	2136
SMC50J5.0CA	5000 W, 5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5	6.4	6.74	544	2136
SMC50J58A	5000 W, 58 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	58	64.6	68	53	381
SMC50J58CA	5000 W, 58 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	58	64.6	68	53	381
SMC50J6.0A	5000 W, 6 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6	6.7	7.05	486	2042
SMC50J6.0CA	5000 W, 6 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6	6.7	7.05	486	2042
SMC50J6.5A	5000 W, 6.5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6.5	7.2	7.58	447	1986
SMC50J6.5CA	5000 W, 6.5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	6.5	7.2	7.58	447	1986
SMC50J64A	5000 W, 64 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	64	71.5	75	47	353
SMC50J64CA	5000 W, 64 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	64	71.5	75	47	353
SMC50J70A	5000 W, 70 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	70	77.9	82	42	345
SMC50J70CA	5000 W, 70 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	70	77.9	82	42	345
SMC50J8.5A	5000 W, 8.5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	8.5	9.4	9.9	348	1710
SMC50J8.5CA	5000 W, 8.5 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	8.5	9.4	9.9	348	1710
SMC50J85A	5000 W, 85 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	85	95	100	32	265
SMC50J85CA	5000 W, 85 V TVS in SMC	Industrial	5000	SMC	8 x 5.9 x 2.3	Bi-Directional	1	85	95	100	32	265
SMCJ12A	1500 W, 12 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	12	13.3	14	79	394
SMCJ130CA	1500 W, 130 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	130	144	152	7.5	38
SMCJ13CA	1500 W, 13 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	13	14.4	15.2	73	368
SMCJ15A	1500 W, 15 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	15	16.7	17.6	64	308
SMCJ15CA	1500 W, 15 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	15	16.7	17.6	64	308
SMCJ170A	1500 W, 170 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	170	189	199	5.5	28
SMCJ188A	1500 W, 188 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	188	209	220	4.6	26
SMCJ188CA	1500 W, 188 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	188	209	220	4.6	26
SMCJ18CA	1500 W, 18 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	18	20	21.1	53	254
SMCJ20A	1500 W, 20 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	20	22.2	23.4	48	234
SMCJ22A	1500 W, 22 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	22	24.4	25.7	44	207
SMCJ24CA	1500 W, 24 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	24	26.7	28.1	40	200
SMCJ26A	1500 W, 26 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.4	37	187
SMCJ28A	1500 W, 28 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	28	31.1	32.7	34	169
SMCJ30A	1500 W, 30 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.3	35.1	32	156
SMCJ30CA	1500 W, 30 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	30	33.3	35.1	32	156
SMCJ33A	1500 W, 33 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	29	143
SMCJ33CA	1500 W, 33 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	33	36.7	38.6	29	143
SMCJ40A	1500 W, 40 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	40	44.4	46.7	24	119
SMCJ40CA	1500 W, 40 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	40	44.4	46.7	24	119
SMCJ48CA	1500 W, 48 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	48	53.3	56.1	20	100
SMCJ5.0A	1500 W, 5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	5	6.4	6.74	171	746
SMCJ5.0CA	1500 W, 5 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	5	6.4	6.74	171	746
SMCJ6.0A	1500 W, 6 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Uni-Directional	1	6	6.7	7.05	152	730
SMCJ70CA	1500 W, 70 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	70	77.8	81.9	13.9	69
SMCJ85CA	1500 W, 85 V TVS in SMC	Industrial	1500	SMC	8 x 5.9 x 2.3	Bi-Directional	1	85	94	99	11.5	56
SMLVT3V3	600 W, 3.3 V TVS in SMB	Industrial	600	SMB	5.3 x 3.6 x 2.3	Uni-Directional	1	3.3	4.1	4.3	50	200
SMM4F10A	400 W, 10 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	10	11.4	12	23.5	127
SMM4F12A	400 W, 12 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	12	13.3	14	20.1	112
SMM4F13A	400 W, 13 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	13	14.3	15	18.6	106

SMM4F15A	400 W, 15 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	15	17.1	18	16.4	90
SMM4F18A	400 W, 18 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	18	20.9	22	14	76
SMM4F20A	400 W, 20 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	20	22.8	24	12	70
SMM4F24A	400 W, 24 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	24	26.6	28.01	9.5	61
SMM4F26A	400 W, 26 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	26	28.5	30	9	58
SMM4F28A	400 W, 28 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	28	31.4	33	8	53
SMM4F33A	400 W, 33 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	33	37.1	39	7	45
SMM4F5.0A	400 W, 5 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	5	6.46	6.8	43.5	179
SMM4F6.0A	400 W, 6 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	6	6.65	7	38.8	175
SMM4F6.5A	400 W, 6.5 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	6.5	7.13	7.5	35.7	166
SMM4F8.5A	400 W, 8.5 V TVS in STmite Flat	Industrial	400	STmite Flat	3.8 x 1.9 x 0.85	Uni-Directional	1	8.5	9.5	10	27.7	140
SPT01-335DEE	Automation sensor transient and overvoltage protection	Industrial	100	QFN-6L	3 x 3 x 0.9	Uni-Directional	3	33	38	41.4	-	2
SPT02-236DDB	Automation sensor transient and overvoltage protection	Industrial	500	QFN-2L	3.3 x 1.5 x 0.75	Uni-Directional	2	36	38	41.4	-	2
STIEC45-24AS	Transil (TVS) for IEC 61000-4-5 compliance	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	24	26.7	28.2	-	500
STIEC45-26AS	Transil (TVS) for IEC 61000-4-5 compliance	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	26	28.9	30.3	-	500
STIEC45-30AS	Transil (TVS) for IEC 61000-4-5 compliance	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	30	33.3	35	-	500
STIEC45-33AS	Transil (TVS) for IEC 61000-4-5 compliance	Industrial	5000	SMC	8 x 5.9 x 2.3	Uni-Directional	1	33	36.7	38.6	-	500
BZW50-22B	5000 W, 22 V TVS in DO-15	Industrial	5000	R6	8.85 x 8.85	Bi-Directional	1	22	24.4	25.7	127	1177
P6KE15CA	600 W, 13 V TVS in DO-15	Industrial	600	DO-15	6.4 x 3.45	Bi-Directional	1	13	14.3	15	28	147
RBO08	REVERSED BATTERY AND OVERVOLTAGE PROTECTION CIRCUIT (RBO)	Industrial	600	D2PAK	15.4 x 10.1 x 4.45	Uni-Directional	1	20	24	28	15	100

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231	Калининград (4012)72-03-81	Омск (3812)21-46-40	Сыктывкар (8212)25-95-17
Ангарск (3955)60-70-56	Калуга (4842)92-23-67	Орел (4862)44-53-42	Тамбов (4752)50-40-97
Архангельск (8182)63-90-72	Кемерово (3842)65-04-62	Оренбург (3532)37-68-04	Тверь (4822)63-31-35
Астрахань (8512)99-46-04	Киров (8332)68-02-04	Пенза (8412)22-31-16	Тольятти (8482)63-91-07
Барнаул (3852)73-04-60	Коломна (4966)23-41-49	Петрозаводск (8142)55-98-37	Томск (3822)98-41-53
Белгород (4722)40-23-64	Кострома (4942)77-07-48	Псков (8112)59-10-37	Тула (4872)33-79-87
Благовещенск (4162)22-76-07	Краснодар (861)203-40-90	Пермь (342)205-81-47	Тюмень (3452)66-21-18
Брянск (4832)59-03-52	Красноярск (391)204-63-61	Ростов-на-Дону (863)308-18-15	Ульяновск (8422)24-23-59
Владивосток (423)249-28-31	Курск (4712)77-13-04	Рязань (4912)46-61-64	Улан-Удэ (3012)59-97-51
Владикавказ (8672)28-90-48	Курган (3522)50-90-47	Самара (846)206-03-16	Уфа (347)229-48-12
Владимир (4922)49-43-18	Липецк (4742)52-20-81	Саранск (8342)22-96-24	Хабаровск (4212)92-98-04
Волгоград (844)278-03-48	Магнитогорск (3519)55-03-13	Санкт-Петербург (812)309-46-40	Чебоксары (8352)28-53-07
Вологда (8172)26-41-59	Москва (495)268-04-70	Саратов (845)249-38-78	Челябинск (351)202-03-61
Воронеж (473)204-51-73	Мурманск (8152)59-64-93	Севастополь (8692)22-31-93	Череповец (8202)49-02-64
Екатеринбург (343)384-55-89	Набережные Челны (8552)20-53-41	Симферополь (3652)67-13-56	Чита (3022)38-34-83
Иваново (4932)77-34-06	Нижний Новгород (831)429-08-12	Смоленск (4812)29-41-54	Якутск (4112)23-90-97
Ижевск (3412)26-03-58	Новокузнецк (3843)20-46-81	Сочи (862)225-72-31	Ярославль (4852)69-52-93
Иркутск (395)279-98-46	Ноябрьск (3496)41-32-12	Ставрополь (8652)20-65-13	
Казань (843)206-01-48	Новосибирск (383)227-86-73	Сургут (3462)77-98-35	
Россия +7(495)268-04-70	Киргизия +996(312)-96-26-47	Казахстан +7(7172)727-132	