

# SD, STA, RF, ST, PD

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# Radio Frequency Transistors

## Overview



ST's RF transistors are manufactured using an optimized process layout designed to **improve RF performance**. They exhibit outstanding RF gain and power saturation, higher breakdown voltage, improved ruggedness and reliability (higher MTTF). These unique features result in **high-performance** and **cost-effective** solutions.

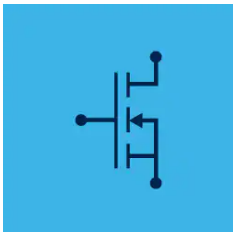
With more than 35 years' experience, ST offers a broad portfolio of Radio Frequency power transistors operating from 7 to 100 V. They are a perfect fit for applications ranging from 1 MHz to 4 GHz, such as:

- Industrial, Scientific and Medical (ISM)
- FM and TV Broadcast
- Mobile and wideband communications
- Avionics and Radar
- Telecom and Satellite Communications

Several package options are available, from SMD plastic to ceramic and ST's innovative STAC® air cavity package featuring 25% lower thermal resistance, improved RF performance and best-in-class reliability.

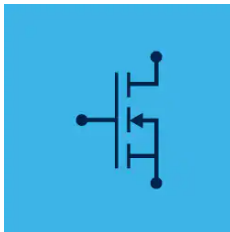
In addition to a wide range of evaluation boards and reference designs, ST offers software simulators and analysis tools to help engineers quickly get their designs to market.

### RF DMOS



Featuring the best-in-class 50/100V RF DMOS power transistors operating up to 250 MHz for ISM applications.

### RF LDMOS



Broad range of supply voltage and output power from 7 V to 50 V and from 1W to > 1 kW up to 4 GHz.

## STPOWER RF DMOS Transistors

### Overview

ST offers a broad portfolio of RF DMOS (double-diffused metal oxide semiconductor) transistors operating from a supply voltage ranging from 50 up to 100 V with high reliability (1 million power cycles). Targeting applications in the 1 to 250 MHz frequency range, our RF DMOS transistors feature high peak power (up to 1.2 kW) and high ruggedness capability (infinite:1 VSWR).

Based on an optimized process layout resulting in improved RF performance, ST's RF DMOS transistors are ideal for:

- RF plasma generators
- Laser drivers
- RF Heating & Defrosting
- Magnetic Resonance Imaging (MRI)
- HF transceivers
- FM broadcast

In addition to devices housed in ST's innovative STAC® air cavity package featuring a 25% lower thermal resistance, we also offers a range of moisture-resistant RF transistors available in gel-filled package, providing a cost-effective solution for equipment operating in high-moisture environments.

To help engineers quickly get their designs to market, we offer a wide range of evaluation boards as well as several software simulators and analysis tools.



Radio Frequency Transistors/STPOWER RF DMOS Transistors

Part Number	General Description	Package	Grade	Frequency (MHz) nom	Output Power (W) nom	Power Gain (dB) nom	Transistor Supply Voltage (V) nom	Efficiency (%) nom	R <sub>th</sub> (°C/W) (Junction To Case) max
SD2931-10	RF power transistor: HF/VHF/UHF N-channel power MOSFETs	M174	Industrial	175	150	15	50	65	0.45
SD2931-12MR	150 W, 50 V moisture resistant HF/VHF DMOS transistor	M174MR	Industrial	175	150	15	50	65	0.45
SD2932	HF/VHF/UHF RF power N-channel MOSFET	M244	Industrial	175	300	16	50	60	0.35
SD2933	HF/VHF/UHF RF power N-channel MOSFETs	M177	Industrial	30	300	23.5	50	65	0.27
SD2941-10	HF/VHF/UHF RF power N-channel MOSFETs	M174	Industrial	175	175	15.8	50	65	0.45
SD2942	HF/VHF/UHF RF power N-channel MOSFET	M244	Industrial	175	350	17	50	61	0.35
SD2943	HF/VHF/UHF RF power N-channel MOSFET	M177	Industrial	30	350	25	50	65	0.27
SD3931-10	RF power transistors HF/VHF/UHF N-channel MOSFETs	M174	Industrial	150	175	21.3	100	57	0.45
SD4931	HF/VHF/UHF RF power N-channel MOSFET	M174	Industrial	175	150	14.8	50	56	0.45
SD4933	HF/VHF/UHF RF power N-channel MOSFET	M177	Industrial	30	300	24	50	58	0.27
SD4933MR	50 V moisture resistant DMOS transistor for ISM applications	M177MR	Industrial	30	300	24	50	58	0.27
STAC2942B	HF/VHF/UHF RF power N-channel MOSFET	STAC780-4B	Industrial	175	350	21	50	75	0.28
STAC3932B	HF/VHF/UHF RF power N-channel MOSFET	STAC780-4B	Industrial	123	450	24.6	100	70	0.28
SD3933	HF/VHF/UHF RF power N-channel MOSFETs	M177	Industrial	30	350	29	100	66	0.27
STAC3932F	RF power transistors HF/VHF/UHF N-channel MOSFETs	STAC780-4F	Industrial	123	450	24.6	100	70	0.28
STAC4932B	HF/VHF/UHF RF power N-channel MOSFET	STAC780-4B	Industrial	123	1000	26	100	60	0.075
STAC4932F	RF power transistors HF/VHF/UHF N-channel MOSFET	STAC780-4F	Industrial	123	1000	26	100	60	0.075
STAC4932F1MR	350 W 50 V HF/VHF DMOS in STAC moisture-resistant flangeless package	STAC780-4F	Industrial	123	350	24	50	60	0.28

# STPOWER RF LDMOS Transistors

## Overview

ST offers a broad portfolio of RF LDMOS (lateral double-diffused metal oxide semiconductor) transistors operating from a supply voltage of 7 to 50 V. They target applications in the 1 MHz to 4 GHz frequency range and feature high peak power up (>1 kW) and high ruggedness capability.

Designed to increase the transistor's power saturation capability, minimizing the distortion at higher power levels, our latest 28V & 50V LDMOS technologies feature improved RF performance (+3 dB, +15% efficiency), ruggedness and reliability.

- Target applications include:
- ISM & Broadcast
- Mobile & Wideband Comms
- Avionics & Radar
- Telecom & Satellite communications

Our PowerSO-10 plastic package is a high-power SMD package designed to offer high reliability and is specially optimized for RF needs and ease of assembly. Certain devices are also available in die form for chip-on-board (CoB) design.

In addition to a wide range of evaluation boards, ST offers several software simulators and analysis tools to help engineers quickly get their designs to market.



**Radio Frequency Transistors / STPOWER RF LDMOS Transistors/Avionics & Radar**

Part Number	General Description	Package	Grade	Frequency (MHz) nom	Output Power (W) nom	Power Gain (dB) nom	Transistor Supply Voltage (V) nom	Efficiency (%) nom	$R_{th}$ (°C/W) (Junction To Case) max
RF2L36040CF2	40 W, 28 V, 2.7 to 3.6 GHz RF power LDMOS transistor	A2	Industrial	3600	40	14	28	48	0.7
RF2L36075CF2	75 W, 28 V, 3.1 to 3.6 GHz RF power LDMOS transistor	B2	Industrial	3500	75	12.5	28	45	0.35
RF5L0912750CB4	750 W, 50 V, 960 to 1215 MHz RF power LDMOS transistor	D4E	Industrial	960	750	15	50	53	0.02
RF5L10111K0CB4	1000 W, 50 V, 1030 to 1090 MHz RF power LDMOS transistor	D4E	Industrial	1030	1000	14.5	50	52	0.02
RF5L1214750CB4	750 W, 50 V, 1200 to 1400 MHz RF power LDMOS transistor	D4E	Industrial	1300	750	15	50	53	0.02
STAC1011-500	500 W, 50 V, 700 to 1200 MHz RF power LDMOS transistor	STAC780-4F	Industrial	1090	500	16	50	59	-
STAC1214-350	350 W, 50 V, 1200 to 1400 MHz RF power LDMOS transistor	STAC780-4F	Industrial	1400	350	14	50	55	0.28

**Radio Frequency Transistors / STPOWER RF LDMOS Transistors/ISM & Broadcast**

Part Number	General Description	Package	Grade	Frequency (MHz) nom	Output Power (W) nom	Power Gain (dB) nom	Transistor Supply Voltage (V) nom	Efficiency (%) nom	R <sub>th</sub> (°C/W) (Junction To Case) max
RF2L24280CB4	280 W, 28 V, 2.4 to 2.5 GHz RF Power LDMOS transistor	D4E	Industrial	2450	280	13	28	60	0.2
RF4L10700CB4	700 W, 40 V, HF to 1 GHz RF power LDMOS transistor	D4E	Industrial	915	700	15	40	69	0.16
RF4L15400CB4	650 W, 28/32 V, 0.4 to 1 GHz RF power LDMOS transistor	D4E	Industrial	650	650	19.5	50	67	0.16
RF5L051K0CB4	1 kW, 50 V, HF to 250 MHz RF Power LDMOS transistor	D4E	Industrial	-	1500	-	50	-	-
RF5L051K4CB4	1.3 kW, 50 V, HF to 250 MHz RF Power LDMOS transistor	D4E	Industrial	-	1500	-	50	-	-
RF5L051K5CB4	1.5 kW, 50 V, HF to 250 MHz RF Power LDMOS transistor	D4E	Industrial	-	1500	-	50	-	-
RF5L052K0CB4	2000 W, 50 V, HF to 500 MHz RF Power LDMOS transistor	D4E	Industrial	108	2000	19.5	50	77	0.09
RF5L052K0CF4	2000 W, 50 V, HF to 500 MHz RF Power LDMOS transistor	D4	Industrial	108	2000	19.5	50	77	0.09
RF5L05500CB4	550 W, 50 V, HF to 250 MHz RF Power LDMOS transistor	LBB	Industrial	-	550	-	50	-	-
RF5L05750CF2	750 W, 50 V, HF to 500 MHz RF power LDMOS transistor	C2	Industrial	108	750	20	50	78	0.08
RF5L05950CF2	950 W, 50 V, HF to 500 MHz RF power LDMOS transistor	C2	Industrial	108	950	20	50	76	0.08
RF5L08350CB4	400 W, 50 V, 0.4 to 1 GHz RF power LDMOS transistor	B4E	Industrial	860	400	19	50	61	0.35
RF5L08600CB4	650 W, 50 V, 0.4 to 1 GHz RF power LDMOS transistor	D4E	Industrial	650	650	19.5	50	67	0.16
RF5L15030CB2	30 W, 50 V, HF to 1.5 GHz RF power LDMOS transistor	GXB	Industrial	1000	30	23.5	50	50	2.9
RF5L15120CB4	120 W 50 V RF power LDMOS transistor from HF to 1.5 GHz	LBB	Industrial	1000	120	20	50	60	0.7
ST24180	180 W, 32 V, 2.3 to 2.5 GHz RF Power LDMOS transistor	B2	Industrial	2350	180	15.3	32	48	0.35

Radio Frequency Transistors / STPOWER RF LDMOS Transistors/Mobile & Wideband Comms

Part Number	General Description	Package	Grade	Frequency (MHz) nom	Output Power (W) nom	Power Gain (dB) nom	Transistor Supply Voltage (V) nom	Efficiency (%) nom	R <sub>th</sub> (°C/W) (Junction To Case) max
PD54003-E	RF power transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead)	Industrial	500	3	12	7.5	55	1.8
PD54008-E	RF power transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead)	Industrial	500	8	11.5	7.5	55	1.2
PD54008L-E	RF power transistors, the LdmoST plastic family	PowerFLAT 5x5 HV	Industrial	500	8	15	7.5	50	3
PD55003-E	RF power transistor from the LdmoST plastic family of N-channel enhancement-mode lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	500	3	14	12.5	52	3
PD55003L-E	RF power transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerFLAT 5x5 HV	Industrial	500	3	19	12.5	52	5.7
PD55008-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	500	8	17	12.5	55	1.8
PD55015-E	RF power transistor from the LdmoST plastic family of N-channel enhancement-mode lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	500	15	14	12.5	55	1.2
PD55025-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	500	25	14.5	12.5	50	1.2
PD55035STR1-E	35 W, 12.5 V, HF to 1 GHz RF power LDMOS transistor	PowerSO-10RF (straight lead)	Industrial	500	35	16.9	12.5	62	1
PD57018-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	945	18	16.5	28	53	3
PD57030-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	945	30	14	28	53	1.8
PD57045-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead)	Industrial	945	45	14.5	28	50	1.2
PD57060S-E	RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	945	60	14.3	28	54	1
PD85035-E	RF power transistor, LdmoST plastic family N-channel enhancement-mode lateral MOSFETs	PowerSO-10RF (formed lead),PowerSO-10RF (straight lead)	Industrial	870	35	17	13.6	72	1
RF2L15200CB4	200 W, 28 V, HF to 1.5 GHz RF power LDMOS transistor	LBB	Industrial	860	200	17.5	28	72	0.35
RF2L27015CG2	15 W, 28 V, 0.7 to 2.7 GHz RF power LDMOS transistor	E2	Industrial	2700	15	19	28	53	2
RF2L27025CG2	25 W, 28 V, 0.7 to 2.7 GHz RF power LDMOS transistor	E2	Industrial	2700	25	18	28	50	1.8
RF2L42008CG2	8 W, 28 V, 0.7 to 4.2 GHz RF power LDMOS transistor	E2	Industrial	3600	8	14.5	28	47	3.6
RF3L05150CB4	150 W, 28/32 V, HF to 1 GHz RF power LDMOS transistor	LBB	Industrial	520	150	23	28	60	0.4
RF3L05200CB4	200 W 28/32 V RF power LDMOS transistor from HF to 1 GHz	LBB	Industrial	650	200	19	28	63	0.35
RF3L05250CB4	250 W 28/32 V RF power LDMOS transistor from HF to 1 GHz	LBB	Industrial	650	250	18	28	62	0.32



RF3L05400CB4	400 W 28/32 V RF power LDMOS transistor from HF to 1 GHz	LBB	Industrial	108	400	15	28	75	0.3
RF5L15030CB2	30 W, 50 V, HF to 1.5 GHz RF power LDMOS transistor	GXB	Industrial	1000	30	23.5	50	50	2.9
SD56060	60 W, 28 V, HF to 1 GHz RF power LDMOS transistor	M246	Industrial	860	60	16	28	60	0.875
SD57030	RF power transistor, the LdmoST family	M243	Industrial	945	30	15	28	60	1.75
SD57030-01	RF power transistor, the LdmoST family	M250	Industrial	945	30	15	28	60	1.75
SD57045	RF power transistor, the LdmoST family	M243	Industrial	945	45	15	28	40	1.4
SD57045-01	RF power transistor, the LdmoST family	M250	Industrial	945	45	15	28	40	1.4
ST05250	250 W, 28/32 V RF Power LDMOS transistor from HF to 1 GHz	B4E	Industrial	945	250	13.4	28	52	0.32
ST16010	10 W, 28 V, HF to 1.6 GHz RF Power LDMOS transistor	MM	Industrial	930	10	23	28	58	3
ST16045	45 W, 28 V, 0.7 to 1.7 GHz RF Power LDMOS transistor	A2	Industrial	1330	45	20	28	55	0.7
ST36015	20 W, 28 V, 0.7 to 3.6 GHz RF power LDMOS transistor	E2	Industrial	3450	20	12.4	28	42	2
ST50V10100	RF Power LDMOS transistor for frequencies up to 1.5 GHz	M243	Industrial	1000	100	18	50	60	0.75
ST50V10200	200 W, 50 V, HF to 1.5GHz RF Power LDMOS transistor	M246	Industrial	1500	200	18	50	60	0.4
ST9045C	RF Power LDMOS transistor HF up to 1.5 GHz	M243	Industrial	945	63	18.5	28	70	1
ST9060C	RF Power LDMOS transistor HF up to 1.5 GHz	M243	Industrial	945	80	17.3	28	70	0.75

**Radio Frequency Transistors / STPOWER RF LDMOS Transistors/Telecom & Satellite Comms**

Part Number	General Description	Package	Grade	Frequency (MHz) nom	Output Power (W) nom	Power Gain (dB) nom	Transistor Supply Voltage (V) nom	Efficiency (%) nom	R <sub>th(j-c)</sub> (°C/W) (Junction To Case) max
RF2L16080CF2	80 W, 28 V, 1.3 to 1.7 GHz RF power LDMOS transistor	A2	Industrial	1625	80	18	28	57	1
RF2L16180CB4	180 W, 28 V, 1.3 to 1.6 GHz RF power LDMOS transistor	B4E	Industrial	1450	180	14	28	60	0.38
RF2L16180CF2	180 W, 28 V, 1.3 to 1.7 GHz RF power LDMOS transistor	B2	Industrial	1470	180	17.5	28	56	0.38
RF2L27015CG2	15 W, 28 V, 0.7 to 2.7 GHz RF power LDMOS transistor	E2	Industrial	2700	15	19	28	53	2
RF2L27025CG2	25 W, 28 V, 0.7 to 2.7 GHz RF power LDMOS transistor	E2	Industrial	2700	25	18	28	50	1.8
RF2L36040CF2	40 W, 28 V, 2.7 to 3.6 GHz RF power LDMOS transistor	A2	Industrial	3600	40	14	28	48	0.7
RF2L36075CF2	75 W, 28 V, 3.1 to 3.6 GHz RF power LDMOS transistor	B2	Industrial	3500	75	12.5	28	45	0.35
RF2L42008CG2	8 W, 28 V, 0.7 to 4.2 GHz RF power LDMOS transistor	E2	Industrial	3600	8	14.5	28	47	3.6
ST16010	10 W, 28 V, HF to 1.6 GHz RF Power LDMOS transistor	MM	Industrial	930	10	23	28	58	3
ST36015	20 W, 28 V, 0.7 to 3.6 GHz RF power LDMOS transistor	E2	Industrial	3450	20	12.4	28	42	2

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