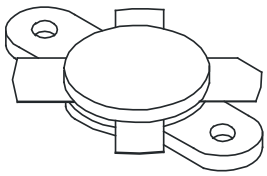
SD2951-10

250 W, 50 V HF/VHF DMOS transistor

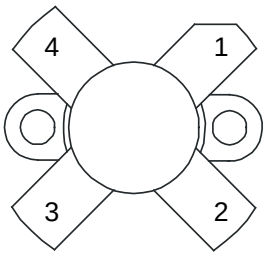
Datasheet - target specification



M174 Epoxy sealed

Figure 1: Pin connection

1. Drain
2. Source
3. Gate
4. Source



Features

- Excellent thermal stability
- Common source configuration
- P_{OUT} = 250 W with 14 dB gain @ 175 MHz
- Low $R_{DS(on)}$
- Load mismatch 65:1 all phases @ 250 W - 50 V - 175 MHz / 1 msec - 10%

Description

The SD2951-10 is an N-channel MOS field-effect RF power transistor, intended for use in 50 V dc large signal applications up to 230 MHz. It offers 25% lower $R_{DS(ON)}$ than the industry standard, with 40% higher P_{SAT} than ST's SD2931-10 device. The SD2951-10 is housed in the low thermal non-pedestal package, offering 25% lower thermal resistance than the industry standard, thus rendering it the "best-in-class" transistor for ISM applications, where reliability and ruggedness are critical factors.

Table 1: Device summary

Order code	Marking	Package	Packing[(1)]
SD2951-10	SD2951-10	M174	Plastic tray

Notes:

(1)For additional details, please refer to Marking, packing and shipping specifications.

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1 Electrical data

1.1 Maximum rating

(T_{CASE} = 25 °C)

Table 2: Absolute maximum rating

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain source voltage	145	V
V_{DGR}	Drain-gate voltage (R_{GS} = 1 MΩ)	145	V
V_{GS}	Gate-source voltage	±20	V
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

2 Electrical characteristics

(T_{CASE} = 25 °C)

Table 3: Static

Symbol	Test conditions		Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0 V	I_{DS} = 100 mA	145	155		V
I_{DSS}	V_{GS} = 0 V	V_{DS} = 50 V			50	µA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V			250	nA
$V_{GS(Q)}$ (1)	V_{DS} = 10 V	I_D = 250 mA	2.0		4.0	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 10 A			3.0	V
G_{FS} (1)	V_{DS} = 8 V	I_D = 5 A	7			mho
C_{ISS}	V_{GS} = 0 V	V_{DS} = 50 V f = 1 MHz		645		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 50 V f = 1 MHz		194		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 50 V f = 1 MHz		5		pF

Notes:

(1)$V_{GS(Q)}$ and G_{FS} sorted with alpha/numeric code marked on unit.

Table 4: Dynamic

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 50 V; I_{DQ} = 250 mA; f = 175 MHz	200	250		W
G_{PS}	V_{DD} = 50 V; I_{DQ} = 250 mA; P_{OUT} = 200 W; f = 175 MHz	14	15.8	-	dB
h_D	V_{DD} = 50 V; I_{DQ} = 250 mA; P_{OUT} = 200 W; f = 175 MHz	55	65		%

Table 5: V_{GS} and G_{FS} sorts

V_{GS} code	Value	G_{FS} code	Value
1	1.5 - 2.0	A	7 - 8
2	2.0 - 2.5	B	8 - 9
3	2.5 - 3.0	C	9 - 10
4	3.0 - 3.5	D	10 - 11
5	3.5 - 4.0		

3 Impedance

Figure 2: Impedance data schematic

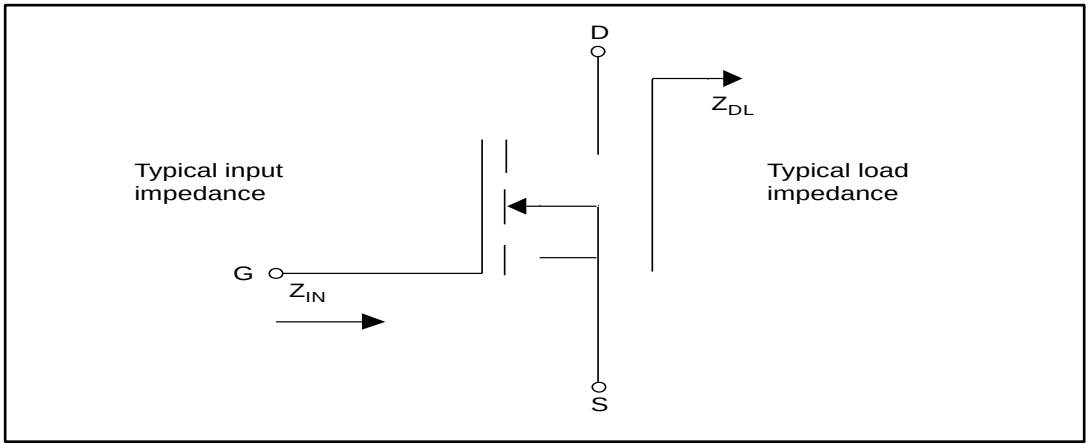

Table 6: Impedance data

f	Z_{IN} (Ω)	Z_{DL} (Ω)
30 MHz	TBD	TBD
175 MHz	TBD	TBD

4 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

4.1 M174 package information

Figure 3: M174 package dimensions

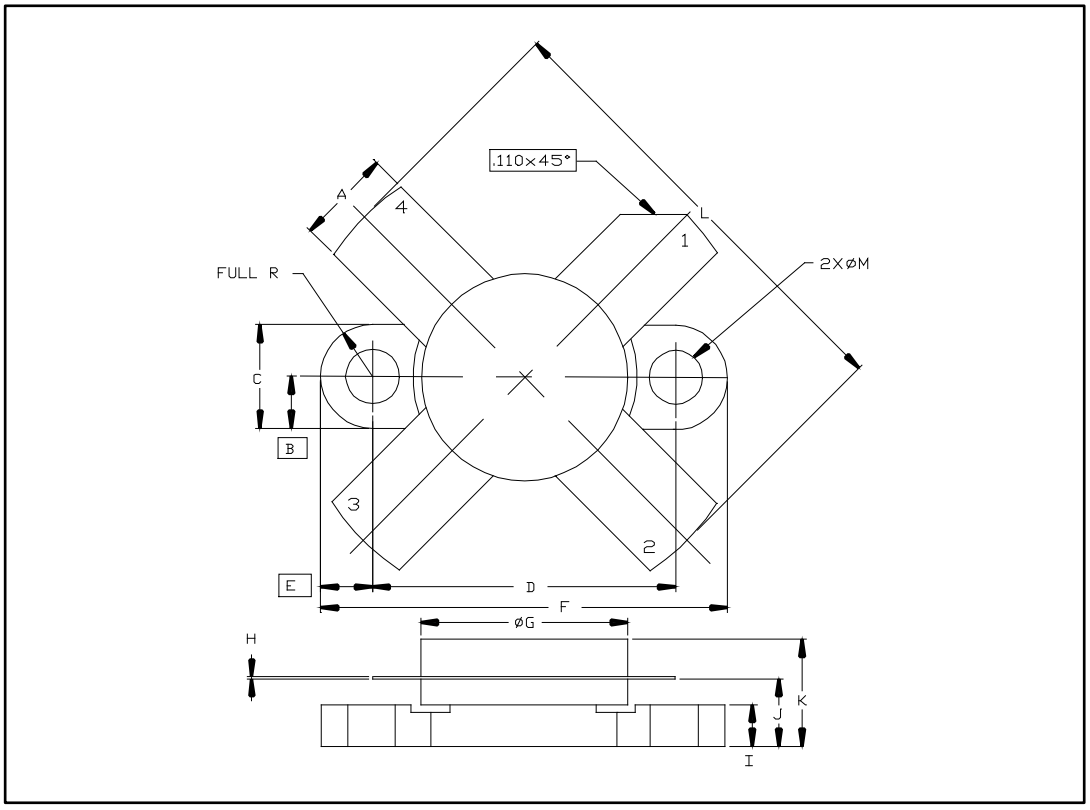

Table 7: M174 (.500 DIA 4/L N/HERM W/FLG)

Dim.	mm.			inch		
	Min.	Typ.	Max	Min.	Typ.	Max
A	5.56		5.584	0.219		0.230
B		3.18			0.125	
C	6.22		6.48	0.245		0.255
D	18.28		18.54	0.720		0.730
E		3.18			0.125	
F	24.64		24.89	0.970		0.980
G	12.57		12.83	0.495		0.505
H	0.08		0.18	0.003		0.007
I	2.11		3.00	0.083		0.118
J	3.81		4.45	0.150		0.175
K			7.11			0.280
L	25.53		26.67	1.005		1.050
M	3.05		3.30	0.120		0.130

5 Marking, packing and shipping specifications

Table 8: Packing and shipping specifications

Order code	Packaging	Pcs per tray	Dry pack humidity	V_{GS} and G_{FS} code	Lot code
SD2951-10	Plastic tray	25	< 10%	Not mixed	Not mixed

Figure 4: Marking layout

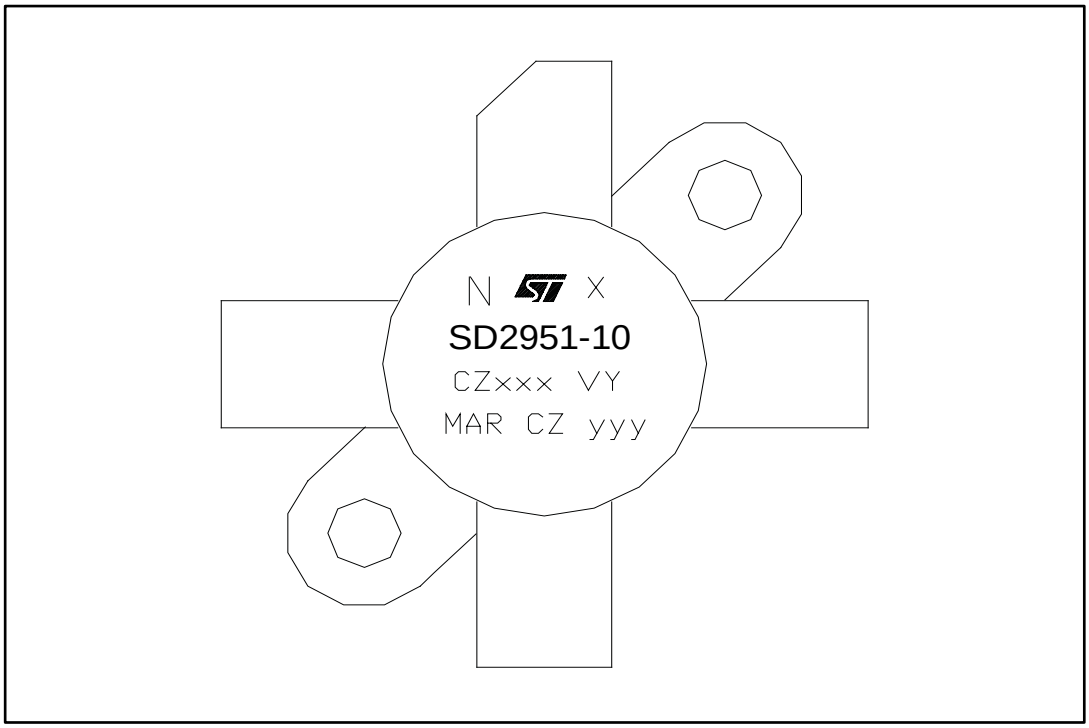

Table 9: Marking specifications

Symbol	Description
N	V_{GS} sort
X	G_{FS} sort
CZ	Assembly plant
xxx	Last 3 digits of diffusion lot
VY	Diffusion plant
MAR	Country of origin
CZ	Test and finishing plant
y	Assembly year
yy	Assembly week

6 Revision history

Table 10: Document revision history

Date	Revision	Changes
27-Aug-2013	1	Initial release.

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