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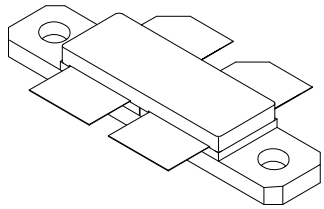
LET9180

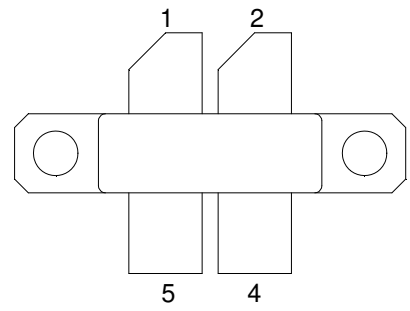
180 W, 32 V Wideband LDMOS transistor

Datasheet - target specification



M246
Epoxy sealed

Figure 1. Pin connection



Features

- Excellent thermal stability
- Common source configuration push-pull
- P_{OUT} = 180 W with 19 dB gain @ 860 MHz
- BeO-free package

Description

The LET9180 is a common source n-channel enhancement-mode lateral field-effect RF power transistor designed for broadband commercial and industrial applications at frequencies up to 2 GHz.

Table 1. Device summary

Order code	Packaging	Branding
LET9180	M246	LET9180

Contents

1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings (T_{CASE} = 25 °C)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-source voltage	80	V
V_{GS}	Gate-source voltage	- 10 / + 15	V
I_D	Drain current	24	A
P_{DISS}	Power dissipation	318	W
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	0.55	°C/W

2 Electrical characteristics

T_{CASE} = +25 °C

2.1 Static

Table 4. Static (per section)

Symbol	Test conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	V_{GS} = 0, I_{DS} = 10 mA	80			V
I_{DSS}	V_{GS} = 0, V_{DS} = 28 V			1	µA
I_{GSS}	V_{GS} = 5 V, V_{DS} = 0			1	µA
$V_{GS(Q)}$	V_{DS} = 28 V, I_D = 100 mA	2.0		5.0	V
$V_{DS(ON)}$	V_{GS} = 10 V, I_D = 3 A		0.8	1.2	V
G_{FS}	V_{DS} = 10 V, I_D = 3 A	2.5			mho
C_{ISS}	V_{GS} = 0, V_{DS} = 32 V, f = 1 MHz		70		pF
C_{OSS}	V_{GS} = 0, V_{DS} = 32 V, f= 1 MHz		36		pF
C_{RSS}	V_{GS} = 0, V_{DS} = 32 V, f = 1 MHz		0.9		pF

2.2 Dynamic

Table 5. Dynamic (V_{DD}= 32 V, I_{DQ}= 500 mA)

Symbol	Test conditions	Min	Typ	Max	Unit
P_{OUT}	f = 860 MHz, P_{IN} = 3 W	150	175	-	W
G_{PS}	P_{OUT} = 180 W, f = 860 MHz	18	20		dB
η_D	P_{OUT} = 180 W, f = 860 MHz	60	69		%
Load Mismatch	P_{OUT} = 220 W, f = 860 MHz all phase angles			65:1	VSWR

3 Impedance data

Figure 2. Impedance data

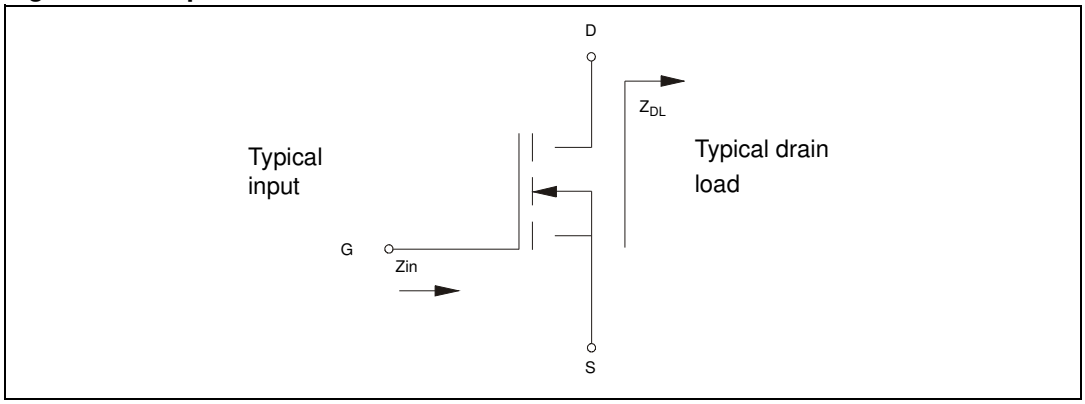


Table 6. Impedance data

Frequency MHz	Z source (Ω)	Z load (Ω)
860	TBD	TBD

4 Typical performances

Figure 3. Gain vs output power

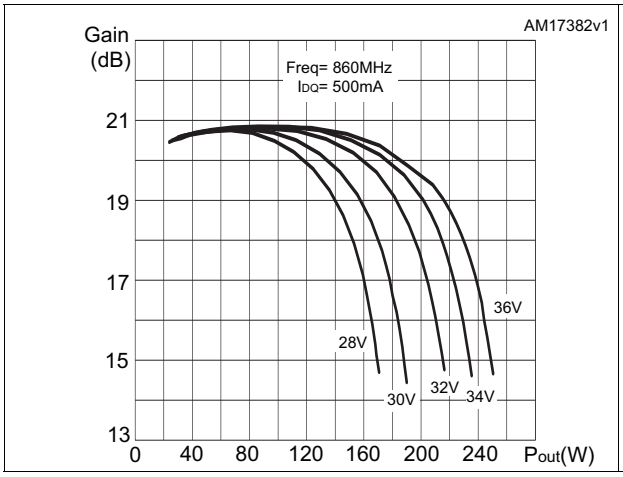
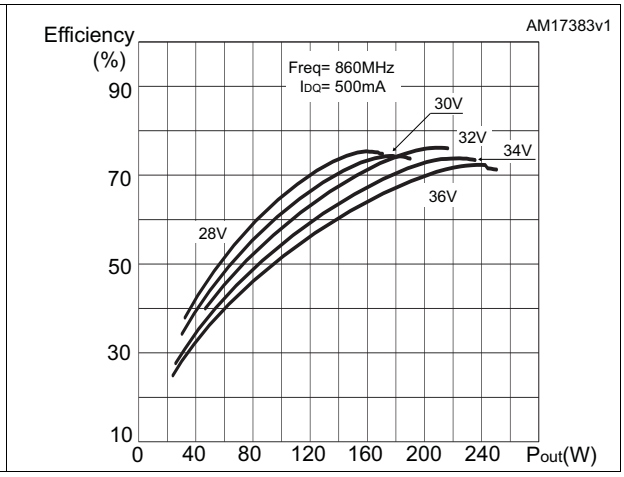


Figure 4. Efficiency vs output power



5 Package mechanical data

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*.
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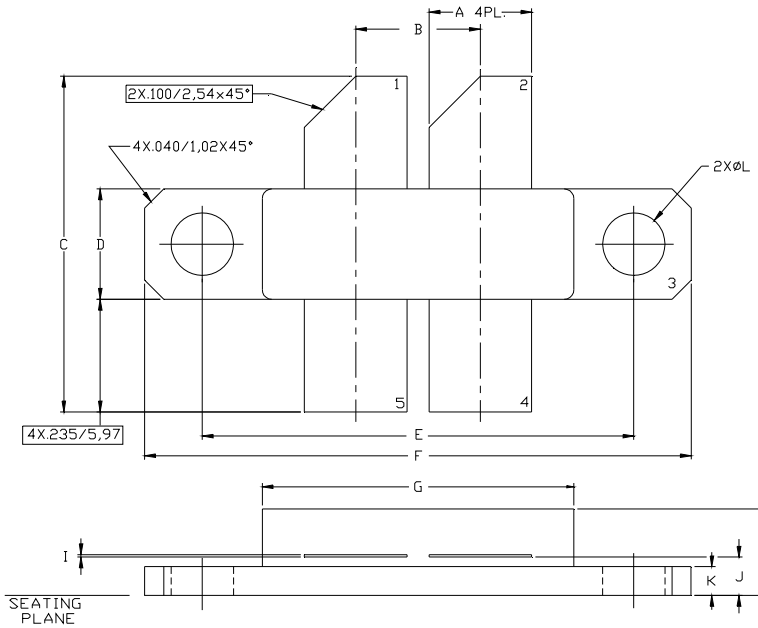
Table 7. M246 (0.230 x 0.650 WIDE 4/L BAL N/HERM W/FLG) mechanical data

Dim.	mm.			Inch		
	Min	Typ	Max	Min	Typ	Max
A	5.33		5.59	0.210		0.220
B	6.48		6.73	0.255		0.265
C	17.27		18.29	0.680		0.720
D	5.72		5.97	0.225		0.235
E		22.86			.900	
F	28.83		29.08	1.135		1.145
G	16.26		16.76	0.640		0.660
H	4.19		5.08	0.165		0.200
I	0.08		0.15	0.003		0.006
J	1.83		2.24	0.072		0.088
K	1.40		1.65	0.055		0.065
L	3.18		3.43	0.125		0.135

Figure 5. Package dimensions



Controlling dimension: Inches

Ref. 7145054A

6 Revision history

Table 8. Document revision history

Date	Revision	Changes
29-May-2013	1	Initial release.

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