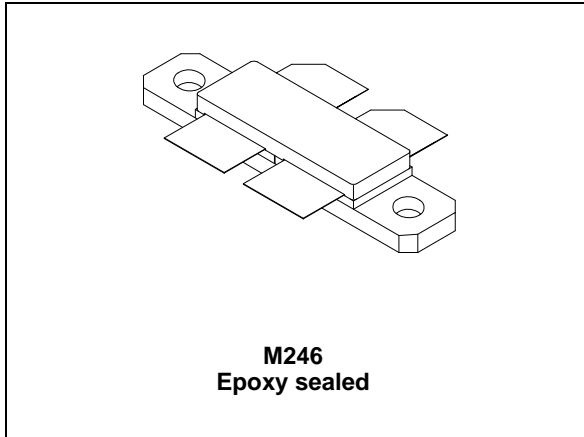


## 180 W, 32 V Wideband LDMOS transistor

Datasheet - target specification



### Features

- Excellent thermal stability
- Common source configuration push-pull
- $P_{OUT} = 180\text{ W}$  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.

Figure 1. Pin connection

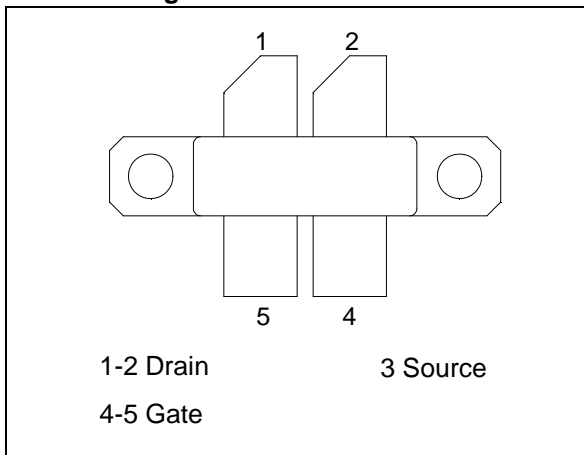


Table 1. Device summary

Order code	Packaging	Branding
LET9180	M246	LET9180

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# 1 Electrical data

## 1.1 Maximum ratings

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

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

$T_{CASE} = +25\text{ }^{\circ}\text{C}$

### 2.1 Static

Table 4. Static (per section)

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

### 2.2 Dynamic

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

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

### 3 Impedance data

Figure 2. Impedance data

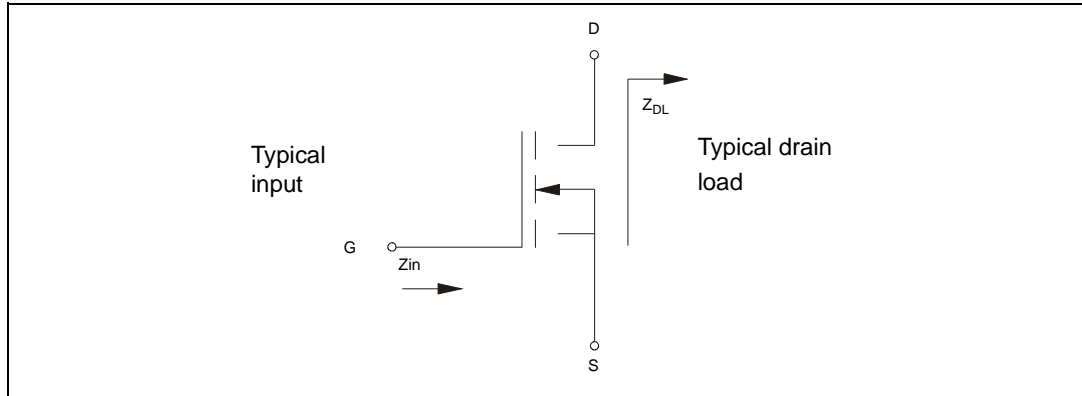


Table 6. Impedance data

Frequency MHz	Z source ( $\Omega$ )	Z load ( $\Omega$ )
860	TBD	TBD

# 4 Typical performances

Figure 3. Gain vs output power

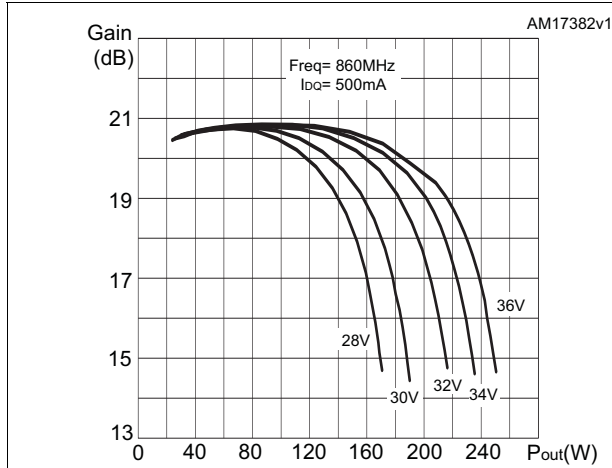
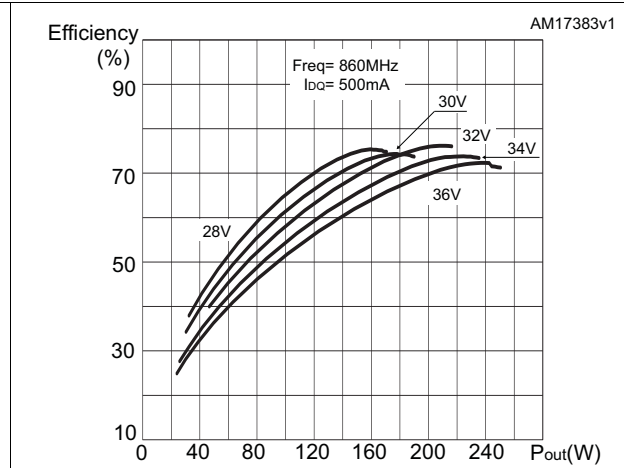


Figure 4. Efficiency vs output power



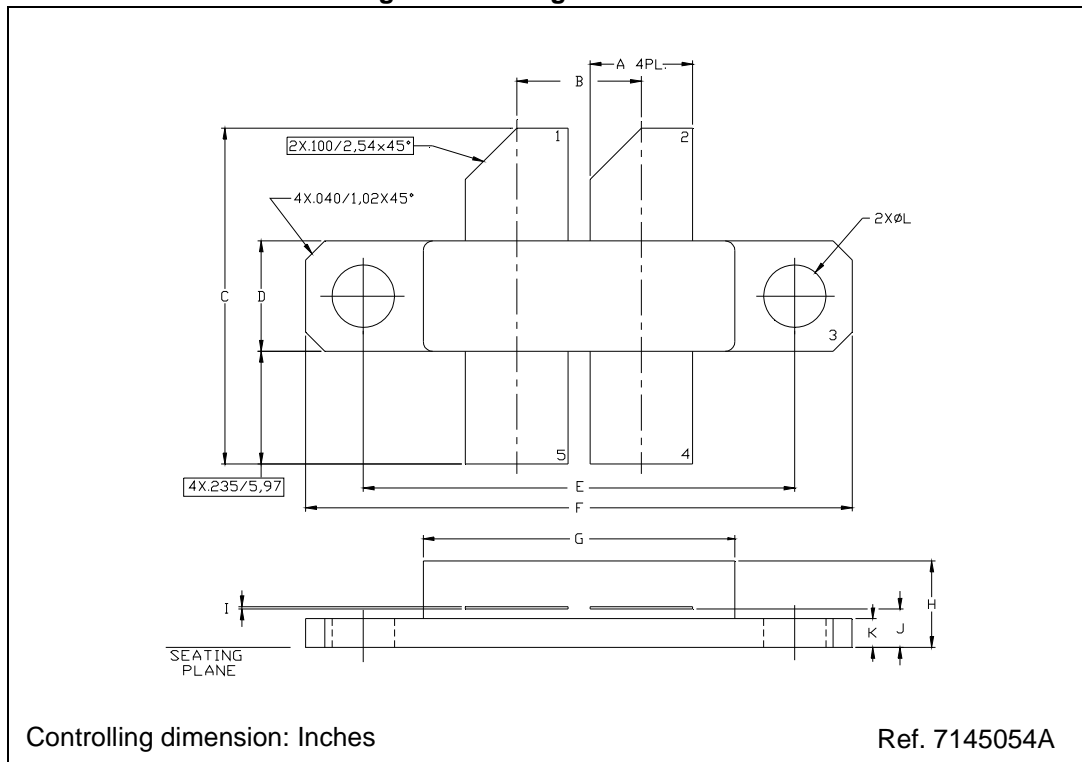
## 5 Package mechanical data

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

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





## 6 Revision history

**Table 8. Document revision history**

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

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