



LET16060C

RF power transistor from the LdmoST family of N-channel enhancement-mode lateral MOSFETs

Preliminary data

Features

- Excellent thermal stability
- Common source configuration
- P_{OUT} (@ 28 V)= 60 W with 13.8 dB gain @ 1600 MHz
- BeO free package
- In compliance with the 2002/95/EC European directive

Description

The LET16060C 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 1.6 GHz. The LET16060C is designed for high gain and broadband performance operating in common source mode at 28 V. It is ideal for INMARSAT satellite communications.

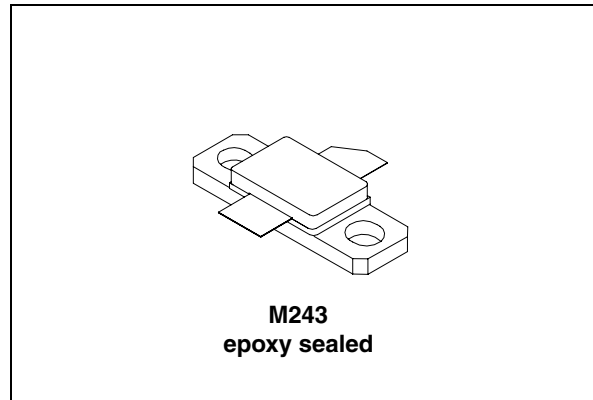


Figure 1. Pin out

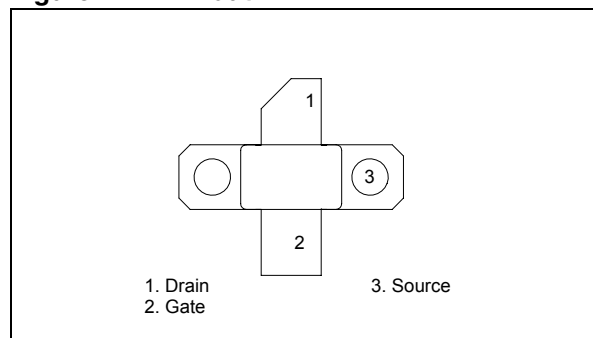


Table 1. Device summary

Order code	Package	Branding
LET16060C	M243	LET16060C

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	-0.5 to +15	V
I_D	Drain current	12	A
P_{DISS}	Power dissipation (@ $T_C = 70\text{ °C}$)	100	W
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{th(JC)}$	Junction-case thermal resistance	1.3	°C/W

2 Electrical characteristics

$T_C = 25\text{ }^{\circ}\text{C}$

Table 4. Static

Symbol	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}; I_{DS} = 10\text{ mA}$	80			V
I_{DSS}	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}$			1	μA
I_{GSS}	$V_{GS} = 5\text{ V}; V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 28\text{ V}; I_D = 400\text{ mA}$	2		5	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}	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}; f = 1\text{ MHz}$		77		pF
C_{OSS}	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}; f = 1\text{ MHz}$		39		pF
C_{RSS}	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}; f = 1\text{ MHz}$		1.2		pF

Table 5. Dynamic

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{IN} = 4\text{ W}; f = 1600\text{ MHz}$	60	70	-	W
G_{PS}	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{OUT} = 60\text{ W}; f = 1600\text{ MHz}$	12.5	13.8		dB
h_D	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{IN} = 4\text{ W}; f = 1600\text{ MHz}$	50	55		%
Load mismatch	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{OUT} = 60\text{ W}; f = 1600\text{ MHz}$ All phase angles		20:1		VSWR

Table 6. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case max	1.3	$^{\circ}\text{C/W}$

Table 7. Impedance data

Frequency (MHz)	Z source (Ω)	Z load (Ω)
1600	$1.3 - j2.3$	$0.2 - j.96$

3 Typical performances

Figure 2. Gain and efficiency vs output power

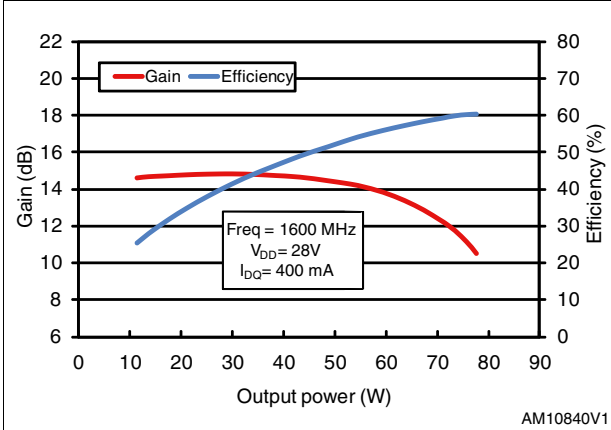


Figure 3. Gain vs output power and bias current

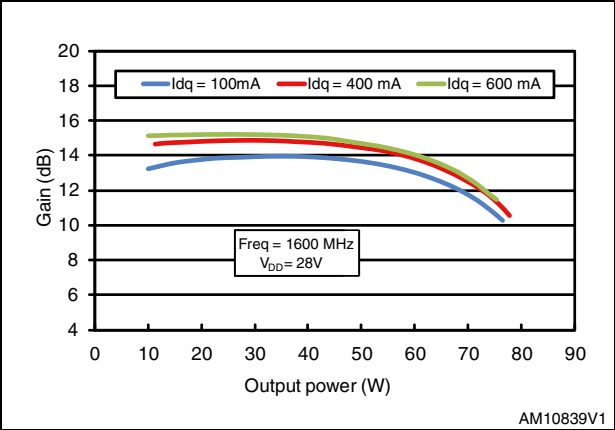
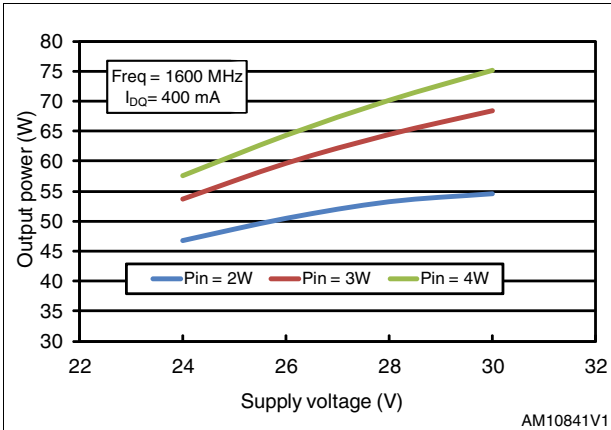


Figure 4. Output power vs drain supply voltage

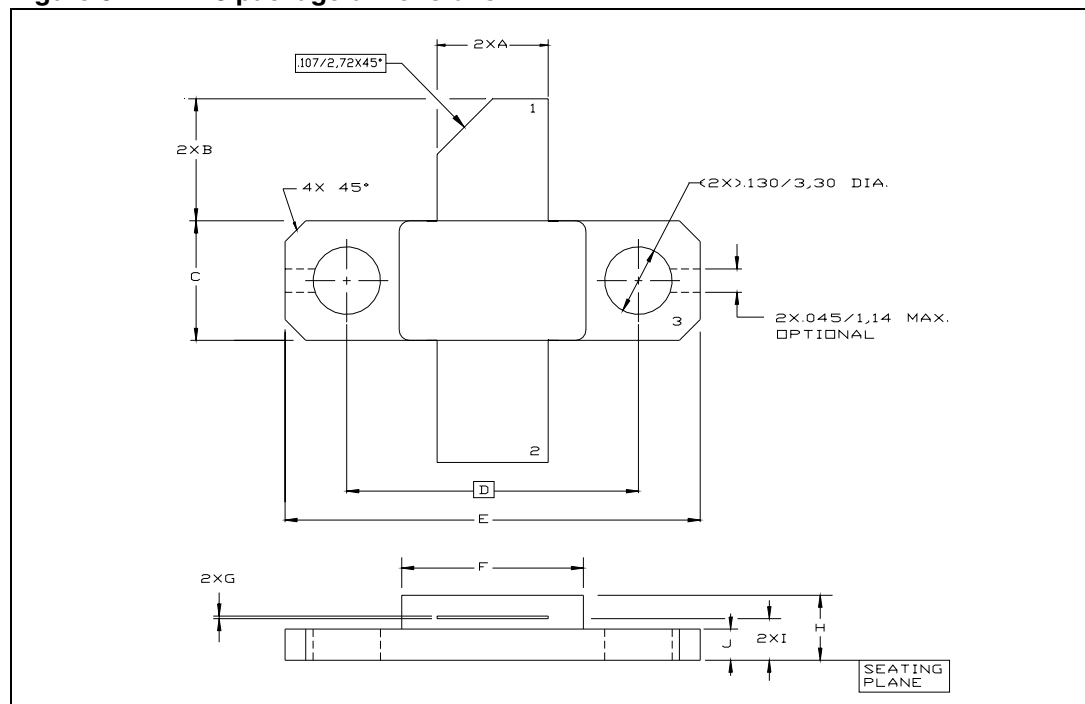


4 Package mechanical data

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Table 8. M243 (.230 x .360 2L N/HERM W/FLG) mechanical data

Dim.	mm			inch		
	Min.	Typ	Max.	Min.	Typ	Max.
A	5.21		5.72	0.205		0.225
B	5.46		6.48	0.215		0.255
C	5.59		6.1	0.22		0.24
D		14.27			0.562	
E	20.07		20.57	0.79		0.81
F	8.89		9.4	0.35		0.37
G	0.1		0.15	0.004		0.006
H	3.18		4.45	0.125		0.175
I	1.83		2.24	0.072		0.088
J	1.27		1.78	0.05		0.07

Figure 5. M243 package dimensions

5 Revision history

Table 9. Document revision history

Date	Revision	Changes
20-Sep-2011	1	Initial release.
15-Nov-2011	2	Modified Table 4 : $V_{GS(Q)}$ and $V_{DS(ON)}$ Modified Table 5 and 6 Inserted: Table 7 Inserted: Figure 2 , 3 and 4

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