



# LET9060C

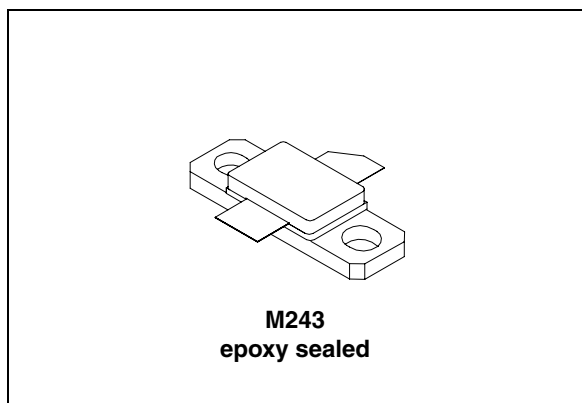
RF power transistor from the LdmoST family  
of n-channel enhancement-mode lateral MOSFETs

## Features

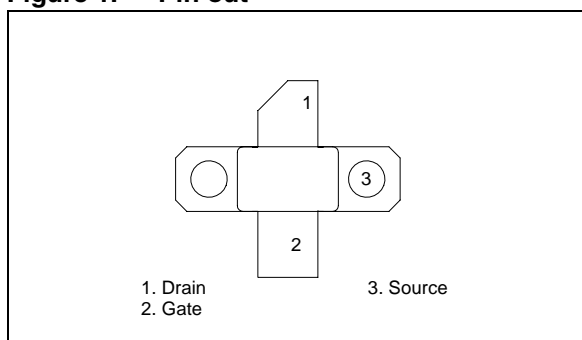
- Excellent thermal stability
- Common source configuration
- $P_{OUT}$  (@ 28 V)= 60 W with 18 dB gain @ 945 MHz
- $P_{OUT}$  (@ 36 V)= 90 W with 18 dB gain @ 945 MHz
- BeO free package
- In compliance with the 2002/95/EC European directive

## Description

The LET9060C 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 1.0 GHz. The LET9060C is designed for high gain and broadband performance operating in common source mode at 28 V. It is ideal for base station applications requiring high linearity.



**Figure 1. Pin out**



**Table 1. Device summary**

Order code	Package	Branding
LET9060C	M243	LET9060C

# 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 (@ $T_C = 70\text{ °C}$ )	130	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	1.0	°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	$\mu\text{A}$
$I_{GSS}$	$V_{GS} = 5\text{ V}; V_{DS} = 0\text{ V}$			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
$C_{ISS}$	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}; f = 1\text{ MHz}$		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
$P_{OUT}$	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{IN} = 1.5\text{ W}; f = 945\text{ MHz}$	60	75	-	W
$G_{PS}$	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{OUT} = 60\text{ W}; f = 945\text{ MHz}$	16	18	-	dB
$h_D$	$V_{DD} = 28\text{ V}; I_{DQ} = 400\text{ mA}; P_{IN} = 1.5\text{ W}; f = 945\text{ MHz}$	60	70	-	%
Load mismatch	$V_{DD} = 35\text{ V}; I_{DQ} = 400\text{ mA}; P_{OUT} = 100\text{ W}; f = 945\text{ MHz}$ All phase angles		20:1		VSWR

3 Impedance data

Figure 2. Impedance data

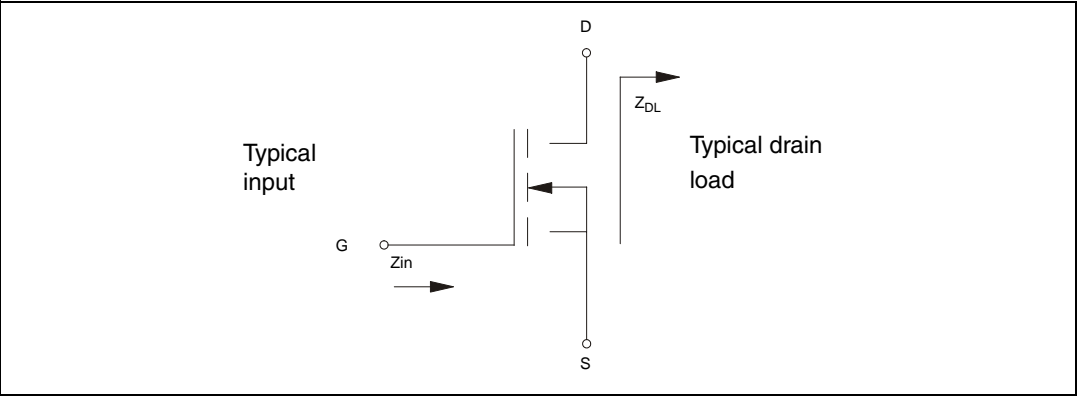


Table 6. Impedance data

Frequency	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
945	$0.34 - j 0.31$	$2.78 + j 0.66$

4 Typical performances

Figure 3. Gain vs output power freq = 945 MHz, Vdd = 28 V

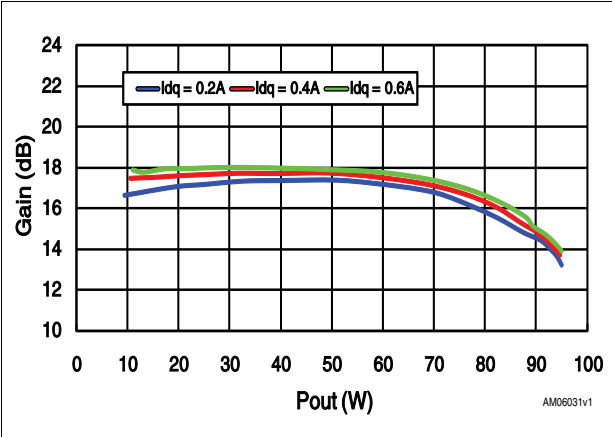


Figure 4. Gain and efficiency vs output power, freq = 945 MHz, Vdd = 28 V, Idq = 0.4 A

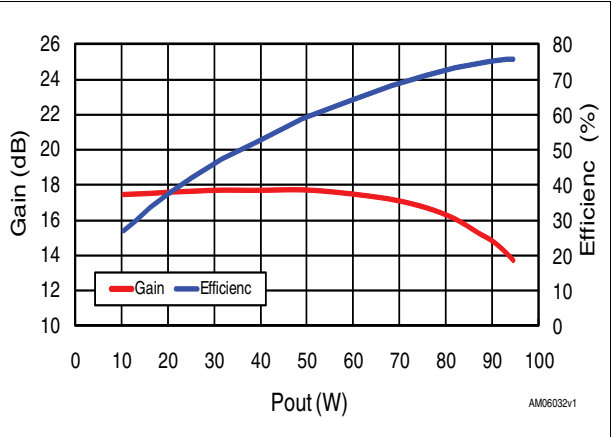


Table 7. Gain vs output power, freq = 945 MHz, Idq = 0.4 A

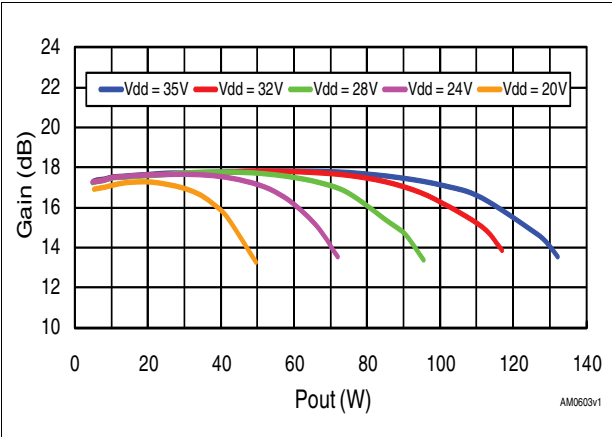


Figure 5. Gain and efficiency vs output power, freq = 945 MHz, Vdd = 35 V, Idq = 0.4 A

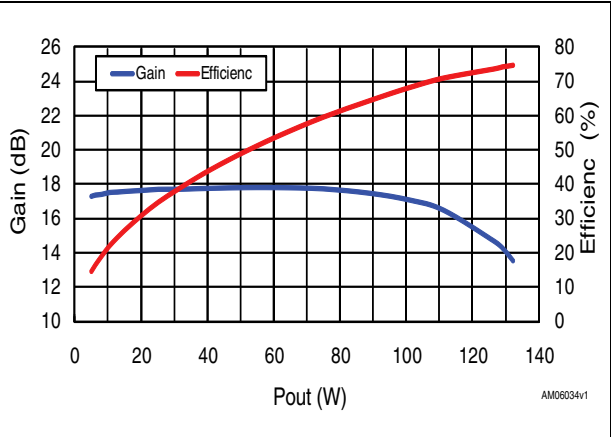


Table 8. Output power vs supply voltage  
freq = 945 MHz, Idq = 0.4 A

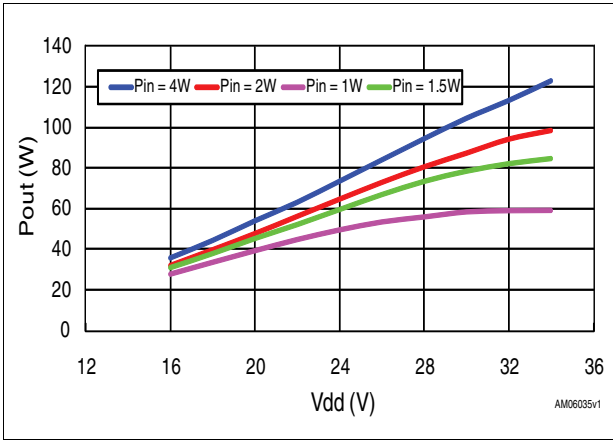
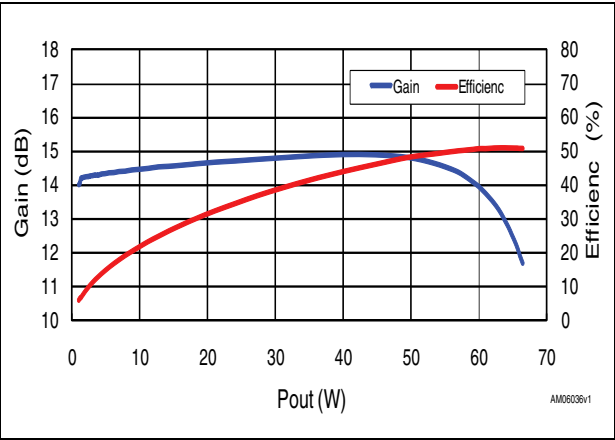


Figure 6. Gain and efficiency vs output power, freq = 1850 MHz, Vdd = 28 V, Idq = 0.4 A



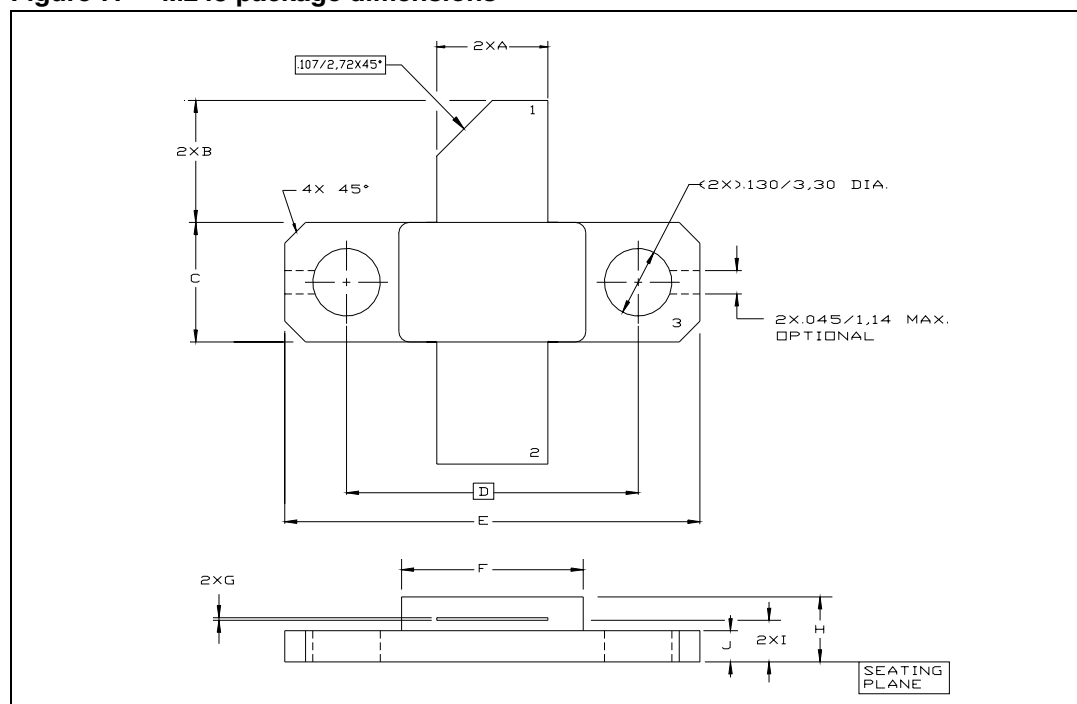
## 5 Package mechanical data

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](http://www.st.com). ECOPACK® is an ST trademark.

**Table 9. 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 7. M243 package dimensions**



## 6 Revision history

**Table 10. Document revision history**

Date	Revision	Changes
25-Nov-2009	1	Initial release.
11-Feb-2010	2	Changed test condition for $V_{(BR)DSS}$ in <a href="#">Table 4: Static</a> .
04-Apr-2011	3	Updated features on cover page.



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