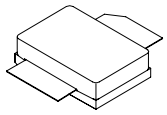
LET9060F

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



M250
epoxy sealed

Description

The LET9060F 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 LET9060F 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

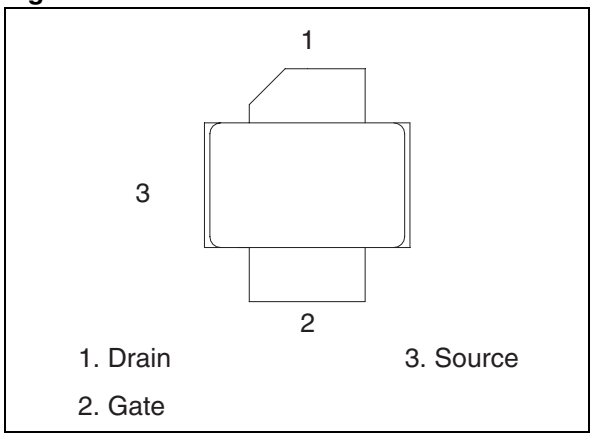


Table 1. Device summary

Order code	Package	Branding
LET9060F	M250	LET9060F

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	-0.5 to +15	V
I_D	Drain current	12	A
P_{DISS}	Power dissipation (@ T_C = 70 °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 °C

Table 4. Static

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

Table 5. Dynamic

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{IN} = 1.5 W; f = 945 MHz	60	75	-	W
G_{PS}	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{OUT} = 60 W; f = 945 MHz	16	18	-	dB
h_D	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{IN} = 1.5 W; f = 945 MHz	60	70	-	%
Load mismatch	V_{DD} = 35 V; I_{DQ} = 400 mA; P_{OUT} = 100 W; f = 945 MHz All phase angles		20:1		VSWR

3 Impedance data

Figure 2. Impedance data

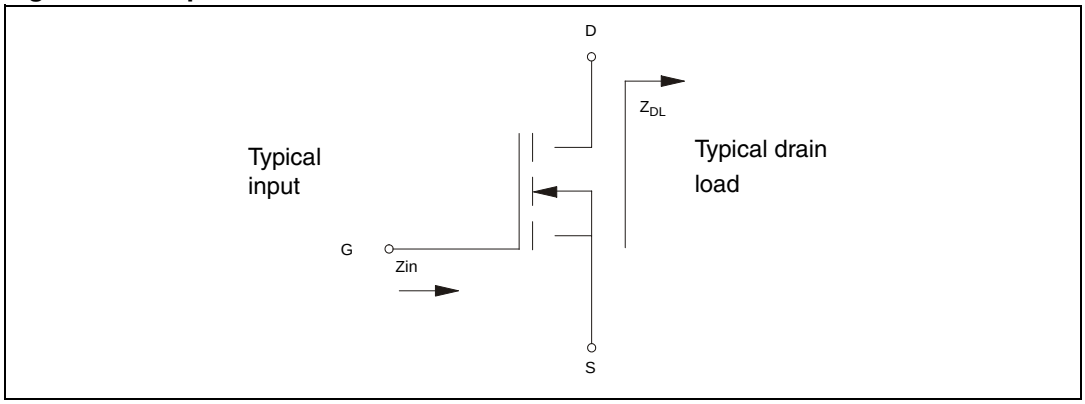


Table 6. Impedance data

Frequency	Z_{IN} (Ω)	Z_{DL} (Ω)
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

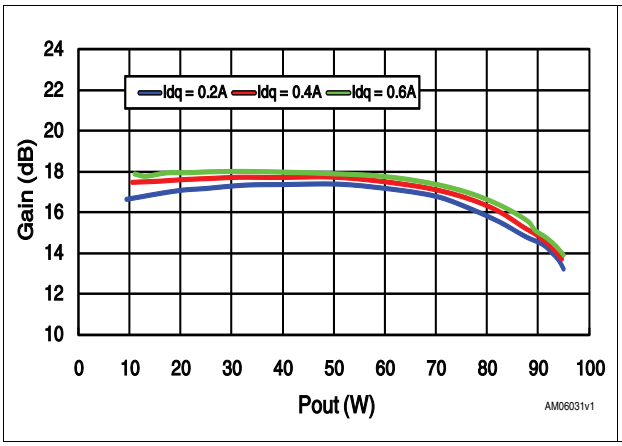


Figure 4. Gain and efficiency vs output power, freq = 945 MHz, Vdd = 28 V, Idq = 0.4 A

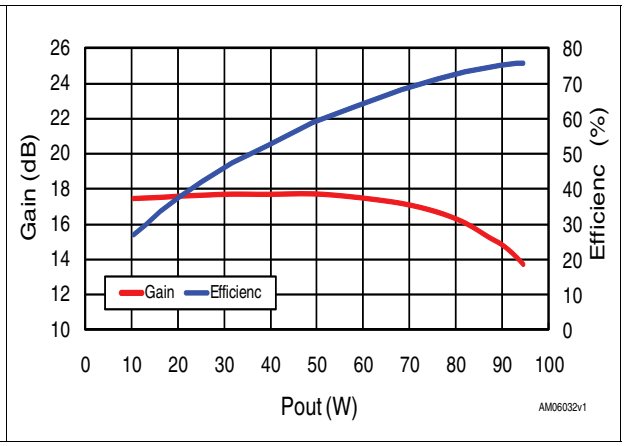


Table 7. Gain vs output power, freq = 945 MHz, Idq = 0.4 A

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

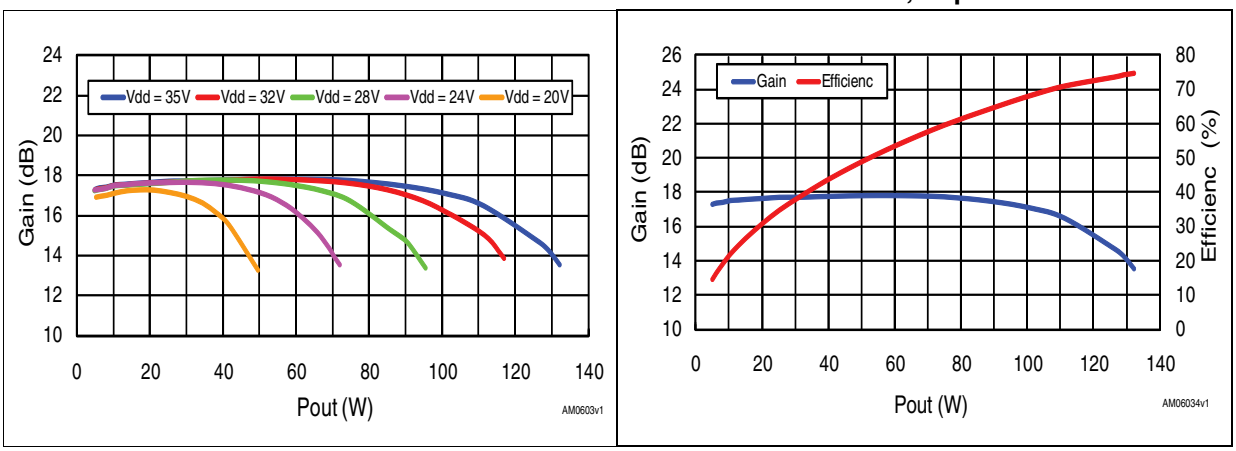


Table 8. Output power vs supply voltage freq = 945 MHz, Idq = 0.4 A

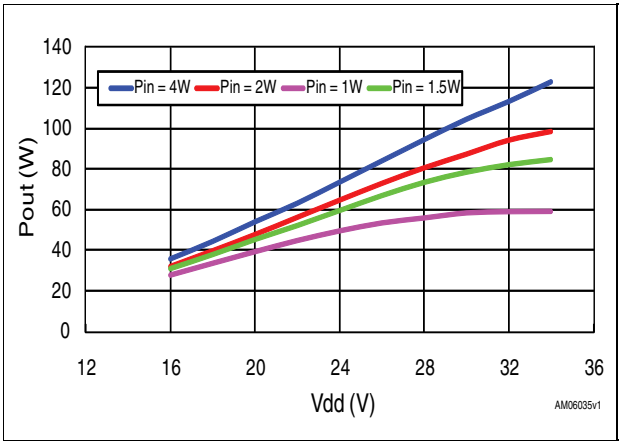
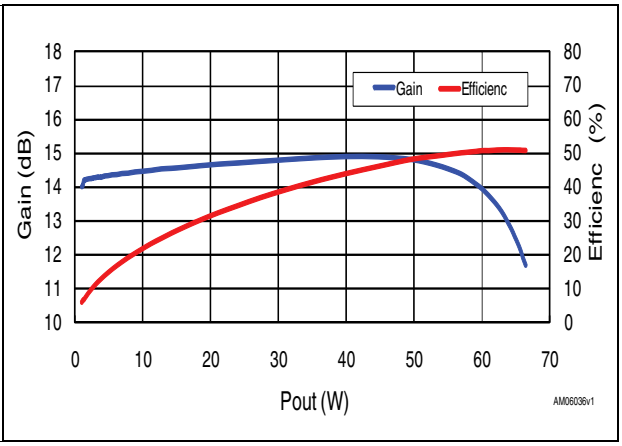


Figure 6. Gain and efficiency vs output power, freq = 1850 MHz, Vdd = 28 V, Idq = 0.4 A



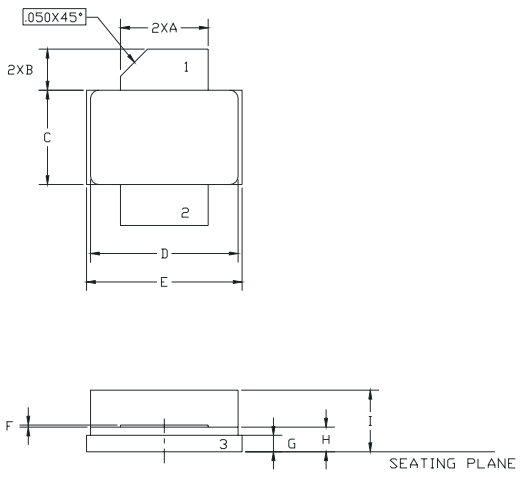
5 Package mechanical data

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. ECOPACK® is an ST trademark.

Table 9. M250 (.230 x .360 2L N/HERM W/FLG) mechanical data

Dim.	mm.			Inch		
	Min	Typ	Max	Min	Typ	Max
A	5.21		5.71	0.205		0.225
B	2.16		2.92	0.085		0.115
C	5.59		6.09	0.220		0.240
D	8.89		9.40	0.350		0.370
E	9.40		9.91	0.370		0.390
F	0.11		0.15	0.004		0.006
G	0.89		1.14	0.035		0.045
H	1.45		1.70	0.057		0.067
I	2.67		3.94	0.105		0.155

Figure 7. M250 package dimensions



6 Revision history

Table 10. Document revision history

Date	Revision	Changes
03-Dec-2009	1	Initial release.
11-Feb-2010	2	Changed test condition for $V_{(BR)DSS}$ in *Table 4: Static*.
04-Apr-2011	3	Updated features on cover page.

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