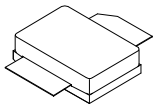
LET9070FB

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

Datasheet — production data

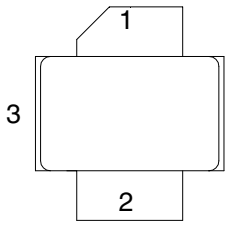
Features

- Excellent thermal stability
- Common source configuration
- P_{OUT} (@ 28 V)= 70 W with 16 dB gain @ 945 MHz
- BeO free package
- In compliance with the 2002/95/EC European directive
- Bidirectional ESD



M250
epoxy sealed

Figure 1. Pin out



1. Drain
2. Gate
3. Source

Description

The LET9070FB 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 LET9070FB 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.

Table 1. Device summary

Order code	Package	Branding
LET9070FB	M250	LET9070FB

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 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; I_{DS} = 10 mA	80			V
I_{DSS}	V_{GS} = 0; V_{DS} = 28 V			1	µA
I_{GSS}	V_{GS} = 5; V_{DS} = 0			1	µA
$V_{GS(Q)}$	V_{DS} = 28; 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} = 28 V; f = 1 MHz		78		pF
C_{OSS}	V_{GS} = 0; V_{DS} = 28 V; f = 1 MHz		42		pF
C_{RSS}	V_{GS} = 0; V_{DS} = 28 V; f = 1 MHz		2.7		pF

Table 5. Dynamic

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{IN} = 2.5 W; f = 945 MHz	70	80		W
G_{PS}	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{OUT} = 70 W; f = 945 MHz		16		dB
h_D	V_{DD} = 28 V; I_{DQ} = 400 mA; P_{IN} = 2.5 W; f = 945 MHz	60	65		%
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

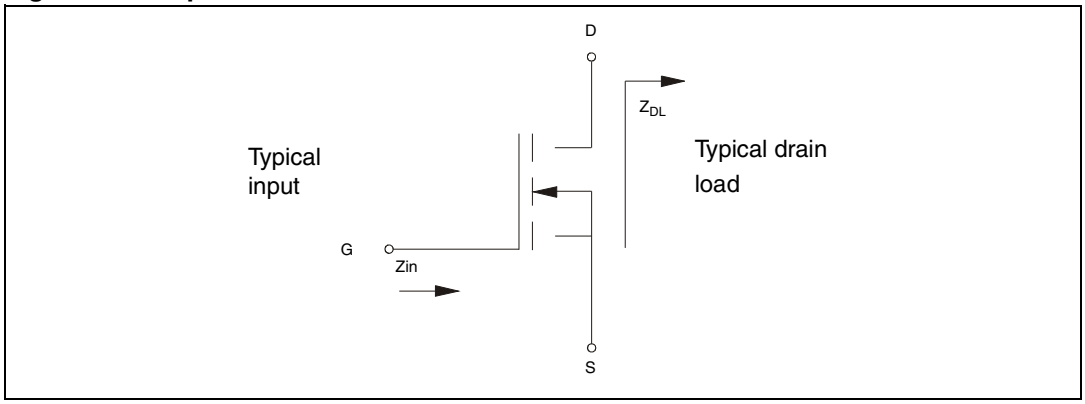
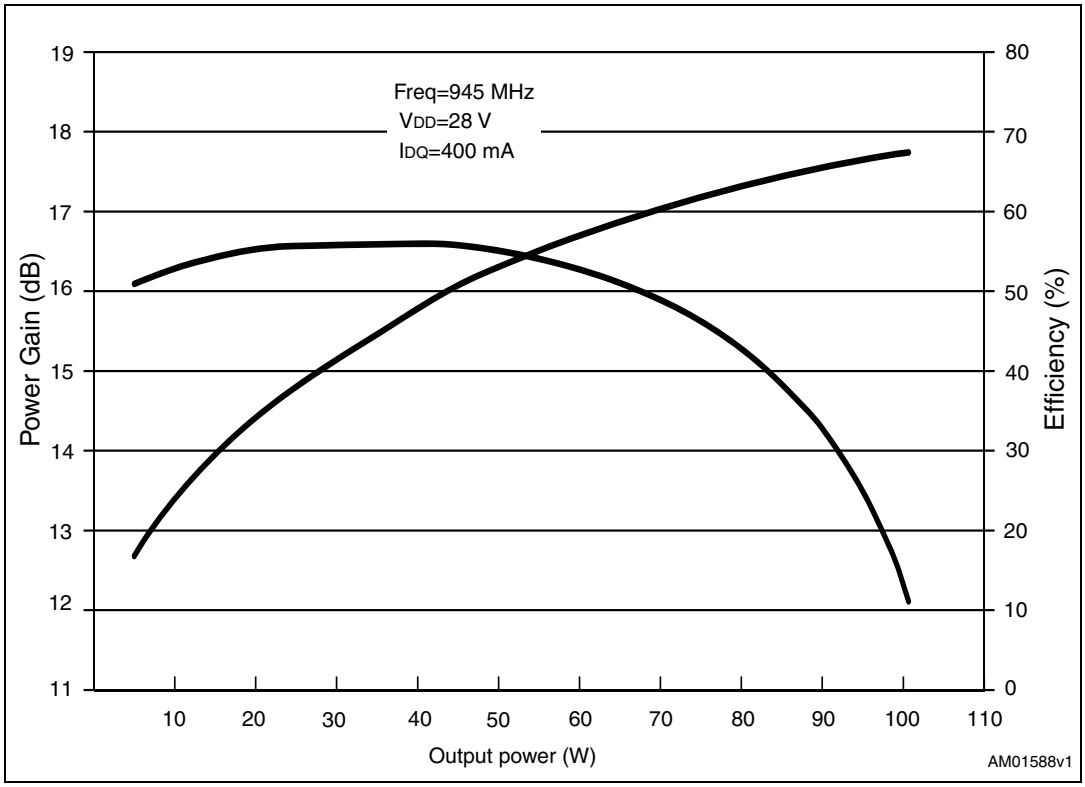


Table 6. Impedance data

Frequency	Z_{IN} (Ω)	Z_{OUT} (Ω)
945	TBD	TBD

4 Typical performance

Figure 3. Power gain and efficiency vs. output power



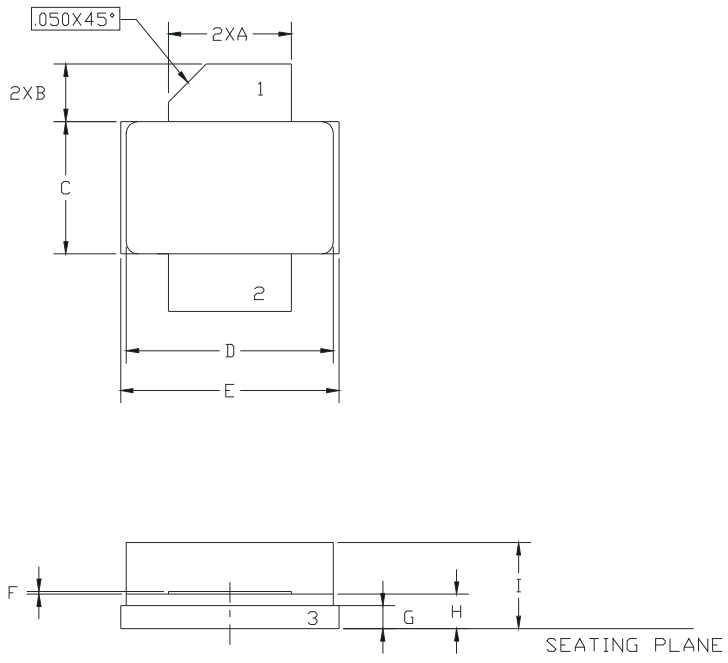
5 Package mechanical data

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. ECOPACK® is an ST trademark.

Table 7. 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 4. Package dimension



Controlling dimension: Inches 1022729B

6 Revision history

Table 8. Document revision history

Date	Revision	Changes
20-Dec-2012	1	Initial release.

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