



LET9120M

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

Preliminary data

Features

- Excellent thermal stability
- Common source configuration push-pull
- $P_{OUT} = 120\text{ W}$ with 18 dB gain @ 860 MHz
- Internal input matching
- BeO-free package

Description

The LET9120M 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.

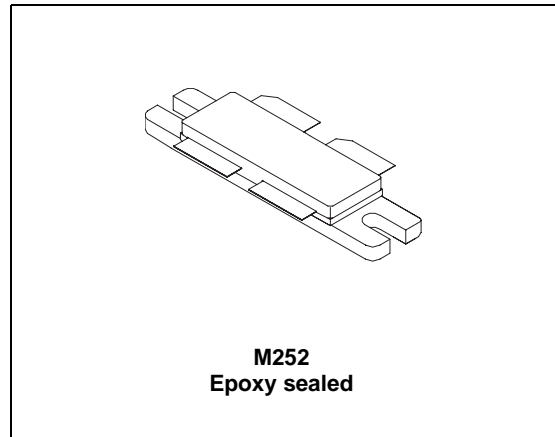


Figure 1. Pin connection

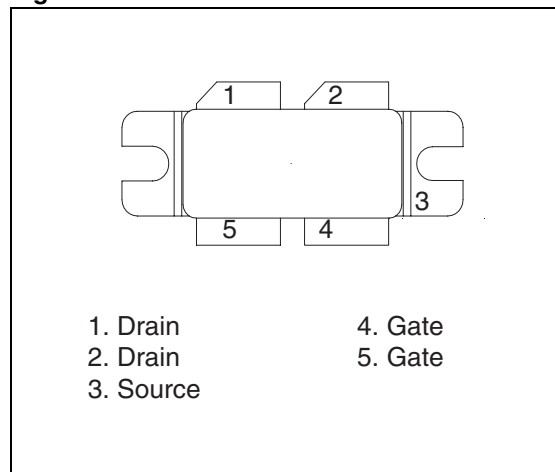


Table 1. Device summary

Order code	Package	Branding
LET9120M	M252	LET9120M

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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	± 20	V
I_D	Drain current	18	A
P_{DISS}	Power dissipation (@ $T_c = 70\text{ °C}$)	217	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	0.6	°C/W

2 Electrical characteristics

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

2.1 Static

Table 4. Static (per section)

Symbol	Test conditions		Min	Typ	Max	Unit
$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{ V}$	$I_{\text{DS}} = 10\text{ mA}$	80			V
I_{DSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 28\text{ V}$			1	μA
I_{GSS}	$V_{\text{GS}} = 5\text{ V}$	$V_{\text{DS}} = 0\text{ V}$			1	μA
$V_{\text{GS(Q)}}$	$V_{\text{DS}} = 28\text{ V}$	$I_{\text{D}} = 100\text{ mA}$	2.0		5.0	V
$V_{\text{DS(ON)}}$	$V_{\text{GS}} = 10\text{ V}$	$I_{\text{D}} = 3\text{ A}$		0.9	1.2	V
G_{FS}	$V_{\text{DS}} = 10\text{ V}$	$I_{\text{D}} = 3\text{ A}$	2.5			mho
C_{OSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 28\text{ V}$		29		pF

Note: Device is internally input matched.

2.2 Dynamic

Table 5. Dynamic

Symbol	Test conditions		Min	Typ	Max	Unit
P_{OUT}	$V_{\text{DD}} = 32\text{ V}$	$I_{\text{DQ}} = 400\text{ mA}$ $f = 860\text{ MHz}$	120			W
G_{PS}	$V_{\text{DD}} = 32\text{ V}$	$I_{\text{DQ}} = 400\text{ mA}$ $P_{\text{OUT}} = 120\text{ W}$ $f = 860\text{ MHz}$	16	18	-	dB
η_{D}	$V_{\text{DD}} = 32\text{ V}$	$I_{\text{DQ}} = 400\text{ mA}$ $P_{\text{OUT}} = 120\text{ W}$ $f = 860\text{ MHz}$	50	65		%

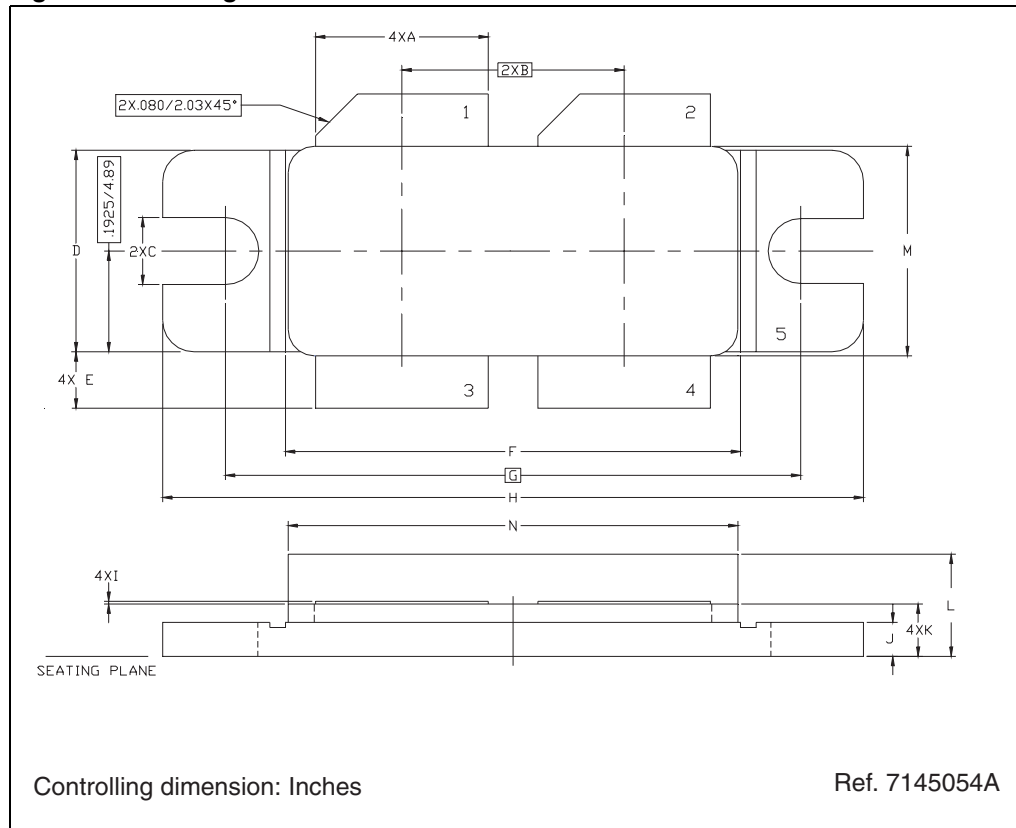
3 Package mechanical data

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Table 6. M252 (.400 x .860 4L BAL N/HERM W/FLG) mechanical data

Dim.	mm.			inch		
	Min	Typ	Max	Min	Typ	Max
A	8.13		8.64	.320		.340
B		10.80			.425	
C	3.00		3.30	.118		.130
D	9.65		9.91	.380		.390
E	2.16		2.92	.085		.115
F	21.97		22.23	.865		.875
G		27.94			1.100	
H	33.91		34.16	1.335		1.345
I	0.10		0.15	.004		.006
J	1.52		1.78	.060		.070
K	2.36		2.74	.093		.108
L	4.57		5.33	.180		.210
M	9.96		10.34	.392		.407
N	21.64		22.05	.852		.868

Figure 2. Package dimensions



4 Revision history

Table 7. Document revision history

Date	Revision	Changes
10-Nov-2009	1	First Issue.
11-Feb-2010	2	Changed test condition for $V_{(BR)DSS}$ in Table 4: Static (per section) .

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