



# LET20030S

## RF POWER TRANSISTORS

### *Ldmos Enhanced Technology in Plastic Package*

#### TARGET DATA

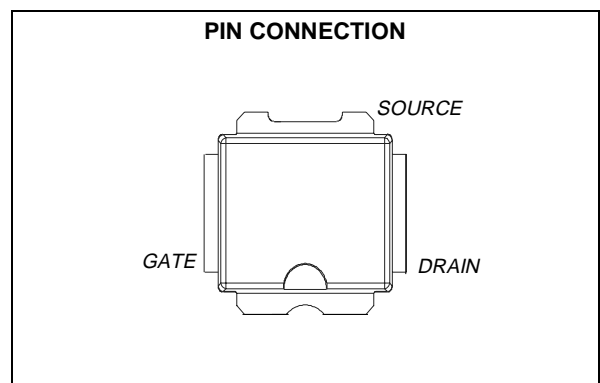
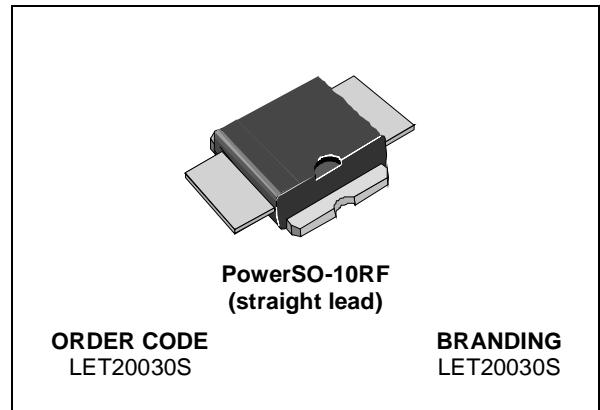
Designed for GSM / EDGE / IS-97 applications

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 30\text{ W}$  with 11 dB gain @ 2000 MHz
- ESD PROTECTION
- IS-97 CDMA PERFORMANCES  
 $P_{OUT} = 4.5\text{ W}$   
 $EFF = 17\%$

#### DESCRIPTION

The LET20030S is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor. It is designed for high gain, broad band commercial and industrial applications. It operates at 26 V in common source mode at frequencies up to 2 GHz. LET20030S boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology mounted in the first true SMD plastic RF power package, PowerSO-10RF. LET20030S's superior linearity performance makes it an ideal solution for base station applications.

The PowerSO-10 plastic package, designed to offer high reliability, is the first ST JEDEC approved, high power SMD package. It has been specially optimized for RF needs and offers excellent RF performances and ease of assembly.



Mounting recommendations are available in [www.st.com/rf/](http://www.st.com/rf/) (look for application note AN1294)

#### ABSOLUTE MAXIMUM RATINGS ( $T_{CASE} = 25^\circ\text{C}$ )

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	65	V
$V_{GS}$	Gate-Source Voltage	-0.5 to +15	V
$I_D$	Drain Current	TBD	A
$P_{DISS}$	Power Dissipation	140	W
$T_j$	Max. Operating Junction Temperature	165	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-65 to +175	$^\circ\text{C}$

#### THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	1.0	$^\circ\text{C/W}$
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**ELECTRICAL SPECIFICATION** ( $T_{CASE} = 25\text{ }^{\circ}\text{C}$ )

**STATIC**

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$ $I_{DS} = 1\text{ mA}$	65			V
$I_{DSS}$	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$			1	$\mu\text{A}$
$I_{GSS}$	$V_{GS} = 5\text{ V}$ $V_{DS} = 0\text{ V}$			1	$\mu\text{A}$
$V_{GS(Q)}$	$V_{DS} = 26\text{ V}$ $I_D = \text{TBD}$	2.5		5.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$ $I_D = 1\text{ A}$		TBD		V
$G_{FS}$	$V_{DS} = 10\text{ V}$ $I_D = 1\text{ A}$		TBD		mho
$C_{ISS}$	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$ $f = 1\text{ MHz}$		TBD		pF
$C_{OSS}$	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$ $f = 1\text{ MHz}$		TBD		pF
$C_{RSS}$	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$ $f = 1\text{ MHz}$		TBD		pF

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>DYNAMIC</b> ( $f = 2000\text{ MHz}$ )					
$P_{1dB}$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$	30			W
$G_P$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W}$	11	13		dB
$\eta_D$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W}$	45	50		%
$\text{IMD3}^{(1)}$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W PEP}$		-32	-28	dBc
Load mismatch	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W}$ ALL PHASE ANGLES			10:1	VSWR
<b>DYNAMIC</b> ( $f = 1930 - 1990\text{ MHz}$ )					
$P_{OUT}^{(2)}$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$	25	30		W
$G_P$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W}$	11	13		dB
$\eta_D^{(2)}$	$V_{DD} = 26\text{ V}$ $I_{DQ} = \text{TBD}$ $P_{OUT} = 30\text{ W}$	40	45		%
$P_{out(CDMA)}^{(3)}$	885 KHz < -47 dBc 1.25 MHz < -55 dBc 2.25 MHz < -55 dBc		4.5		W
$\eta_{D(CDMA)}^{(3)}$	885 KHz < -47 dBc 1.25 MHz < -55 dBc 2.25 MHz < -55 dBc		17		%

(1)  $f_1 = 2000\text{ MHz}$ ,  $f_2 = 2000.1\text{ MHz}$

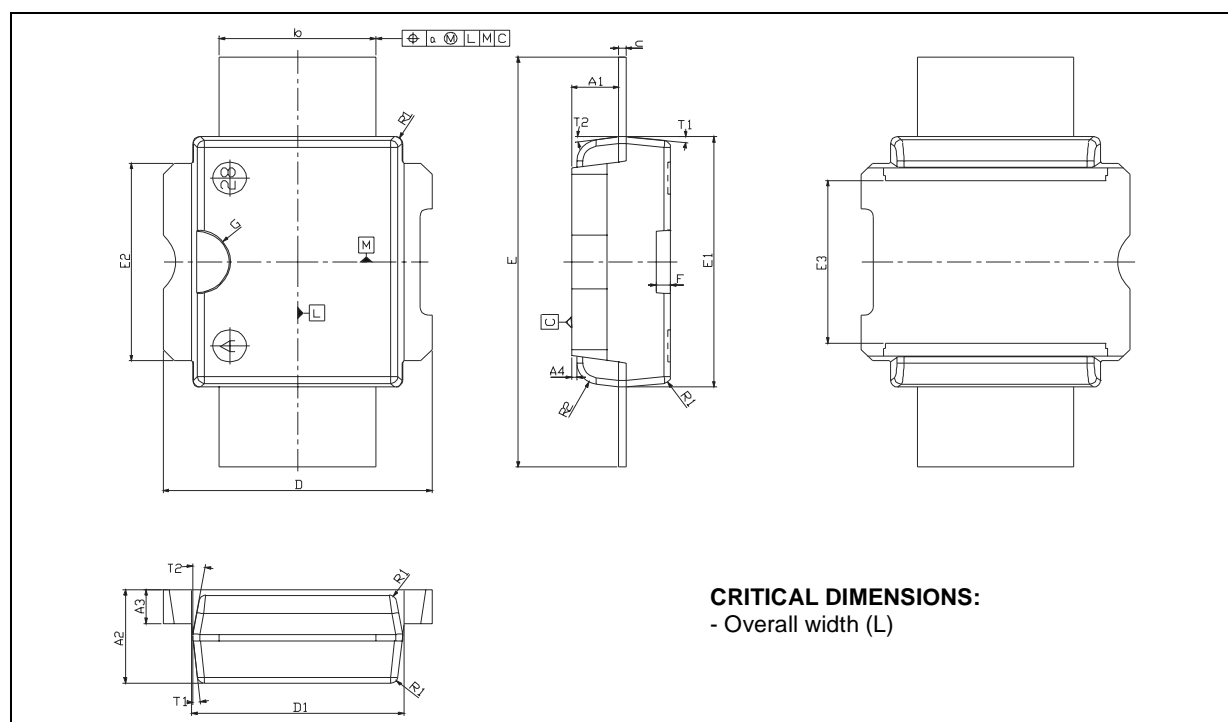
(2) 1 dB Compression point

(3) IS-97 CDMA Pilot, Sync, Paging, Traffic, Codes 8 Thru 13

**PowerSO-10RF Straight Lead MECHANICAL DATA**

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A1	1.62	1.67	1.72	0.064	0.065	0.068
A2	3.4	3.5	3.6	0.134	0.137	0.142
A3	1.2	1.3	1.4	0.046	0.05	0.054
A4	0.15	0.2	0.25	0.005	0.007	0.009
a		0.2			0.007	
b	5.4	5.53	5.65	0.212	0.217	0.221
c	0.23	0.27	0.32	0.008	0.01	0.012
D	9.4	9.5	9.6	0.370	0.374	0.377
D1	7.4	7.5	7.6	0.290	0.295	0.298
E	15.15	15.4	15.65	0.595	0.606	0.615
E1	9.3	9.4	9.5	0.365	0.37	0.375
E2	7.3	7.4	7.5	0.286	0.292	0.294
E3	5.9	6.1	6.3	0.231	0.24	0.247
F		0.5			0.019	
G		1.2			0.047	
R1			0.25			0.01
R2		0.8			0.031	
T1		6 deg			6 deg	
T2		10 deg			10 deg	

Note (1): Resin protrusions not included (max value: 0.15 mm per side)



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