



LET9130

RF POWER TRANSISTORS *Ldmos Enhanced Technology*

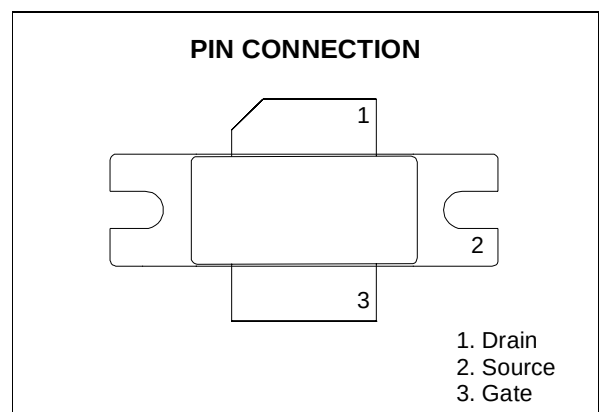
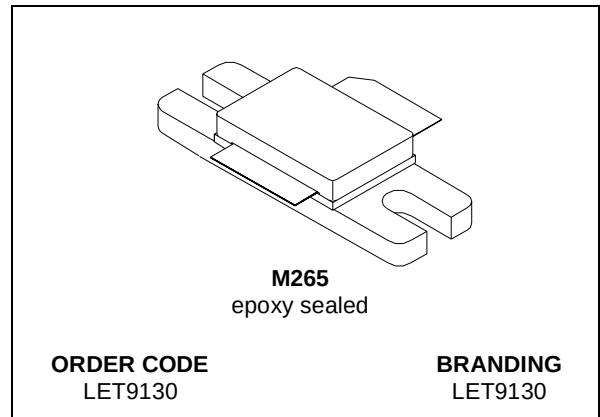
PRELIMINARY DATA

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- IS-95 CDMA: 865-895 MHz / 28 V
P_{OUT} = 25 W
EFF. = 29 %
- EDGE: 920-960 MHz / 28 V
P_{OUT} = 45 W
EFF. = 38 %
- GSM: 920-960 MHz / 28 V
P_{OUT} = 135 W
EFF. = 51 %
- EXCELLENT THERMAL STABILITY
- BeO FREE PACKAGE
- INTERNAL INPUT MATCHING
- ESD PROTECTION

DESCRIPTION

The LET9130 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 LET9130 is designed for high gain and broadband performance operating in common source mode at 28 V. Its internal matching makes it ideal for base station applications requiring high linearity.



ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25 °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	15	A
P _{DISS}	Power Dissipation (@ T _c = 70 °C)	217	W
T _j	Max. Operating Junction Temperature	200	°C
T _{STG}	Storage Temperature	-65 to +200	°C

THERMAL DATA

R _{th(j-c)}	Junction -Case Thermal Resistance	0.6	°C/W
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ELECTRICAL SPECIFICATION ($T_{CASE} = 25^{\circ}C$)**STATIC** (Per Section)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$ $I_D = 10\text{ }\mu\text{A}$	65			V
I_{DSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$			1	μA
I_{DSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 65\text{ V}$			10	μA
I_{GSS}	$V_{GS} = 5\text{ V}$ $V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 26\text{ V}$ $I_D = \text{TBD}$	3		5	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$ $I_D = 3\text{ A}$		0.19	0.4	V
G_{FS}	$V_{DS} = 10\text{ V}$ $I_D = 9\text{ A}$		12		mho
C_{OSS}	$V_{GS} = 0\text{ V}$ $V_{DD} = 28\text{ V}$ $f = 1\text{ MHz}$		90		pF
C_{RSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 26\text{ V}$ $f = 1\text{ MHz}$		4.8		pF

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
DYNAMIC ($f = 920\text{-}960\text{ MHz}$)					
P_{1dB}	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$	120	135		W
η_D	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$ $P_{OUT} = 130\text{ W}$	48	51		%
G_p	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$ $P_{OUT} = 130\text{ W}$	15	16		dB
Load mismatch	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$ $P_{OUT} = 130\text{ W}$ ALL PHASE ANGLES			10:1	VSWR
$P_{OUT(EDGE)}$	400 KHz < -60 dBc 600 KHz < -70 dBc EVM < 3 %		45		W
$\eta_{D(EDGE)}$	400 KHz < -60 dBc 600 KHz < -70 dBc EVM < 3 %		38		%
DYNAMIC ($f = 865\text{-}895\text{ MHz}$)					
P_{1dB}	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$	120	135		W
η_D	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$ $P_{OUT} = 135\text{ W}$	50	55		%
Load mismatch	$V_{DD} = 28\text{ V}$ $I_{DQ} = 1\text{ A}$ $P_{OUT} = 135\text{ W}$ ALL PHASE ANGLES			10:1	VSWR
$P_{OUT(CDMA)}^{(1)}$	750 KHz ACPR: -45dBc 1.98 MHz ACPR: -60dBc		25		W
$G_{p(CDMA)}$	$V_{DD} = 26\text{ V}$ $I_{DQ} = 800\text{ mA}$ $P_{OUT} = 25\text{ W}$	16	17		dB
$\eta_{D(CDMA)}^{(1)}$	750 KHz ACPR: -45dBc 1.98 MHz ACPR: -60dBc		29		%

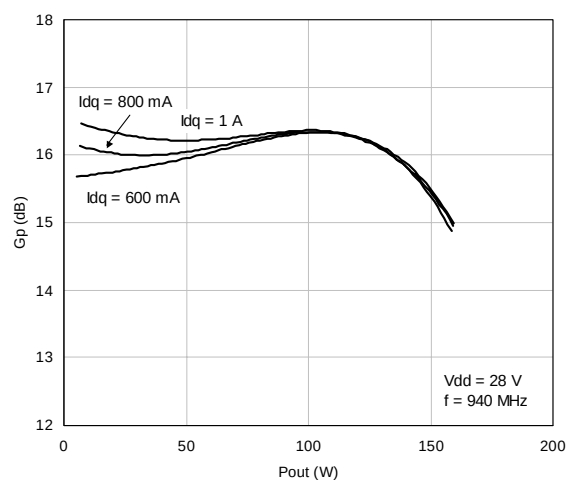
(1) IS-95 CDMA Pilot, Sync, Paging, Traffic, Codes 8 Thru 13

ESD PROTECTION CHARACTERISTICS

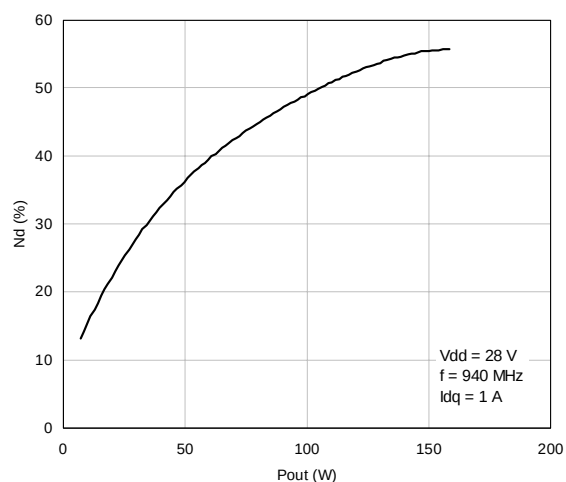
Test Conditions	Class
Human Body Model	2
Machine Model	M3

TYPICAL PERFORMANCE

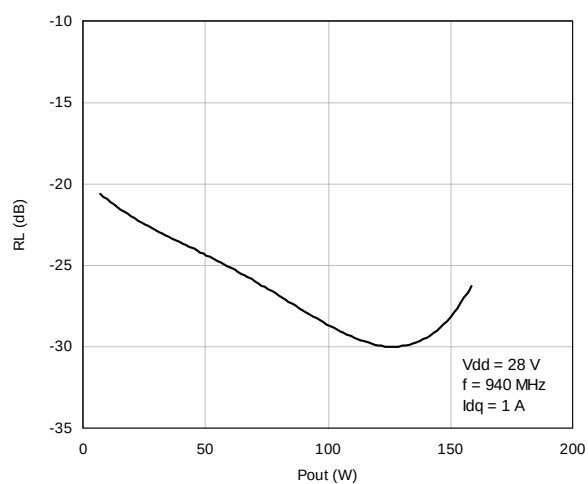
Power Gain Vs Output Power



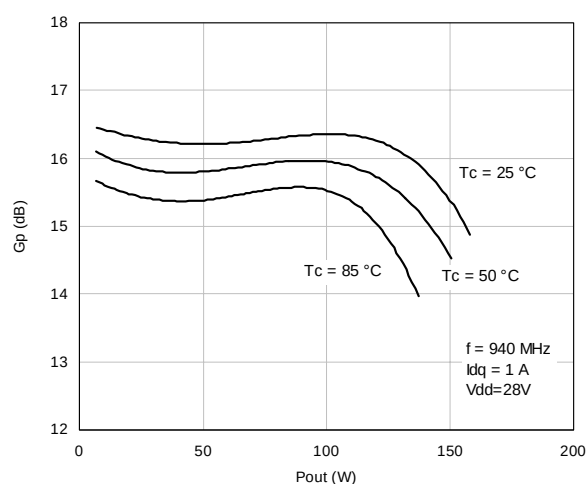
Efficiency Vs Output Power



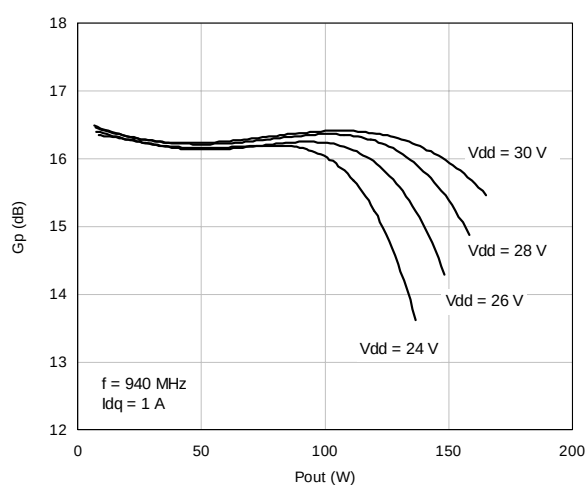
Input Return Loss Vs Output Power



Power Gain Vs Output Power



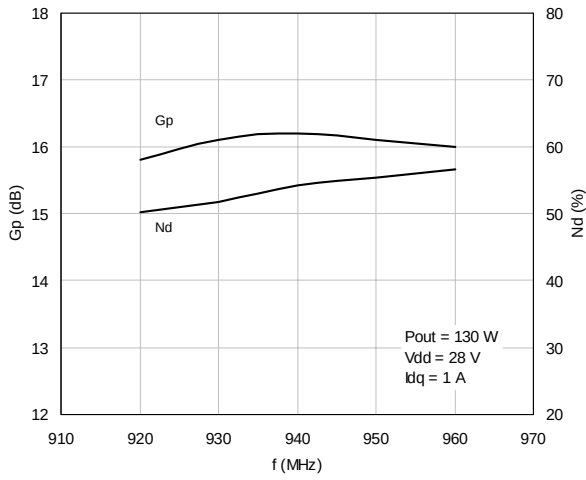
Power Gain Vs Output Power



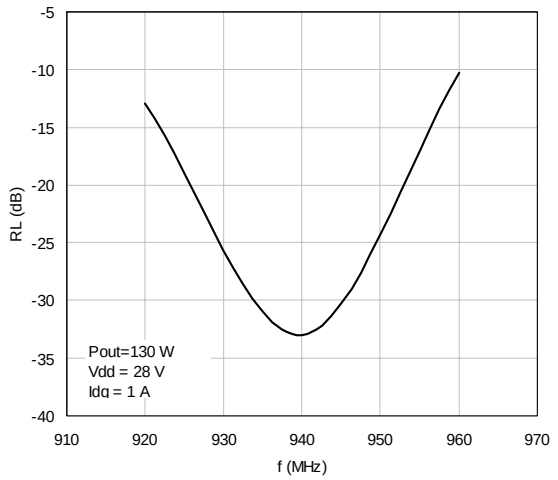
LET9130

TYPICAL PERFORMANCE (BROADBAND)

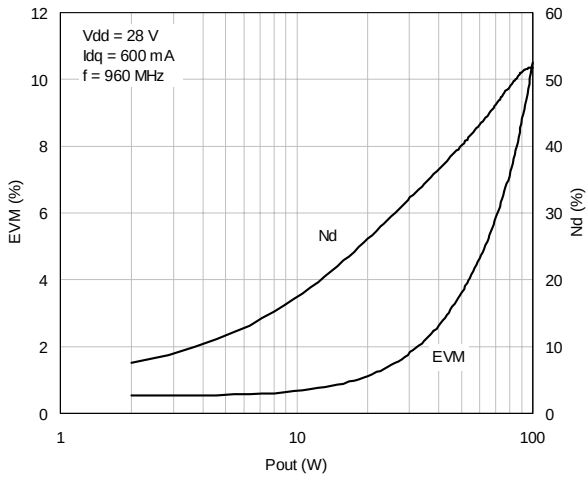
Gain-Efficiency Vs Frequency



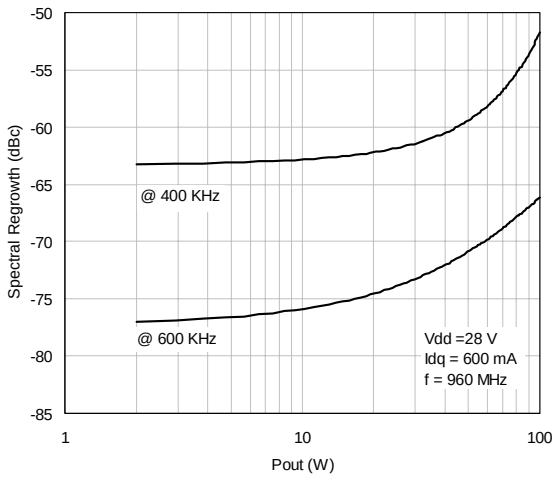
Return Loss Vs Frequency



EVM-Efficiency Vs Output Power

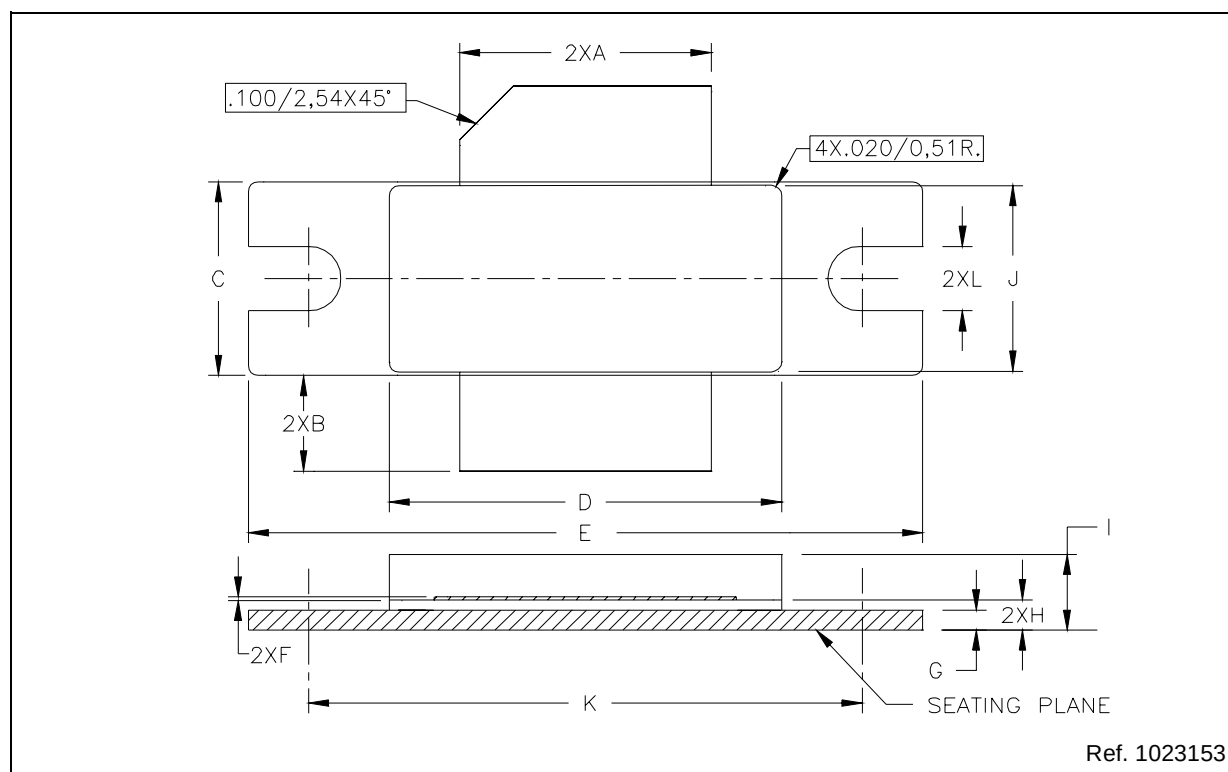


Spectral Regrowth Vs Output Power



M265 (.370 x .780 WIDE 2/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	12.57		12.83	.495		.505
B	4.32		5.33	.170		.210
C	9.65		9.91	.380		.390
D	19.61		20.02	.772		.788
E	33.91		34.16	1.335		1.345
F	0.08		0.15	.003		.006
G	0.89		1.14	.035		.045
H	1.45		1.70	.057		.067
I	3.18		4.32	.125		.170
J	9.27		9.53	.365		.375
K	27.69		28.19	1.090		1.110
L	3.00		3.51	.118		.138



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