L-Band Avionics Transistor

- Silicon LDMOS Technology
- P_{OUT-PK} = 20W @ ELM Mode S/6.4%/50V; (P_{AVG} = 1.28W)
- 1030MHz or 1090MHz Operating Frequency
- Internal Impedance Pre-matched Device
- Specified For Use Under Class AB Operation
- Metal Based Package Sealed With Ceramic-Epoxy Lid
- Gold Metallization System: Chip - Wire Bond - Package
- Package Size: W=0.800″ (20.32mm), L=0.230″ (5.84mm)
- 100% High Power RF Tested in Broadband RF Test Fixture

PARAMETER	SYM	MIN	TYP	MAX	UNITS	TEST CONDITIONS
DC ELECTRICAL SPECIFICATIONS						
Drain-Source Breakdown Voltage	BV_{DSS}	90	--	--	V	I_{DS}=5mA, V_{GS}=0V, T_{F1}, S1
Drain Leakage Current	I_{DSS}	--	--	50	uA	V_{DS}=50V, V_{GS}=0V, T_{F1}, S1
Operating Gate Voltage	V_{GS}	2.5	--	5.0	V	V_{DS}=5V, I_D=10mA, T_{F1}, S1
Gate Leakage Current	I_{GSS}	--	--	20	uA	V_{GS}=5V, V_{DS}=0V, T_{F1}, S1
RF ELECTRICAL SPECIFICATIONS						
Input Return Loss	IRL	-18	-10	-7	dB	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1
Power Output	Po	20	25	40	W	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1
Power Gain	G	14	15	17	dB	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1
Drain Efficiency	N_D	37	43	75	%	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1
Pulse Amplitude Droop	D	-0.50	-0.20	+0.20	dB	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1
Load Mismatch Stability	VSWR-S	3:1	--	--	--	PIN1, V1, I_{DQ1}, PW1, DF1, F1, F2, T_{F1}, S1

PARAMETER	SYM	MIN	NOM	MAX	UNITS	NOTES
RF TEST CONDITIONS						
Input Power 1	PIN1	--	0.8	--	W	--
Drain Supply Voltage 1	V1	--	50	--	V	--
Quiescent Drain Current 1	I_{DQ1}	--	10	--	mA	--
Pulse Format	PW1	--	*	--	--	*ELM mode S, 48 x (32µs ON, 18µs off), 6.4%
Duty Factor 1	DF1	--	6.4	--	%	--
Frequency 1	F1	--	1030	--	MHz	--
Frequency 2	F2	--	1090	--	MHz	--
Flange Temperature 1	T_{F1}	25	30	35	°C	--

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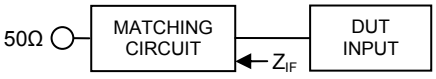
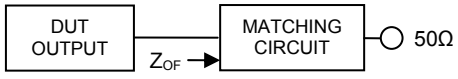
PARAMETER	SYM	MIN	MAX	UNITS	SCREEN	CONDITIONS
MAXIMUM RATINGS						
Drain-Source Voltage	V_{DS}	--	100	V	BD	T_F = 25°C
Gate-Source Voltage	V_{GS}	-0.5	12	V	BD	T_F = 25°C
Storage Temperature Range	T_{STG}	-55	+150	°C	BD	--
Operating Junction Temperature	T_J	-55	+200	°C	BD	--
PROCESS SPECIFICATIONS						
DC Wafer Probe	--	--	--	--	100%	Per Integra Spec
Wafer DC, RF Qualification	--	--	--	--	Q1	Per Integra Spec
Wire Bond Strength	--	--	--	--	LM	Per Integra Spec
Pre-cap Visual Inspection	--	--	--	--	100%	Per Integra Spec
Gross Leak Test – MIL-STD-750D	--	--	--	--	100%	Method 1071.6 C
THERMAL RESISTANCE						
Peak Thermal Resistance Per Rated RF Specification	$R_{TH(JC)}$	--	0.24	°C/W	BD	T_F = 25°C
SCREENING LEVELS						
Screening Level 1	S1	100	--	--	%	--
Parameter Qualified By Design	BD	--	--	--	--	--
Parameter Qualified By 3 Pieces (min) Per Wafer	Q1	--	--	--	--	--
Parameter Qualified By Assembly Line Monitor	LM	--	--	--	--	--

RF TEST FIXTURE – BROADBAND

► Broadband RF Test Fixture. Provides Device Impedance Matching to 50Ω Across the Rated Operating Frequency Range.

► Electronic CAD Drawing File Available Upon Request. Includes Circuit Dimensions and Parts List.

► Reference Design PCB: Rogers 6010.2, DK=10.2.

FREQUENCY (MHz)	Z_{IF}(Ω)	Z_{OF}(Ω)
1030	0.8 – j0.75	8.8 + j8.3
1090	0.8 – j0.25	11.8 – j10.3
Impedance Definition		

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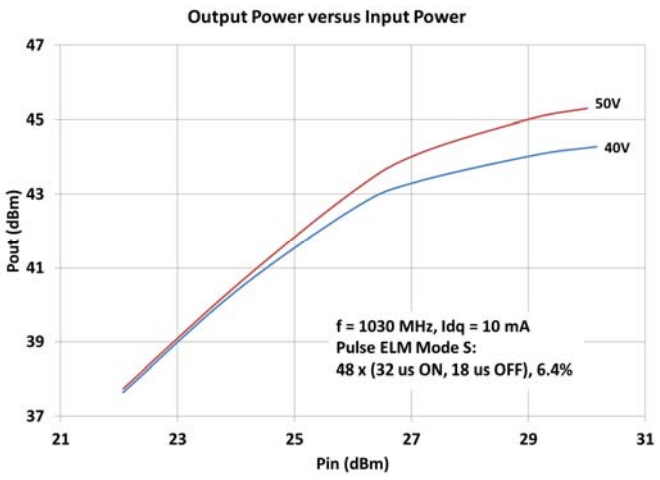
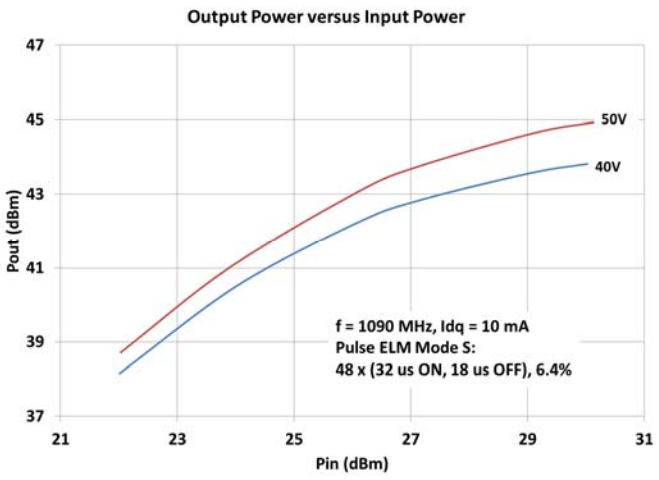
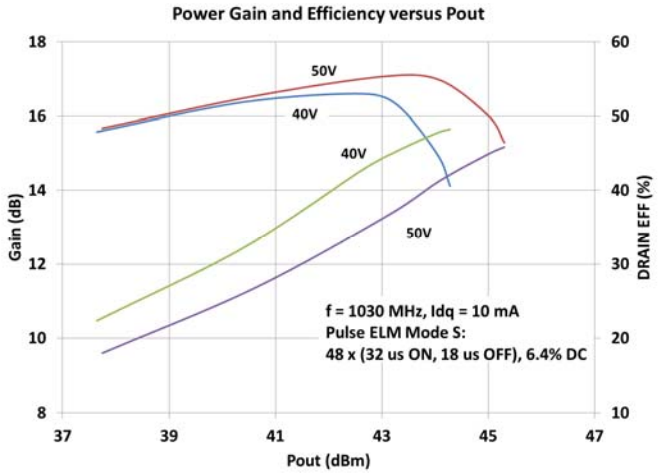
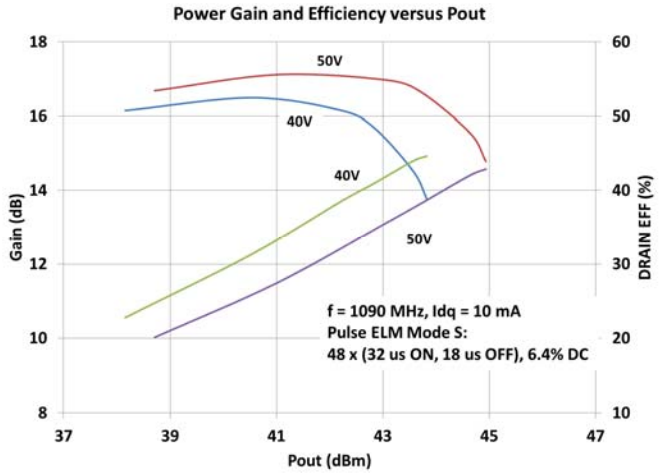
TYPICAL PERFORMANCE









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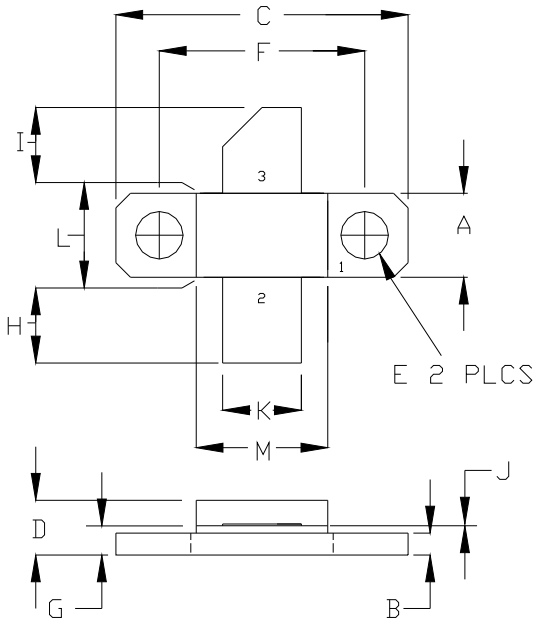
PACKAGE OUTLINE DRAWING



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.225	0.235	5.71	5.96
B	0.055	0.065	1.40	1.65
C	0.795	0.805	20.19	20.44
D	0.140	0.160	3.55	4.06
E	0.125	0.135	3.18	3.43
F	0.557	0.567	14.14	14.40
G	0.077	0.087	1.95	2.20
H	0.230	0.240	5.84	6.09
I	0.230	0.240	5.84	6.09
J	0.004	0.006	0.10	0.15
K	0.210	0.220	5.33	5.59
L	0.225	0.235	5.71	5.96
M	0.355	0.365	9.01	9.27

PIN SCHEDULE	
1	SOURCE
2	GATE
3	DRAIN

NOTE: LID-PL32-1

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DEFINITIONS	
DATA SHEET STATUS	
Proposed Specification	This data sheet contains proposed specifications.
Preliminary Specification	This data sheet contains specifications based on preliminary measurements and data.
Product Specification	This data sheet contains final product specifications.
MAXIMUM RATINGS	
Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to maximum values for extended periods of time may affect device reliability.	

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