

Avionics Band RF Power LDMOS FET

The high power transistor part number ILD1011M30 is designed for Avionics systems operating at 1030-1090 MHz. This LDMOS FET device under 50us, 2% pulse format supplies a minimum of 30 watt of peak pulse power. All devices are 100% screened for large signal parameters.



Silicon LDMOS FET

- High Power Gain
- Superior thermal stability
- Gold Metal

Class AB Operation

- Gate biased to $I_{DQ}=10mA$

Configuration

- Common Source

Gold Metal

- Maximum Reliability

BeO - Free Package

- Metal Based
- Epoxy Seal

Epoxy Sealed Lid

- Gross Leak Qualified

RF Test Fixture

- Broadband
- Matched to 50Ω
- Long-term Correlation
- 100% Device RF Screening
- No External Tuning Allowed

TYPICAL DATA TYPICAL DATA TYPICAL DATA TYPICAL DATA

Freq (GHz)	PW (us)	Duty (%)	V _{DS} (V)	P _{IN} (W)	IRL (dB)	P _{out} (W)	G _p (dB)	I _D (A)	VSWR 3:1
1.030	50	2	28.0	1	14	46.3	16.66	3.50	P
1.090	50	2	28.0	1	13	40.3	16.05	2.75	P

I_{DQ}=10mA

MAXIMUM RATINGS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Drain-Source Voltage	V_{DS}	--	62	V	--
BD	Gate-Source Voltage	V_{GS}	-0.5	12	V	--
BD	Storage Temperature Range	T_{STG}	-55	+150	°C	--
BD	Operating Junction Temperature Range	T_J	-55	+200	°C	--
Note	Screen 'BD' = parameter qualified By Design.					

THERMAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance	$R_{TH(JC)}$	--	0.17	°C/W	$V_{DS}=28V, I_{DQ}=10mA, T_F=25\pm5^\circ C, P_{IN}=1W$
Note	Screen 'BD' = parameter qualified By Design.					

PROCESSING SPECIFICATIONS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	DC Wafer Probe	--	--	--	--	Per Integra specification.
Q1	Wafer DC and RF Qualification	--	--	--	--	Per Integra specification.
LM	Wire Bond Strength	--	--	--	--	Line monitor per Integra specification.
100%	Pre-cap visual inspection	--	--	--	--	Per Integra specification
100%	Gross leak test	--	--	--	--	MIL-STD-750D, Method 1071, Test Condition C
Note	Screen 'Q1' = parameter is qualified by assembly and test of 3 pieces minimum per wafer.					
Note	Screen 'LM' = parameter is qualified by assembly line monitor.					

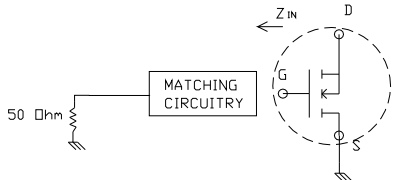
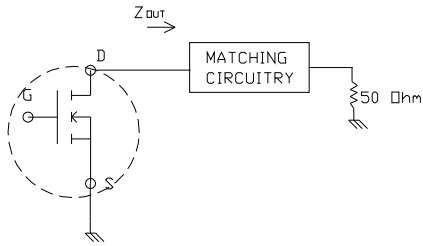
DC ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Drain-Source Breakdown Voltage	BV_{DSS}	62	--	V	$I_{DS}=20mA, V_{GS}=0V, T_F=25\pm5^\circ C.$
100%	Drain Leakage Current	I_{DSS}	--	3	uA	$V_{DS}=28V, V_{GS}=0V, T_F=25\pm5^\circ C.$
100%	Operating Gate Voltage	V_{GS}	2.75	4.75	V	$I_{DS}=100mA, V_{DS}=5V, T_F=25\pm5^\circ C.$
100%	Gate Leakage Current	I_{GSS}	--	1.0	uA	$V_{GS}=5V, V_{DS}=0V, T_F=25\pm5^\circ C.$

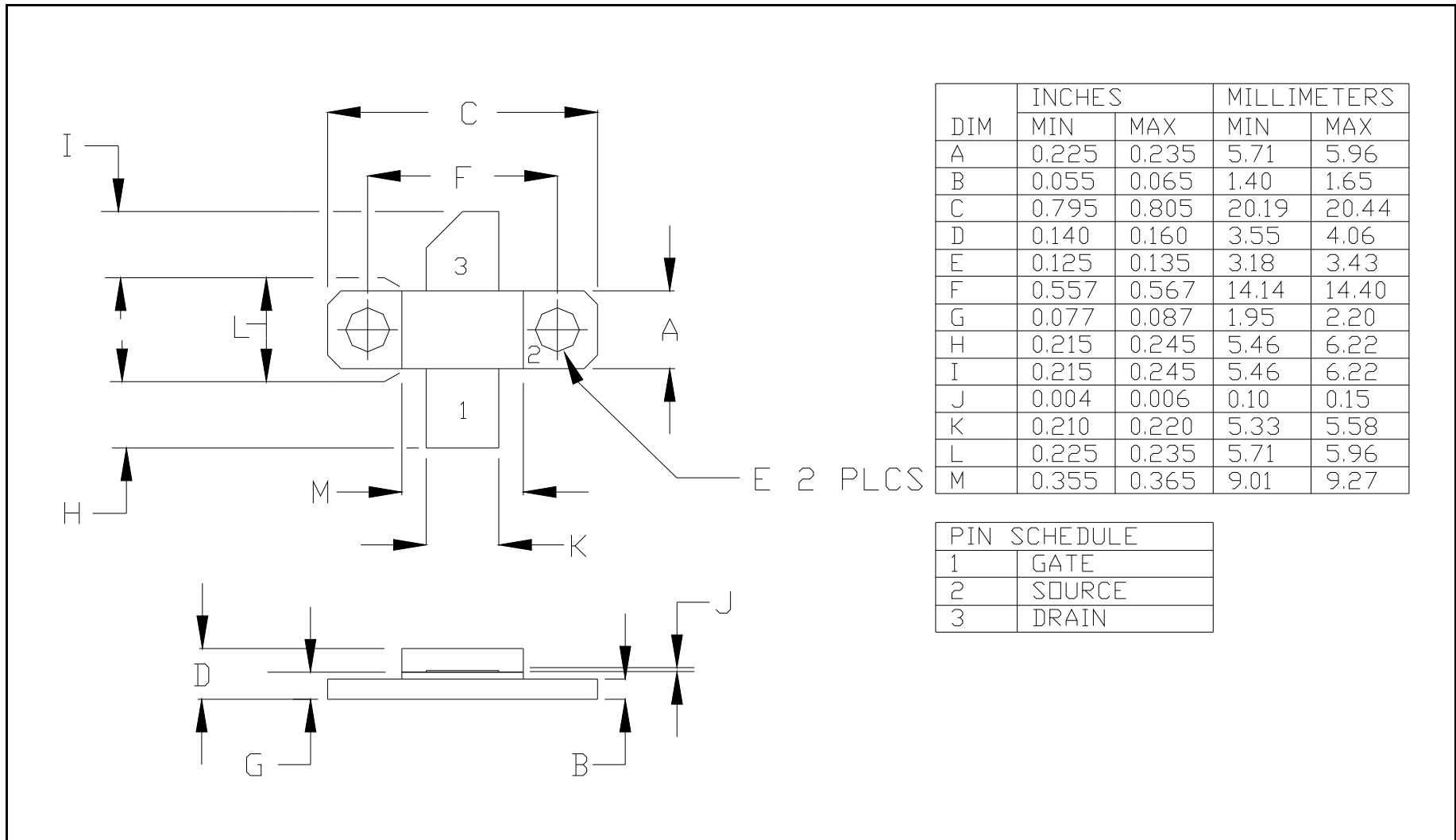
RF ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	-18	-10	dB	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$.
100%	Drain Efficiency	Nd	40	80	%	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$.
100%	Power Gain	Gp	14.77	20.00	dB	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$.
100%	Output Power	Pout	30	100	W	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$.
100%	Stability into 3:1 VSWR	VSWR-S	--	3:1	--	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$ Rotate 3:1 output VSWR through 360° phase. No oscillatory or pulse break-up characteristics allowed on detected output pulse.
100%	Load Mismatch Tolerance	LMT	--	3:1	--	$V_{DS}=28V$, $P_{in}=1W$, Pulse=PW1 @ F1, F2, $T_F=25\pm5^\circ C$, $I_{DQ}=10mA$, Rotate 3:1 output VSWR through 360° phase.
Note 1	F1=1030 MHz, F2=1090 MHz.					
Note 2	Pulse format: PW1= 50us, 2%					
Note 3	T_F = Device flange temperature.					
Note 4	Screen 'BD' = parameter qualified By Design.					

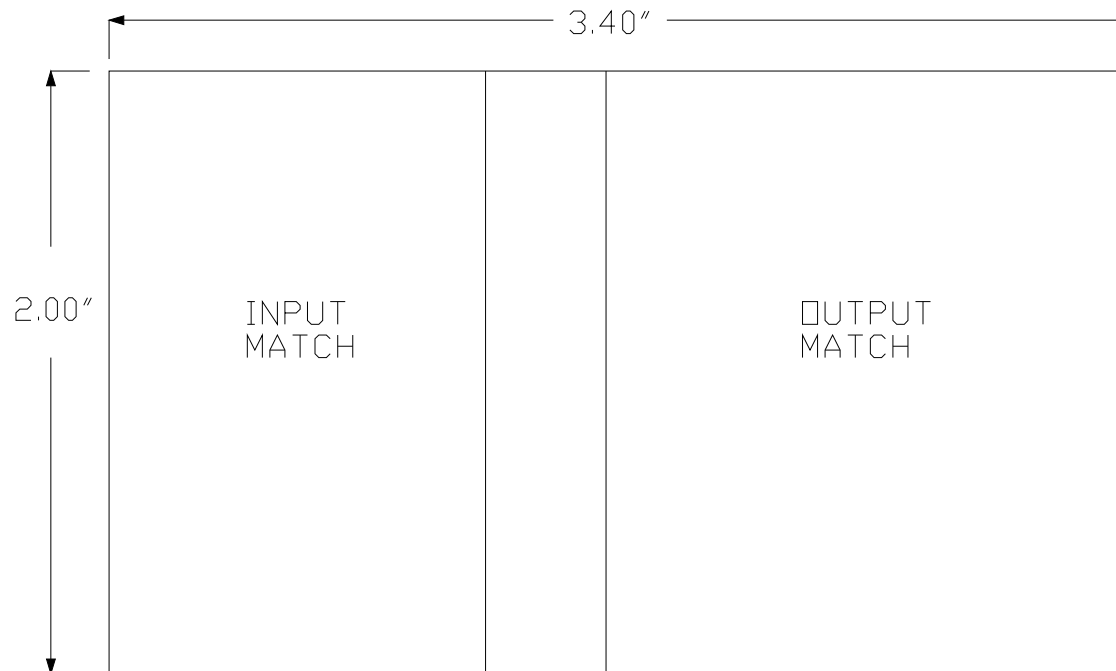
RF TEST FIXTURE IMPEDANCE CHARACTERISTICS

Frequency (MHz)	$Z_{IF} (\Omega)$	$Z_{OF} (\Omega)$
1030	1.20 -j1.51	2.84 +j1.18
1090	1.21 -j1.24	3.33 +j1.48
Impedance Definition		

PACKAGE DIMENSIONAL OUTLINE DRAWING



RF TEST FIXTURE



CONTACT FACTORY FOR RF TEST FIXTURE CAD DRAWING WITH CIRCUIT DIMENSIONS

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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