

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

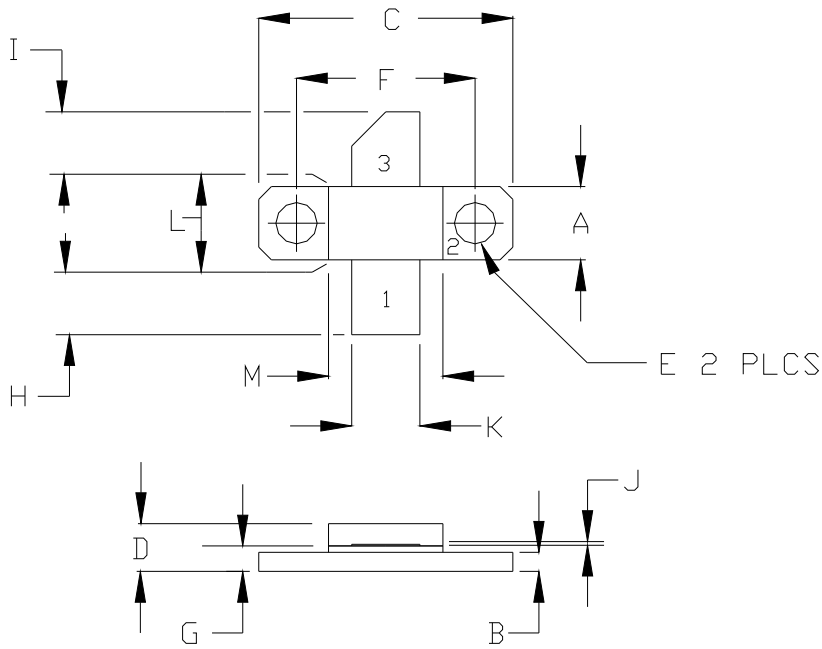


| PARAMETER | SYM | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|-------------------------------------|------------|-------|-------|-------|-------------|---|
| DC ELECTRICAL SPECIFICATIONS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | 90 | -- | -- | V | $I_{DS}=5mA, V_{GS}=0V, T_{F1}, S1$ |
| Drain Leakage Current | I_{DSS} | -- | -- | 50 | μA | $V_{DS}=50V, V_{GS}=0V, T_{F1}, S1$ |
| Operating Gate Voltage | V_{GS} | 2.5 | -- | 4.5 | V | $V_{DS}=5V, I_D=10mA, T_{F1}, S1$ |
| Gate Leakage Current | I_{GSS} | -- | -- | 20 | μA | $V_{GS}=5V, V_{DS}=0V, T_{F1}, S1$ |
| RF ELECTRICAL SPECIFICATIONS | | | | | | |
| Input Return Loss | IRL | -18 | -10 | -7 | dB | PIN1, V1, I_{DQ1} , PW1, DF1, F1, F2, $T_{F1}, S1$ |
| Power Output | P_o | 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 | 60 | % | 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, $T_{F1}, S1$ |
| DC & 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 (32 μs ON, 18 μs 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 | $^{\circ}C$ | -- |

| PARAMETER | SYM | MIN | MAX | UNITS | SCREEN | CONDITIONS |
|--|--------------|------|------|--------------------|--------|--------------------------|
| MAXIMUM RATINGS | | | | | | |
| Drain-Source Voltage | V_{DS} | -- | 100 | V | BD | $T_F = 25^\circ\text{C}$ |
| Gate-Source Voltage | V_{GS} | -0.5 | 12 | V | BD | $T_F = 25^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 | +150 | $^\circ\text{C}$ | BD | -- |
| Operating Junction Temperature | T_J | -55 | +200 | $^\circ\text{C}$ | 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 | $^\circ\text{C/W}$ | BD | $T_F = 25^\circ\text{C}$ |
| 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) | $Z_{IF}(\Omega)$ | $Z_{OF}(\Omega)$ |
| 1030 | $1.4 - j0.35$ | $6.1 + j8.0$ |
| 1090 | $1.4 + j0.35$ | $7.4 - j11.5$ |
| Impedance Definition | | |

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 | 0.215 | 0.245 | 5.46 | 6.22 |
| I | 0.215 | 0.245 | 5.46 | 6.22 |
| J | 0.004 | 0.006 | 0.10 | 0.15 |
| K | 0.210 | 0.220 | 5.33 | 5.58 |
| L | 0.225 | 0.235 | 5.71 | 5.96 |
| M | 0.355 | 0.365 | 9.01 | 9.27 |

| PIN SCHEDULE | |
|--------------|--------|
| 1 | GATE |
| 2 | SOURCE |
| 3 | DRAIN |

| 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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