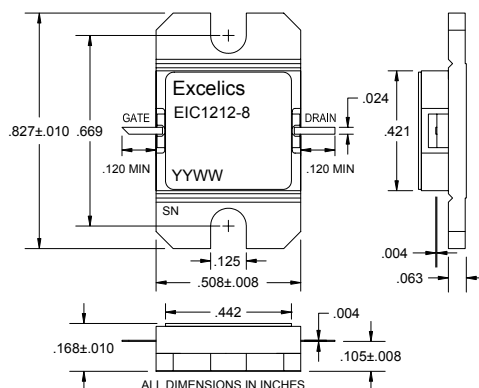


UPDATED 01/04/2006

12.20-12.70 GHz 8-Watt Internally Matched Power FET

FEATURES

- 12.20– 12.70GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.0 dBm Output Power at 1dB Compression
- 6.5 dB Power Gain at 1dB Compression
- 27% Power Added Efficiency
- -46 dBc IM3 at PO = 28.5 dBm SCL
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R_{TH}



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



Caution! ESD sensitive device.

| SYMBOL | PARAMETERS/TEST CONDITIONS ¹ | MIN | TYP | MAX | UNITS |
|------------|--|------|------|-----------|--------------------|
| P_{1dB} | Output Power at 1dB Compression $f = 12.20-12.70\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$ | 38.5 | 39.0 | | dBm |
| G_{1dB} | Gain at 1dB Compression $f = 12.20-12.70\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$ | 5.5 | 6.5 | | dB |
| ΔG | Gain Flatness $f = 12.20-12.70\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$ | | | ± 0.6 | dB |
| PAE | Power Added Efficiency at 1dB Compression $f = 12.20-12.70\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$ | | 27 | | % |
| I_{d1dB} | Drain Current at 1dB Compression $f = 12.20-12.70\text{GHz}$ | | 2300 | 2600 | mA |
| IM3 | Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 28.5\text{ dBm S.C.L}^2$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 65\% IDSS$ $f = 12.70\text{GHz}$ | -43 | -46 | | dBc |
| I_{DSS} | Saturated Drain Current $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$ | | 4000 | 5000 | mA |
| V_P | Pinch-off Voltage $V_{DS} = 3\text{ V}$, $I_{DS} = 40\text{ mA}$ | | -2.5 | -4.0 | V |
| R_{TH} | Thermal Resistance ³ | | 3.5 | 4.0 | $^\circ\text{C/W}$ |

Note: 1) Tested with 100 Ohm gate resistor.

2) S.C.L. = Single Carrier Level.

3) Overall R_{th} depends on case mounting.

ABSOLUTE MAXIMUM RATING^{1,2}

| SYMBOL | CHARACTERISTIC | VALUE |
|-----------|-------------------------|---------------------------|
| V_{DS} | Drain to Source Voltage | 10 V |
| V_{GS} | Gate to Source Voltage | -4.5 V |
| I_{DS} | Drain Current | $IDSS$ |
| I_{GSF} | Forward Gate Current | 80 mA |
| P_{IN} | Input Power | @ 3dB compression |
| P_T | Total Power Dissipation | 38 W |
| T_{CH} | Channel Temperature | 175 $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | -65/+175 $^\circ\text{C}$ |

Notes:

1. Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.

2. Bias conditions must also satisfy the following equation $P_T < (T_{CH} - T_{PKG})/R_{TH}$; where T_{PKG} = temperature of package, and $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$.

Specifications are subject to change without notice.

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page 1 of 1

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