



# EIC6472-8

## 6.40-7.20 GHz 8-Watt Internally-Matched Power FET

### FEATURES

- 6.40 – 7.20 GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.5 dBm Output Power at 1dB Compression
- 9.5 dB Power Gain at 1dB Compression
- 36% Power Added Efficiency
- -46 dBc IM3 at  $P_o = 28.5$  dBm SCL
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and  $R_{TH}$



### DESCRIPTION

The EIC6472-8 is a high power, highly linear, single stage MFET amplifier in a flange mount package. This amplifier features Excelics' unique MESFET transistor technology.



Caution! ESD sensitive device.

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

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS
$P_{1dB}$	Output Power at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	38.5	39.5		dBm
$G_{1dB}$	Gain at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	8.5	9.5		dB
$\Delta G$	Gain Flatness $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$			$\pm 0.6$	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$ $f = 6.40\text{-}7.20\text{GHz}$		36		%
$I_{d1dB}$	Drain Current at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$		2200	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. <sup>2</sup> $V_{DS} = 10\text{ V}, I_{DSQ} \approx 65\% I_{DSS}$ $f = 7.20\text{ GHz}$	-43	-46		dBc
$I_{DSS}$	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		4000	4500	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 <sup>3</sup>		3.5	4	$^\circ\text{C/W}$

Notes:

1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall  $R_{th}$  depends on case mounting.

Specifications are subject to change without notice.

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## ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	VALUE
V <sub>DS</sub>	Drain to Source Voltage	10 V
V <sub>GS</sub>	Gate to Source Voltage	-4.5 V
I <sub>DS</sub>	Drain Current	IDSS
I <sub>GSF</sub>	Forward Gate Current	80 mA
P <sub>IN</sub>	Input Power	@ 3dB compression
P <sub>T</sub>	Total Power Dissipation	32 W
T <sub>CH</sub>	Channel Temperature	150°C
T <sub>STG</sub>	Storage Temperature	-65/+150°C

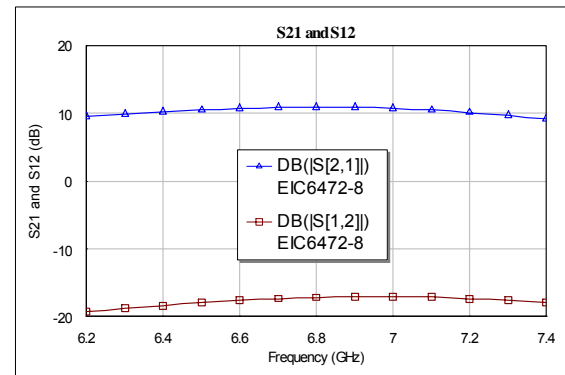
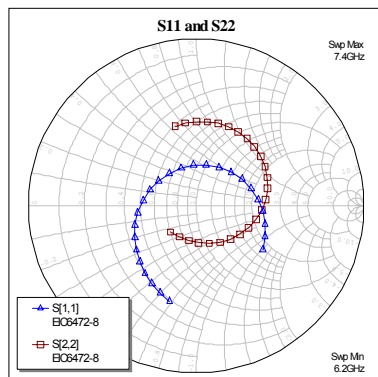
### Notes:

- Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
- Bias conditions must also satisfy the following equation  $P_T < (T_{CH} - T_{PKG})/R_{TH}$ ; where  $T_{PKG}$  = temperature of package, and  $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$ .

## PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)

V<sub>DS</sub> = 10 V, I<sub>DSQ</sub> ≈ 2200mA



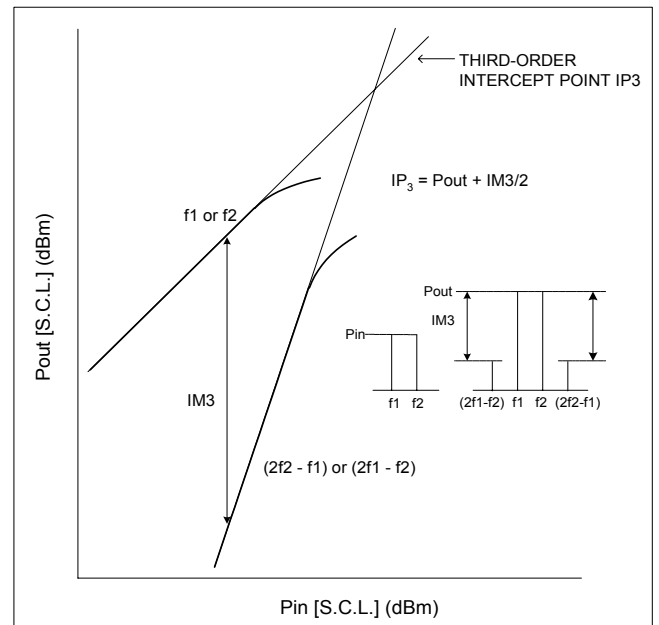
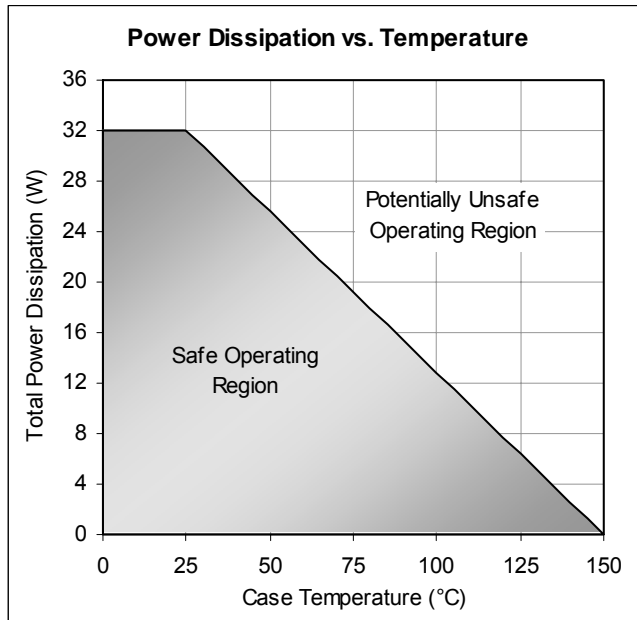
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.8	0.7691	-59.89	2.4709	37.54	0.0842	-23	0.3937	169.91
6.0	0.6925	-81.02	2.737	11.91	0.097	-47.68	0.4423	135.72
6.2	0.5944	-105.44	3.0092	-14.9	0.1089	-73.62	0.493	104.65
6.4	0.4754	-134.77	3.2245	-43.07	0.1208	-101.3	0.5112	75.2
6.6	0.3499	-173.19	3.4136	-72.55	0.1315	-129.81	0.4959	45.51
6.8	0.2507	129.61	3.4973	-103.52	0.1389	-160.34	0.4386	13.78
7.0	0.2665	59.43	3.4291	-135.28	0.1408	169	0.3388	-22.61
7.2	0.3712	5.6	3.2015	-167.15	0.1359	138.35	0.2387	-70.85
7.4	0.4764	-33.41	2.8736	162.48	0.1272	108.36	0.2196	-134.09
7.6	0.5578	-67.13	2.5143	132.86	0.1125	79.22	0.3012	174.34
7.8	0.6096	-97.26	2.1393	104.58	0.0965	51.48	0.4095	141.65
8.0	0.6451	-124.95	1.7837	77.58	0.0825	26.06	0.5064	118.52

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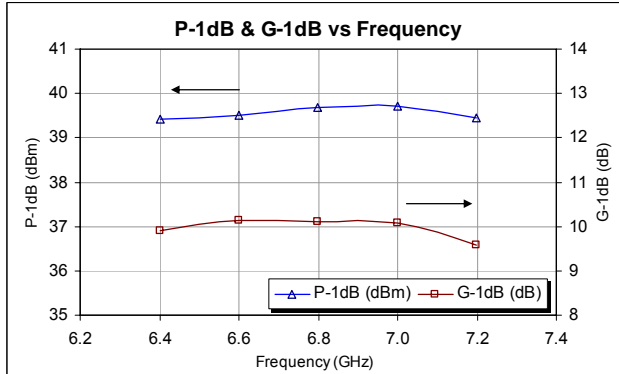
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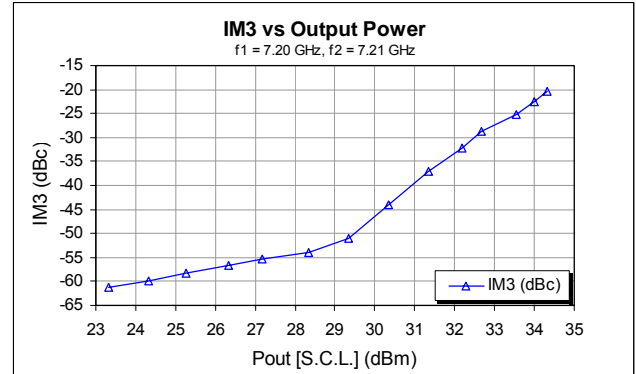
## Power De-rating Curve and IM3 Definition



## Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 2200\text{ mA}$ )

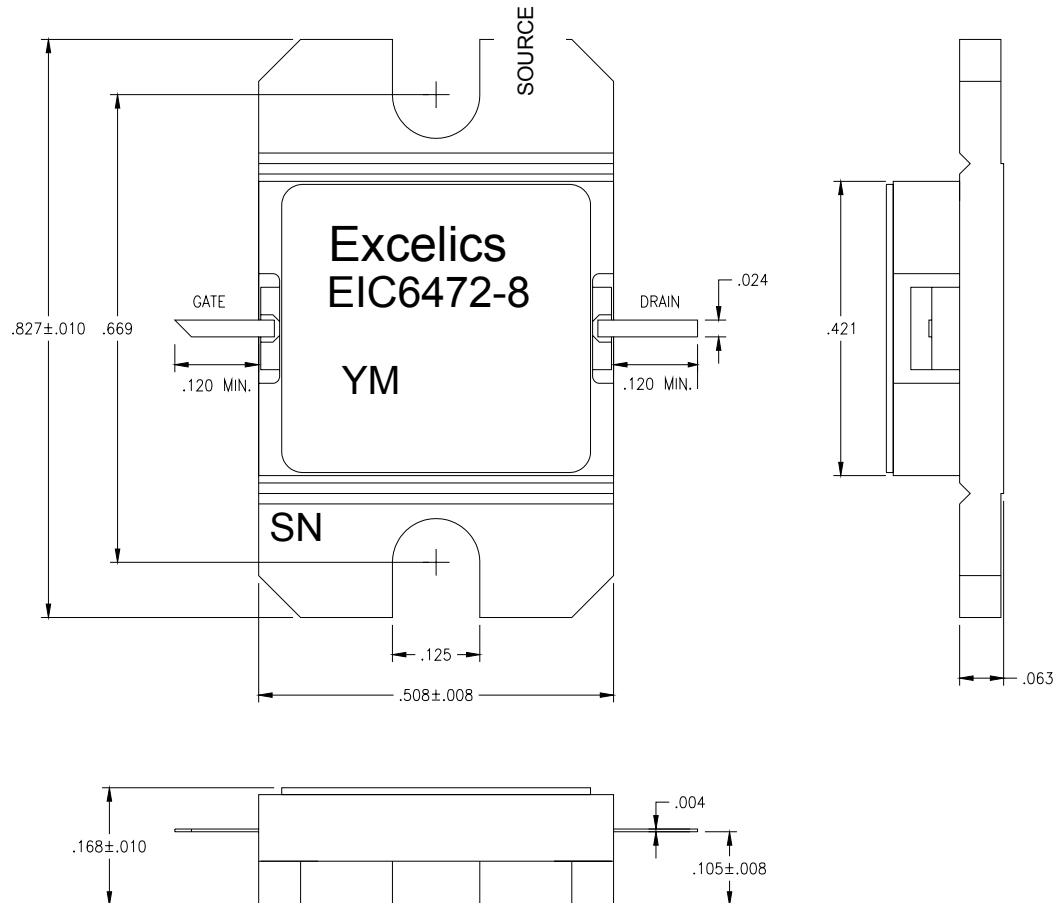


## Typical IM3 Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 65\% IDSS$ )



## PACKAGE OUTLINE

Dimensions in inches, Tolerance  $\pm .005$  unless otherwise specified



## ORDERING INFORMATION

Part Number	Grade <sup>1</sup>	$f_{\text{Test}}$ (GHz)	$P_{1\text{dB}}$ (min)	$IM_3$ (min) <sup>2</sup>
EIC6472-8	Industrial	6.4-7.2 GHz	38.5	-43

- Notes: 1. Contact factory for military and hi-rel grades.  
2. Exact test conditions are specified in "Electrical Characteristics" table.