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 Po = 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°C)

SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 6.40-7.20GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA	38.5	39.5		dBm
G_{1dB}	Gain at 1dB Compression f = 6.40-7.20GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA	8.5	9.5		dB
ΔG	Gain Flatness f = 6.40-7.20GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 2200mA f = 6.40-7.20GHz		36		%
Id_{1dB}	Drain Current at 1dB Compression f = 6.40-7.20GHz		2200	2600	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 28.5 dBm S.C.L[2] V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS f = 7.20 GHz	-43	-46		dBc
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		4000	4500	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 40 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		3.5	4	°C/W

Notes:
1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall Rth depends on case mounting.

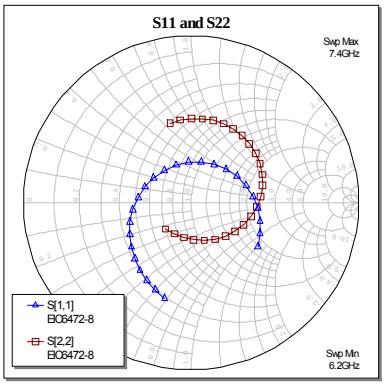
ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION[1,2]

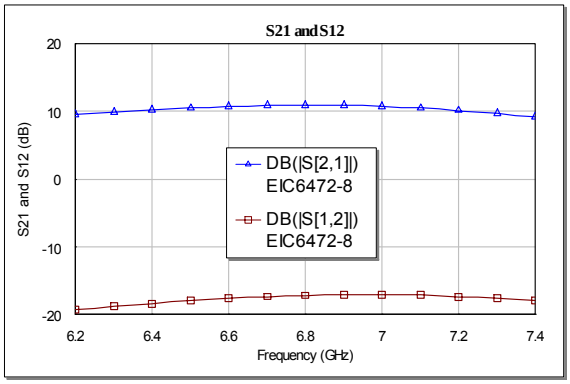
SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	10 V
V_{GS}	Gate to Source Voltage	-4.5 V
I_{DS}	Drain Current	IDSS
I_{GSF}	Forward Gate Current	80 mA
P_{IN}	Input Power	@ 3dB compression
P_T	Total Power Dissipation	32 W
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/+150°C

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 $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$.

PERFORMANCE DATA

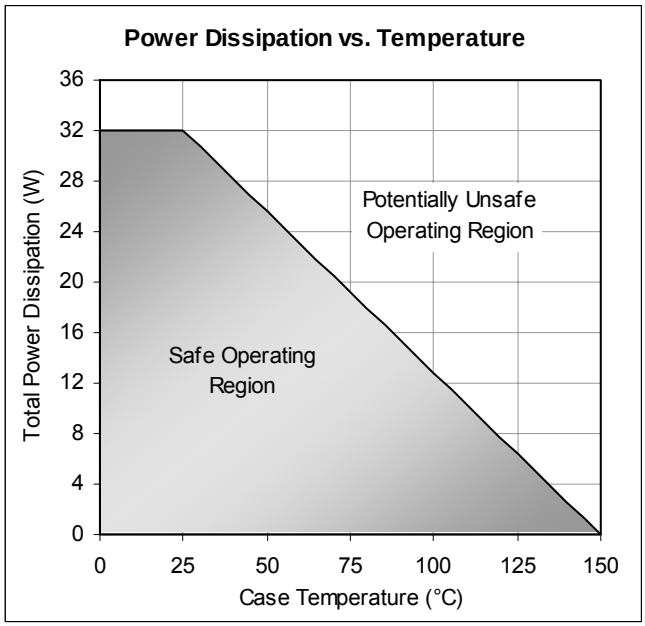
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 2200mA

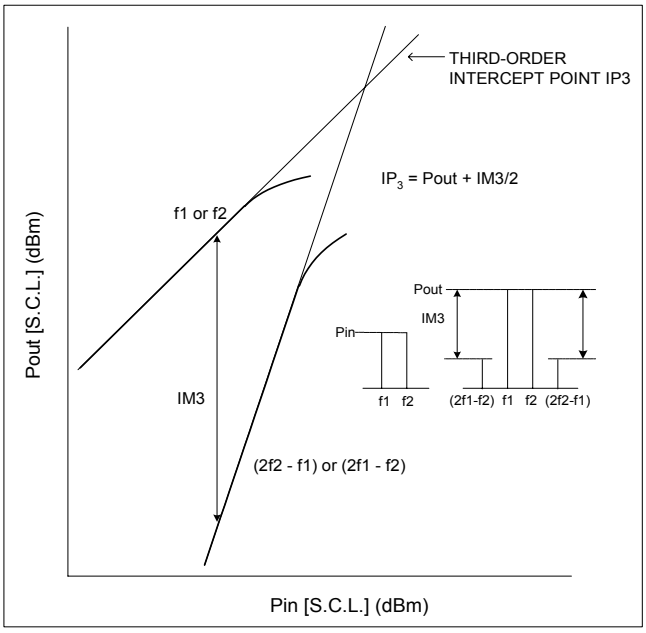




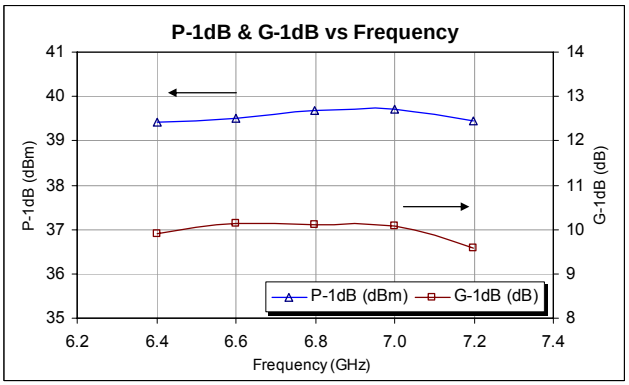
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.8	0.7691	-59.89	2.4709	37.54	0.0842	-23	0.3937	169.91
6.0	0.6925	-81.02	2.737	11.91	0.097	-47.68	0.4423	135.72
6.2	0.5944	-105.44	3.0092	-14.9	0.1089	-73.62	0.493	104.65
6.4	0.4754	-134.77	3.2245	-43.07	0.1208	-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

Power De-rating Curve and IM3 Definition

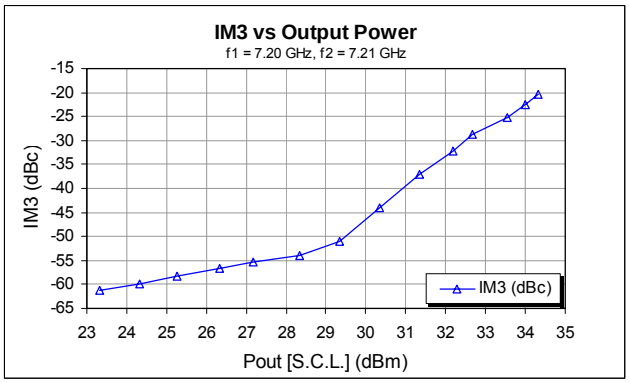




Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 2200 mA)

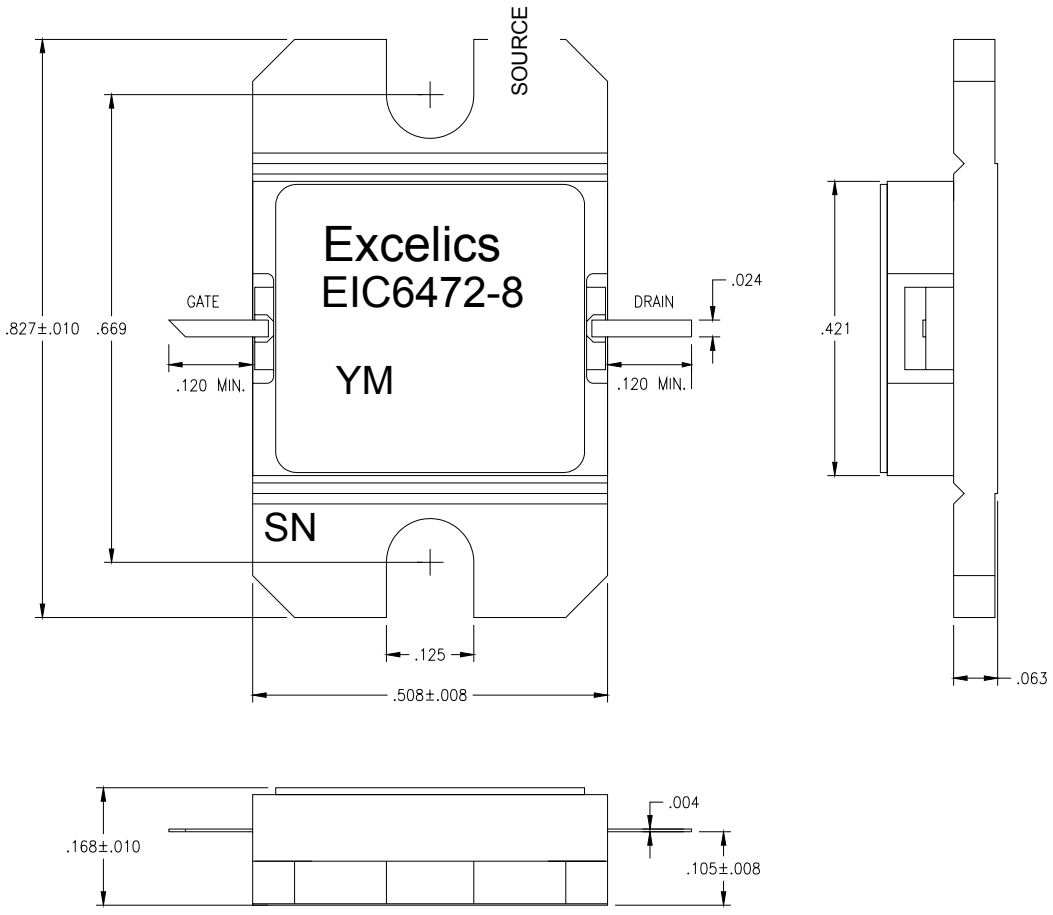


Typical IM3 Data (V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS)



PACKAGE OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified



ORDERING INFORMATION

Part Number	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)	IM_3 (min)[2]
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.