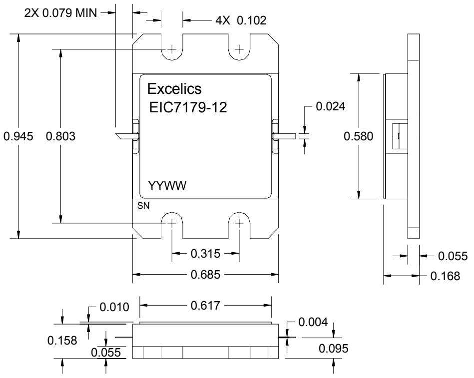
EIC7179-12

ISSUED 02/29/2008

7.10-7.90 GHz 12-Watt Internally Matched Power FET



FEATURES

- **7.10– 7.90GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+41.5 dBm Output Power at 1dB Compression**
- **9.0 dB Power Gain at 1dB Compression**
- **38% Power Added Efficiency**
- **-47 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°C)

Caution! ESD sensitive device.

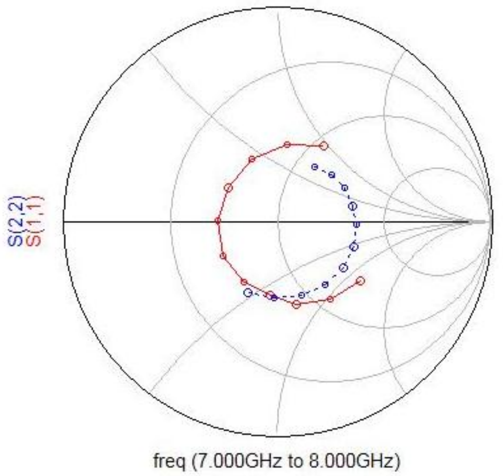
SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 7.10-7.90GHz V_{DS} = 10 V, $I_{DSQ} \approx$ 3250mA	40.5	41.5		dBm
G_{1dB}	Gain at 1dB Compression f = 7.10-7.90GHz V_{DS} = 10 V, $I_{DSQ} \approx$ 3250mA	8.0	9.0		dB
ΔG	Gain Flatness f = 7.10-7.90GHz V_{DS} = 10 V, $I_{DSQ} \approx$ 3250mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, $I_{DSQ} \approx$ 3200mA f = 7.10-7.90GHz		38		%
Id_{1dB}	Drain Current at 1dB Compression f = 7.10-7.90GHz		3500	4150	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, $I_{DSQ} \approx$ 65% IDSS f = 7.90GHz	-45	-47		dBc
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		6500	7900	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 62 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		2.3	2.8	°C/W

Note: 1) Tested with 50 Ohm gate resistor. 2) S.C.L. = Single Carrier Level. 3) Overall Rth depends on case mounting.

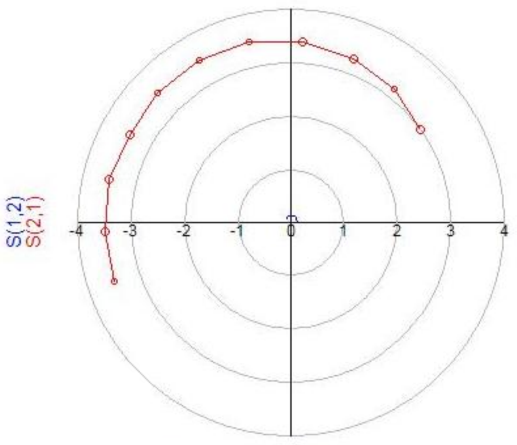
MAXIMUM RATING AT 25°C[1,2]

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	15	10V
Vgs	Gate-Source Voltage	-5	-4V
Igsf	Forward Gate Current	129.6mA	43.2mA
Igsr	Reverse Gate Current	-21.6mA	-7.2mA
Pin	Input Power	37dBm	@ 3dB Compression
Tch	Channel Temperature	175 °C	175 °C
Tstg	Storage Temperature	-65 to +175 °C	-65 to +175 °C
Pt	Total Power Dissipation	54W	54W

Note: 1. Exceeding any of the above ratings may result in permanent damage.
2. Exceeding any of the above ratings may reduce MTTF below design goals.



freq (7.000GHz to 8.000GHz)



freq (7.000GHz to 8.000GHz)

freq	S(1,1)	S(1,2)	S(2,1)	S(2,2)
7.000GHz	0.476 / -34.870	0.109 / 139.240	3.481 / -161.260	0.311 / 55.490
7.100GHz	0.439 / -55.570	0.112 / 123.240	3.491 / -177.160	0.333 / 41.070
7.200GHz	0.394 / -77.150	0.115 / 107.340	3.497 / 166.700	0.352 / 26.670
7.300GHz	0.343 / -95.280	0.115 / 92.510	3.433 / 151.520	0.359 / 12.360
7.400GHz	0.324 / -119.400	0.120 / 77.570	3.473 / 136.110	0.372 / -1.810
7.500GHz	0.298 / -147.710	0.123 / 61.530	3.479 / 119.660	0.377 / -17.440
7.600GHz	0.278 / 178.850	0.125 / 45.200	3.451 / 102.940	0.376 / -34.380
7.700GHz	0.282 / 144.690	0.125 / 28.720	3.385 / 86.040	0.369 / -52.570
7.800GHz	0.316 / 111.790	0.123 / 12.270	3.280 / 69.070	0.361 / -72.160
7.900GHz	0.364 / 83.060	0.121 / -4.110	3.141 / 52.090	0.357 / -92.960
8.000GHz	0.418 / 58.560	0.117 / -20.060	2.981 / 35.610	0.357 / -113.260

S-PARAMETERS

Measured at Vds=10V, IDS=3250mA