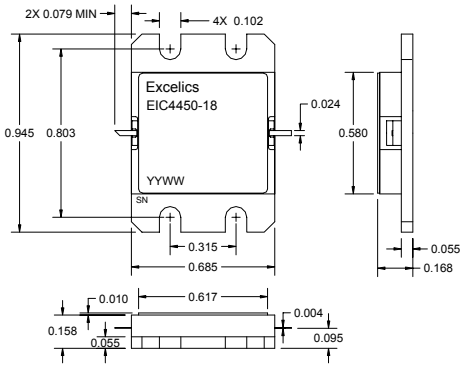
EIC4450-18

UPDATED: 10/18/2007

4.40-5.00GHz 18-Watt Internally Matched Power FET



FEATURES

- **4.40– 5.00GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+42.5 dBm Output Power at 1dB Compression**
- **9.5 dB Power Gain at 1dB Compression**
- **33% Power Added Efficiency**
- **-46 dBc IM3 at Po = 31.5 dBm SCL**
- **Hermetic Metal Flange Package**
- **100% Tested for DC, RF, and R_{TH}**

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 = 4.40-5.00GHz V_{DS} = 10 V, I_{DSQ} ≈ 4500mA	41.5	42.5		dBm
G_{1dB}	Gain at 1dB Compression f = 4.40-5.00GHz V_{DS} = 10 V, I_{DSQ} ≈ 4500mA	8.5	9.5		dB
ΔG	Gain Flatness f = 4.40-5.00GHz V_{DS} = 10 V, I_{DSQ} ≈ 4500mA			±0.8	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 4500mA f = 4.40-5.00GHz		33		%
Id_{1dB}	Drain Current at 1dB Compression f = 4.40-5.00GHz		4800	5500	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 31.5 dBm S.C.L[2] V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS f = 5.00GHz	-43	-46		dBc
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		9000	13000	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 84 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		1.6	1.8	°C/W

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

ABSOLUTE MAXIMUM RATING

SYMBOLS	PARAMETERS	ABSOLUTE	CONTINUOUS
Vds	Drain-Source Voltage	15V	10V
Vgs	Gate-Source Voltage	-5V	-4V
Igf	Forward Gate Current	105mA	31.6mA
Igr	Reverse Gate Current	-21.5mA	-5.2mA
Pin	Input Power	41.5dBm	@ 3dB Compression
Tch	Channel Temperature	175C	175C
Tstg	Storage Temperature	-65C to +175C	-65C to +175C
Pt	Total Power Dissipation	83W	83W

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.

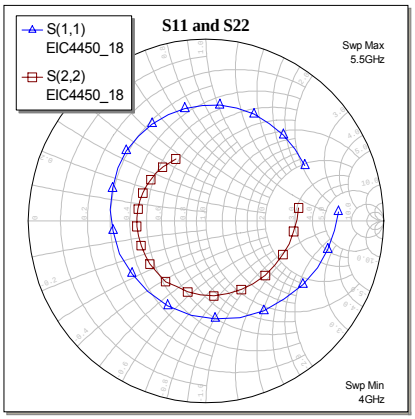
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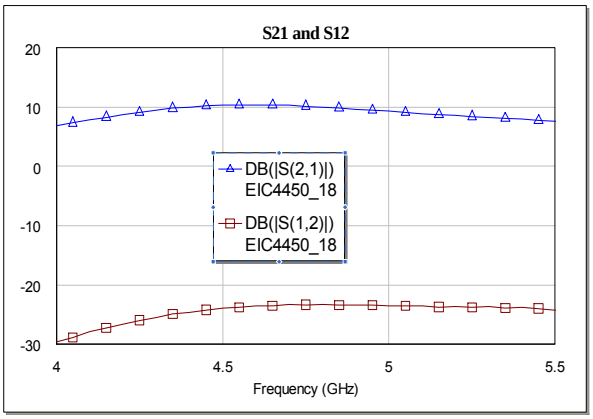
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4.40-5.00GHz 18-Watt Internally Matched Power FET

PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 4500mA





FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
4.0	0.746	3.87	2.188	174.37	0.0331	128.97	0.5264	7.77
4.1	0.702	-12.85	2.46	159.41	0.0402	110.29	0.4961	-6.7
4.2	0.648	-32.72	2.728	142.86	0.0469	91.51	0.471	-23.1
4.3	0.592	-56.68	2.984	124.95	0.0529	73.93	0.449	-41.93
4.4	0.54	-84.5	3.166	106.51	0.0589	51.54	0.426	-62.11
4.5	0.513	-114.65	3.274	87.23	0.064	31.7	0.415	-83.8
4.6	0.507	-145.16	3.3	68.35	0.066	11.24	0.404	-104.74
4.7	0.525	-174.09	3.269	49.83	0.068	-9.18	0.404	-124.18
4.8	0.555	161.21	3.155	32.31	0.0683	-26.7	0.395	-143.18
4.9	0.592	139.36	3.034	15.48	0.068	-44.52	0.389	-159.55
5.0	0.614	119.6	2.911	-0.65	0.067	-59.98	0.391	-175.53
5.1	0.629	100.93	2.784	-16.08	0.066	-76.99	0.388	170.32
5.2	0.642	83.03	2.685	-31.48	0.066	-93.09	0.387	156.69
5.3	0.646	65.36	2.574	-46.6	0.066	-108.81	0.384	143.89
5.4	0.643	47.31	2.498	-62.2	0.065	-123.52	0.384	129.44
5.5	0.635	28.7	2.394	-77.25	0.062	-138.54	0.381	116.51

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness