

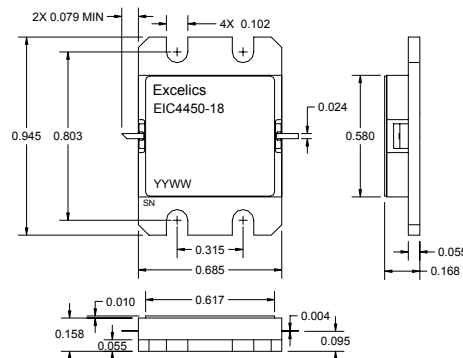
EIC4450-18

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 $P_o = 31.5$ 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 $f = 4.40\text{-}5.00\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4500\text{mA}$	41.5	42.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 4.40\text{-}5.00\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4500\text{mA}$	8.5	9.5		dB
ΔG	Gain Flatness $f = 4.40\text{-}5.00\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4500\text{mA}$			± 0.8	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4500\text{mA}$ $f = 4.40\text{-}5.00\text{GHz}$		33		%
I_{d1dB}	Drain Current at 1dB Compression $f = 4.40\text{-}5.00\text{GHz}$		4800	5500	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 31.5\text{ dBm S.C.L}^2$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 65\% I_{DSS}$ $f = 5.00\text{GHz}$	-43	-46		dBc
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$		9000	13000	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}$, $I_{DS} = 84\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		1.6	1.8	$^\circ\text{C/W}$

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

ABSOLUTE MAXIMUM RATING

SYMBOLS	PARAMETERS	ABSOLUTE	CONTINUOUS
V_{ds}	Drain-Source Voltage	15V	10V
V_{gs}	Gate-Source Voltage	-5V	-4V
I_{gf}	Forward Gate Current	105mA	31.6mA
I_{gr}	Reverse Gate Current	-21.5mA	-5.2mA
P_{in}	Input Power	41.5dBm	@ 3dB Compression
T_{ch}	Channel Temperature	175C	175C
T_{stg}	Storage Temperature	-65C to +175C	-65C to +175C
P_t	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.

Specifications are subject to change without notice.

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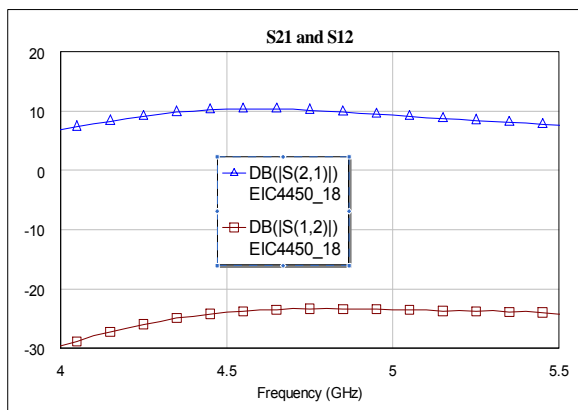
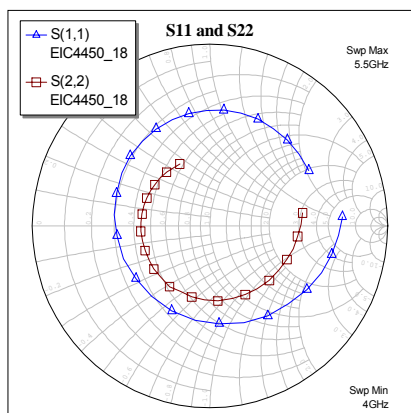
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PERFORMANCE DATA

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

$V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4500\text{mA}$



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	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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