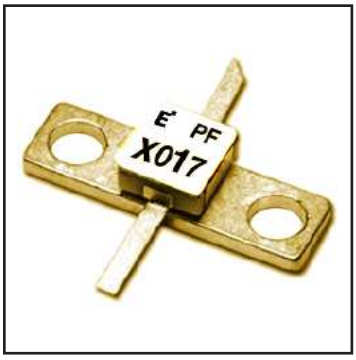
FSX017WF

General Purpose GaAs FET

FEATURES

- Medium Power Output: P_{1dB}=21.5dB (Typ.)@8.0GHz
- High Power Gain: G_{1dB}=11dB (Typ.)@8.0GHz
- Hermetic Metal/Ceramic Package
- Proven Reliability



DESCRIPTION

The FSX017WF is a general purpose GaAs FET designed for medium power applications up to the 12GHz. These devices have a wide dynamic range and are suitable for use in medium power, wide band, linear drive amplifiers or oscillators.

Eudyna stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		12	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_{tot}	T_c = 25°C	1.0	W
Storage Temperature	T_{stg}		-65 to +175	°C
Channel Temperature	T_{ch}		175	°C

Eudyna recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain - source operating voltage (V_{DS}) should not exceed 8 volts.
2. The forward and reverse gate currents should not exceed 0.7 and -0.1 mA respectively with gate resistance of 2000Ω.
3. The operating channel temperature (T_{ch}) should not exceed 145°C.

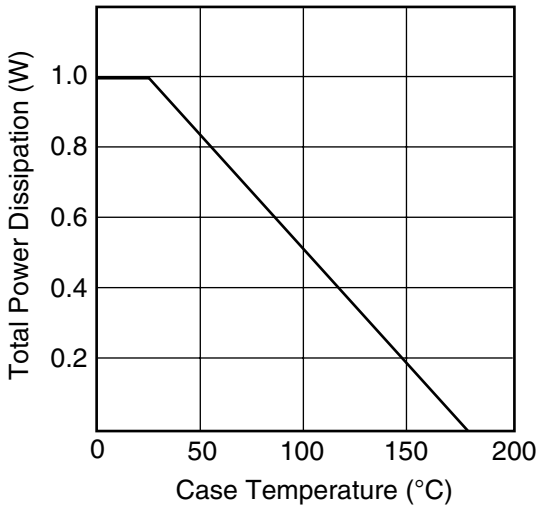
ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Test Conditions		Limit Min.	Limit Typ.	Limit Max.	Unit
Saturated Drain Current	I_{DSS}	V_{DS} = 3V, V_{GS} = 0V		35	55	75	mA
Transconductance	g_m	V_{DS} = 3V, I_{DS} = 27mA		-	50	-	mS
Pinch-off Voltage	V_p	V_{DS} = 3V, I_{DS} = 2.7mA		-0.7	-1.2	-1.7	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -2.7μA		-5.0	-	-	V
Noise Figure	NF	V_{DS} = 3V, I_{DS} = 10mA f = 8GHz		-	2.5	-	dB
Associated Gain	G_{as}			-	10.5	-	dB
Output Power at 1 dB G.C.P.	P_{1dB}	V_{DS} = 8V, I_{DS} = 0.7I_{DSS}	f = 4GHz	-	21.5	-	dBm
			f = 8GHz	20.5	21.5	-	dBm
			f = 12GHz	-	20.5	-	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}	V_{DS} = 8V, I_{DS} = 0.7I_{DSS}	f = 4GHz	-	15.0	-	dB
			f = 8GHz	10.0	11.0	-	dB
			f = 12GHz	-	7.5	-	dB
Thermal Resistance	R_{th}	Channel to Case		-	120	150	°C/W

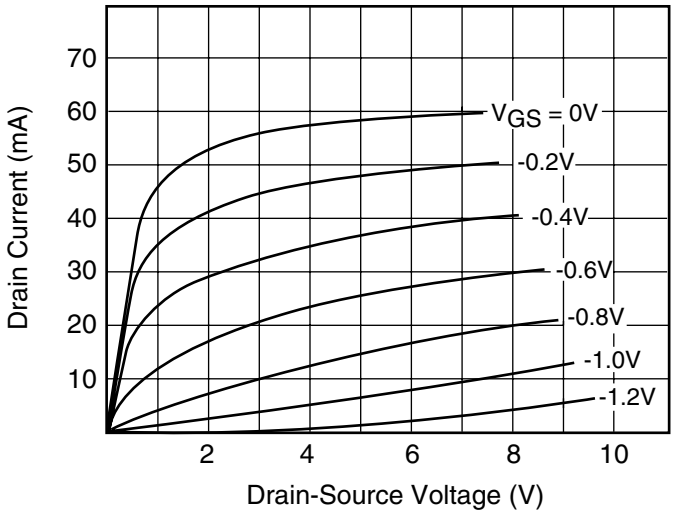
CASE STYLE: WF

G.C.P.: Gain Compression Point

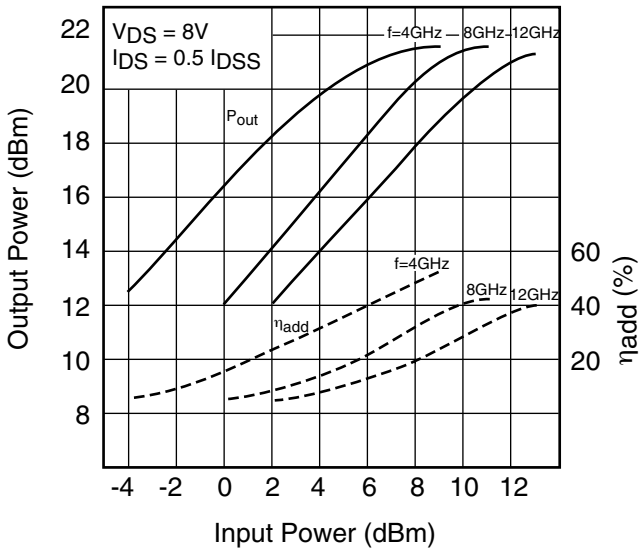
POWER DERATING CURVE



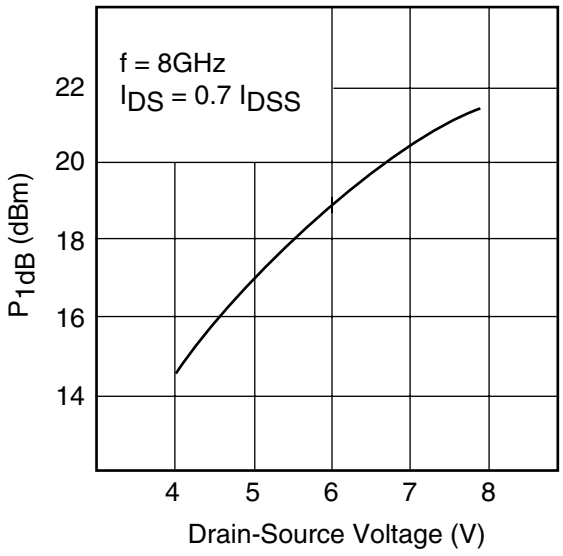
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE

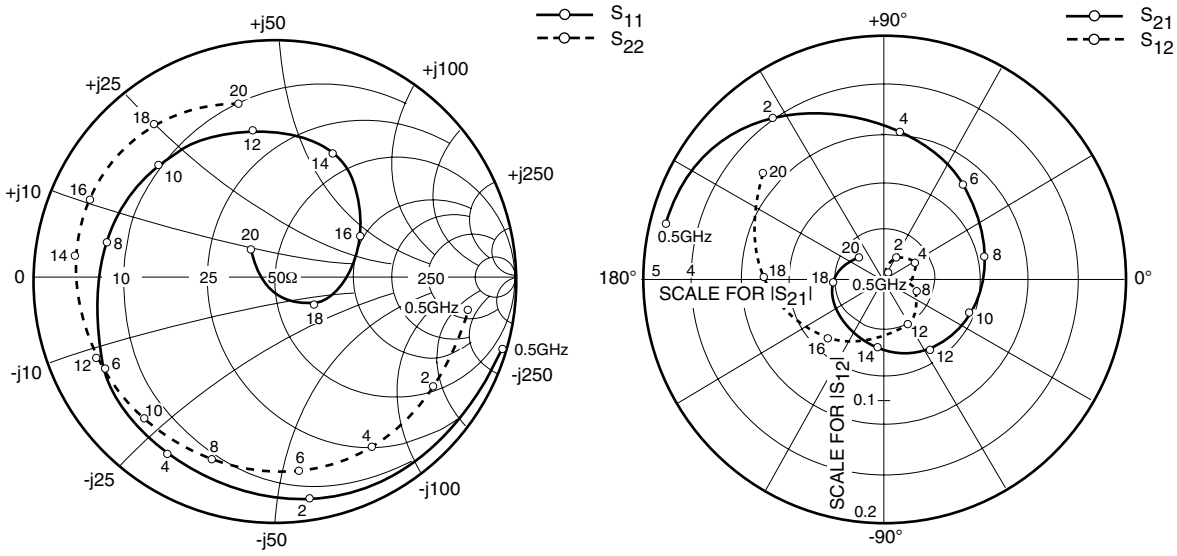


OUTPUT POWER vs. INPUT POWER



P_{1dB} vs. V_{DS}



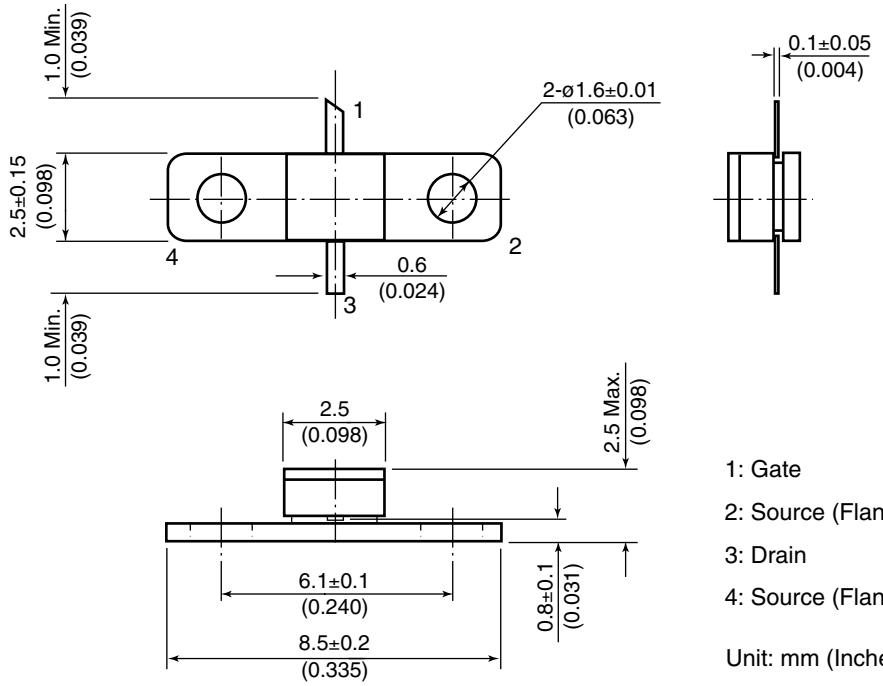


S-PARAMETERS

V_{DS} =8V, I_{DS} = 35mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.994	-17.5	4.666	165.0	.007	75.3	.826	-8.4
1000	.982	-33.7	4.499	151.2	.013	69.9	.819	-17.3
2000	.936	-66.2	4.066	124.2	.022	47.3	.808	-33.3
3000	.891	-92.7	3.486	101.1	.026	30.2	.799	-47.7
4000	.855	-112.9	3.001	82.3	.027	17.5	.796	-59.2
5000	.817	-131.0	2.706	66.1	.026	7.6	.795	-67.5
6000	.778	-150.4	2.555	49.2	.026	0.0	.791	-76.3
7000	.738	-172.0	2.407	30.3	.026	-12.8	.778	-88.8
8000	.705	167.8	2.206	12.0	.022	-20.7	.774	-102.1
9000	.693	150.3	2.020	-5.3	.025	-24.2	.777	-115.7
10000	.679	135.1	1.894	-20.9	.028	-31.8	.780	-127.6
11000	.655	117.2	1.842	-38.1	.035	-43.3	.791	-140.5
12000	.631	96.4	1.750	-57.3	.042	-60.2	.798	-155.2
13000	.610	78.9	1.595	-76.9	.047	-79.6	.809	-173.0
14000	.573	64.6	1.422	-94.9	.050	-96.0	.830	172.1
15000	.503	48.0	1.298	-111.5	.058	-113.5	.846	163.3

Case Style "WF"
Metal-Ceramic Hermetic Package



1: Gate

2: Source (Flange)

3: Drain

4: Source (Flange)

Unit: mm (Inches)