

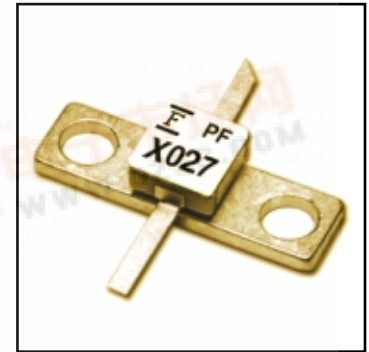
## General Purpose GaAs FET

### FEATURES

- Medium Power Output:  $P_{1dB}=24.5dBm(Typ.)@8.0GHz$
- High Power Gain:  $G_{1dB}=10dB(Typ.)@8.0GHz$
- Hermetic Metal/Ceramic Package
- Proven Reliability

### DESCRIPTION

The FSX027WF 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.



Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

### ABSOLUTE MAXIMUM RATINGS (Ambient Temperature $T_a = 25^{\circ}C$ )

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		12	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_T$	$T_C = 25^{\circ}C$	1.5	W
Storage Temperature	$T_{STG}$		-65 to 175	$^{\circ}C$
Channel Temperature	$T_{CH}$		175	$^{\circ}C$

Fujitsu 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 1.4 and -0.2 mA respectively with gate resistance of 1000 $\Omega$ .
3. The operating channel temperature ( $T_{ch}$ ) should not exceed 145 $^{\circ}C$ .

### ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^{\circ}C$ )

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3V, V_{GS} = 0V$	70	110	150	mA
Transconductance	$g_m$	$V_{DS} = 3V, I_{DS} = 54mA$	-	100	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 3V, I_{DS} = 5.4mA$	-0.7	-1.2	-1.7	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -5.4\mu A$	-5.0	-	-	V
Noise Figure	NF	$V_{DS} = 3V, I_{DS} = 30mA$	-	2.5	-	dB
Associated Gain	$G_{as}$	$f = 8GHz$	-	9.5	-	dB
Output Power at 1 dB G.C.P.	$P_{1dB}$	$f = 4GHz$	-	24.5	-	dBm
		$f = 8GHz$	23.5	24.5	-	dBm
		$f = 12GHz$	-	23.5	-	dBm
Power Gain at 1 dB G.C.P.	$G_{1dB}$	$f = 4GHz$	-	14.0	-	dB
		$f = 8GHz$	9.0	10.0	-	dB
		$f = 12GHz$	-	6.5	-	dB
Thermal Resistance	$R_{th}$	Channel to Case	-	70	100	$^{\circ}C/W$

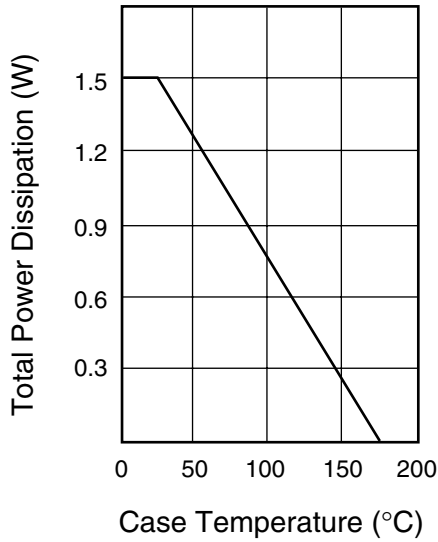
CASE STYLE: WF

G.C.P.: Gain Compression Point

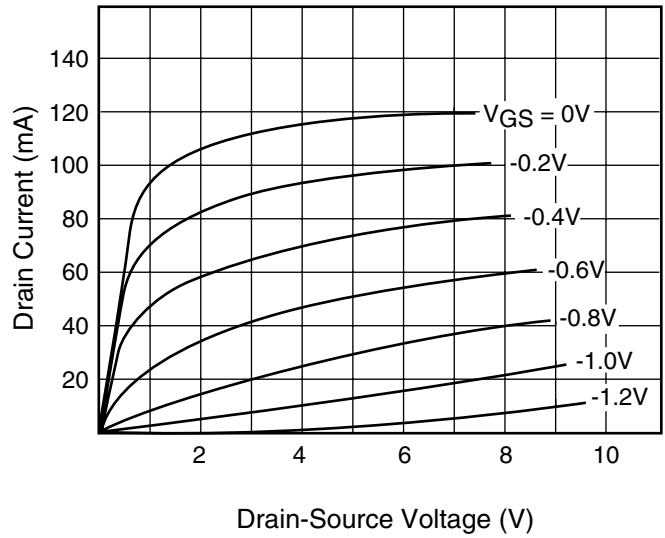
# FSX027WF

General Purpose GaAs FET

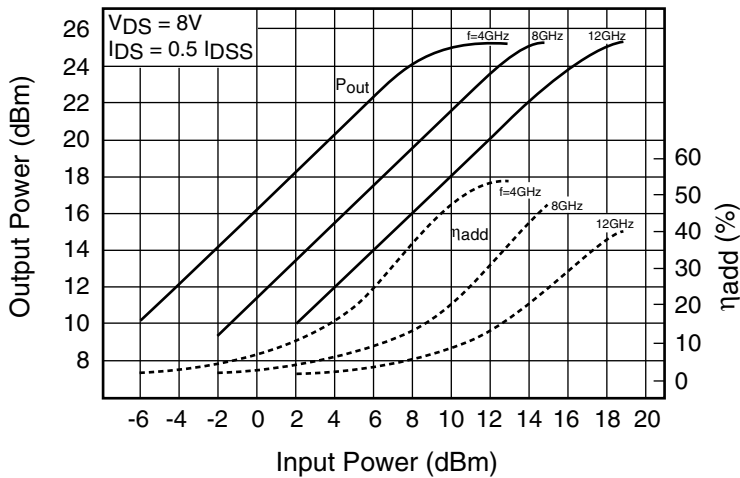
### POWER DERATING CURVE



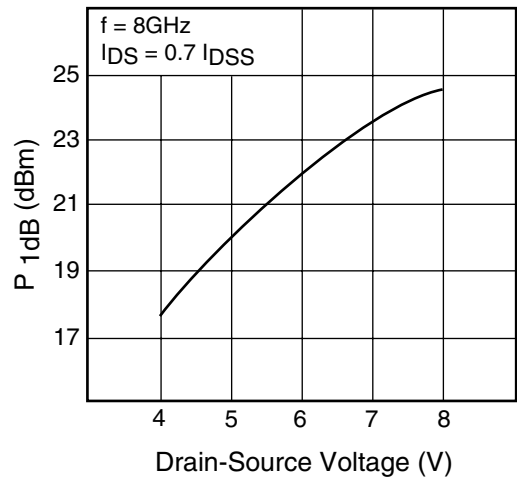
### DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



### OUTPUT POWER vs. INPUT POWER

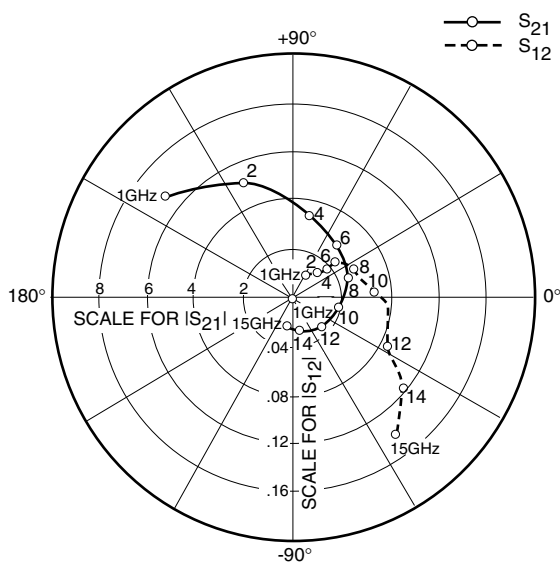
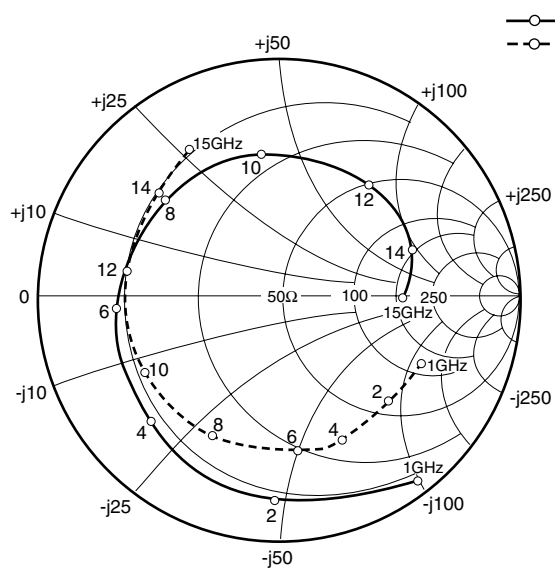


### P 1dB vs. VDS



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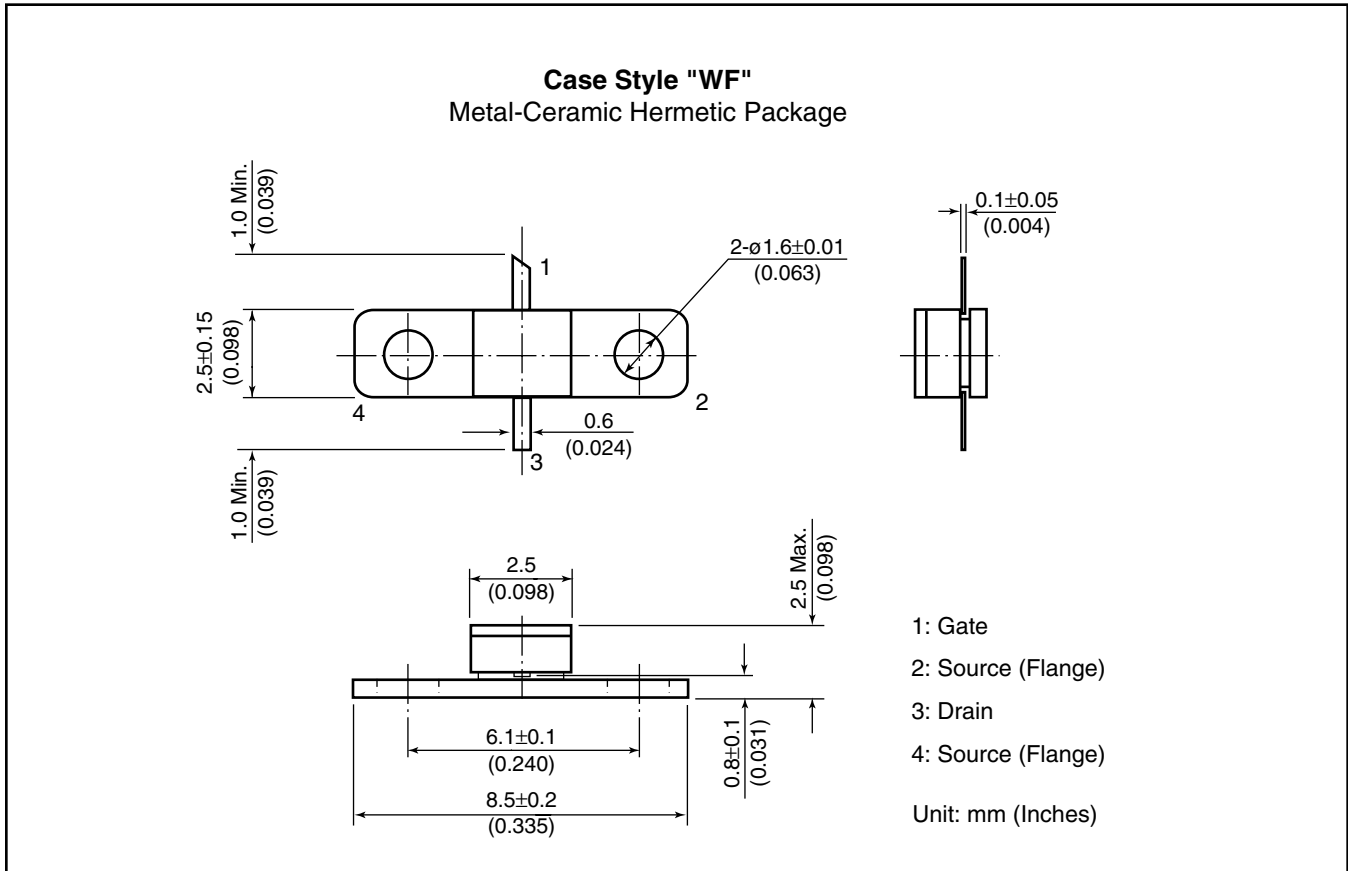
### S-PARAMETERS

$V_{DS} = 8V, I_{DS} = 75mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.942	-53.2	6.773	142.1	.021	62.8	.651	-25.8
2000	.852	-91.2	5.211	114.2	.030	47.6	.628	-43.7
3000	.782	-116.0	3.993	94.6	.033	43.1	.635	-56.5
4000	.745	-135.8	3.335	80.7	.035	41.5	.651	-66.8
5000	.710	-155.2	2.994	66.2	.037	44.2	.652	-73.6
6000	.683	-176.8	2.747	51.7	.040	41.3	.642	-83.7
7000	.656	-159.9	2.532	36.2	.048	38.2	.634	-97.6
8000	.638	139.7	2.323	20.2	.054	26.4	.638	-115.9
9000	.618	119.4	2.089	1.4	.057	17.1	.636	-134.5
10000	.601	97.2	1.838	-14.7	.065	3.9	.642	-150.7
11000	.592	73.4	1.639	-30.5	.078	-5.1	.646	-168.5
12000	.591	51.8	1.646	-48.3	.087	-28.1	.647	172.6
13000	.600	33.6	1.401	-67.1	.093	-31.1	.651	155.2
14000	.582	19.1	1.409	-82.1	.117	-38.7	.668	139.4
15000	.499	-0.7	1.246	-103.6	.139	-53.2	.705	121.8

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Fujitsu Compound Semiconductor Products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put these products into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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Printed in U.S.A. FCSI0598M200