

FSX51WF

General Purpose GaAs FETs

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

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

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

1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 0.1 and -0.1 mA respectively with gate resistance of 2000 Ω .

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

Item	Symbol	Test Conditions	Limit			Unit	
			Min.	Typ.	Max.		
Saturated Drain Current	I_{DSS}	$V_{DS} = 3\text{V}, V_{GS} = 0\text{V}$	30	60	120	mA	
Transconductance	g_m	$V_{DS} = 3\text{V}, I_{DS} = 30\text{mA}$	-	25	-	mS	
Pinch-off Voltage	V_p	$V_{DS} = 3\text{V}, I_{DS} = 1\text{mA}$	-1.0	-2.5	-5.0	V	
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -10\mu\text{A}$	-5	-	-	V	
Noise Figure	NF	$V_{DS} = 3\text{V}, I_{DS} = 10\text{mA}$ $f = 8\text{GHz}$	-	2.5	-	dB	
Associated Gain	G_{as}		-	9.5	-	dB	
Output Power at 1 dB G.C.P.	P_{1dB}	$V_{DS} = 8\text{V},$ $I_{DS} = 0.5I_{DSS}$	$f = 4\text{GHz}$	-	19	-	dBm
			$f = 8\text{GHz}$	17.5	19	-	dBm
			$f = 12\text{GHz}$	-	18	-	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}	$V_{DS} = 8\text{V},$ $I_{DS} = 0.5I_{DSS}$	$f = 4\text{GHz}$	-	14	-	dB
			$f = 8\text{GHz}$	9.5	10	-	dB
			$f = 12\text{GHz}$	-	6.5	-	dB
Maximum Available Gain	$G_{a(max)}$	$V_{DS} = 3.5\text{V},$ $I_{DS} = 30\text{mA}$	$f = 8\text{GHz}$	-	13	-	dB
			$f = 12\text{GHz}$	-	9.5	-	dB
Thermal Resistance	R_{th}	Channel to Case	-	120	150	$^\circ\text{C/W}$	

CASE STYLE: WF

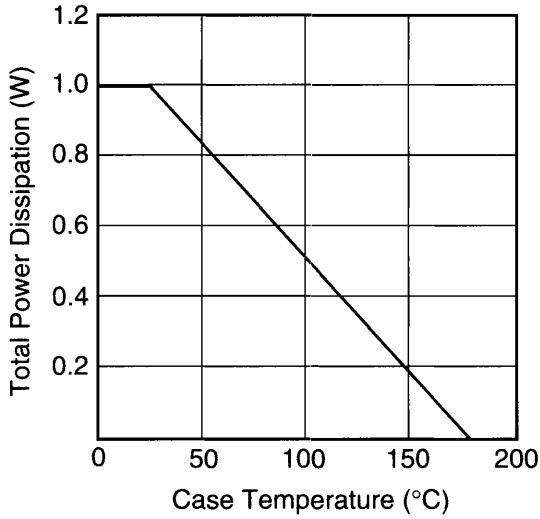
G.C.P.: Gain Compression Point

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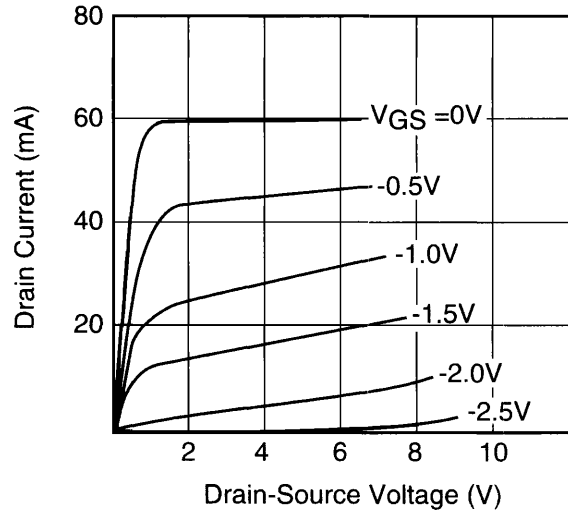
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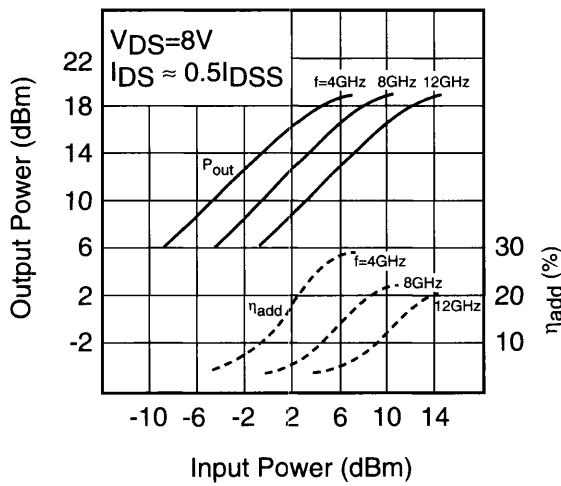
POWER DERATING CURVE



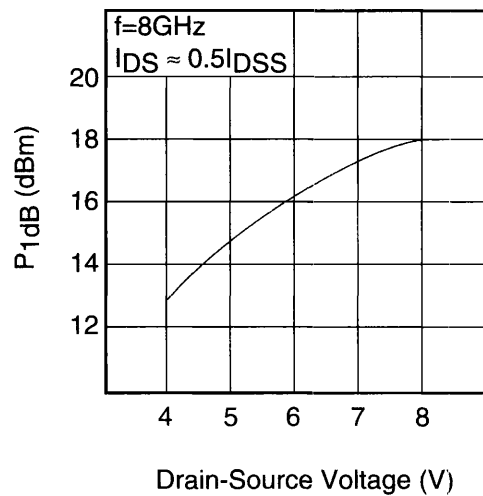
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER

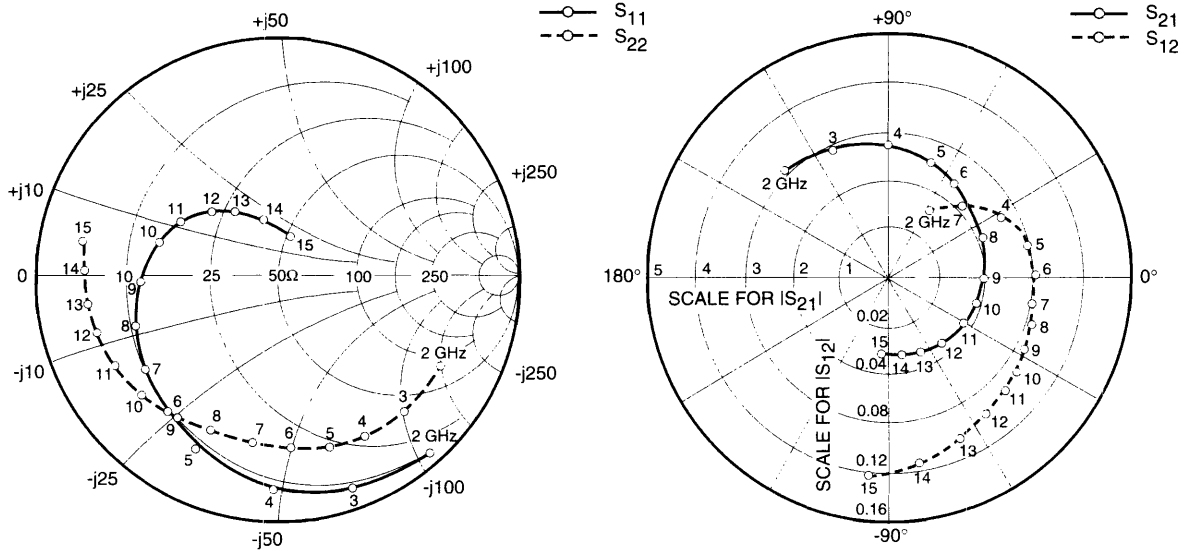


P1dB vs. VDS



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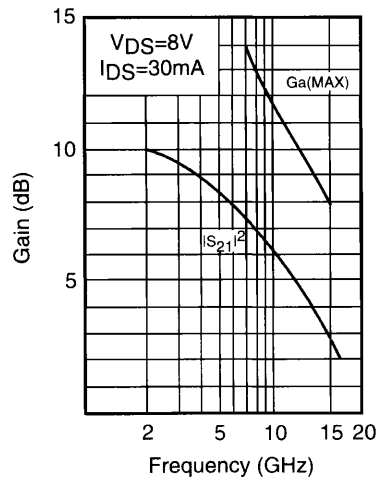


S-PARAMETERS

$V_{DS} = 8V, I_{DS} = 30mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.991	-12.7	3.288	167.6	.009	79.6	.795	-8.2
1000	.980	-24.6	3.248	156.3	.017	71.3	.790	-15.4
2000	.945	-47.3	3.140	134.5	.031	56.0	.775	-29.7
3000	.898	-70.0	2.994	112.6	.043	40.4	.756	-44.4
4000	.845	-91.6	2.826	91.7	.053	26.4	.738	-58.4
5000	.782	-112.2	2.617	71.7	.058	13.3	.716	-72.9
6000	.726	-131.1	2.397	53.1	.060	1.6	.697	-87.1
7000	.677	-147.7	2.210	36.2	.060	-9.2	.694	-100.1
8000	.649	-162.9	2.082	19.3	.061	-17.7	.713	-113.0
9000	.610	-178.3	1.957	2.1	.062	-25.9	.734	-125.8
10000	.552	166.8	1.834	-14.6	.063	-36.3	.745	-138.2
11000	.498	152.0	1.730	-30.9	.063	-45.9	.752	-150.5
12000	.441	136.9	1.645	-47.3	.065	-54.9	.761	-162.0
13000	.370	121.3	1.571	-64.1	.068	-66.3	.782	-172.6
14000	.274	104.9	1.493	-81.5	.074	-79.4	.804	177.7
15000	.162	80.3	1.419	-99.3	.080	-95.3	.811	167.6

Ga(MAX) and $|S_{21}|^2$ vs. FREQUENCY



Case Style "WF" Metal-Ceramic Hermetic Package

