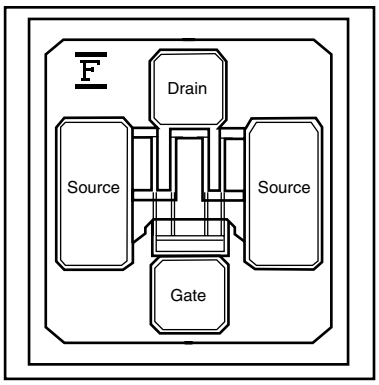
FSX017X

GaAs FET & HEMT Chips

FEATURES

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



DESCRIPTION

The FSX017X is a general purpose GaAs FET designed for medium power applications up to 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 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

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 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} = 0.7 I_{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} = 0.7 I_{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

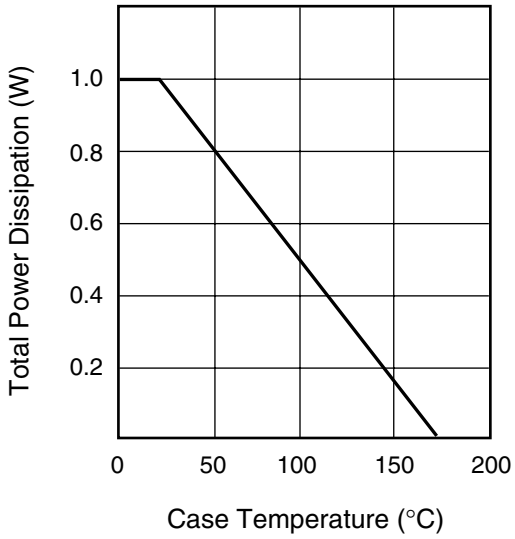
Note: RF parameter sample size 10pcs. criteria (accept/reject)=(2/3)

G.C.P.: Gain Compression Point

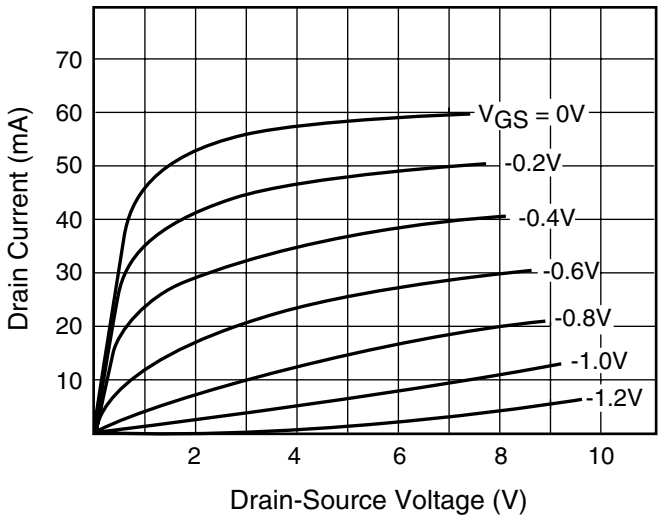
The chip must be enclosed in a hermetically sealed environment for optimum performance and reliability.

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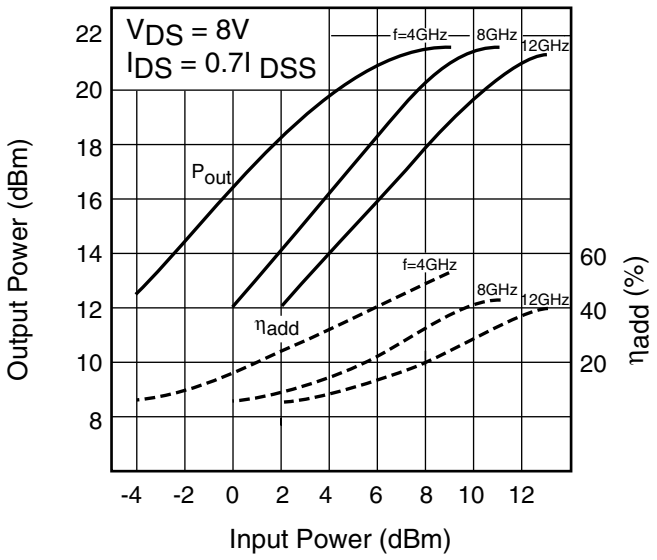
POWER DERATING CURVE



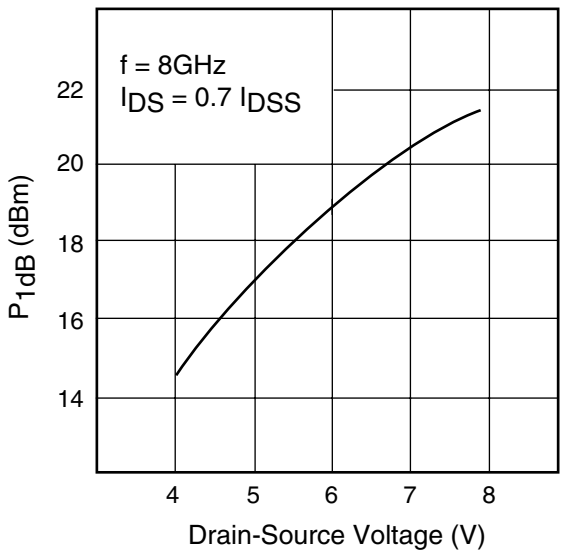
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAG



OUTPUT POWER vs. INPUT POWER



P_{1dB} vs. V_{DS}



S-PARAMETERS

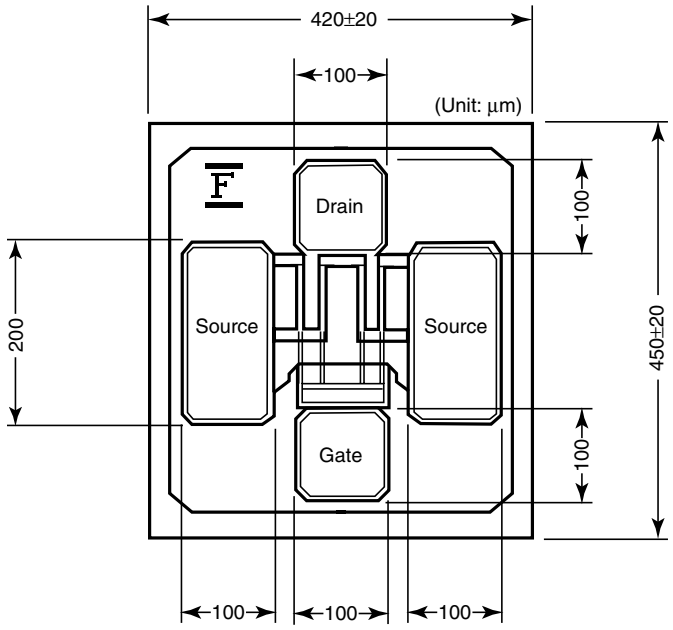
V_{DS} = 8V, I_{DS} = 35mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.989	-24.0	4.538	162.3	.013	76.7	.837	-6.1
2000	.960	-46.5	4.260	145.7	.025	65.4	.820	-11.9
3000	.925	-66.6	3.890	130.9	.035	55.1	.801	-16.9
4000	.890	-84.0	3.493	117.7	.042	46.0	.782	-21.6
5000	.860	-99.0	3.132	106.3	.048	38.6	.764	-25.9
6000	.833	-111.8	2.814	95.9	.052	32.5	.751	-29.9
7000	.814	-122.6	2.525	86.5	.054	27.4	.740	-33.8
8000	.799	-132.1	2.294	78.2	.057	23.2	.733	-37.8
9000	.788	-140.6	2.095	70.2	.060	18.6	.726	-41.7
10000	.780	-148.1	1.931	62.8	.061	15.1	.720	-45.7
11000	.773	-154.7	1.782	55.5	.063	12.0	.716	-49.7
12000	.768	-160.9	1.646	48.7	.064	9.1	.710	-53.6
13000	.762	-166.3	1.536	42.5	.065	5.9	.704	-57.6
14000	.759	-171.4	1.442	36.4	.065	2.6	.702	-61.4
15000	.759	-176.0	1.343	29.7	.065	2.1	.699	-65.4
16000	.759	179.6	1.269	25.1	.068	-.2	.699	-69.5
17000	.764	175.6	1.215	18.1	.066	-3.1	.697	-73.4
18000	.766	171.6	1.137	12.7	.069	-3.6	.695	-77.7
19000	.771	167.7	1.087	7.5	.071	-6.6	.694	-81.8
20000	.778	164.1	1.042	1.2	.070	-10.1	.691	-85.4

NOTE:* The data includes bonding wires.
n: number of wires
Gate n=1 (0.1mm length, 25µm Dia Au wire)
Drain n=1 (0.1mm length, 25µm Dia Au wire)
Source n=4 (0.2mm length, 25µm Dia Au wire)

Download S-Parameters, click here

CHIP OUTLINE



Die Thickness: 100±20μm

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- **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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