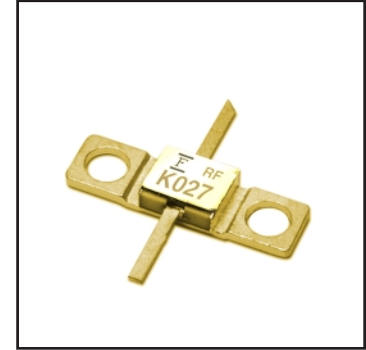
FLK027WG

X, Ku Band Power GaAs FET

FEATURES

- High Output Power: P_{1dB} = 24.0dBm(Typ.)
- High Gain: G_{1dB} = 7.0dB(Typ.)
- High PAE: η_{add} = 32%(Typ.)
- Proven Reliability
- Hermetic Metal/Ceramic Package



DESCRIPTION

The FLK027WG is a power GaAs FET that is designed for general purpose applications in the Ku-Band frequency range as it provides superior power, gain, and efficiency.

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}		15	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_T	T_C = 25°C	1.875	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 10 volts.
2. The forward and reverse gate currents should not exceed 2.2 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			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS} = 5V, V_{GS} = 0V	-	100	150	mA
Transconductance	g_m	V_{DS} = 5V, I_{DS} = 65mA	-	50	-	mS
Pinch-off Voltage	V_p	V_{DS} = 5V, I_{DS} = 5mA	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -5μA	-5	-	-	V
Output Power at 1dB G.C.P.	P_{1dB}	V_{DS} = 10V, I_{DS} = 0.6 I_{DSS} (Typ.), f = 14.5 GHz	23.0	24.0	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		6.0	7.0	-	dB
Power-added Efficiency	η_{add}		-	32	-	%
Output Power at 1dB G.C.P.	P_{1dB}	V_{DS} = 10V, I_{DS} = 0.6 I_{DSS} (Typ.), f = 12 GHz	-	24	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		-	8	-	dB
Power-added Efficiency	η_{add}		-	34	-	%
Thermal Resistance	R_{th}	Channel to Case	-	40	80	°C/W

CASE STYLE: WG

G.C.P.: Gain Compression Point

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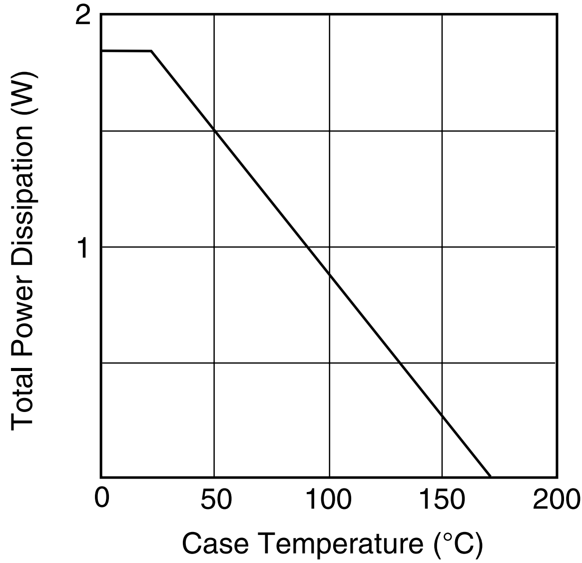
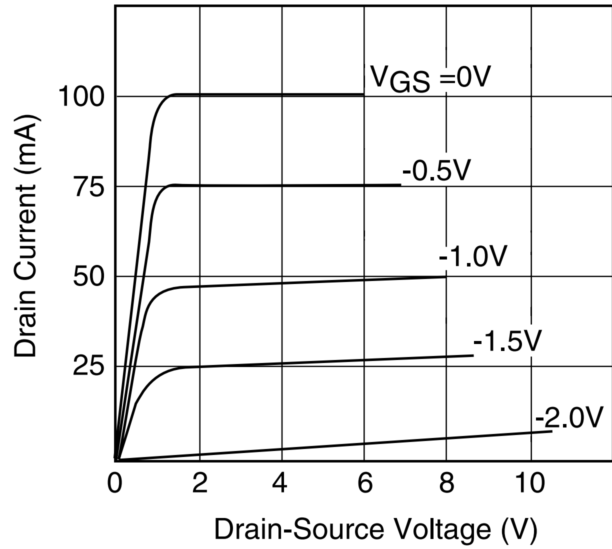
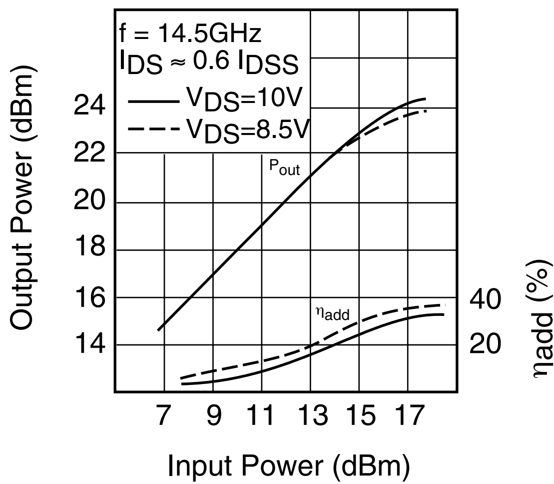
POWER DERATING CURVE



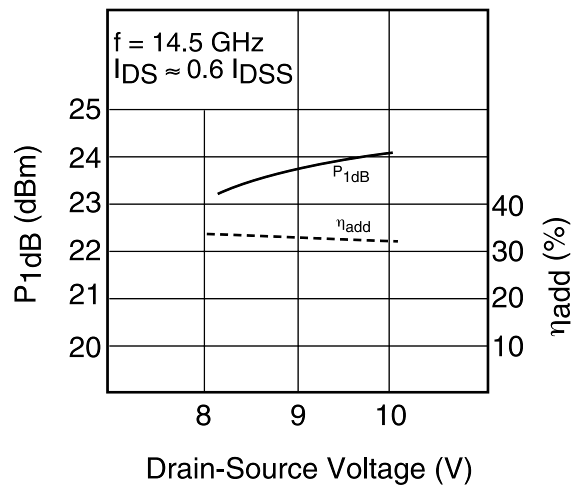
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE

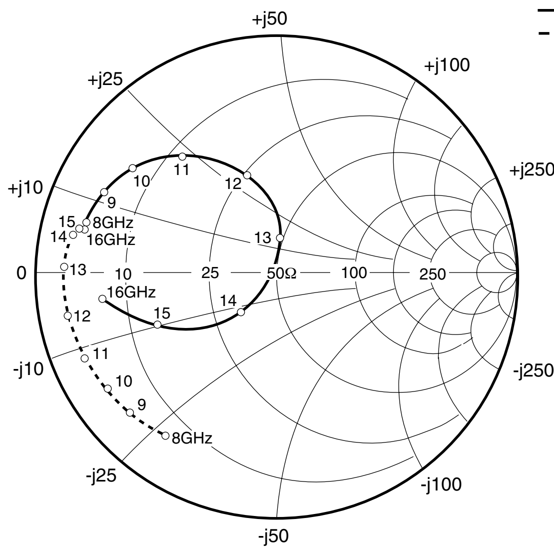


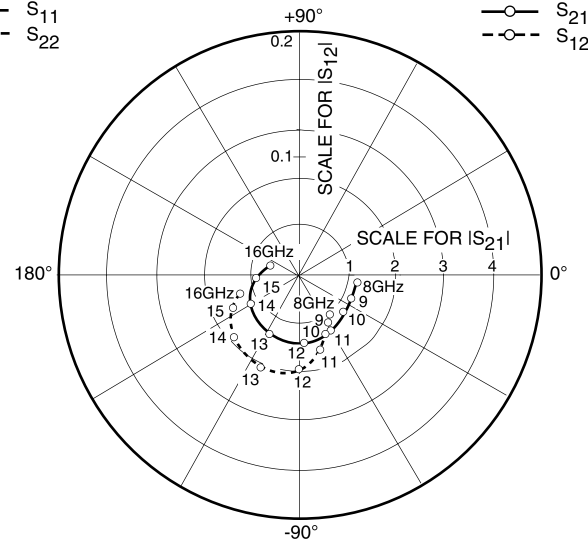
OUTPUT POWER vs. INPUT POWER



P_{1dB} & η_{add} vs. V_{DS}







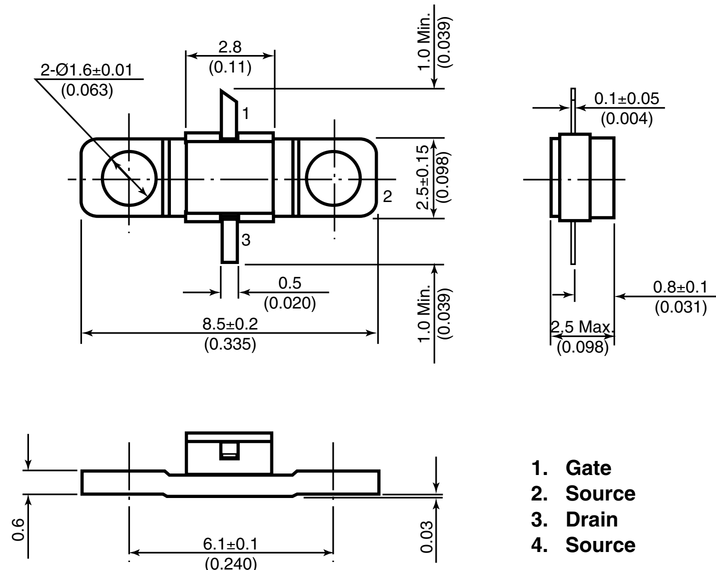
S-PARAMETERS

V_{DS} = 10V, I_{DS} = 60mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.985	-31.8	4.381	156.3	.011	67.8	.758	-13.7
1000	.965	-60.1	3.965	134.7	.021	48.5	.748	-27.2
8000	.819	165.4	1.204	-8.3	.041	-54.3	.825	-123.9
8500	.804	159.8	1.177	-16.6	.043	-56.1	.832	-130.0
9000	.787	155.0	1.161	-24.5	.046	-58.6	.838	-135.6
9500	.766	150.1	1.164	-32.1	.049	-61.0	.842	-140.2
10000	.735	144.2	1.197	-40.4	.053	-63.6	.853	-144.8
10500	.689	137.4	1.248	-49.7	.058	-68.7	.864	-149.6
11000	.623	128.7	1.309	-60.3	.065	-74.0	.871	-155.0
11500	.534	118.5	1.364	-72.9	.072	-81.9	.878	-161.4
12000	.423	106.5	1.407	-86.4	.078	-90.5	.885	-167.8
12500	.290	93.9	1.413	-101.2	.082	-101.5	.886	-174.6
13000	.139	82.0	1.380	-116.8	.083	-112.3	.882	178.7
13500	.036	-123.8	1.304	-133.2	.080	-123.7	.875	173.0
14000	.223	-131.8	1.190	-149.4	.075	-136.1	.861	169.2
14500	.395	-144.2	1.041	-164.5	.068	-145.6	.849	167.8
15000	.542	-155.7	.893	-177.4	.061	-152.8	.842	167.4
15500	.652	-164.2	.757	172.1	.054	-156.1	.832	167.6
16000	.734	-170.9	.655	163.3	.052	-160.8	.829	167.3

Case Style "WG"

Metal-Ceramic Hermetic Package



Unit: mm(inches)

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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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