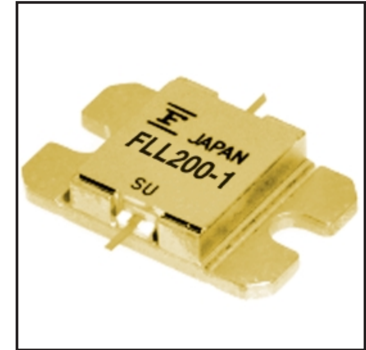
FLL200IB-1, FLL200IB-2, FLL200IB-3

L-Band Medium & High Power GaAs FET

FEATURES

- High Output Power: P_{1dB} = 42.5dBm (Typ.)
- High Gain: G_{1dB} = 13.0dB (Typ.)@1.8GHz (FLL200IB-1)
- High PAE: η_{add} = 34% (Typ.)
- Proven Reliability
- Hermetically Sealed Package



DESCRIPTION

The FLL200IB-1, FLL200IB-2, FLL200IB-3 are Power GaAs FETs that are specifically designed to provide high power at L-Band frequencies with gain, linearity and efficiency superior to that of silicon devices. The performance in multitone environments for Class AB operation make them ideally suited for base station applications.

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	83.3	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 53.6 and -11.6 mA respectively with gate resistance of 25Ω.
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		-	8	12	A
Transconductance		g_m	V_{DS} = 5V, I_{DS} = 4800mA		-	4000	-	mS
Pinch-off Voltage		V_p	V_{DS} = 5V, I_{DS} = 480mA		-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage		V_{GSO}	I_{GS} = -480μA		-5	-	-	V
Output Power at 1dB G.C.P.	FLL200IB-1	P_{1dB}	V_{DS} = 10V, I_{DS} = 0.6 I_{DSS} (Typ.)	f=1.5GHz	41.5	42.5	-	dBm
	FLL200IB-2			f=2.3GHz				
	FLL200IB-3			f=2.6GHz				
Power Gain at 1dB G.C.P.	FLL200IB-1	G_{1dB}		f=1.5GHz	12.0	13.0	-	dB
	FLL200IB-2			f=2.3GHz	10.0	11.0	-	dB
	FLL200IB-3			f=2.6GHz	10.0	11.0	-	dB
Drain Current		I_{dsr}	V_{DS} = 10V, I_{DS} = 0.6 I_{DSS} (Typ.)		-	4.8	6.0	A
Power added Efficiency		η_{add}			-	34	-	%
Thermal Resistance		R_{th}	Channel to Case		-	1.6	1.8	°C/W
Channel Temperature Rise		ΔT_{ch}	10V x I_{dsr} x R_{th}		-	-	80	°C

CASE STYLE: IB

G.C.P.: Gain Compression Point

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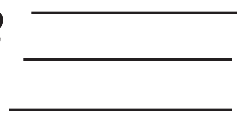
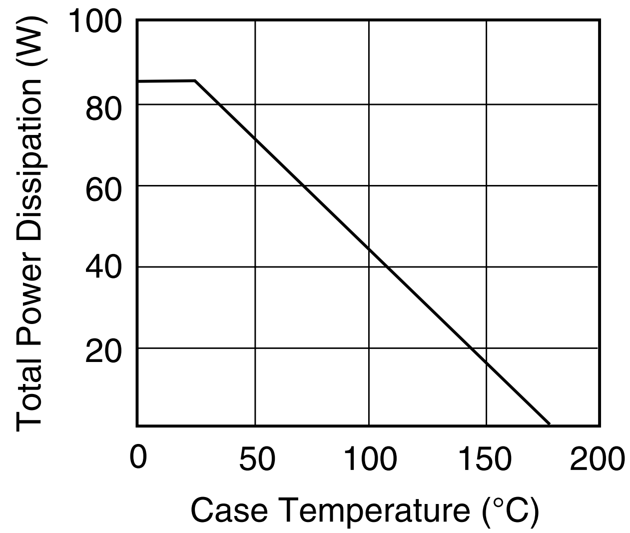
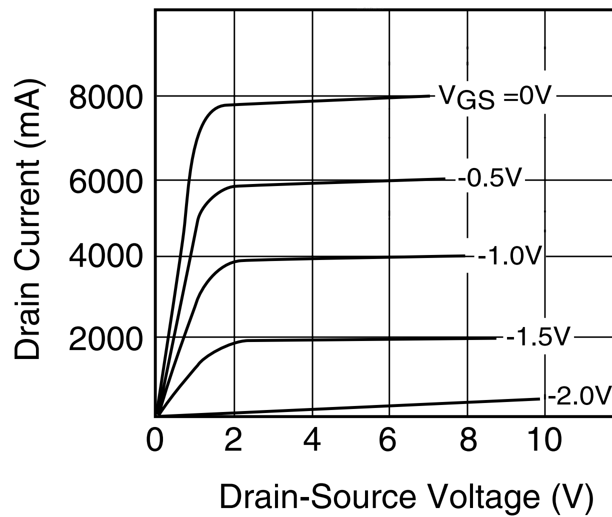
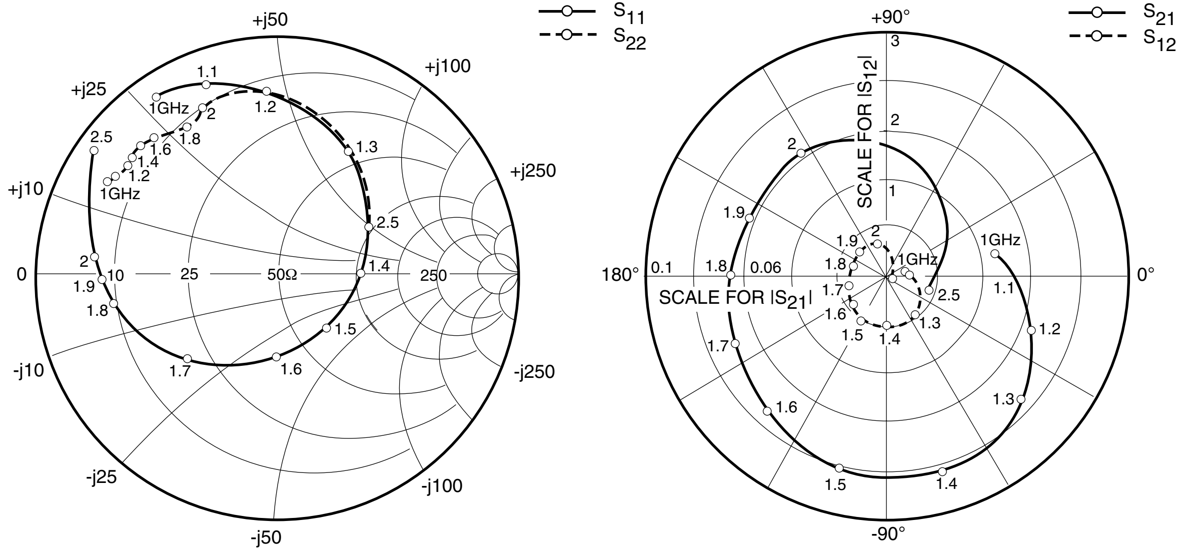




POWER DERATING CURVE
Total Power Dissipation (W)
100
80
60
40
20
0
50
100
150
200
Case Temperature (°C)



DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE
Drain Current (mA)
8000
6000
4000
2000
VGS =0V
-0.5V
-1.0V
-1.5V
-2.0V
0
2
4
6
8
10
Drain-Source Voltage (V)

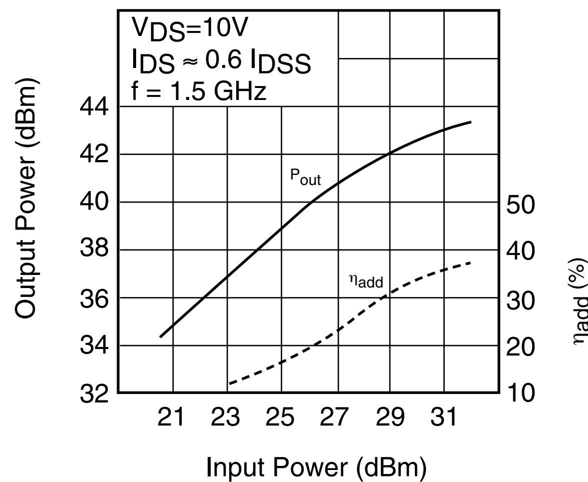


S-PARAMETERS

V_{DS} = 10V, I_{DS} = 4800mA

FREQUENCY (MHZ)	S11 MAG	S11 ANG	S21 MAG	S21 ANG	S12 MAG	S12 ANG	S22 MAG	S22 ANG
1000	.888	124.3	1.517	13.5	.009	-5.0	.819	150.3
1100	.841	110.9	1.761	-.2	.012	-17.3	.796	147.5
1200	.754	91.4	2.113	-18.0	.015	-33.3	.786	145.9
1300	.584	60.4	2.559	-42.4	.019	-56.8	.790	142.7
1400	.353	1.2	2.876	-73.3	.022	-86.9	.790	140.7
1500	.341	-87.7	2.754	-105.9	.021	-119.8	.800	136.5
1600	.490	-133.3	2.443	-132.5	.019	-147.5	.787	131.6
1700	.609	-156.4	2.215	-156.1	.017	-172.2	.764	127.5
1800	.680	-170.8	2.096	-179.2	.016	162.7	.732	123.4
1900	.719	179.5	2.034	155.9	.015	135.4	.716	121.2
2000	.753	173.8	1.953	126.8	.015	103.5	.729	116.4
2500	.942	145.3	.563	-15.5	.006	-39.0	.451	32.7

OUTPUT POWER vs. INPUT POWER



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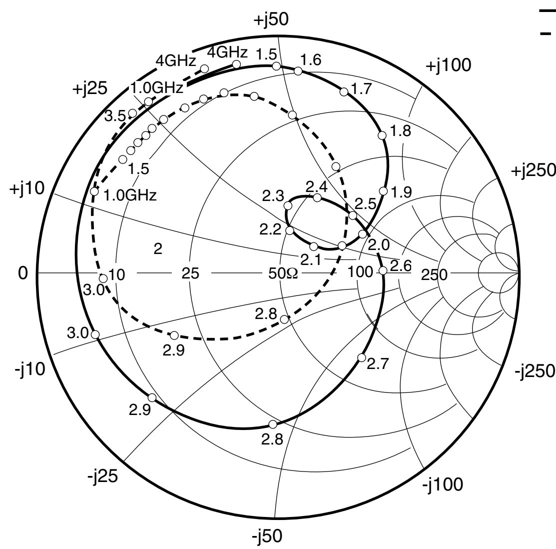
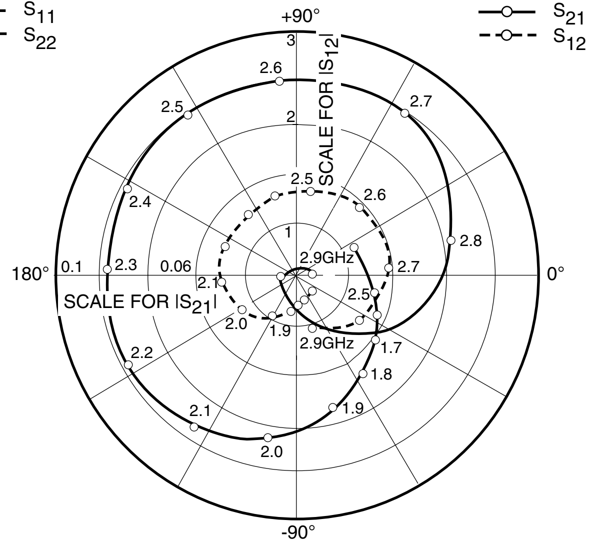


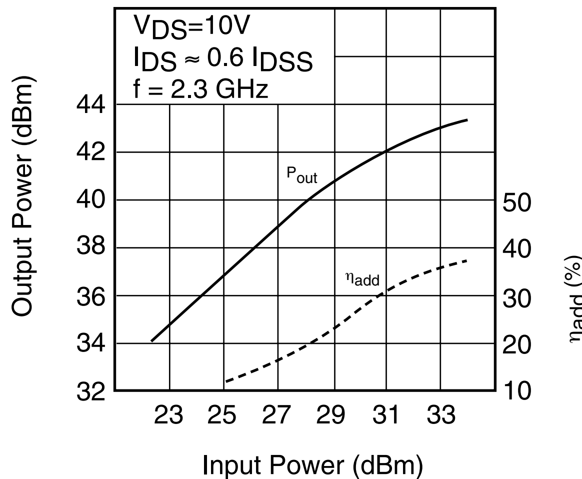


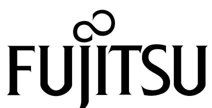
S-PARAMETERS

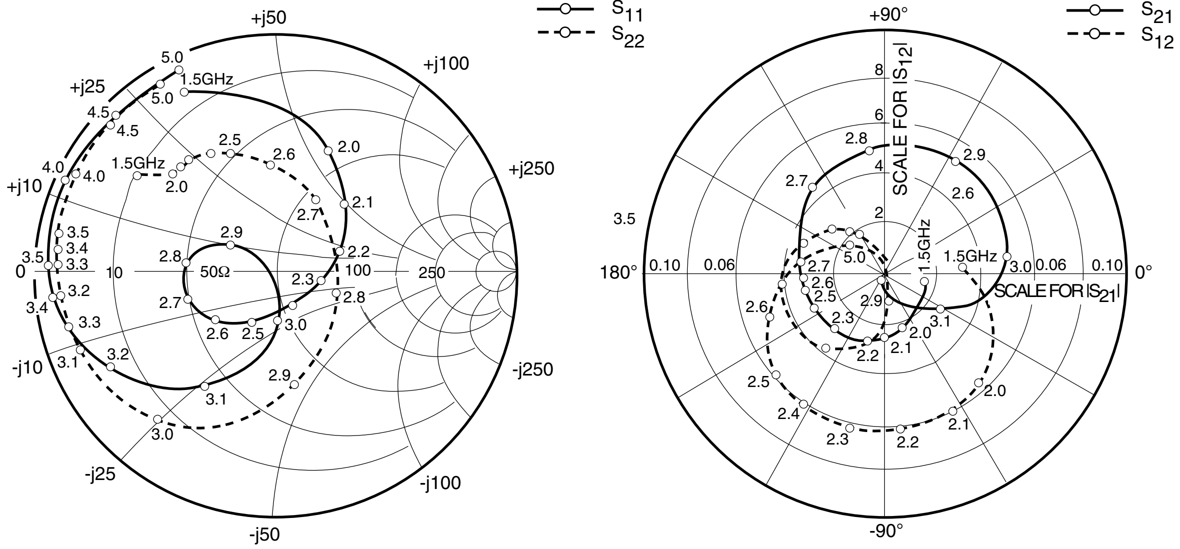
V_{DS} = 10V, I_{DS} = 4800mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.944	157.3	1.164	60.9	.004	-.8	.906	166.1
1000	.937	127.4	.835	28.8	.006	-16.3	.855	153.8
1500	.880	90.3	1.090	-14.0	.010	-55.4	.826	141.4
1700	.791	68.9	1.421	-39.7	.014	-81.9	.810	135.6
2000	.379	27.8	2.283	-100.2	.025	-147.2	.814	125.6
2300	.309	82.4	2.569	179.4	.031	128.7	.789	104.9
2500	.408	41.8	2.632	128.5	.035	78.5	.651	83.8
2700	.480	-43.5	2.631	55.1	.039	6.2	.290	26.4
3000	.803	-158.4	.772	-68.4	.012	-111.1	.718	-177.7
3500	.915	135.8	.030	-151.4	.001	72.1	.937	131.5
4000	.926	102.3	.013	-8.2	.002	8.3	.947	109.9

OUTPUT POWER vs. INPUT POWER





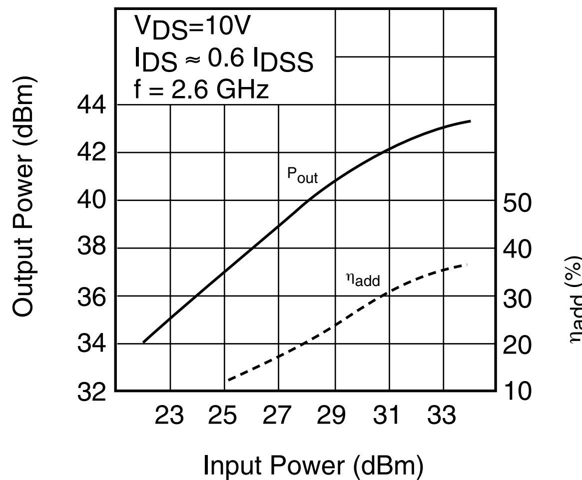


S-PARAMETERS

V_{DS} = 10V, I_{DS} = 4800mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.962	166.6	1.649	63.2	.007	41.9	.837	168.9
1000	.933	144.9	1.143	30.0	.015	32.2	.798	156.2
1500	.864	115.5	1.368	-12.1	.031	2.8	.726	142.6
2000	.548	64.6	2.320	-75.5	.059	-50.7	.526	137.3
2500	.220	-111.2	3.742	-173.7	.051	-138.8	.560	107.0
3000	.214	-85.0	4.634	7.9	.039	-126.8	.782	-128.3
3500	.923	178.6	.375	-118.7	.017	117.2	.898	166.5
4000	.953	150.4	.065	-162.9	.005	84.4	.939	147.5
4500	.952	131.2	.020	168.3	.001	75.2	.951	133.4
5000	.953	113.9	.008	143.6	.001	63.7	.957	119.1

OUTPUT POWER vs. INPUT POWER



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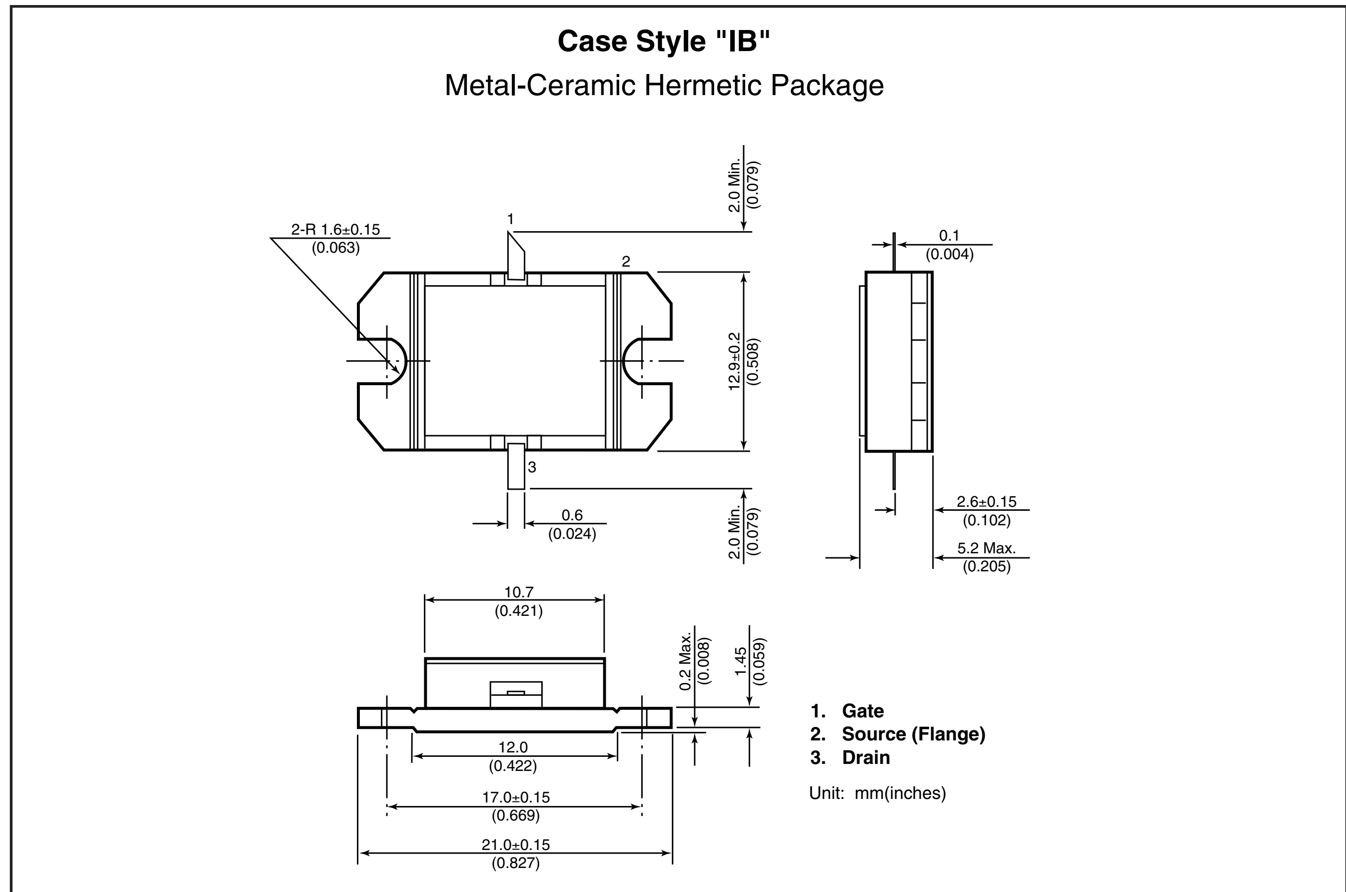
Case Style "IB"

Metal-Ceramic Hermetic Package



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