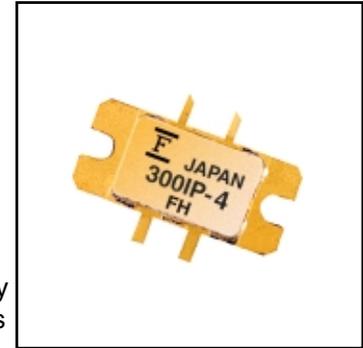


## FEATURES

- Push-Pull Configuration
- High PAE: 40% (Typ.)
- Broad Frequency Range: 3400 to 3600 MHz.
- Suitable for class A operation.

## DESCRIPTION

The FLL300IP-4 is a 30 Watt GaAs FET that employs a push-pull design which offers ease of matching, greater consistency and a broader bandwidth for high power L-band amplifiers. This product is targeted to reduce the size and complexity of highly linear, high power base station transmitting amplifiers. This new product is uniquely suited for use in Wireless Local Loop (WLL) base station amplifiers as it offers high gain, long term reliability and ease of use.



## APPLICATIONS

- Solid State Base-Station Power Amplifier.
- WLL Communication Systems.

## ABSOLUTE MAXIMUM RATINGS (Ambient Temperature Ta=25°C)

Parameter	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		15	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_T$	$T_c = 25^\circ\text{C}$	107	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 54.4 and -17.4mA 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	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Drain Current	$I_{DSS}$	$V_{DS} = 5V, V_{GS} = 0V$	-	12	16	A
Transconductance	gm	$V_{DS} = 5V, I_{DS} = 7.2A$	-	6000	-	mS
Pinch-Off Voltage	$V_p$	$V_{DS} = 5V, I_{DS} = 720mA$	-1.0	-2.0	-3.5	V
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -720\mu A$	-5	-	-	V
Output Power at 1 dB G.C.P.	$P_{1dB}$	$V_{DS} = 10V$ $f = 3.6GHz$ $I_{DS} = 6A$	43.5	44.5	-	dBm
Power Gain at 1 dB G.C.P.	$G_{1dB}$		7.0	8.0	-	dB
Drain Current	$I_{DSR}$		-	6.0	8.0	A
Power-Added Efficiency	$\eta_{add}$	Note 1	-	40	-	%
Thermal Resistance	$R_{th}$	Channel to Case	-	1.0	1.4	$^\circ\text{C}/W$
Channel Temperature Rise	$\Delta T_{ch}$	Note 2	-	-	80	$^\circ\text{C}$

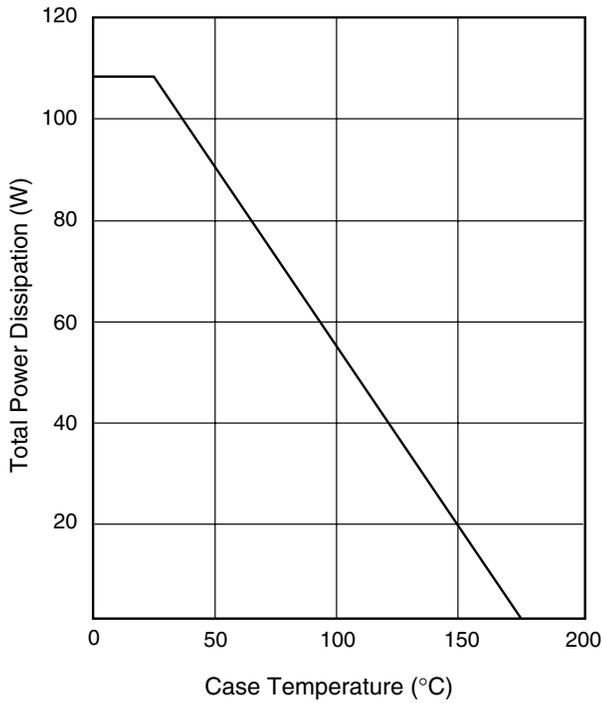
### CASE STYLE: IP

Note 1: The device shall be measured at a constant  $V_{GS}$  condition.

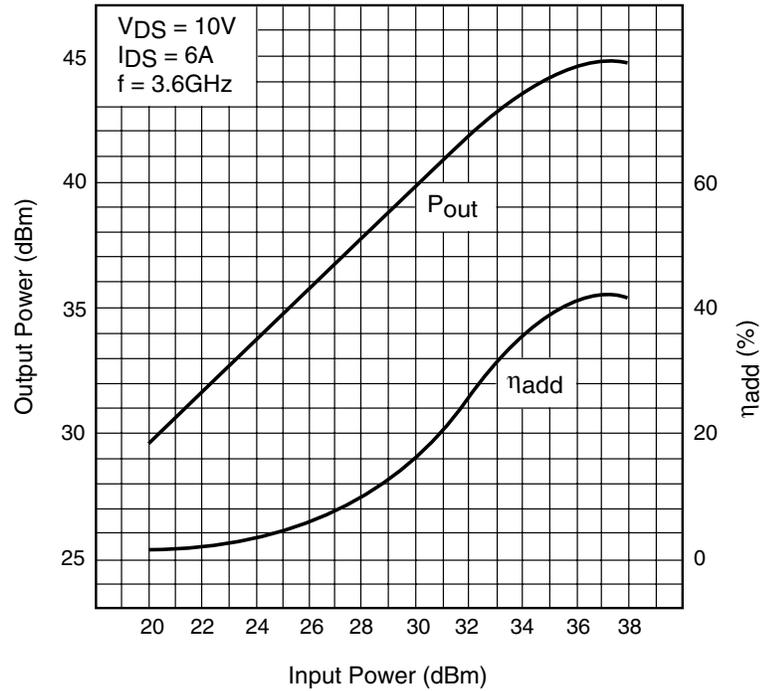
Note 2:  $\Delta T_{ch} = (10V \times I_{DSR} - P_{out} + P_{in}) \times R_{th}$

G.C.P.: Gain Compression Point

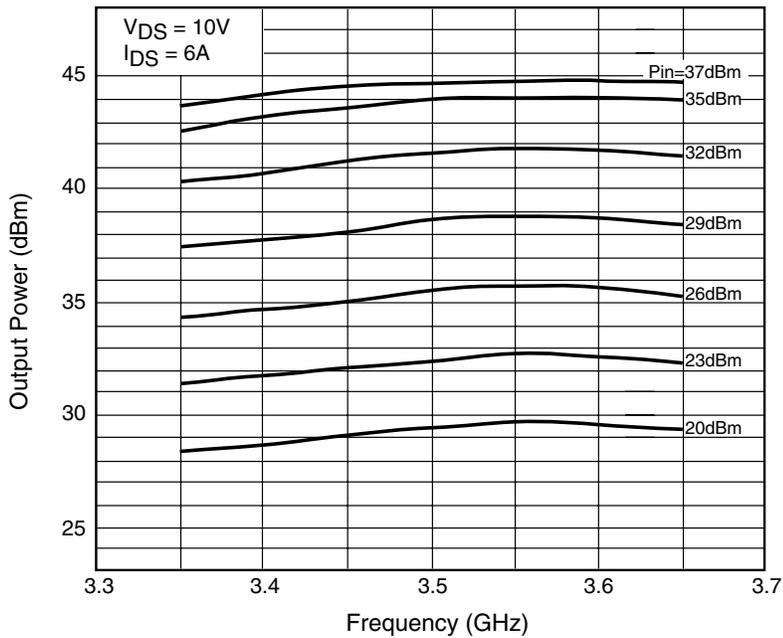
**POWER DERATING CURVE**



**OUTPUT POWER &  $\eta_{add}$  vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**



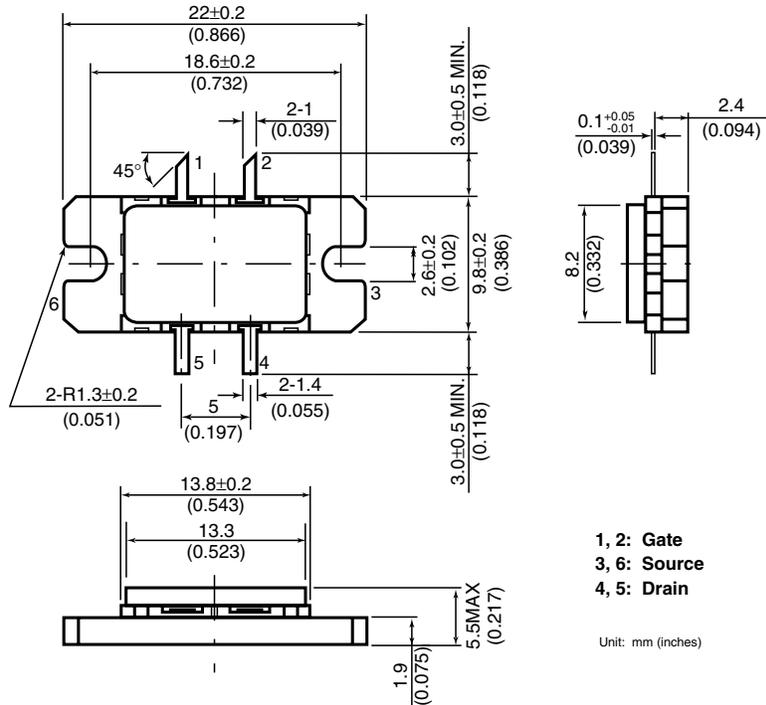
## S-PARAMETERS

$V_{DS} = 10V, I_{DS} = 3.0A$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.952	173.8	1.115	42.2	.007	23.4	.841	179.4
1100	.953	172.7	1.035	37.4	.007	35.9	.843	178.9
1120	.951	172.1	1.022	36.3	.007	40.2	.842	178.8
1300	.946	169.6	.918	26.9	.007	34.6	.846	177.4
1400	.942	168.4	.876	21.7	.008	25.6	.846	177.0
1500	.942	167.0	.843	16.4	.009	30.7	.845	175.8
1600	.936	165.2	.816	10.9	.008	30.2	.848	174.9
1700	.934	163.7	.799	5.3	.009	23.6	.847	174.2
1800	.928	162.1	.785	-3	.010	28.1	.850	173.2
1900	.923	160.8	.778	-6.0	.010	23.9	.850	172.0
2000	.917	159.2	.779	-12.0	.011	22.2	.849	171.2
2100	.910	157.8	.783	-18.0	.012	16.0	.851	170.3
2200	.907	156.6	.793	-24.2	.012	13.7	.852	169.3
2300	.892	154.7	.812	-30.6	.013	12.9	.855	168.3
2400	.882	153.3	.834	-37.8	.013	6.9	.855	167.7
2500	.867	152.5	.868	-43.3	.014	-8	.862	167.3
2600	.848	151.0	.915	-51.2	.014	-3.9	.865	166.6
2700	.822	149.7	.969	-59.3	.015	-9.3	.870	166.1
2800	.787	148.3	1.051	-68.7	.015	-8.2	.876	165.5
2900	.744	146.9	1.148	-79.7	.015	-16.1	.890	164.7
3000	.685	146.6	1.267	-92.5	.019	-27.9	.904	163.3
3100	.617	148.5	1.401	-107.9	.018	-45.8	.915	161.8
3200	.549	154.9	1.525	-126.8	.016	-63.3	.921	159.9
3300	.541	167.5	1.576	-148.6	.017	-86.5	.917	157.0
3400	.630	176.2	1.490	-172.0	.013	-114.9	.892	154.4
3500	.751	177.2	1.305	165.8	.008	-148.2	.864	153.8
3600	.840	174.1	1.088	146.8	.005	-179.3	.842	153.1
3700	.894	170.2	.886	130.5	.005	111.0	.832	153.2
3800	.928	166.9	.727	117.4	.007	88.7	.829	153.3
3900	.942	163.5	.599	105.5	.006	61.9	.830	152.8
4000	.951	160.6	.496	94.9	.008	54.4	.835	152.1
4100	.959	158.2	.421	85.5	.010	40.5	.839	151.3
4200	.958	155.5	.358	76.2	.010	31.5	.850	149.8
4300	.960	153.1	.307	68.0	.010	17.1	.859	148.4
4400	.957	150.5	.266	59.8	.011	24.3	.862	146.8
4500	.959	147.8	.233	52.1	.011	17.4	.868	144.7
4600	.958	145.3	.205	44.7	.012	16.5	.871	142.4
4700	.953	142.2	.180	37.8	.012	17.4	.884	140.0
4800	.957	139.1	.163	31.4	.013	17.9	.883	137.2
4900	.952	135.9	.148	24.9	.014	17.7	.896	134.9
5000	.955	132.3	.134	18.7	.015	16.5	.904	131.5

Note: This S-Parameter data shows measurements performed on a single-ended push-pull FET. These parameters should be used to determine the calculated Push-Pull S-Parameter amplifier designs.

## Case Style "IP" Metal-Ceramic Hermetic Package



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