

FLL600IQ-3

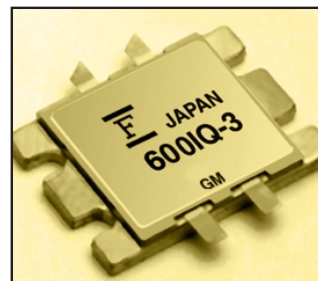
L-Band Medium & High Power GaAs FET

FEATURES

- Push-Pull Configuration
- High Power Output: 60W
- High PAE: 43%.
- Broad Frequency Range: 2000 to 2700 MHz.
- Suitable for class AB operation.

DESCRIPTION

The FLL600IQ-3 is a 60 Watt GaAs FET that employs a push-pull design that 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 WLL and MMDS base station amplifiers as it offers high gain, long term reliability and ease of use.



Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

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

| Parameter | Symbol | Condition | Rating | Unit |
|-------------------------|-----------|--------------------------|-------------|------------------|
| Drain-Source Voltage | V_{DS} | | 15 | V |
| Gate-Source Voltage | V_{GS} | | -5 | V |
| Total Power Dissipation | P_T | $T_c = 25^\circ\text{C}$ | 125 | 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 12 volts.
2. The forward and reverse gate currents should not exceed 78 and -32 mA respectively with gate resistance of 25Ω .
3. The operating channel temperature (T_{ch}) should not exceed 145°C .

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

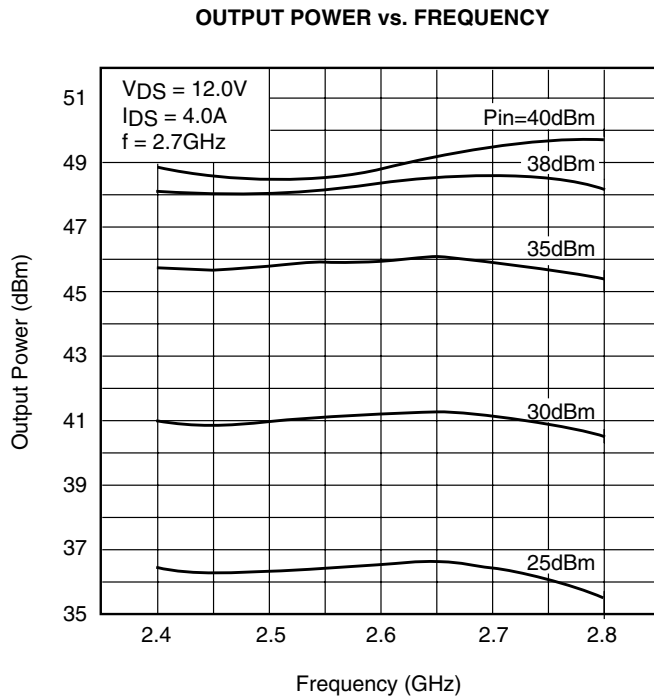
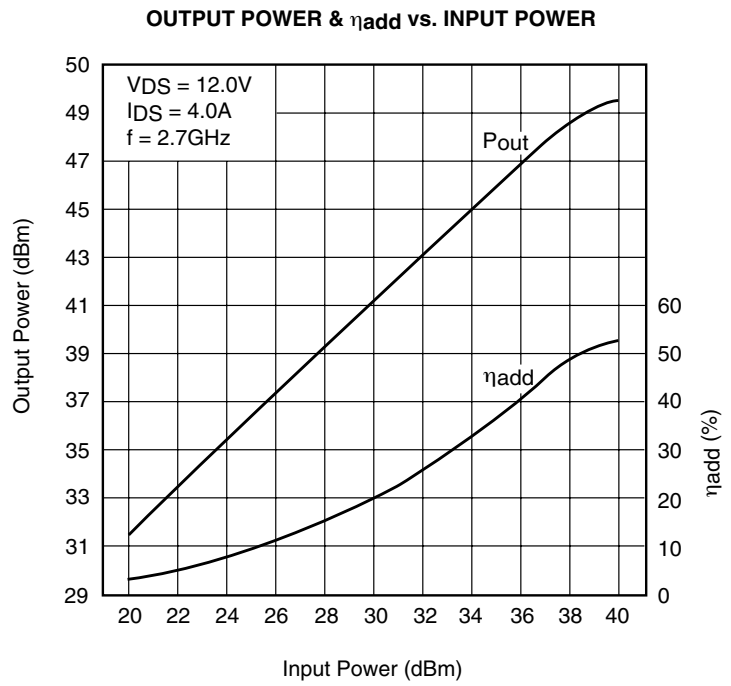
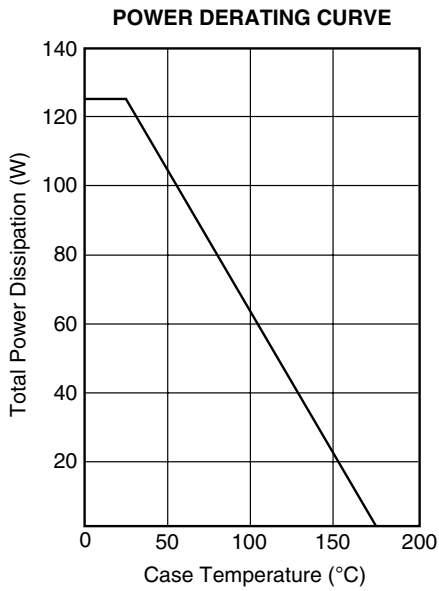
| Item | Symbol | Conditions | Limits | | | Unit |
|-------------------------------|--------------|---------------------------------------------------------|--------|------|------|--------------------|
| | | | Min. | Typ. | Max. | |
| Drain Current | I_{DSS} | $V_{DS} = 5V, V_{GS} = 0V$ | - | 24 | 32 | A |
| Transconductance | gm | $V_{DS} = 5V, I_{DS} = 14.4A$ | - | 12 | - | S |
| Pinch-Off Voltage | V_p | $V_{DS} = 5V, I_{DS} = 1.44A$ | -1.0 | -2.0 | -3.5 | V |
| Gate-Source Breakdown Voltage | V_{GSO} | $I_{GS} = -1.44mA$ | -5 | - | - | V |
| Output Power at 1 dB G.C.P. | P_{1dB} | $V_{DS} = 12V$ $f=2.7\text{ GHz}$ $I_{DS} = 4.0A$ | 47.0 | 48.0 | - | dBm |
| Power Gain at 1 dB G.C.P. | G_{1dB} | | 9.0 | 10.0 | - | dB |
| Drain Current | I_{DSR} | | - | 11.0 | 15.0 | A |
| Power-Added Efficiency | η_{add} | | - | 43 | - | % |
| Thermal Resistance | R_{th} | Channel to Case | - | 0.8 | 1.2 | $^\circ\text{C/W}$ |

CASE STYLE: IQ

G.C.P.: Gain Compression Point

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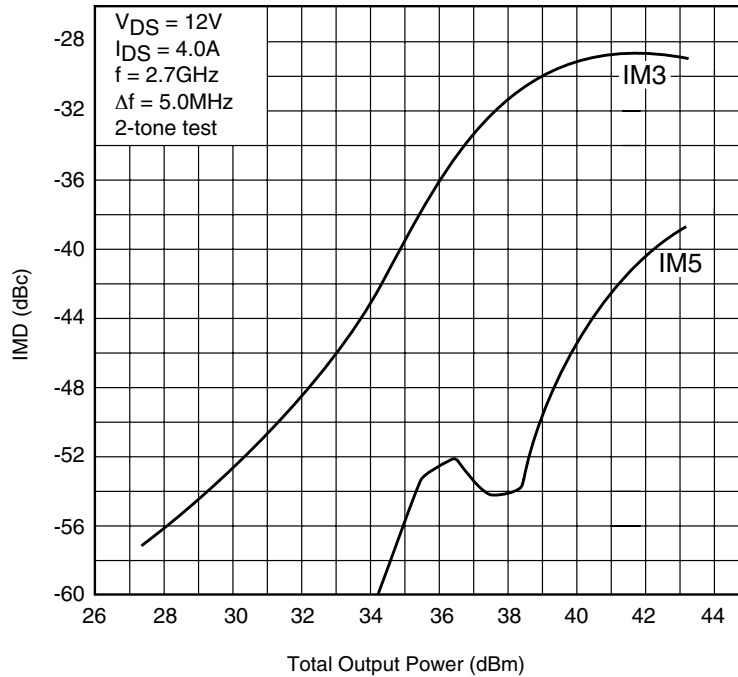
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OUTPUT POWER vs. IMD

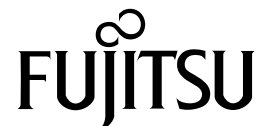


S-PARAMETERS

$V_{DS} = 12V, I_{DS} = 2000mA$

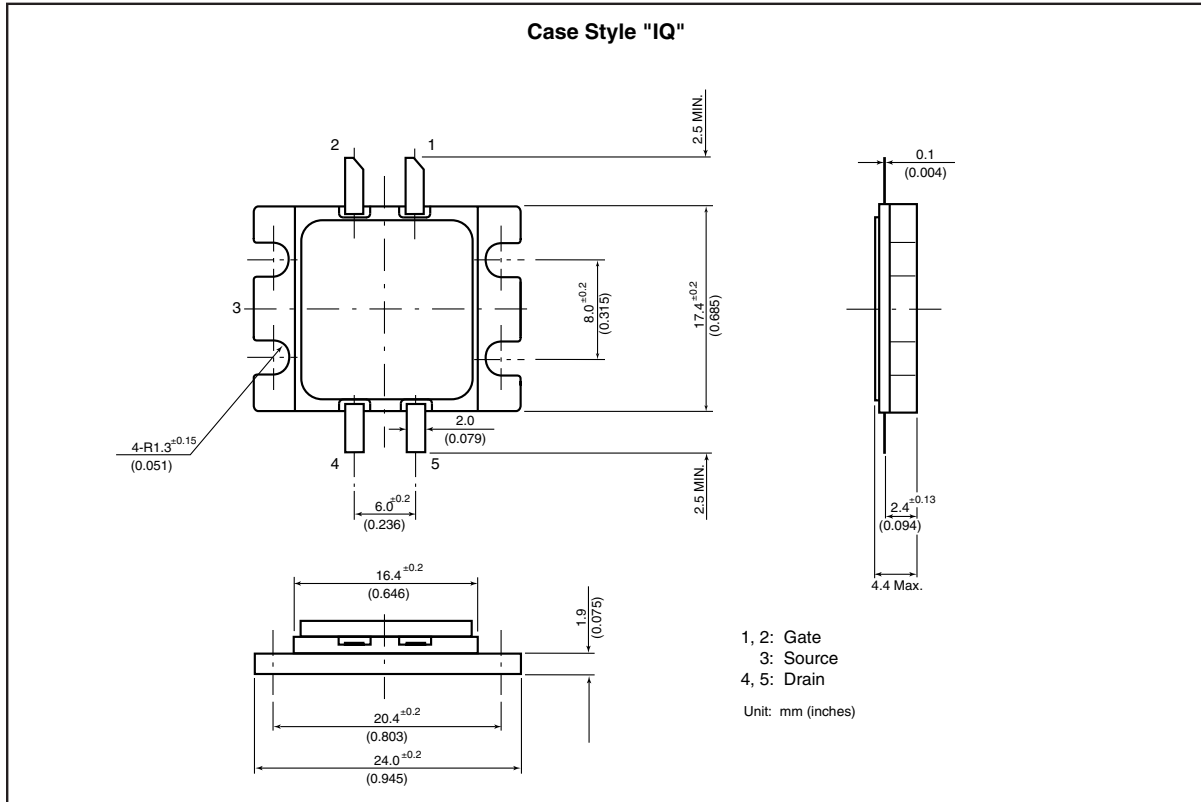
| FREQUENCY (MHZ) | S11 | | S21 | | S12 | | S22 | |
|--------------------|------|-------|-------|--------|------|--------|------|--------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 500 | .978 | 178.4 | .905 | 76.5 | .005 | 47.5 | .807 | 176.5 |
| 600 | .974 | 176.4 | .793 | 73.0 | .005 | 51.3 | .895 | 175.3 |
| 700 | .972 | 175.0 | .729 | 69.5 | .006 | 61.1 | .896 | 174.9 |
| 800 | .962 | 173.6 | .684 | 66.2 | .006 | 58.1 | .886 | 174.1 |
| 900 | .961 | 172.5 | .690 | 62.2 | .008 | 51.9 | .873 | 173.1 |
| 1000 | .952 | 170.7 | .688 | 57.1 | .009 | 51.7 | .866 | 172.4 |
| 1100 | .944 | 168.6 | .718 | 51.1 | .011 | 56.7 | .858 | 171.7 |
| 1200 | .933 | 167.0 | .740 | 44.6 | .013 | 50.1 | .844 | 171.3 |
| 1300 | .924 | 165.2 | .784 | 37.5 | .014 | 46.6 | .832 | 171.1 |
| 1400 | .901 | 162.7 | .836 | 29.6 | .016 | 42.9 | .823 | 171.0 |
| 1500 | .881 | 160.4 | .898 | 20.8 | .018 | 36.2 | .814 | 171.2 |
| 1600 | .853 | 157.8 | .959 | 11.6 | .020 | 28.6 | .815 | 171.7 |
| 1700 | .816 | 155.2 | 1.043 | 1.3 | .023 | 23.3 | .818 | 172.6 |
| 1800 | .778 | 152.9 | 1.116 | -10.0 | .024 | 16.5 | .828 | 172.9 |
| 1900 | .736 | 151.0 | 1.231 | -20.8 | .026 | 7.8 | .843 | 173.3 |
| 2000 | .704 | 148.6 | 1.386 | -32.8 | .029 | -9.8 | .864 | 172.4 |
| 2100 | .636 | 146.2 | 1.566 | -47.5 | .026 | -22.1 | .871 | 171.2 |
| 2200 | .579 | 145.5 | 1.730 | -61.5 | .025 | -30.4 | .887 | 169.9 |
| 2300 | .508 | 145.9 | 1.998 | -78.1 | .025 | -45.0 | .876 | 167.5 |
| 2400 | .439 | 152.3 | 2.278 | -97.6 | .023 | -65.2 | .843 | 164.8 |
| 2500 | .439 | 166.3 | 2.605 | -116.1 | .020 | -94.7 | .782 | 163.6 |
| 2600 | .562 | 172.4 | 2.774 | -144.5 | .013 | -141.0 | .697 | 166.2 |
| 2700 | .700 | 162.6 | 2.675 | -173.0 | .013 | 137.0 | .661 | 173.7 |
| 2800 | .755 | 146.1 | 2.312 | 160.3 | .016 | 85.1 | .692 | -179.9 |
| 2900 | .723 | 126.8 | 1.967 | 137.9 | .021 | 51.3 | .748 | -177.1 |
| 3000 | .648 | 107.1 | 1.649 | 119.3 | .026 | 37.5 | .805 | -176.7 |
| 3100 | .579 | 74.7 | 1.536 | 101.2 | .034 | 23.2 | .841 | -177.3 |
| 3200 | .477 | 26.1 | 1.338 | 78.5 | .040 | 2.4 | .875 | -178.6 |
| 3300 | .318 | -33.9 | .963 | 58.0 | .038 | -21.5 | .909 | 179.2 |

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.



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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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