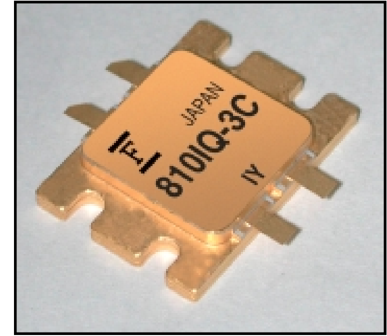
# FLL810IQ-3C

## *L-Band High Power GaAs FET*

## FEATURES

- Push-Pull Configuration
- High Power Output: 80W
- High PAE: 50%.
- Excellent Linearity
- Suitable for class AB operation.
- Hermetically Sealed Package




## DESCRIPTION

The FLL810IQ-3C is an 80 Watt GaAs FET that employs a push-pull design. This device offers excellent linearity, ease of matching, and greater consistency in covering the frequency band of 2.5 to 2.7 GHz. This new product is uniquely suited for use in MMDS applications as it offers high gain, long term reliability and ease of use.

### ABSOLUTE MAXIMUM RATINGS (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** | $P_T$ | Tc = 25°C | 136 | 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 12 volts.
2. The forward and reverse gate currents should not exceed 176 and -51.8 mA respectively with gate resistance of 5Ω.
3. The operating channel temperature ($T_{ch}$) should not exceed 145°C.

### ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

| Item | Symbol | Conditions | Limits | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| **Drain Current** | $I_{DSS}$ | $V_{DS}$ = 5V, $V_{GS}$ = 0V | - | 8 | - | A |
| **Pinch-Off Voltage** | $V_p$ | $V_{DS}$ = 5V, $I_{DS}$ = 220mA | -0.1 | -0.3 | -0.5 | V |
| **Gate-Source Breakdown Voltage** | $V_{GSO}$ | $I_{GS}$ = -2.2mA | -5 | - | - | V |
| **Output Power** | $P_{out}$ | $V_{DS}$ = 12V<br>f = 2.6 GHz<br>$I_{DS}$ = 5.0A<br>Pin = 40.0dBm | 48.0 | 49.0 | - | dBm |
| **Linear Gain (Note 1)** | GL | | 11.0 | 12.0 | - | dB |
| **Power-Added Efficiency** | $\eta_{add}$ | | - | 50 | - | % |
| **Drain Current** | $I_{DSR}$ | | - | 11.5 | 15.0 | A |
| **Thermal Resistance** | $R_{th}$ | Channel to Case | - | 0.8 | 1.1 | °C/W |

**CASE STYLE: IQ**

Note 1: The condition for GL is the same as Pout except Pin = 25.0dBm.

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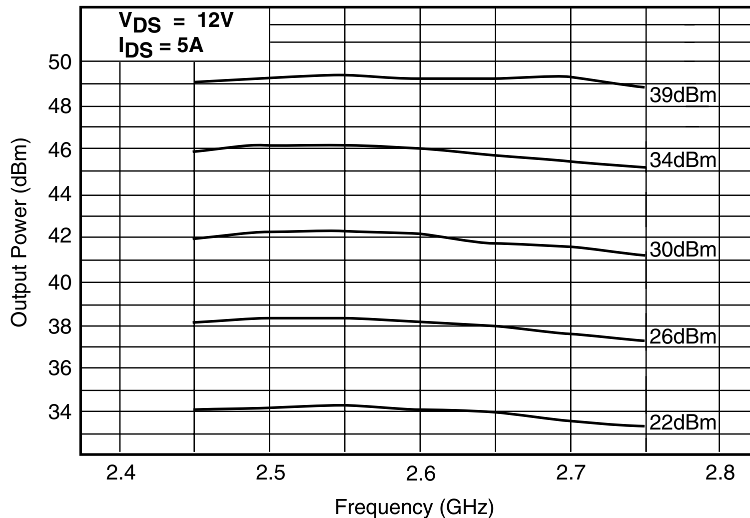
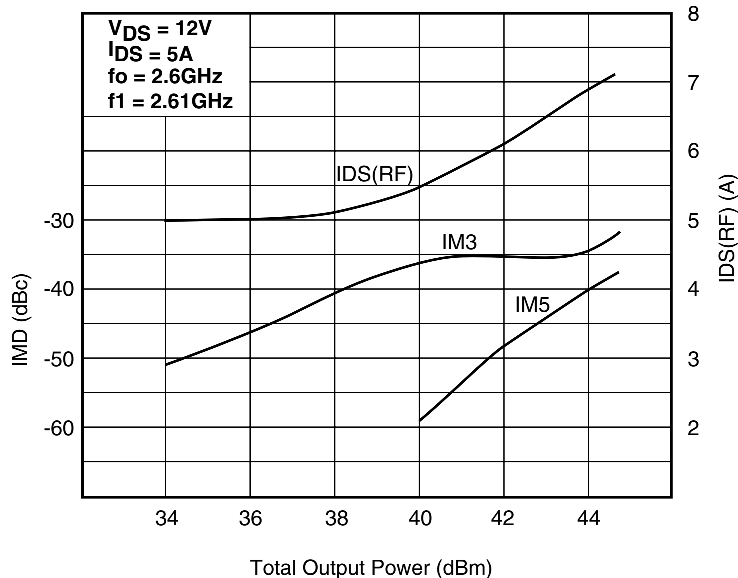
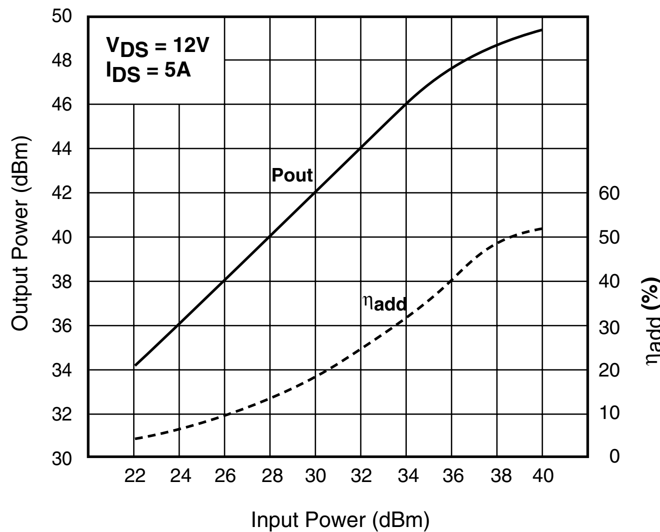
**OUTPUT POWER vs. FREQUENCY**




**IMD & IDS(RF) vs. TOTAL OUTPUT POWER**




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



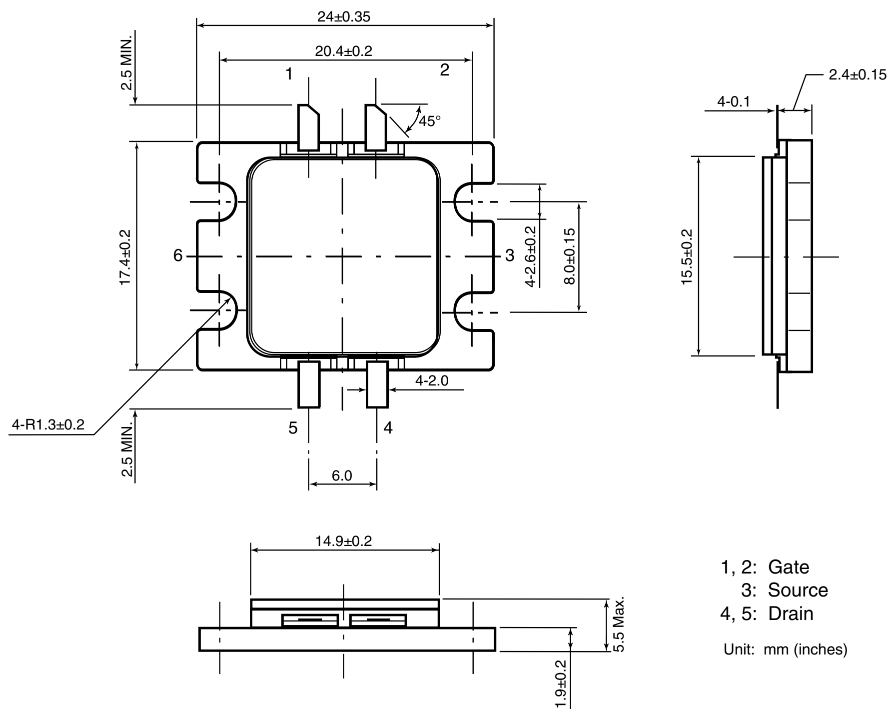
**S-PARAMETERS**

$V_{DS}$ = 12V, $I_{DS}$ = 2500mA

| FREQUENCY | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| (MHZ) | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1500 | .856 | 137.9 | 1.167 | 39.2 | .021 | 43.0 | .841 | 167.3 |
| 1600 | .786 | 131.5 | 1.430 | 25.6 | .026 | 31.2 | .805 | 167.9 |
| 1700 | .698 | 124.7 | 1.722 | 10.3 | .029 | 15.8 | .790 | 169.2 |
| 1800 | .579 | 118.4 | 2.020 | -8.0 | .034 | 0.9 | .777 | 170.2 |
| 1900 | .455 | 115.3 | 2.323 | -27.7 | .036 | -16.4 | .795 | 171.0 |
| 2000 | .347 | 115.2 | 2.564 | -48.5 | .039 | -39.5 | .818 | 169.7 |
| 2100 | .247 | 119.8 | 2.784 | -67.9 | .041 | -59.6 | .819 | 167.1 |
| 2200 | .141 | 142.0 | 3.064 | -90.1 | .041 | -84.9 | .781 | 163.5 |
| 2300 | .200 | -160.2 | 3.418 | -114.9 | .039 | -114.5 | .668 | 162.4 |
| 2400 | .425 | -159.8 | 3.446 | -143.7 | .035 | -150.5 | .560 | 170.4 |
| 2500 | .634 | -179.2 | 3.332 | -173.7 | .029 | 170.0 | .556 | -175.3 |
| 2600 | .738 | 156.5 | 2.845 | 161.4 | .024 | 122.6 | .659 | -168.5 |
| 2700 | .750 | 129.4 | 2.436 | 134.5 | .023 | 84.7 | .747 | -168.5 |
| 2800 | .693 | 94.5 | 2.125 | 113.9 | .020 | 47.3 | .822 | -170.0 |
| 2900 | .620 | 48.8 | 1.618 | 89.3 | .020 | 12.3 | .879 | -172.2 |
| 3000 | .601 | 0.2 | 1.345 | 67.3 | .019 | -15.0 | .910 | -175.1 |
| 3100 | .713 | -39.5 | 1.031 | 50.9 | .017 | -35.8 | .931 | -177.6 |
| 3200 | .804 | -68.6 | .748 | 31.0 | .014 | -60.2 | .922 | -179.8 |
| 3300 | .863 | -89.7 | .587 | 19.4 | .015 | -70.4 | .936 | 178.2 |
| 3400 | .895 | -104.3 | .420 | 9.2 | .014 | -85.8 | .936 | 176.2 |
| 3500 | .909 | -115.6 | .335 | 0.5 | .009 | -96.7 | .951 | 174.2 |

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.

### Case Style "IQ"

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