

# FLL600IQ-2C

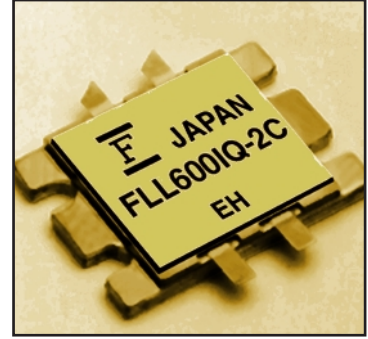
## L-Band High Power GaAs FET

### FEATURES

- Push-Pull Configuration
- High Power Output: 60W (Typ.)
- High PAE: 51% (Typ.)
- Broad Frequency Range: 2100 to 2200 MHz.
- Suitable for class AB operation.

### DESCRIPTION

The FLL600IQ-2C 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 W-CDMA and IMT 2000 base station amplifiers as it offers high gain, long term reliability and ease of use.



### APPLICATIONS

- Solid State Base-Station Power Amplifier.
- W-CDMA and IMT 2000 Communication Systems.

### 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 | $P_T$     | $T_c = 25^\circ\text{C}$ | 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 117 and -35.4 mA respectively with gate resistance of 10 $\Omega$ .
3. The operating channel temperature ( $T_{ch}$ ) should not exceed 145°C.

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

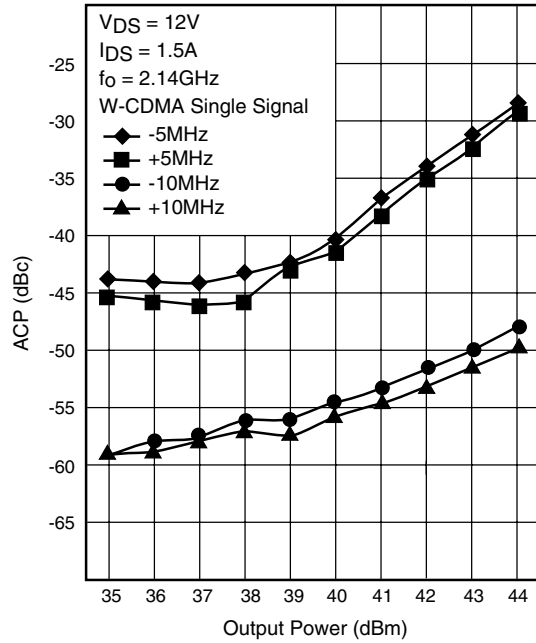
| Item                          | Symbol       | Conditions                                                                     | Limits |      |      | Unit               |
|-------------------------------|--------------|--------------------------------------------------------------------------------|--------|------|------|--------------------|
|                               |              |                                                                                | Min.   | Typ. | Max. |                    |
| Drain Current                 | $I_{DSS}$    | $V_{DS} = 5V, V_{GS} = 0V$                                                     | -      | 6    | -    | A                  |
| Pinch-Off Voltage             | $V_p$        | $V_{DS} = 5V, I_{DS} = 151mA$                                                  | -0.1   | -0.3 | -0.5 | V                  |
| Gate-Source Breakdown Voltage | $V_{GSO}$    | $I_{GS} = -1.51mA$                                                             | -5     | -    | -    | V                  |
| Output Power                  | $P_{out}$    | $V_{DS} = 12V$<br>$f = 2.17\text{ GHz}$<br>$I_{DS} = 1.5A$<br>$P_{in} = 39dBm$ | 47.0   | 48.0 | -    | dBm                |
| Linear Gain                   | GL           |                                                                                | 11.0   | 12.0 | -    | dB                 |
| Drain Current                 | $I_{DSR}$    |                                                                                | -      | 9    | 13   | A                  |
| Power-Added Efficiency        | $\eta_{add}$ |                                                                                | -      | 51   | -    | %                  |
| Thermal Resistance            | $R_{th}$     | Channel to Case                                                                | -      | 0.8  | 1.2  | $^\circ\text{C/W}$ |

CASE STYLE: IU

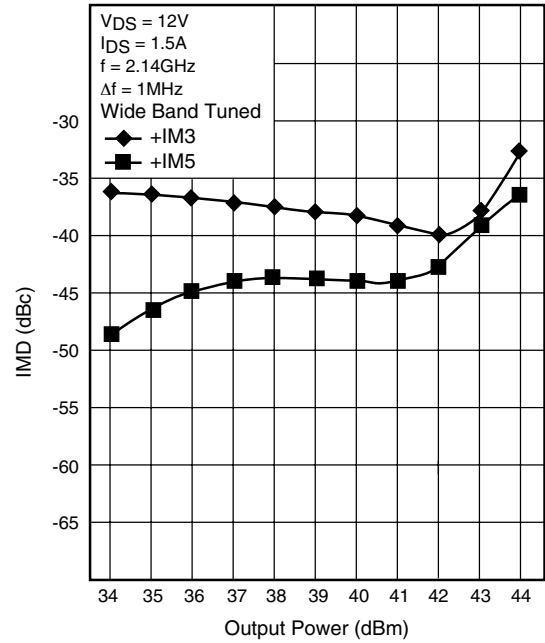
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## L-Band High Power GaAs FET

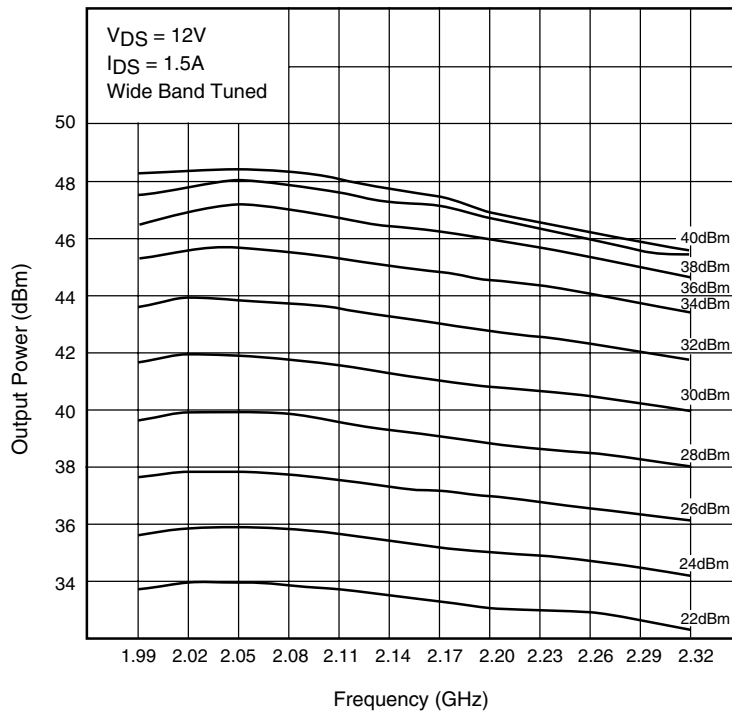
ACP vs. OUTPUT POWER



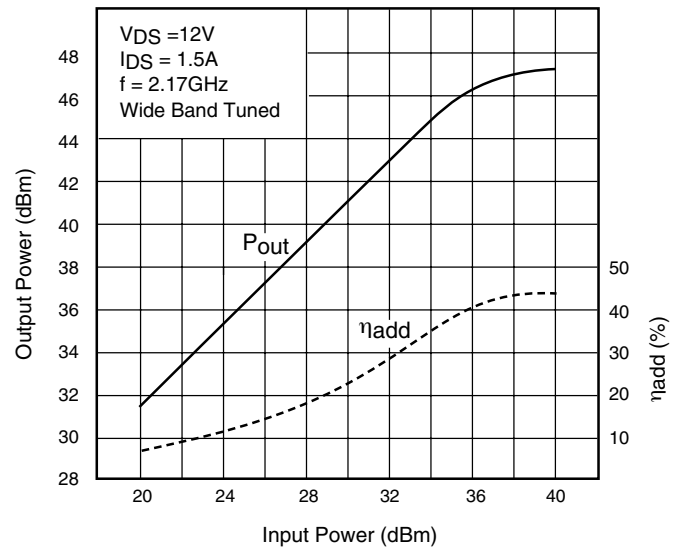
IMD vs. OUTPUT POWER



OUTPUT POWER vs. FREQUENCY



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



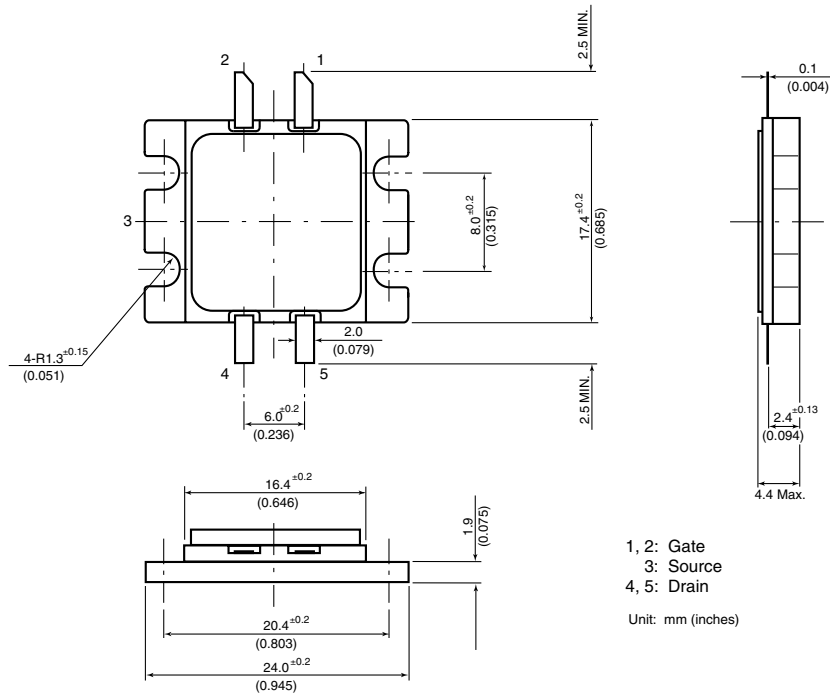
**S-PARAMETERS** $V_{DS} = 12V, I_{DS} = 750mA$ 

| FREQUENCY<br>(MHZ) | S11  |        | S21   |        | S12  |        | S22  |        |
|--------------------|------|--------|-------|--------|------|--------|------|--------|
|                    | MAG  | ANG    | MAG   | ANG    | MAG  | ANG    | MAG  | ANG    |
| 1000               | .923 | 168.0  | .798  | 51.9   | .009 | 50.4   | .853 | 175.2  |
| 1100               | .916 | 166.5  | .811  | 46.7   | .010 | 46.2   | .845 | 174.8  |
| 1200               | .897 | 164.7  | .844  | 40.3   | .012 | 46.0   | .841 | 175.0  |
| 1300               | .880 | 163.1  | .879  | 33.0   | .014 | 43.1   | .835 | 175.1  |
| 1400               | .856 | 161.4  | .933  | 25.3   | .014 | 41.4   | .828 | 175.4  |
| 1500               | .828 | 159.9  | 1.006 | 16.3   | .018 | 32.5   | .828 | 176.0  |
| 1600               | .794 | 158.3  | 1.102 | 6.5    | .017 | 28.8   | .833 | 176.4  |
| 1700               | .751 | 157.3  | 1.198 | -4.8   | .020 | 17.0   | .847 | 176.7  |
| 1800               | .710 | 156.9  | 1.301 | -16.3  | .022 | 11.9   | .864 | 176.6  |
| 1900               | .672 | 157.7  | 1.420 | -30.4  | .022 | -2.9   | .887 | 175.6  |
| 2000               | .641 | 159.0  | 1.510 | -44.9  | .022 | -15.0  | .905 | 173.9  |
| 2100               | .619 | 162.1  | 1.612 | -60.8  | .020 | -26.2  | .907 | 171.2  |
| 2200               | .615 | 164.7  | 1.703 | -74.8  | .018 | -42.8  | .906 | 168.5  |
| 2300               | .629 | 167.3  | 1.819 | -90.9  | .013 | -66.7  | .882 | 165.0  |
| 2400               | .670 | 168.5  | 1.924 | -107.0 | .009 | -90.6  | .841 | 161.8  |
| 2500               | .722 | 167.8  | 2.094 | -123.3 | .006 | -149.2 | .785 | 160.5  |
| 2600               | .788 | 162.7  | 2.178 | -143.8 | .011 | 131.7  | .703 | 160.4  |
| 2700               | .852 | 153.7  | 2.227 | -165.4 | .018 | 101.8  | .637 | 163.6  |
| 2800               | .883 | 140.8  | 2.156 | 172.6  | .030 | 80.0   | .602 | 169.5  |
| 2900               | .878 | 123.3  | 2.093 | 151.0  | .039 | 54.9   | .611 | 175.9  |
| 3000               | .816 | 98.1   | 2.019 | 127.8  | .057 | 37.0   | .649 | -179.3 |
| 3100               | .671 | 60.6   | 1.899 | 101.7  | .063 | 9.4    | .716 | -177.1 |
| 3200               | .304 | 3.9    | 1.349 | 72.0   | .060 | -32.3  | .800 | -179.1 |
| 3300               | .364 | 23.2   | 1.195 | 74.8   | .035 | -27.7  | .815 | 177.0  |
| 3400               | .489 | -29.8  | 1.167 | 53.6   | .037 | -30.9  | .831 | 174.7  |
| 3500               | .638 | -65.9  | 1.023 | 30.1   | .039 | -34.4  | .846 | 172.5  |
| 3600               | .726 | -92.2  | .790  | 11.3   | .035 | -41.6  | .857 | 170.0  |
| 3700               | .778 | -109.9 | .621  | -1.7   | .037 | -47.1  | .863 | 167.4  |
| 3800               | .802 | -122.9 | .499  | -10.6  | .038 | -44.1  | .863 | 165.3  |
| 3900               | .820 | -132.5 | .443  | -16.0  | .032 | -55.1  | .865 | 163.1  |
| 4000               | .836 | -141.3 | .401  | -23.6  | .034 | -41.3  | .864 | 160.3  |
| 4100               | .839 | -149.1 | .380  | -29.6  | .037 | -38.8  | .865 | 157.5  |
| 4200               | .835 | -156.7 | .363  | -37.3  | .049 | -30.3  | .865 | 154.3  |
| 4300               | .823 | -165.2 | .360  | -44.0  | .070 | -29.1  | .861 | 150.9  |
| 4400               | .769 | -177.9 | .364  | -49.0  | .131 | -26.5  | .862 | 146.4  |
| 4500               | .342 | 139.7  | .514  | -52.9  | .381 | -63.5  | .822 | 137.7  |

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## L-Band High Power GaAs FET

Case Style "IQ"



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- 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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Printed in U.S.A. FCSI1199M200

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