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# BLF248

**28V, 300W, 175MHz**

## RF POWER PUSH-PULL VERTICAL MOSFET

The BLF248 is designed for broadband commercial and military applications at frequencies to 175MHz. The high power, high gain, ruggedness and broadband performance of this device make possible solid state transmitters for FM broadcast or TV channel frequency bands.

### FEATURES

- **Improved Ruggedness $V_{(BR)DSS}$ = 80V**
- **300W with 14dB Typical Gain @ 175MHz, 28V**
- **Excellent Stability & Low IMD**
- **Common Source Configuration**
- **RoHS Compliant**
- **5:1 Load VSWR Capability at Specified Operating Conditions**
- **Nitride Passivated**
- **Refractory Gold Metallization**
- **P1dB High Voltage Replacement for BLF248**

### Maximum Ratings

**All Ratings: $T_C$ =25°C unless otherwise specified**

| Symbol | Parameter | BLF248 | Unit |
|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | 80 | V |
| $I_D$ | Continuous Drain Current @ $T_C$ = 25°C | 40 | A |
| $V_{GS}$ | Gate-Source Voltage | ±40 | V |
| $P_D$ | Total Device dissipation @ $T_C$ = 25°C | 500 | W |
| $T_{STG}$ | Storage Temperature Range | -65 to 150 | °C |
| $T_J$ | Operating Junction Temperature | 200 | |

### Static Electrical Characteristics

| Symbol | Parameter | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage ($V_{GS}$ = 0V, $I_D$ = 100mA) | 80 | 90 | | V |
| $V_{DS(ON)}$ | On State Drain Voltage ($I_{D(ON)}$ = 10A, $V_{GS}$ = 10V) | | .9 | 1.0 | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current ($V_{DS}$ = 60V, $V_{GS}$ = 0V) | | | 1.0 | mA |
| $I_{GSS}$ | Gate-Source Leakage Current ($V_{DS}$ = ±20V, $V_{DS}$ = 0V) | | | 1.0 | μA |
| $g_{fs}$ | Forward Transconductance ($V_{DS}$ = 10V, $I_D$ = 5A) | 5.0 | | | mhos |
| $V_{GS(TH)}$ | Gate Threshold Voltage ($V_{DS}$ = 10V, $I_D$ = 100mA) | 2.9 | 3.6 | 4.4 | V |

### Thermal Characteristics

| Symbol | Characteristic | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| $R_{\theta JC}$ | Junction to Case Thermal Resistance | | | 0.35 | °C/W |

**CAUTION:** These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

## Dynamic Characteristics

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0V | | 400 | | pF |
| $C_{oss}$ | Output Capacitance | $V_{DS}$ = 28V | | 375 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | f = 1MHz | | 50 | | |

## Functional Characteristics

| Symbol | Parameter | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| $G_{PS}$ | f = 175MHz,- $V_{DD}$ = 28V, $I_{DQ}$ = 500mA, $P_{out}$ = 300W | 12 | 14 | | dB |
| $\eta_D$ | f = 175MHz, $V_{DD}$ = 28V, $I_{DQ}$ = 500mA, $P_{out}$ = 300W | 45 | 55 | | % |
| ψ | f = 175MHz, $V_{DD}$ = 28V, $I_{DQ}$ = 500mA, $P_{out}$ = 300W 5:1VSWR - All Phase Angles | No Degradation in Output Power | | | |

1. To MIL-STD-1311 Version A, test method 2204B, Two Tone, Reference Each Tone

## Typical Performance Curves

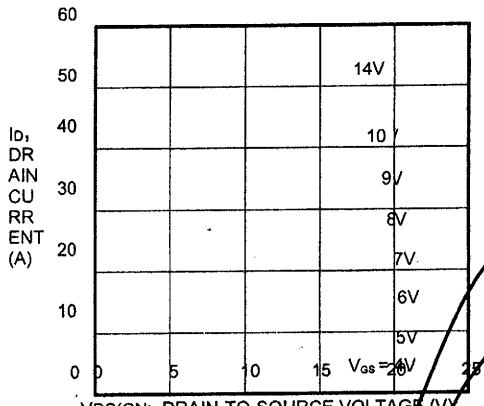

FIGURE 1, Output Characteristics

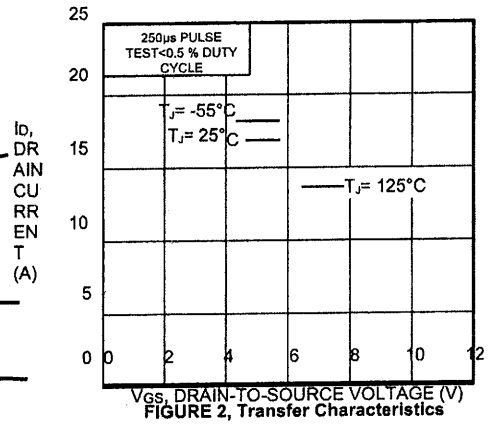

FIGURE 2, Transfer Characteristics

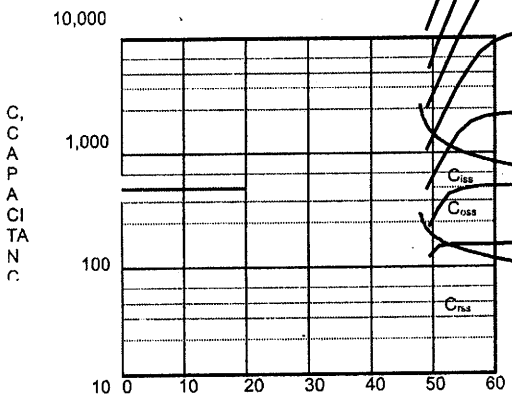

FIGURE 3, Capacitance vs Drain-to-Source Voltage

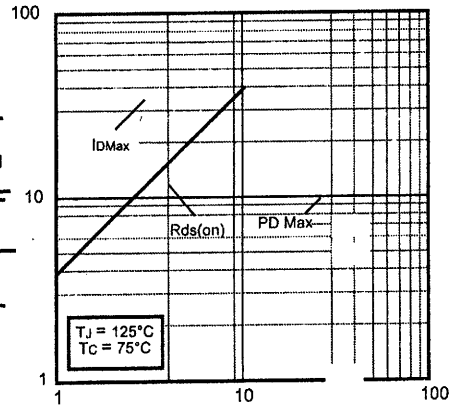

FIGURE 4, Forward Safe Operating Area