# MAPL-000817-015CPC

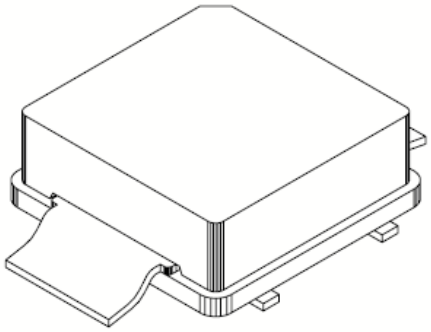
## LDMOS RF Line Power FET Transistor
## 15 W , 800-1700 MHz, 26V

M/A-COM Products
Released - Rev. 07.08

Designed for broadband commercial applications up to 1.7GHz

- High gain, high efficiency and high linearity
- Aluminum-Copper Metallization for high reliability
- RoHS Compliant
- Typical P1dB performance at 960MHz, 26Vdc, CW
  - Typical power output: 16.5W
  - Gain: 17.0dB
  - Efficiency: 50%
  - 10:1 VSWR ruggedness at 15W, 26Vdc, 960MHz

**Product Image**



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### MAXIMUM RATINGS

| Parameter | Symbol | Rating | Units |
|---|---|---|---|
| Drain—Source Voltage | $V_{DSS}$ | 65 | $V_{dc}$ |
| Gate—Source Voltage | $V_{GS}$ | +20, -20 | $V_{dc}$ |
| Total Power Dissipation @ $T_C$ = 25 °C | $P_D$ | 31 | W |
| Storage Temperature | $T_{STG}$ | -65 to +150 | °C |
| Junction Temperature | $T_J$ | 200 | °C |

### THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 4 | °C/W |

NOTE—**CAUTION**—MOS devices are susceptible to damage from electrostatic charge. Precautions in handling and packaging MOS devices should be observed.





- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macomtech.com for additional data sheets and product information.

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **DC CHARACTERISTICS @ 25ºC** | | | | | |
| Drain-Source Breakdown Voltage ($V_{GS}$ = 0 Vdc, $I_D$ = 20 µAdc) | $V_{(BR)DSS}$ | 65 | — | — | Vdc |
| Gate Quiescent Voltage ($V_{ds}$ = 26 Vdc, $I_d$ = 100 mA) | $V_{DS(Q)}$ | 3 | — | 5 | Vdc |
| Drain-Source On-Voltage ($V_{gs}$ = 10 Vdc, $I_d$ = 1 A) | $V_{DS(on)}$ | — | 0.25 | — | Vdc |
| **RF FUNCTIONAL TESTS @ 25ºC (In M/A-COM Test Fixture) (1)** | | | | | |
| Common Source Amplifier Gain ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 960 MHz, $P_{OUT}$ = 15 W) | $G_P$ | — | 17 | — | dB |
| Drain Efficiency ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 960 MHz, $P_{OUT}$ = 15 W) | EFF (ŋ) | — | 50 | — | % |
| Input Return Loss ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 960 MHz, $P_{OUT}$ = 15 W) | IRL | — | -10 | — | dB |
| Output VSWR Tolerance ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 960 MHz, $P_{OUT}$ = 15 W, VSWR = 10:1, All Phase Angles at Frequency of Tests) | Ψ | No Degradation In Output Power Before and After Test | | | |
| Common Source Amplifier Gain ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 1670 MHz, $P_{OUT}$ = 15 W) | $G_P$ | 13.0 | 15 | — | dB |
| Drain Efficiency ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 1670 MHz, $P_{OUT}$ = 15 W) | EFF (ŋ) | 45 | 50 | — | % |
| Input Return Loss ($V_{DD}$ = 26 Vdc, $I_{DQ}$ = 150 mA, f = 1670 MHz, $P_{OUT}$ = 15 W) | IRL | — | -10 | -8 | dB |

(1) Device specifications obtained on a Production Test Fixture.





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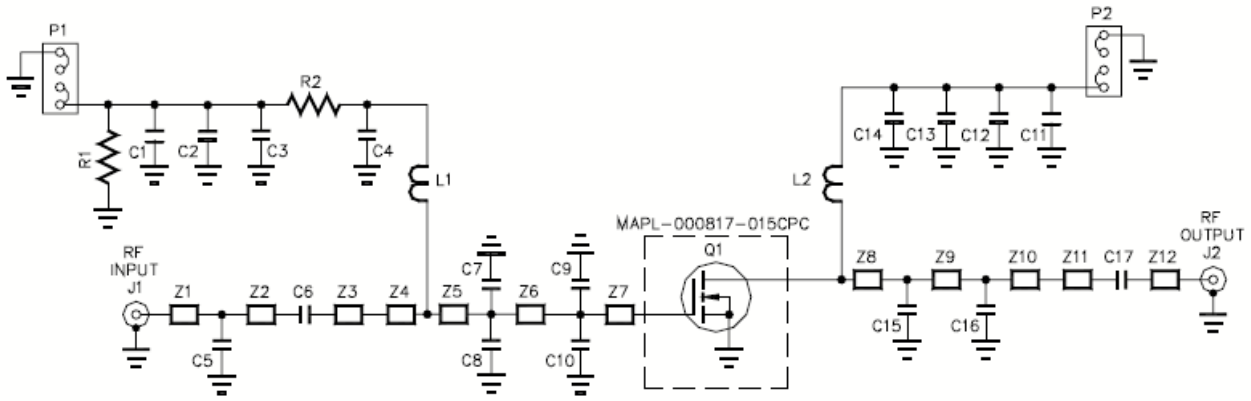



| | |
|---|---|
| C1,C11 | Tantalum Surface Mt. Cap., 100 µF, 35 V |
| C2,C12 | Ceramic Chip Capacitor, 0.1 µF |
| C3,C13 | Ceramic Chip Capacitor, 1000 pF |
| C4,C6,C14,C17 | Chip Capacitor, 39 pF ATC100A |
| C5 | Chip Capacitor, 1.8 pF ATC100A |
| C7,C8 | Chip Capacitor, 1.0 pF ATC100A |
| C9,C10 | Chip Capacitor, 2.7 pF ATC100A |
| C15 | Chip Capacitor, 3.0 pF ATC100A |
| C16 | Chip Capacitor, 3.3 pF ATC100A |
| J1,J2 | SMA Connector, Omni Spectra 2052-5636-02 |
| L1 | Inductor, 72 nH, CoilCraft 0603 |
| L2 | Inductor, 18.5 nH, CoilCraft A05T |
| P1,P2 | Connector, AMP 640457-4 |
| Q1 | Transistor, MAPL-000817-015CPC |
| R1 | Chip Resistor (0805), 10k Ohm |
| R2 | Chip Resistor (0805), 10 Ohm |

| | |
|---|---|
| Z1 | Distributed Microstrip Element, 0.034" x 0.046" |
| Z2 | Distributed Microstrip Element, 0.092" x 0.046" |
| Z3 | Distributed Microstrip Element, 0.532" x 0.046" |
| Z4 | Distributed Microstrip Element, 0.080" x 0.026" |
| Z5 | Distributed Microstrip Element, 0.028" x 0.178" |
| Z6 | Distributed Microstrip Element, 0.216" x 0.178" |
| Z7 | Distributed Microstrip Element, 0.029" x 0.178" |
| Z8 | Distributed Microstrip Element, 0.077" x 0.178" |
| Z9 | Distributed Microstrip Element, 0.211" x 0.178" |
| Z10 | Distributed Microstrip Element, 0.029" x 0.178" |
| Z11 | Distributed Microstrip Element, 0.945" x 0.046" |
| Z12 | Distributed Microstrip Element, 0.125" x 0.046" |

PC Board Rogers (RO4350) Duroid, 0.020:" thick,
Er=3.5, 1 Oz Copper Both Sides

**Figure 1. 1620-1670 MHz Test Fixture Schematic**

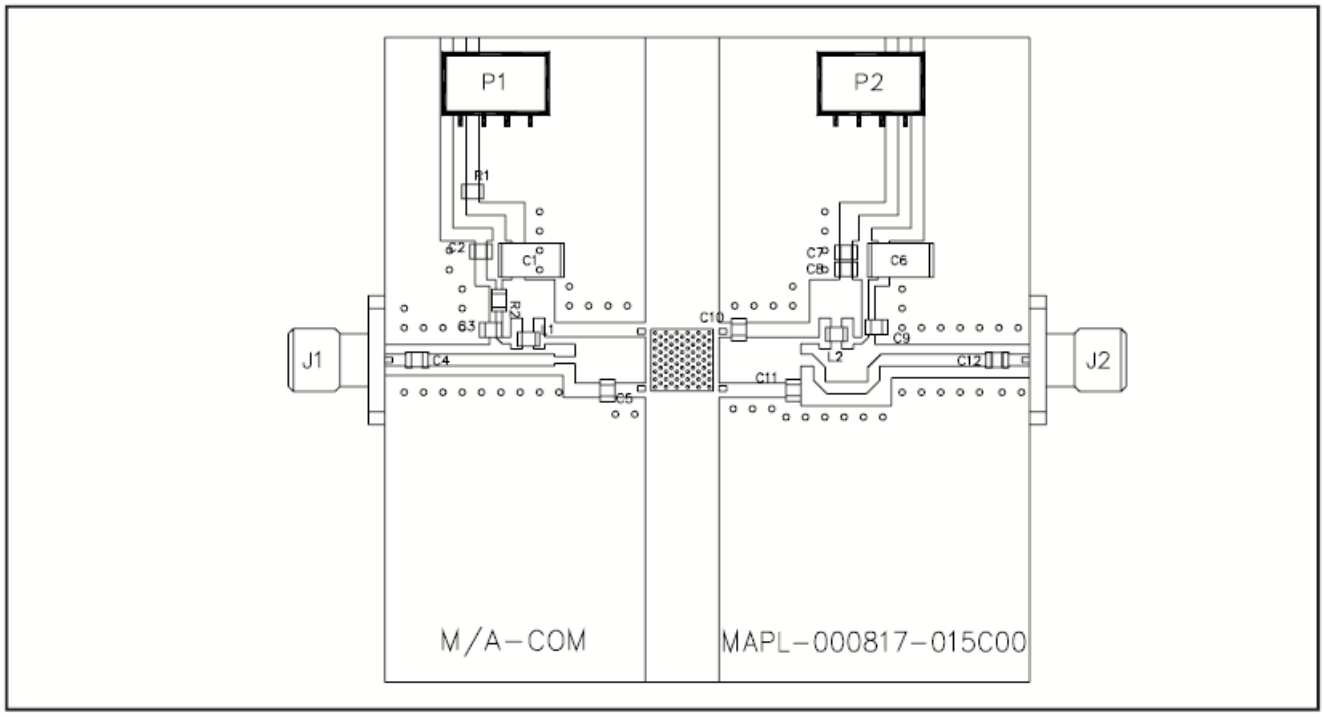
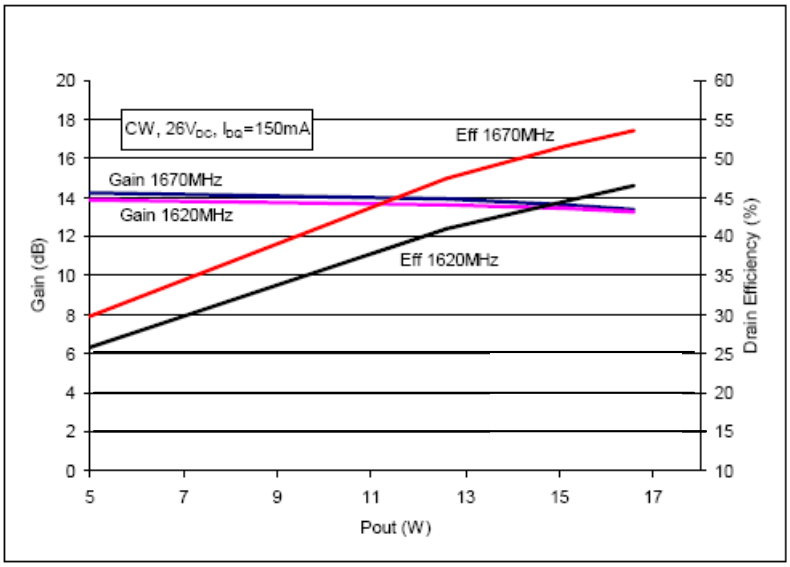
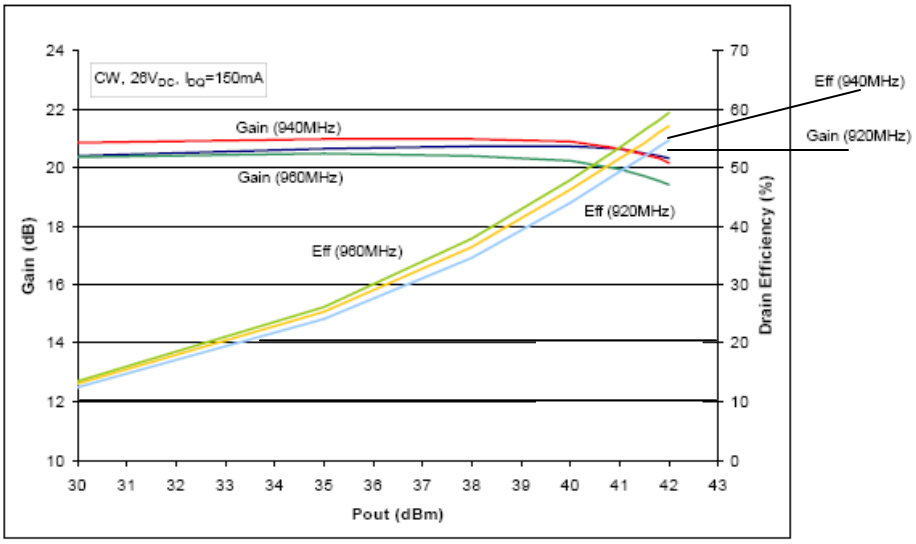



**Figure 2. 1620—1670 MHz Test Fixture Component Layout**




**Graph 1. 1620, 1670MHz: CW Power Gain and Drain Efficiency vs. Output Power**




**Graph 2. 920, 940, 960MHz: CW Power Gain and Drain Efficiency vs. Output Power**

## PACKAGE DIMENSIONS