New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

The RF MOSFET Line

RF Power Field-Effect Transistor

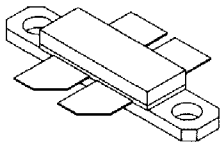
N–Channel Enhancement–Mode Lateral MOSFET

MRF374

470 – 860 MHz, 100 W, 28 V
LATERAL N–CHANNEL
BROADBAND
RF POWER MOSFET

Designed for broadband commercial and industrial applications with frequencies from 470 – 860 MHz. The high gain and broadband performance of this device make it ideal for large–signal, common source amplifier applications in 28 volt transmitter equipment.

- Typical Two–Tone Performance @ 860 MHz, 28 Volts, Narrowband Fixture
  Output Power – 100 Watts PEP
  Power Gain – 13.5 dB
  Efficiency – 36%
  IMD – –31 dBc
- Typical Performance at 860 MHz, 28 Volts, Broadband Fixture
  Output Power – 100 Watts PEP
  Power Gain – 12 dB
  Efficiency – 36%
  IMD – –34 dBc
- 100% Tested for Load Mismatch Stress at All Phase Angles with 5:1 VSWR @ 28 Vdc, 860 MHz, 100 Watts CW
- Excellent Thermal Stability
- Characterized with Differential Large–Signal Impedance Parameters



CASE 375F–04
NI–650

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain–Source Voltage	V_{DSS}	65	Vdc
Gate–Source Voltage	V_{GS}	±20	Vdc
Drain Current – Continuous (per Side)	I_D	7	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	270 1.25	W W/°C
Storage Temperature Range	T_{stg}	– 65 to +150	°C
Operating Junction Temperature	T_J	200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.65	°C/W

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

Quality Semi-Conductors

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

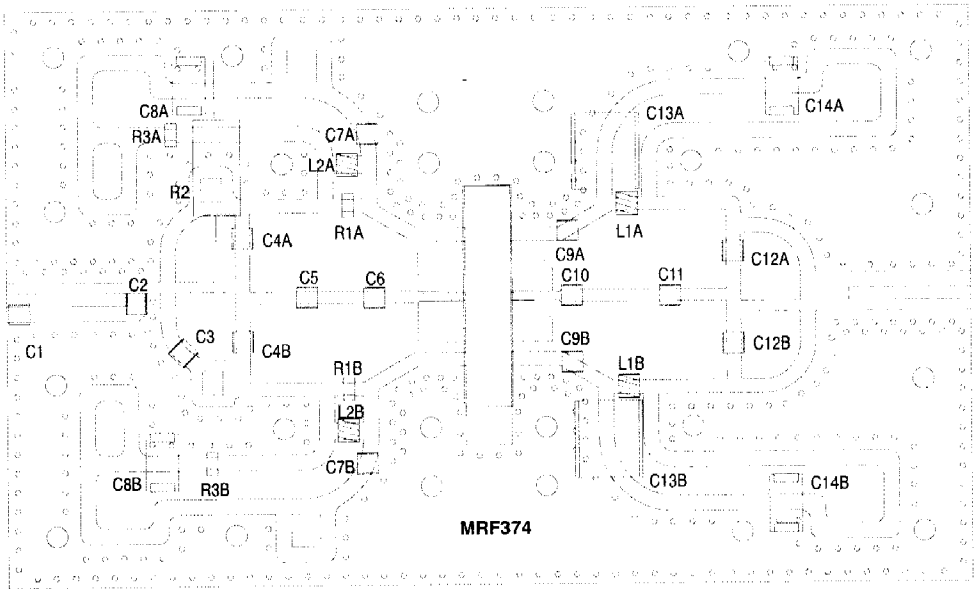
Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain–Source Breakdown Voltage (per Side) (V_{GS} = 0 Vdc, I_D =1 µA per Side)	$V_{(BR)DSS}$	65	–	–	Vdc
Zero Gate Voltage Drain Current (per Side) (V_{DS} = 28 Vdc, V_{GS} = 0 Vdc)	I_{DSS}	–	–	1	µAdc
Gate–Source Leakage Current (per Side) (V_{GS} = 20 Vdc, V_{DS} = 0 Vdc)	I_{GSS}	–	–	1	µAdc
ON CHARACTERISTICS					
Gate Threshold Voltage (per Side) (V_{DS} = 10 V, I_D = 200 µA per Side)	$V_{GS(th)}$	2	3.5	4	Vdc
Gate Quiescent Voltage (per Side) (V_{DS} = 28 V, I_D = 100 mA per Side)	$V_{GS(Q)}$	3	4.2	5	Vdc
Drain–Source On–Voltage (per Side) (V_{GS} = 10 V, I_D = 3 A per Side)	$V_{DS(on)}$	–	0.56	0.8	Vdc
Forward Transconductance (per Side) (V_{DS} = 10 V, I_D = 3 A per Side)	g_{fs}	2.2	2.8	–	S
DYNAMIC CHARACTERISTICS (1)					
Input Capacitance (per Side) (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{iss}	–	80	–	pF
Output Capacitance (per Side) (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{oss}	–	45	–	pF
Reverse Transfer Capacitance (per Side) (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{rss}	–	3.5	–	pF
FUNCTIONAL CHARACTERISTICS, TWO–TONE TESTING (2)					
Common Source Power Gain (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 400 mA, f1 = 857 MHz, f2 = 863 MHz)	G_{ps}	12.5	13.5	–	dB
Drain Efficiency (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 400 mA, f1 = 857 MHz, f2 = 863 MHz)	η	30	36	–	%
Intermodulation Distortion (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 400 mA, f1 = 857 MHz, f2 = 863 MHz)	IMD	–28	–31	–	dB
Load Mismatch (V_{DD} = 28 Vdc, P_{out} = 100 W CW, I_{DQ} = 400 mA, f = 860 MHz, VSWR 5:1 at All Phase Angles of Test)		No Degradation in Output Power			
TYPICAL TWO–TONE BROADBAND					
Common Source Power Gain (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 500 mA, f1 = 857 MHz, f2 = 863 MHz)	G_{ps}	–	12	–	dB
Drain Efficiency (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 500 mA, f1 = 857 MHz, f2 = 863 MHz)	η	–	36	–	%
Intermodulation Distortion (V_{DD} = 28 Vdc, P_{out} = 100 W PEP, I_{DQ} = 500 mA, f1 = 857 MHz, f2 = 863 MHz)	IMD	–	– 34	–	dB

(1) Each side of device measured separately.
(2) Measured in push–pull configuration.

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960



Vertical Balun Mounting Detail

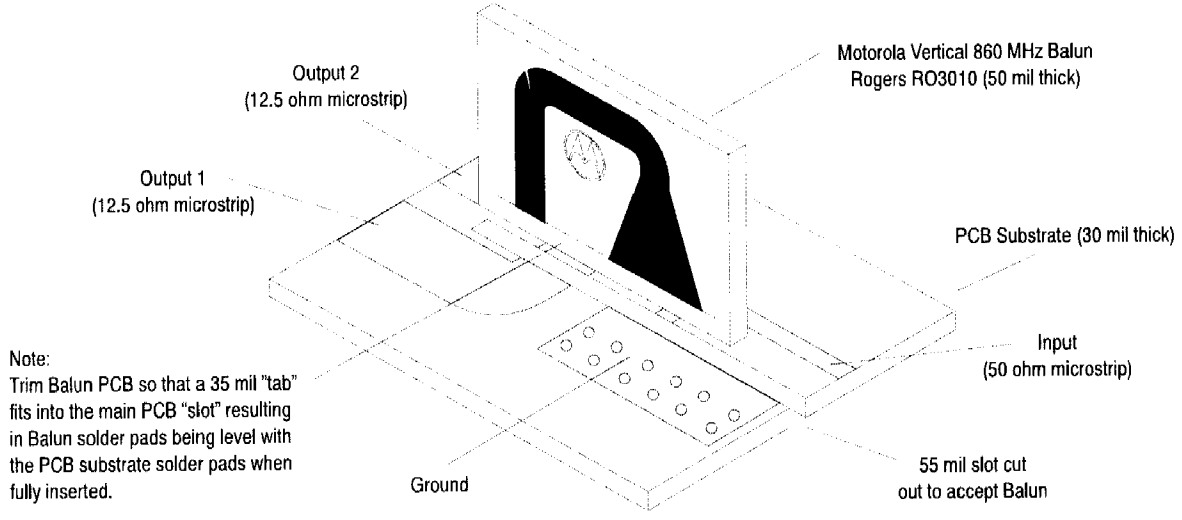


Figure 1. Narrowband Component Layout

Quality Semi-Conductors