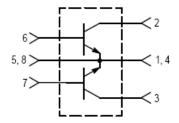


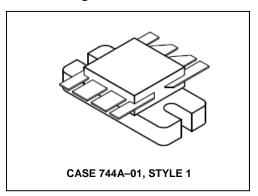
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Designed primarily for wideband large—signal output and driver amplifier stages in the 30 to 500 MHz frequency range.

- Specified 28 V, 400 MHz characteristics —
   Output power = 125 W
   Typical gain = 10 dB
   Efficiency = 55% (typ.)
- Built-in input impedance matching networks for broadband operation
- Push–pull configuration reduces even numbered harmonics
- Gold metallization system for high reliability
- 100% tested for load mismatch



#### **Product Image**



The MRF392 is two transistors in a single package with separate base and collector leads and emitters common. This arrangement provides the designer with a space saving device capable of operation in a push–pull configuration.

#### **PUSH-PULL TRANSISTORS**

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	VCEO	30	Vdc
Collector-Base Voltage	V <sub>СВО</sub>	60	Vdc
Emitter-Base Voltage	VEBO	4.0	Vdc
Collector Current — Continuous	IC	16	Adc
Total Device Dissipation @ T <sub>C</sub> = 25°C (1) Derate above 25°C	PD	270 1.54	Watts W/°C
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Junction Temperature	TJ	200	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>0</sub> JC	0.65	°C/W

#### NOTE:

This device is designed for RF operation. The total device dissipation rating applies only when the device is operated as an RF push-pull
amplifier.

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

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### **MRF392**



### The RF Line Controlled "Q" Broadband Power Transistor 125W, 30 to 500MHz, 28V

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#### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS (1)					
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 0)	V(BR)CEO	30	_	_	Vdc
Collector-Emitter Breakdown Voltage (IC = 50 mAdc, VBE = 0)	V(BR)CES	60	_	_	Vdc
Emitter–Base Breakdown Voltage (I <sub>E</sub> = 5.0 mAdc, I <sub>C</sub> = 0)	V(BR)EBO	4.0	_	_	Vdc
Collector Cutoff Current (V <sub>CB</sub> = 30 Vdc, I <sub>E</sub> = 0)	ICBO	_	_	5.0	mAdc
ON CHARACTERISTICS (1)					
DC Current Gain (I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 5.0 Vdc)	hFE	40	60	100	_
DYNAMIC CHARACTERISTICS (1)					
Output Capacitance (V <sub>CB</sub> = 28 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>ob</sub>	_	75	95	pF
FUNCTIONAL TESTS (2) — See Figure 1					
Common–Emitter Amplifier Power Gain (V <sub>CC</sub> = 28 Vdc, P <sub>out</sub> = 125 W, f = 400 MHz)	G <sub>pe</sub>	8.0	10	_	dB
Collector Efficiency (V <sub>CC</sub> = 28 Vdc, P <sub>out</sub> = 125 W, f = 400 MHz)	η	50	55	_	%
Load Mismatch (V <sub>CC</sub> = 28 Vdc, P <sub>out</sub> = 125 W, f = 400 MHz, VSWR = 30:1, all phase angles)	Ψ	No Degradation in Output Power			

#### NOTES:

- Each transistor chip measured separately.
- 2. Both transistor chips operating in push-pull amplifier.

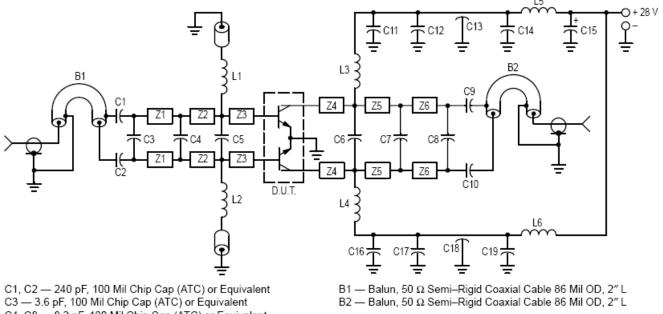
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C4, C8 — 8.2 pF, 100 Mil Chip Cap (ATC) or Equivalent

C5, C6 - 20 pF, 100 Mil Chip Cap (ATC) or Equivalent

C7 - 18 pF, Mini Unelco or Equivalent

C9, C10 - 270 pF, 100 Mil Chip Cap (ATC) or Equivalent

C11, C12, C16, C17 — 470 pF 100 Mil Chip Cap (ATC) or Equivalent

C13, C18 - 680 pF Feedthru

C14, C19 — 0.1  $\mu F$  Erie Redcap or Equivalent

C15 — 20 µF, 50 V

L1, L2 - 0.15 μH Molded Choke With Ferrite Bead

L3, L4 - 2-1/2 Turns #20 AWG, 0.200 ID

L5, L6 - 3-1/2 Turns #18 AWG, 0.200 ID

Z1 - Microstrip Line 270 Mil L x 125 Mil W

Z2 - Microstrip Line 375 Mil L x 125 Mil W

Z3 — Microstrip Line 280 Mil L x 125 Mil W

Z4 — Microstrip Line 300 Mil L x 125 Mil W

Z5 — Microstrip Line 350 Mil L x 125 Mil W

Z6 — Microstrip Line 365 Mil L x 125 Mil W

Board Material — 0.0625'' Teflon Fiberglass  $\epsilon_{\Gamma}$  =  $2.5 \pm 0.05$  1 oz. Cu. CLAD, Double Sided

Figure 1. 400 MHz Test Fixture

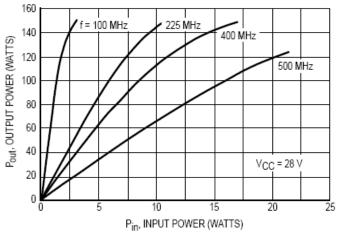
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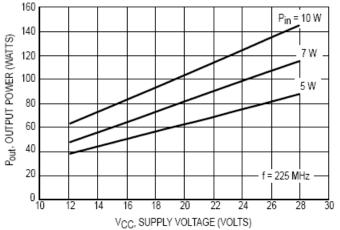
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80 f = 100 MHz 70 Pout, OUTPUT POWER (WATTS) 225 MHz 400 MHz 60 50 40 30 V<sub>CC</sub> = 13.5 V 0 8 10 12 14 16 18 20 Pin, INPUT POWER (WATTS)

Figure 2. Output Power versus Input Power

Figure 3. Output Power versus Input Power



160 Pin = 14 W 140 Pout, OUTPUT POWER (WATTS) 120 10 W 100 7 W 80 60 40 20 f = 400 MHz 0 26 VCC, SUPPLY VOLTAGE (VOLTS)

Figure 4. Output Power versus Supply Voltage

Figure 5. Output Power versus Supply Voltage

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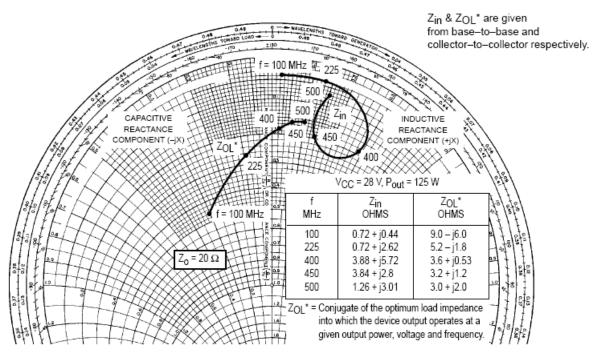


Figure 6. Series Equivalent Input/Output Impedance

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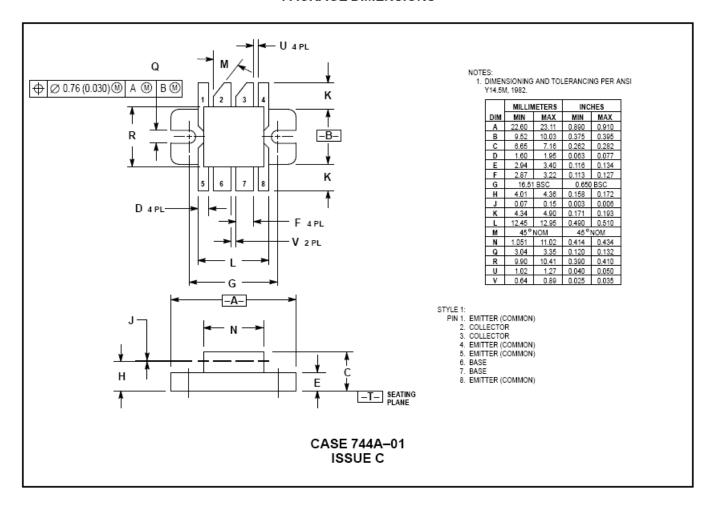
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