

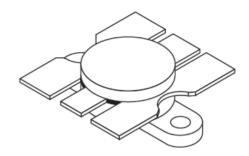
Rev. V1

# The RF Line NPN Silicon Power Transistor 60 W, 225 - 400 MHz, 28 V

- Guaranteed performance in 225 to 400 MHz broadband amplifier @ 28 Vdc Output power = 60 W over 225 to 400 MHz band Minimum gain = 7.8 dB @ 400 MHz
- Built–in matching network for broadband operation using double match technique
- 100% tested for load mismatch at all phase angles with 30:1 VSWR
- Gold metallization system for high reliability applications

Designed primarily for wideband large–signal output amplifier stages in the 225 to 400 MHz frequency range.

**Product Image** 



CASE 316-01, STYLE 1

### MAXIMUM RATINGS\*

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V <sub>CEO</sub>	33	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	60	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	4.0	Vdc
Total Device Dissipation @ T <sub>C</sub> = 25°C (1) Derate above 25°C	PD	146 0.83	Watts W/∘C
Storage Temperature Range	T <sub>stg</sub>	-65 to +200	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Мах	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.2	°C/W

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

Characteristic	Symbol 3 1	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 0)	V(BR)CEO	33	—	—	Vdc
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 50 mAdc, V <sub>BE</sub> = 0)	V <sub>(BR)CES</sub>	60	—	_	Vdc
Emitter–Base Breakdown Voltage (I <sub>E</sub> = 5.0 mAdc, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	4.0	_	_	Vdc

NOTE:

1. These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.

Ісво

\* Indicates JEDEC Registered Data.

Collector Cutoff Current

(V<sub>CB</sub> = 30 Vdc, I<sub>E</sub> = 0)

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(continued)

mAdc

2.0

<sup>1</sup> 

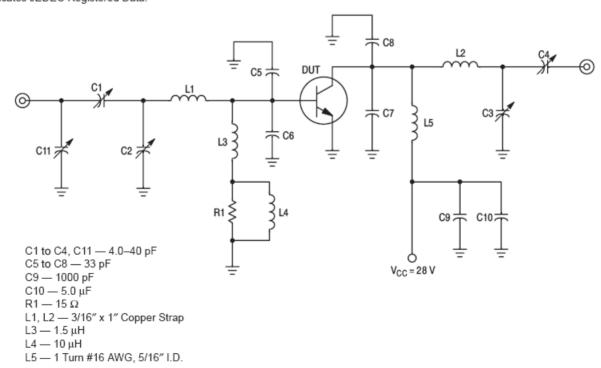


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ELECTRICAL CHARACTERISTICS* — continued (T <sub>C</sub> = 2	25°C unless otherwis	se noted.)			
Characteristic	Symbol €	Min	Тур	Max	Unit
ON CHARACTERISTICS				•	
DC Current Gain (I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 5.0 Vdc)	h <sub>FE</sub>	10	_	100	_
DYNAMIC CHARACTERISTICS	·			•	
Output Capacitance (V <sub>CB</sub> = 28 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>ob</sub>	_	67	75	pF
BROADBAND FUNCTIONAL TESTS (Figure 6)					
Common–Emitter Amplifier Power Gain (V <sub>CC</sub> = 28 Vdc, P <sub>out</sub> = 60 W, f = 225–400 MHz)	G <sub>PE</sub>	7.8	8.5	-	dB
Electrical Ruggedness (P <sub>out</sub> = 60 W, V <sub>CC</sub> = 28 Vdc, f = 400 MHz, VSWR 30:1 all phase angles)	Ψ	No Degradation in Output Power			_
NARROW BAND FUNCTIONAL TESTS (Figure 1)					
Common–Emitter Amplifier Power Gain (V <sub>CC</sub> = 28 Vdc, P <sub>out</sub> = 60 W, f = 400 MHz)	G <sub>PE</sub>	7.8	10	-	dB
Collector Efficiency	η	55	—	-	%

\* Indicates JEDEC Registered Data.

(V<sub>CC</sub> = 28 Vdc, P<sub>out</sub> = 60 W, f = 400 MHz)





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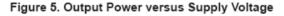
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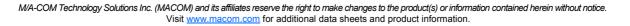
## The RF Line NPN Silicon Power Transistor 60 W, 225 - 400 MHz, 28 V

V<sub>CC</sub> = 28 V V<sub>CC</sub> = 28 V f = 225 MHz Pout, OUTPUT POWER (WATTS) Pout, OUTPUT POWER (WATTS) Pin = 8 W 400 MHz 6 W 4 W 2 W f, FREQUENCY (MHz) Pin, INPUT POWER (WATTS) Figure 2. Pout versus Frequency Figure 3. Output Power versus Input Power Pout = 60 W GPE, COMMON-EMITTER AMPLIFIER POWER GAIN (dB) f = 400 MHz V<sub>CC</sub> = 28 V Pout, OUTPUT POWER (WATTS) Pin = 6 W 4 W 0 L 10 200 f, FREQUENCY (MHz) V<sub>CC</sub>, SUPPLY VOLTAGE (VOLTS)

### NARROW BAND DATA

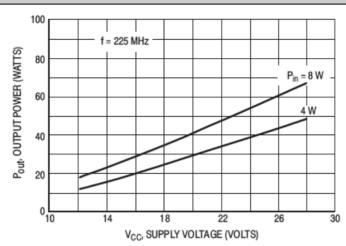
Figure 4. Power Gain versus Frequency

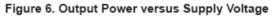


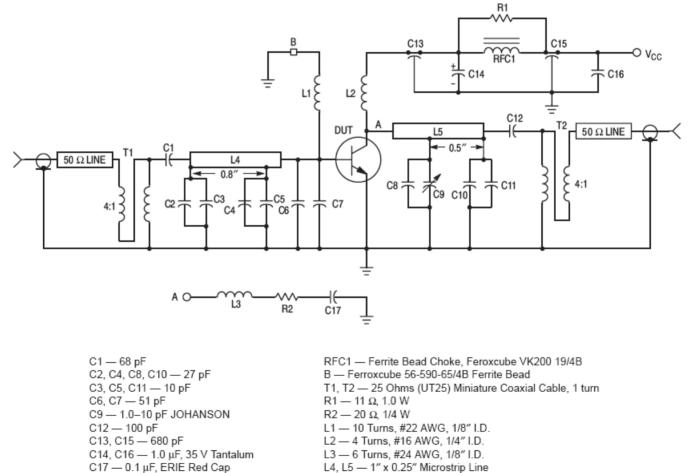




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#### Figure 7. 225 to 400 MHz Broadband Test Circuit Schematic

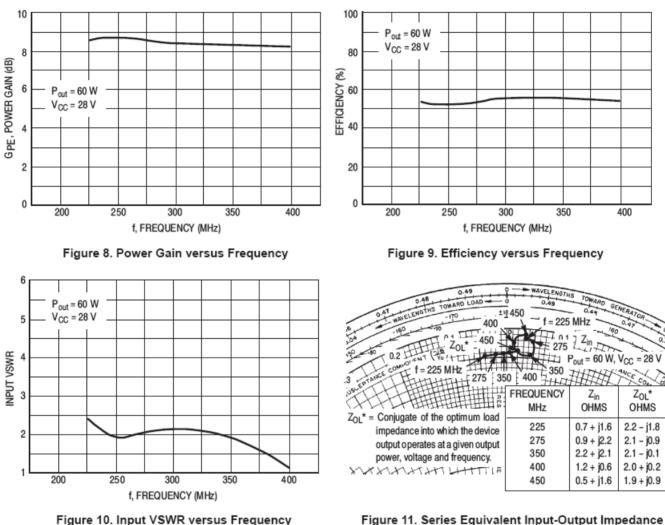
Board Material 0.031" Thick Teflon-Fiberglass

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BROADBAND DATA (Circuit, Figure 7)

Figure 11. Series Equivalent Input-Output Impedance

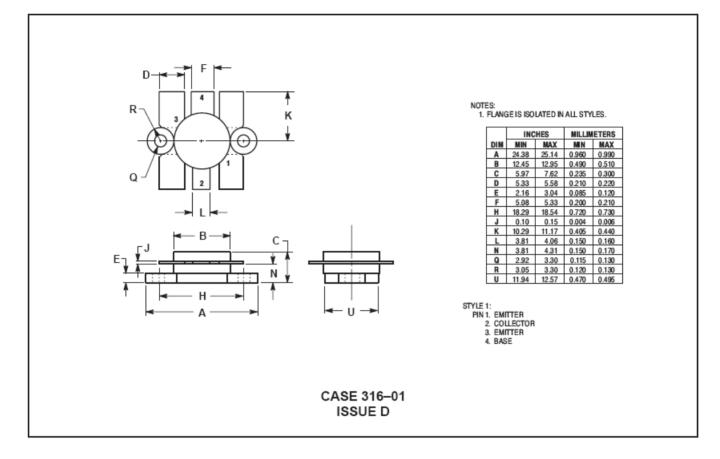
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