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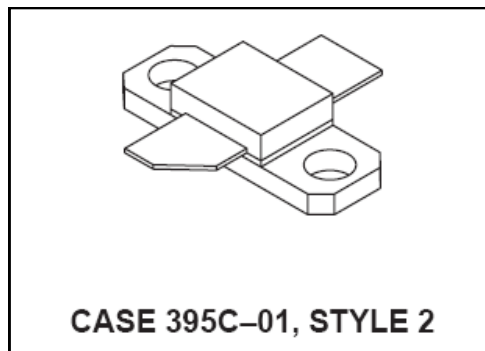
The RF Line NPN Silicon Power Transistor 6.0W , 1.6GHz, 28V

Rev. V1

Designed for 28 V microwave large-signal, common base, Class C, CW amplifier applications in the range 1600 – 1640 MHz.

- Specified 28 V, 1.6 GHz Class C characteristics
 Output power = 6 W
 Minimum gain = 7.4 dB, @ 6 W
 Minimum efficiency = 40% @ 6 W
- Characterized with series equivalent large-signal parameters from 1500 MHz to 1700 MHz
- Silicon nitride passivated
- Gold metalized, emitter ballasted for long life and resistance to metal migration

Product Image



MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CES}	60	Vdc
Emitter-Base Voltage	V _{EBO}	4.0	Vdc
Collector-Current	I _C	1.0	Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	26 0.15	Watts W/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Thermal Resistance — Junction to Case (1) (2)	R _{θJC}	6.8	°C/W
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(1) Thermal measurement performed using CW RF operating condition.

(2) Thermal resistance is determined under specified RF operating conditions by infrared measurement techniques.

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (I _C = 40 mA _{dc} , V _{BE} = 0)	V _{(BR)CES}	55	—	—	V _{dc}
Collector–Base Breakdown Voltage (I _C = 40 mA _{dc} , I _E = 0)	V _{(BR)CBO}	55	—	—	V _{dc}
Emitter–Base Breakdown Voltage (I _E = 2.5 mA _{dc} , I _C = 0)	V _{(BR)EBO}	4.0	—	—	V _{dc}
Collector Cutoff Current (V _{CE} = 28 V _{dc} , V _{BE} = 0)	I _{CES}	—	—	2.5	mA _{dc}

ON CHARACTERISTICS

DC Current Gain (I _{CE} = 0.2 A _{dc} , V _{CE} = 5.0 V _{dc})	h _{FE}	20	—	80	—
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DYNAMIC CHARACTERISTICS

Output Capacitance (V _{CB} = 28 V _{dc} , f = 1.0 MHz)	C _{ob}	11	—	—	pf
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FUNCTIONAL TESTS

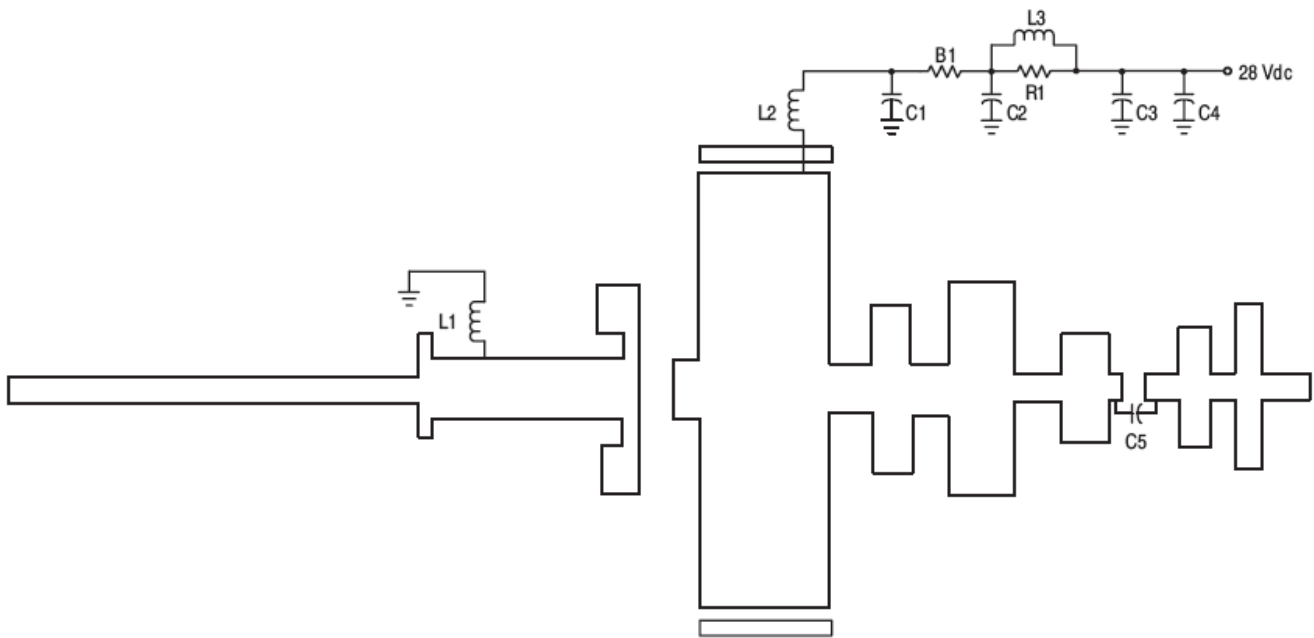
Common–Base Amplifier Power Gain (V _{CC} = 28 V _{dc} , P _{out} = 6 Watts, f = 1600/1640 MHz)	G _{pe}	7.4	—	—	dB
Collector Efficiency (V _{CC} = 28 V _{dc} , P _{out} = 6 Watts, f = 1600/1640 MHz)	η	40	45	—	%
Return Loss (V _{CC} = 28 V _{dc} , P _{out} = 6 Watts, f = 1600/1640 MHz)	I _{RL}	—	8.0	—	dB
Output Mismatch Stress (V _{CC} = 28 V _{dc} , P _{out} = 6 Watts, f = 1600 MHz, Load VSWR = 3:1 all phase angles at frequency of test)	ψ	No Degradation in Output Power			

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Board Material – Teflon[®] Glass Laminate Dielectric
Thickness – 0.30", $\epsilon_r = 2.55$ ", 2.0 oz. Copper

B1	Fair Rite Bead on #24 Wire	C4	47 μ F, 50 V, Electrolytic Cap
C1, C5	100 pF, B Case, ATC Chip Cap	L1, L2	3 Turns, #18, 0.133" ID, 0.15" Long
C2	0.1 μ F, Dipped Mica Cap	L3	9 Turns, #24 Enamel
C3	0.1 μ F, Chip Cap	R1	82 Ω , 1.0 W, Carbon Resistor

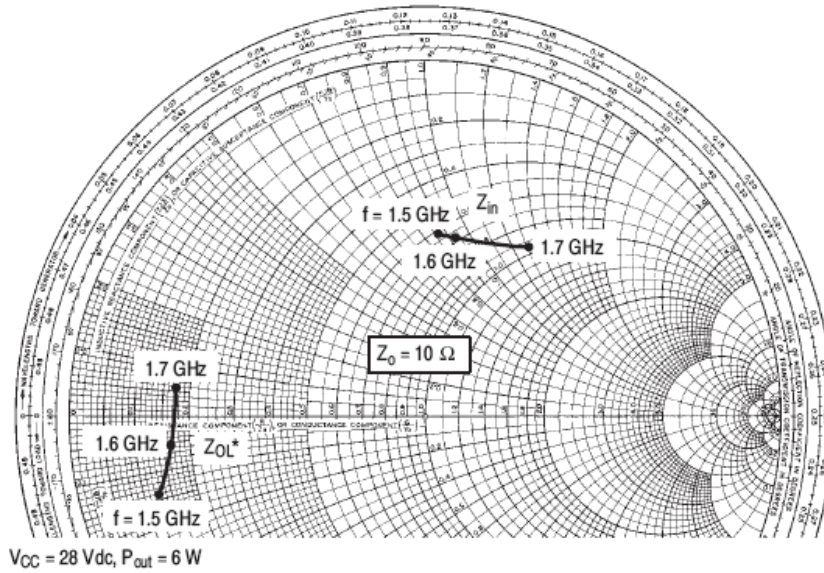
Figure 1. MRF16006 Test Fixture Schematic

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f MHz	Z _{in} Ohms	Z _{OL} * Ohms
1500	6.28 + j 8.53	1.22 - j 1.37
1600	7.04 + j 9.00	1.58 - j 0.53
1700	9.55 + j 12.86	1.71 + j 0.39

Z_{OL}* = Conjugate of the optimum load impedance into which the device output operates at a given output power, voltage and frequency.

Figure 2. Series Equivalent Input/Output Impedance

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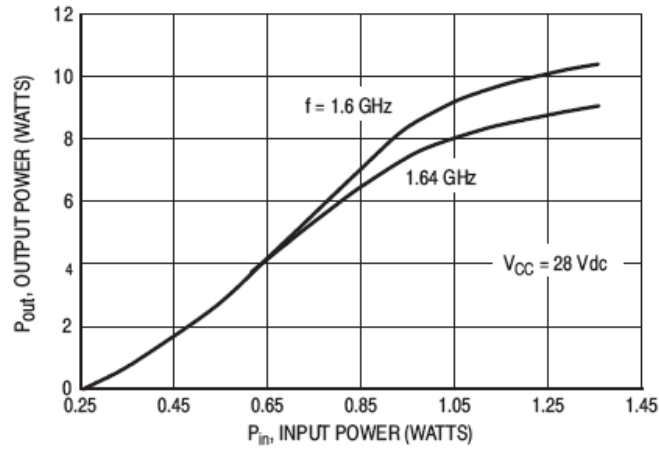


Figure 3. Output Power versus Input Power

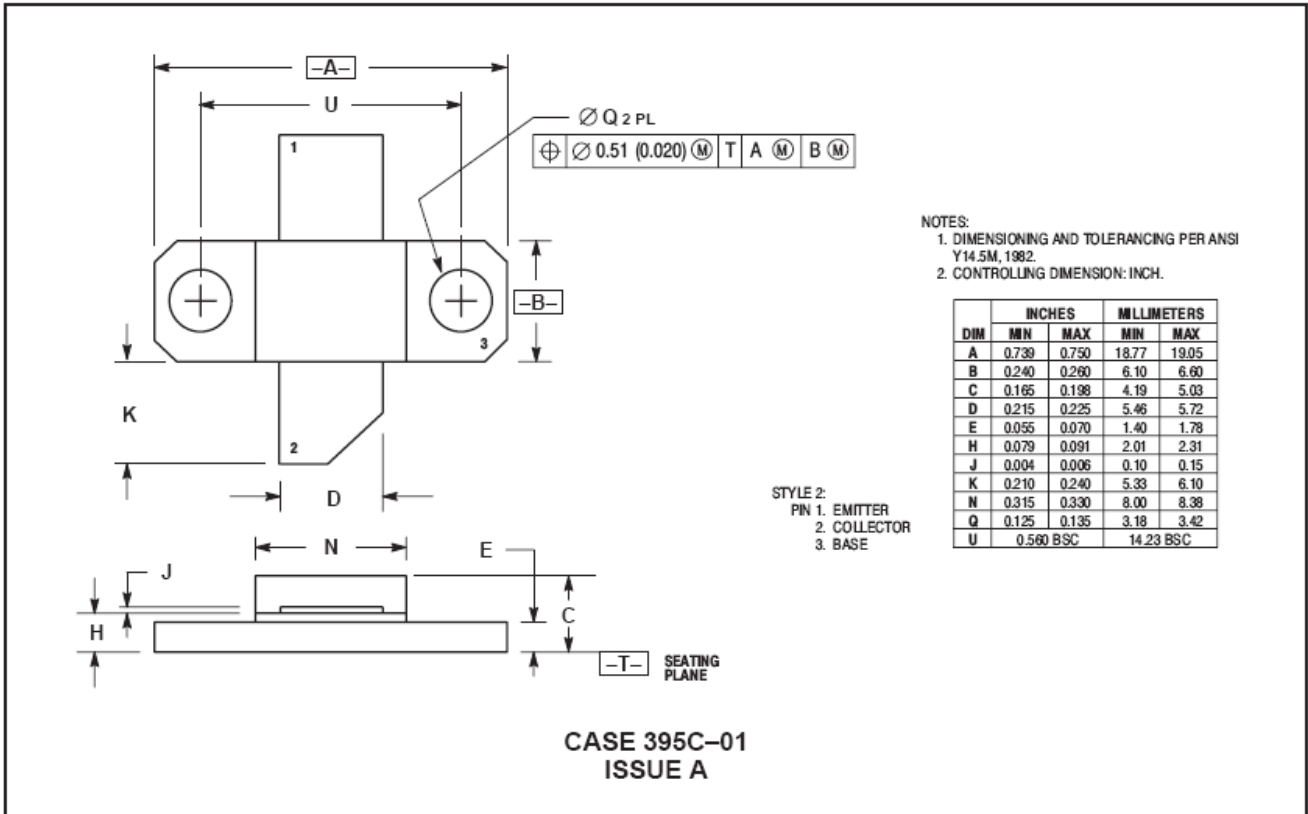
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PACKAGE DIMENSIONS



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