MRF454



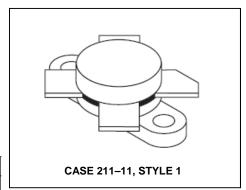
The RF Line NPN Silicon Power Transistor 80W, 30MHz, 12.5V

M/A-COM Products Released - Rev. 07.07

Designed for power amplifier applications in industrial, commercial and amateur radio equipment to 30 MHz.

- Specified 12.5 V, 30 MHz characteristics
- Output power = 80 W
- Minimum gain = 12 dB
- Efficiency = 50%

Product Image



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V _{CEO}	EO 25	
Collector-Base Voltage	V _{CBO}	45	Vdc
Emitter–Base Voltage	V _{EBO}	4.0	Vdc
Collector Current — Continuous	Ic	20	Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	250 1.43	Watts W/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{eJC}	0.7	°C/W

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

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS	•		•		
Collector–Emitter Breakdown Voltage (I _C = 100 mAdc, I _B = 0)	V _{(BR)CEO}	18	_	_	Vdc
Collector–Emitter Breakdown Voltage (I _C = 50 mAdc, V _{BE} = 0)	V _{(BR)CES}	36	_	_	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 mAdc, I _C = 0)	V _{(BR)EBO}	4.0	_	_	Vdc
ON CHARACTERISTICS					
DC Current Gain (I _C = 5.0 Adc, V _{CE} = 5.0 Vdc)	h _{FE}	40	_	150	_
DYNAMIC CHARACTERISTICS	•				
Output Capacitance (V _{CB} = 15 Vdc, I _E = 0, f = 1.0 MHz)	C _{ob}	_	_	250	pF

• **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300

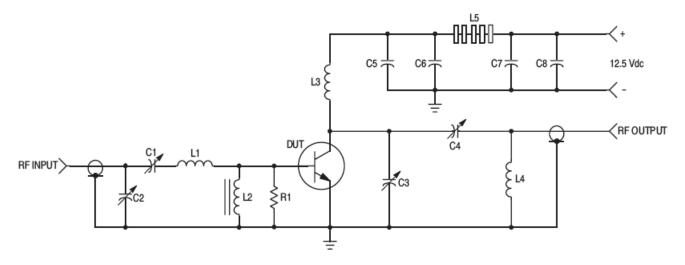


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FUNCTIONAL TESTS (Figure 1)

Common–Emitter Amplifier Power Gain (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	G _{pe}	12	_	_	dB
Collector Efficiency (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	η	50	_	_	%
Series Equivalent Input Impedance (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	Z _{in}	_	.938–j.341	_	Ohms
Series Equivalent Output Impedance (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	Z _{out}	_	1.16-j.201	_	Ohms
Parallel Equivalent Input Impedance (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	_	_	1.06 Ω 1817 pF	_	_
Parallel Equivalent Output Impedance (V _{CC} = 12.5 Vdc, P _{out} = 80 W, f = 30 MHz)	_	_	1.19 Ω 777 pF	_	_



C1, C2, C4 - ARCO 469

C3 - ARCO 466

C5 - 1000 pF, UNELCO

C6, C7 - 0.1 µF Disc Ceramic

C8 — 1000 µF/15 V Electrolytic

R1 - 10 Ohm/1.0 Watt, Carbon

L1 - 3 Turns, #18 AWG, 5/16" I.D., 5/16" Long

L2 — VK200-20/4B, FERROXCUBE

L3 - 12 Turns, #18 AWG Enameled Wire, 1/4" I.D., Close Wound

L4 — 3 Turns 1/8" O.D. Copper Tubing, 3/8" I.D., 3/4" Long

L5 - 7 FERRITE Beads, FERROXCUBE #56-590-65/3B

Figure 1. 30 MHz Test Circuit Schematic

• North America Tel: 800.366.2266 / Fax: 978.366.2266

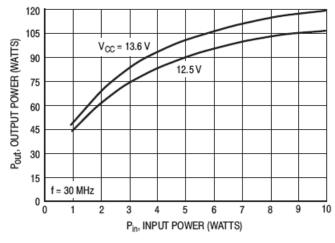
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120 105 Pout, OUTPUT POWER (WATTS) $P_{in} = 5 V$ 90 3.5 W 75 1.75 W 60 45 30 15 f = 30 MHz 0 10 13 16 17 V_{CC}, SUPPLY VOLTAGE (VOLTS)

Figure 2. Output Power versus Input Power

Figure 3. Output Power versus Supply Voltage

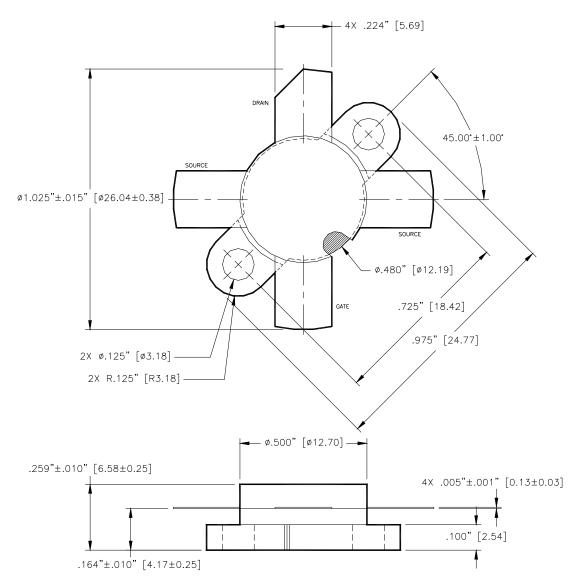
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Unless otherwise noted, tolerances are inches $\pm .005$ " [millimeters ± 0.13 mm]

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