The RF Line NPN Silicon RF Power Transistor

Designed for power amplifier applications in industrial, commercial and a mateur radio equipment to 30 $\rm MHz.$

 Specified 12.5 Volt, 30 MHz Characteristics — Output Power = 80 Watts Minimum Gain = 12 dB Efficiency = 50%

MAXIMUM RATINGS

Rating	Symbol Value		Unit
Collector-Emitter Voltage	VCEO	V _{CEO} 25	
Collector–Base Voltage	VCBO	CBO 45	
Emitter-Base Voltage	VEBO	4.0	Vdc
Collector Current — Continuous	IC	IC 20	
Total Device Dissipation @ T _C = 25°C Derate above 25°C	PD	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	$R_{\theta JC}$	0.7	°C/W

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}C$ unless otherwise noted.)

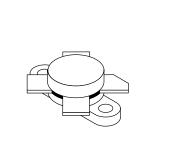
Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ($I_C = 100 \text{ mAdc}, I_B = 0$)	V _(BR) CEO	18	—	_	Vdc
Collector–Emitter Breakdown Voltage (I _C = 50 mAdc, V_{BE} = 0)	V(BR)CES	36	—	_	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \text{ mAdc}, I_C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



MOTOROLA

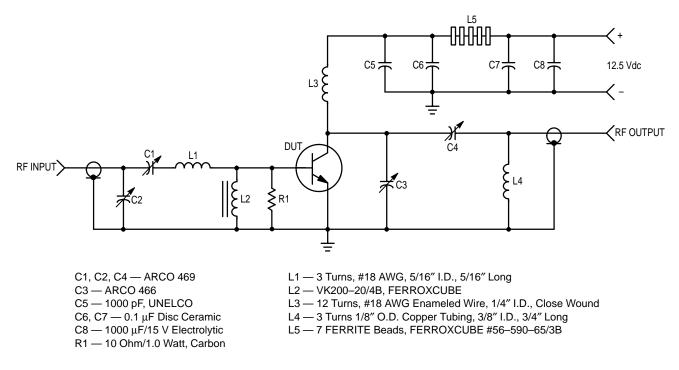
MRF454

80 W, 30 MHz RF POWER TRANSISTOR NPN SILICON



CASE 211-11, STYLE 1

REV 1





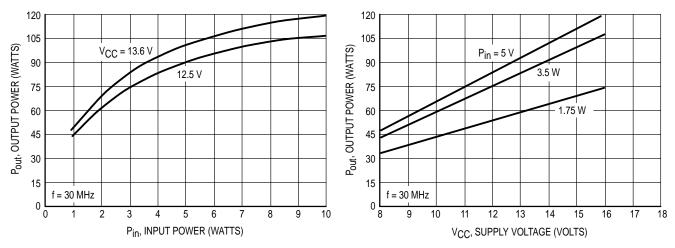
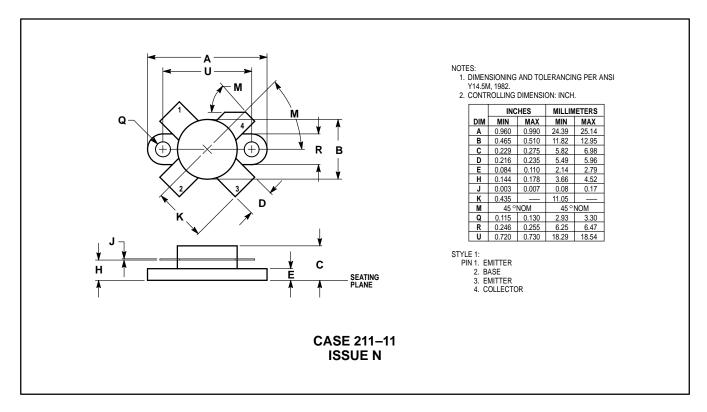


Figure 2. Output Power versus Input Power

Figure 3. Output Power versus Supply Voltage

PACKAGE DIMENSIONS



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