

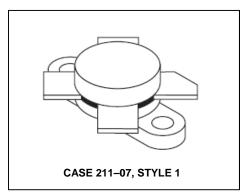
The RF Line NPN Silicon Power Transistor 60W, 30MHz, 12.5V

M/A-COM Products Released - Rev. 05202009

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

Specified 12.5 V, 30 MHz characteristics — Output power = 60 W Minimum gain = 13 dB Efficiency = 55%

Product Image



MAXIMUM RATINGS

Rating	Symbol	nbol Value	
Collector–Emitter Voltage	V _{CEO}	18	Vdc
Collector–Emitter Voltage	V _{CES}	36	Vdc
Emitter-Base Voltage	V _{EBO}	4.0	Vdc
Collector Current — Continuous	I _C	15	Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	175 1.0	Watts W/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R ₀ JC	1.0	°C/W

ELECTRICAL CHARACTERISTICS (Tc = 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}	10	_	150	_
DYNAMIC CHARACTERISTICS					
Output Capacitance (V _{CB} = 12.5 Vdc, I _E = 0, f = 1.0 MHz)	C _{ob}	_	_	250	pF

(continued)

• North America Tel: 800.366.2266 / Fax: 978.366.2266

Europe Tel: 44.1908.574.200 / Fax: 44.1908.574.300

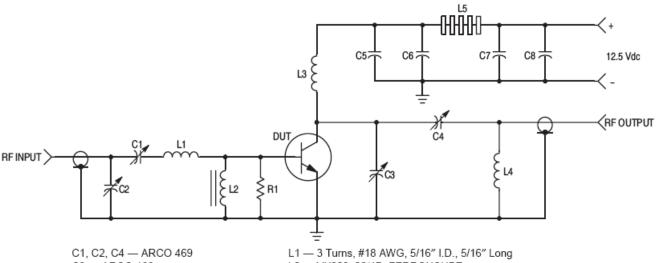


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ELECTRICAL CHARACTERISTICS — continued (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Тур	Max	Unit
FUNCTIONAL TESTS (Figure 1)					
Common–Emitter Amplifier Power Gain (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	G _{pe}	13	_	_	dB
Collector Efficiency (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	η	55	_	_	%
Series Equivalent Input Impedance (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	Z _{in}	_	1.66-j.844	_	Ohms
Series Equivalent Output Impedance (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	Z _{out}	_	1.73–j.188	_	Ohms
Parallel Equivalent Input Impedance (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	Z _{in}	_	2.09/1030	_	Ω/pF
Parallel Equivalent Output Impedance (V _{CC} = 12.5 Vdc, P _{out} = 60 W, f = 30 MHz)	Z _{out}	_	1.75/330	_	Ω/pF



C3 — ARCO 466

L2 — VK200-20/4B, FERROXCUBE

C5 — 1000 pF, UNELCO

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

C6, C7 - 0.1 µF Disc Ceramic

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

C8 — 1000 μF/15 V Electrolytic R1 — 10 Ohm/1.0 Watt, Carbon 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

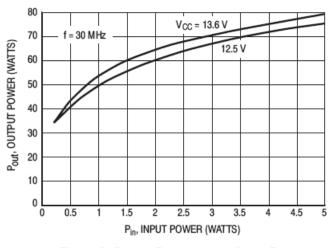
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90 $P_{in} = 3.5 \text{ V}$ 80 f = 30 MHz Pout, OUTPUT POWER (WATTS) 1.75 W 70 1 W 60 50 40 30 20 10 15 17 12 13 16 V_{CC}, SUPPLY VOLTAGE (VOLTS)

Figure 2. Output Power versus Input Power

Figure 3. Output Power versus Supply Voltage

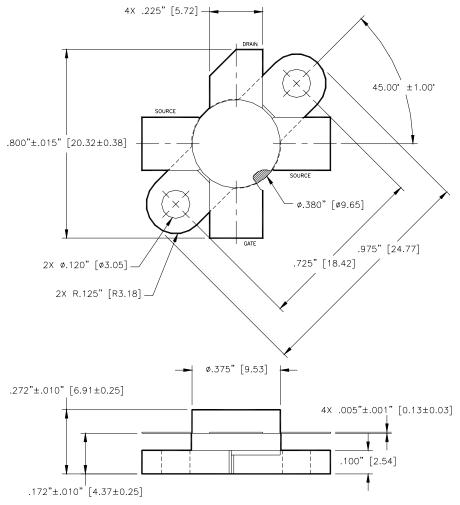
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Unless otherwise noted, tolerances are inches $\pm .005$ " [millimeters ± 0.13 mm]

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