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NPN silicon RF power transistor designed for amplifier, frequency multiplier, or oscillator applications in military and industrial equipment. Suitable for use as output, driver, or pre-driver stages in VHF and UHF equipment. Ideal for CATV applications.



2N3948 (SILICON)

(TO-39)

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

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	20	Vdc
Collector-Base Voltage	V _{CB}	36	Vdc
Emitter-Base Voltage	V _{EB}	3.5	Vdc
Collector Current -- Continuous	I _C	400	mA _{dc}
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	1.0 5.71	Watt mW/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ _{JC}	35	°C/W
Thermal Resistance, Junction to Ambient	θ _{JA}	175	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (I _C = 5 mA _{dc} , I _B = 0)	BV _{CEO(max)}	20	—	Vdc
Collector-Base Breakdown Voltage (I _C = 0.1 mA _{dc} , I _E = 0)	BV _{CBO}	36	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 0.1 mA _{dc} , I _C = 0)	BV _{EBO}	3.5	—	Vdc
Collector Cutoff Current (V _{CB} = 15 Vdc, I _E = 0)	I _{CBO}	—	0.1	μA _{dc}
(V _{CB} = 15 Vdc, I _E = 0, T _A = 150°C)		—	100	
ON CHARACTERISTICS				
DC Current Gain (I _C = 50 mA _{dc} , V _{CE} = 5 Vdc)	h _{FE}	15	—	—
DYNAMIC CHARACTERISTICS				
Current-Gain - Bandwidth Product (I _C = 50 mA _{dc} , V _{CE} = 15 Vdc, f = 200 MHz)	f _T	700	—	MHz
Output Capacitance (V _{CB} = 15 Vdc, I _E = 0, f = 1 MHz)	C _{ob}	—	4.5	pF
FUNCTIONAL TEST				
Power Gain	V _{CE} = 13.8 Vdc, R _L = 50 ohms	G _{PR}	0.0	dB
Power Output	R _L = 50 ohms, f = 400 MHz	P _{out}	1.0	Watt
Collector Efficiency	P _{in} = 0.25 W	η	15	%

