2N5848 (SILICON)

The RF Line

NPN SILICON RF POWER TRANSISTOR

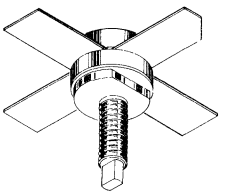
. . . designed primarily for use in large-signal amplifier driver and output stages, the 2N5848 is intended for use in industrial communications equipment operating at frequencies to 80 MHz.

- Optimized for Operation from a 12.5 Volt Supply
- 20 Watts (Min) RF Power Output at 50 MHz
- Balanced Emitter Construction for Burn Out Protection

20 W-50 MHz

RF POWER TRANSISTOR

NPN SILICON

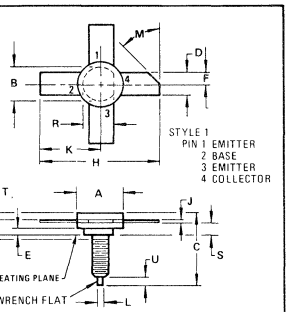


*MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	24	Vdc
Collector-Base Voltage	V_{CB}	48	Vdc
Emitter-Base Voltage	V_{EB}	4.0	Vdc
Collector Current — Continuous	I_C	3.5	Adc
Total Device Dissipation @ $T_C = 25^oC$ Derate above 25^oC	P_D	50 285	Watts mW/^oC
Storage Temperature Range	T_{stg}	-65 to +200	^oC
Stud Torque (1)	—	6.5	in-lbs.

*Indicates JEDEC Registered Data.

(1)For repeated assembly use 5 in-lbs.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	9.78	0.370	0.385
B	8.13	8.38	0.320	0.330
C	18.03	19.05	0.710	0.750
D	5.59	5.84	0.220	0.230
E	1.78	2.03	0.070	0.080
F	2.79	2.92	0.110	0.115
H	26.42	28.70	1.040	1.130
J	0.10	0.15	0.004	0.006
K	13.21	14.35	0.520	0.565
L	1.40	1.65	0.055	0.065
M	45° NOM		45° NOM	
P	—	1.27	—	0.050
R	7.59	7.80	0.299	0.307
S	4.01	4.52	0.158	0.178
T	2.16	2.41	0.085	0.095
U	2.54	3.30	0.100	0.130

NOTE
CASE 145A-01 USE 8-32NC2A STUD

CASE 145A-01

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) (I_C = 100 mAdc, I_B = 0)	BV_{CEO}	24	–	–	Vdc
Collector-Emitter Breakdown Voltage(1) (I_C = 50 mAdc, V_{BE} = 0)	BV_{CES}	48	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mAdc, I_C = 0)	BV_{EBO}	4.0	–	–	Vdc
Collector Cutoff Current (V_{CE} = 15 Vdc, V_{BE} = 0, T_A = +125°C)	I_{CES}	–	–	10	mAdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0)	I_{CBO}	–	–	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.2 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	3.0	15	–	–
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 12.5 Vdc, I_E = 0, f = 0.1 to 1.0 MHz)	C_{ob}	–	100	125	pF
FUNCTIONAL TEST					
Common-Emitter Amplifier Power Gain (P_{out} = 20 W, V_{CC} = 12.5 Vdc, I_C = 3.2 Adc, f = 50 MHz)	G_{PE}	8.0	–	–	dB
Collector Efficiency (P_{out} = 20 W, V_{CC} = 12.5 Vdc, I_C = 3.2 Adc, f = 50 MHz)	η	50	–	–	%

*Indicates JEDEC Registered Data.
(1)Pulsed thru a 25 mH Inductor.

FIGURE 1 – 50 MHz POWER GAIN TEST CIRCUIT

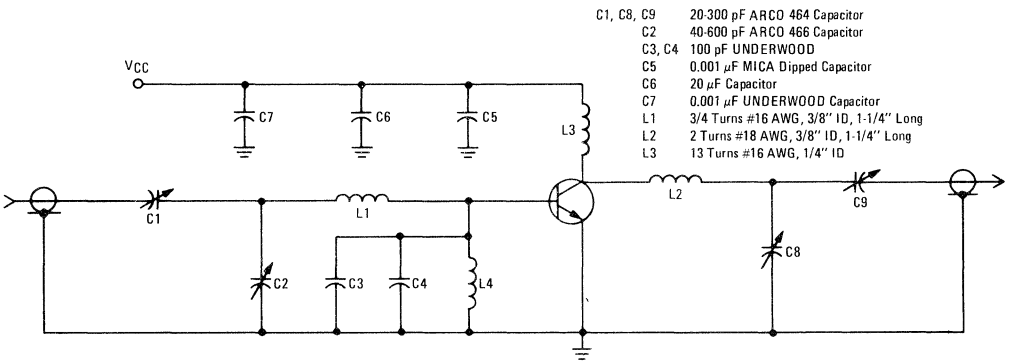


FIGURE 2 – OUTPUT POWER versus INPUT POWER

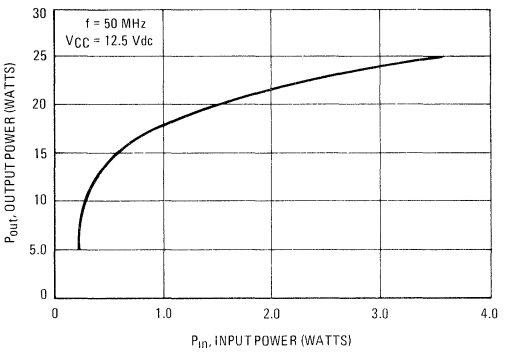


FIGURE 3 – OUTPUT POWER versus FREQUENCY

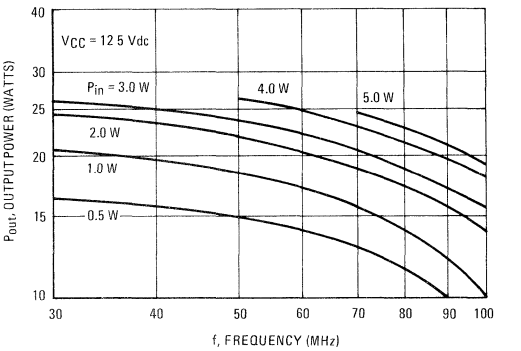


FIGURE 4 – PARALLEL EQUIVALENT INPUT RESISTANCE versus FREQUENCY

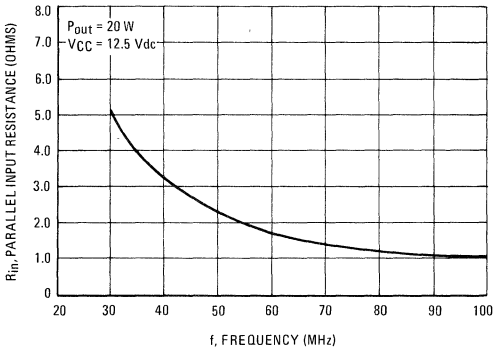


FIGURE 5 – PARALLEL EQUIVALENT INPUT CAPACITANCE versus FREQUENCY

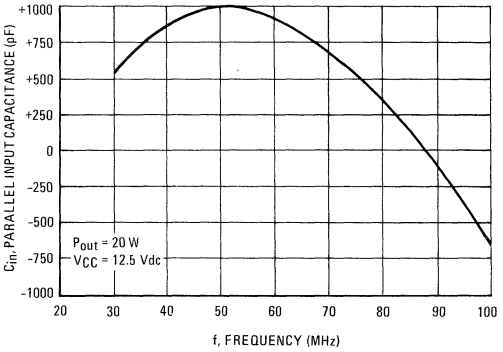


FIGURE 6 – PARALLEL EQUIVALENT OUTPUT CAPACITANCE versus FREQUENCY

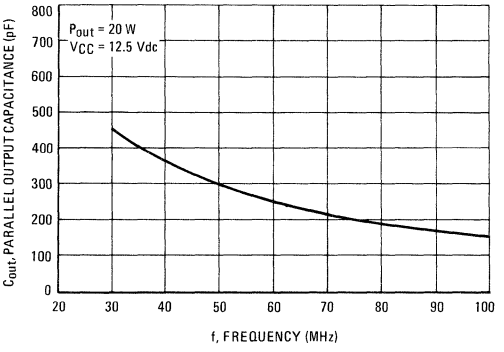
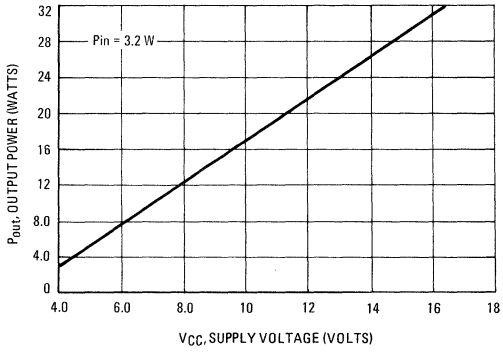


FIGURE 7 – OUTPUT POWER versus SUPPLY VOLTAGE



LOW-BAND FM (25-50 MHz) 12.5 Vdc, 100 WATT AMPLIFIER