2N6366 (SILICON)

The RF Line

NPN SILICON RF POWER TRANSISTOR

. . . designed for operation in driver and predriver stages for high power linear amplifiers, 2.0 to 30 MHz.

- Optimized for Operation from a 12.5 Volt Supply
- Power Gain @ 2.5 W (PEP) = 17 dB (Min)
- Intermodulation Distortion at Rated Power Output
  IMD = -35 dB (Max)

2.5 W (PEP)-30 MHz

RF POWER TRANSISTOR

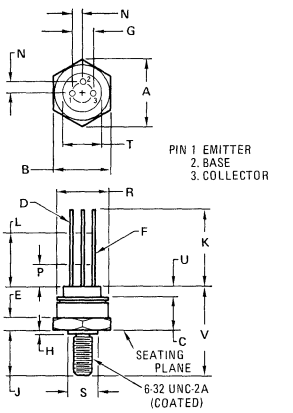
NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Collector-Emitter Voltage	V_{CEO}	18	Vdc
*Collector-Base Voltage	V_{CBO}	36	Vdc
*Emitter-Base Voltage	V_{EBO}	4.0	Vdc
*Collector Current — Continuous	I_C	1.0	Adc
*Total Device Dissipation @ $T_C = 25^oC$ Derate above 25^oC	P_D	10 57.2	Watts mW/^oC
*Storage Temperature Range	T_{stg}	-65 to +200	^oC
Maximum Stud Torque (1)	—	2.1	in.-lb.

*Indicates JEDEC Registered Data.

(1) For repeated assembly use 1.8 in-lb maximum.



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	10.49	11.00	0.413	0.433
B	9.19	9.53	0.362	0.375
C	5.33	5.72	0.210	0.225
D	0.406	0.533	0.016	0.021
E	1.65	1.78	0.065	0.070
F	0.406	0.483	0.016	0.019
G	2.54 BSC		0.100 BSC	
H	0.508	0.889	0.020	0.035
J	6.73	7.42	0.265	0.292
K	12.70	—	0.500	—
L	6.35	—	0.250	—
N	1.27 BSC		0.050 BSC	
P	—	1.27	—	0.050
R	8.89	9.14	0.350	0.360
S	4.45	4.83	0.175	0.190
T	4.11	4.29	0.162	0.169
U	1.14	1.52	0.045	0.060

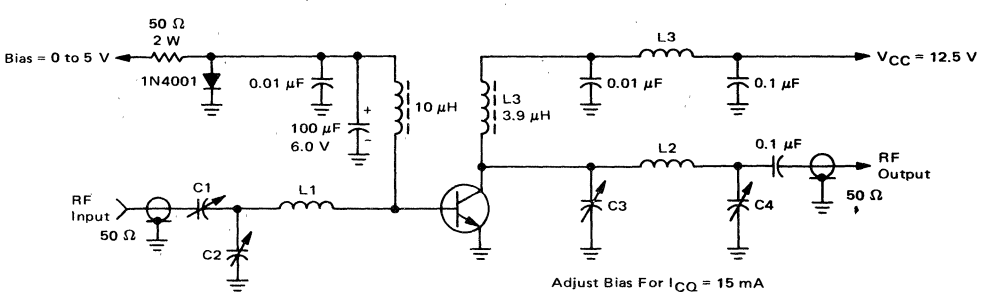
CASE 24
TO-102

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, I_B = 0)	BV_{CEO}	18	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, V_{BE} = 0)	BV_{CES}	36	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.25 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}	–	5.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 250 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	5.0	50	–
DYNAMIC CHARACTERISTICS				
Current-Gain – Bandwidth Product (I_C = 150 mAdc, V_{CE} = 12.5 Vdc, f = 50 MHz)	f_T	50	–	MHz
Output Capacitance (V_{CB} = 12.5 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	–	20	pF
FUNCTIONAL TESTS (Figure 1)				
Common-Emitter Amplifier Power Gain (V_{CC} = 12.5 Vdc, P_{out} = 2.5 W (PEP), f_1 = 30 MHz, f_2 = 30,001 MHz)	G_{PE}	17	–	dB
Collector Efficiency (V_{CC} = 12.5 Vdc, P_{out} = 2.5 W (PEP), f_1 = 30 MHz, f_2 = 30,001 MHz)	η	38.5	–	%
Intermodulation Distortion (V_{CC} = 12.5 Vdc, P_{out} = 2.5 W (PEP), f_1 = 30 MHz, f_2 = 30,001 MHz)	IMD	–	-35	dB

*Indicates JEDEC Registered Data

FIGURE 1 – 30 MHz TEST CIRCUIT



C1, C2 80-480 pF, ARCO 466 or equivalent
C3, C4 25-280 pF, ARCO 464 or equivalent
L1 0.1 μH Molded Choke
L2 0.15 μH Molded Choke
L3 Ferrite Choke, FERROXCUBE VK200 01-03B or equivalent

FIGURE 2 – LINEAR OUTPUT POWER versus FREQUENCY

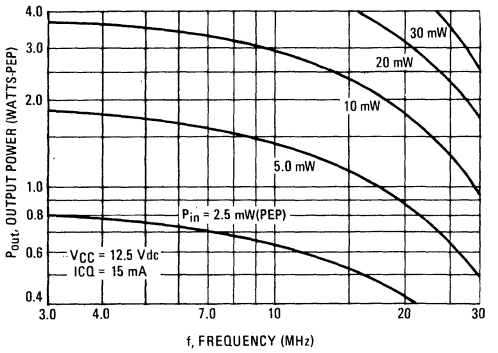


FIGURE 3 – OUTPUT POWER versus INPUT POWER (30 MHz)

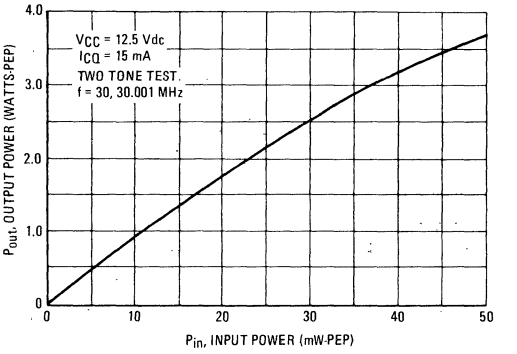


FIGURE 4 – OUTPUT POWER versus INPUT POWER (12 MHz)

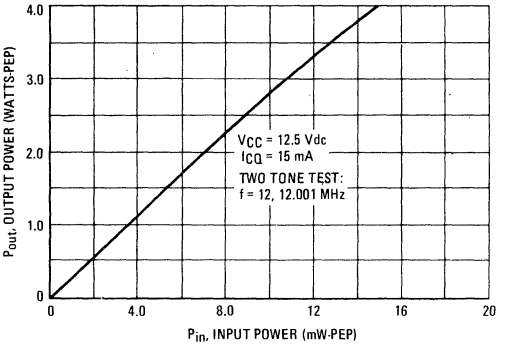


FIGURE 5 – OUTPUT POWER versus INPUT POWER (3.0 MHz)

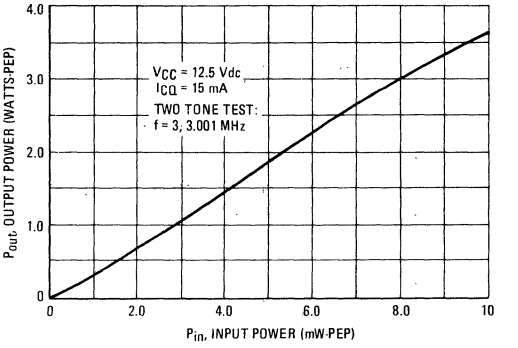


FIGURE 6 – INTERMODULATION DISTORTION versus OUTPUT POWER

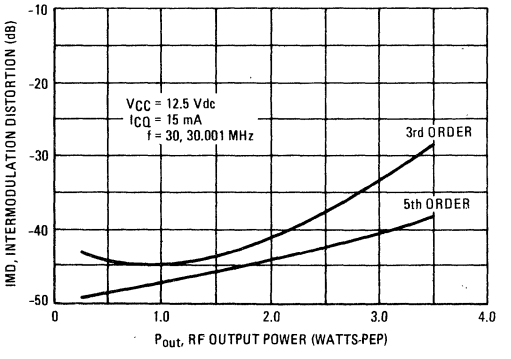


FIGURE 7 – LINEAR OUTPUT POWER versus SUPPLY VOLTAGE

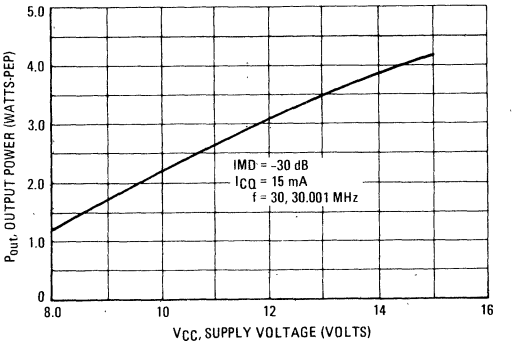


FIGURE 8 – PARALLEL EQUIVALENT INPUT RESISTANCE

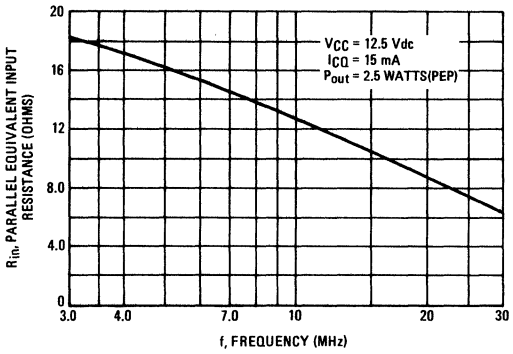


FIGURE 9 – PARALLEL EQUIVALENT INPUT CAPACITANCE

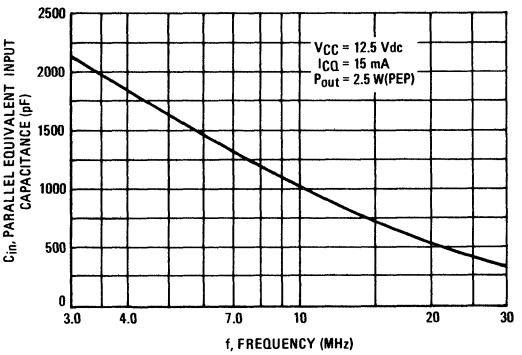


FIGURE 10 – PARALLEL EQUIVALENT OUTPUT RESISTANCE

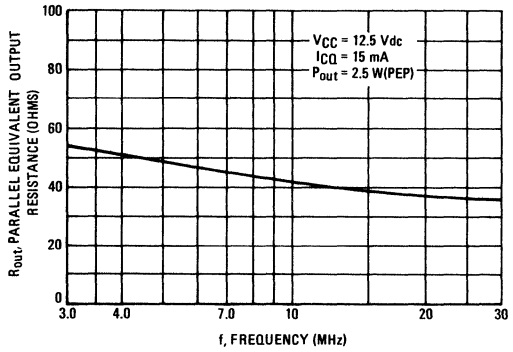


FIGURE 11 – PARALLEL EQUIVALENT OUTPUT CAPACITANCE

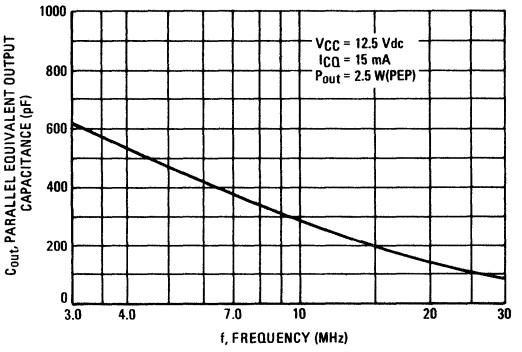


FIGURE 12 – CURRENT-GAIN – BANDWIDTH PRODUCT

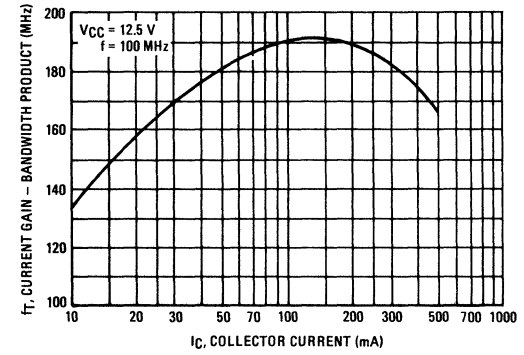


FIGURE 13 – COLLECTOR CURRENT versus BASE-EMITTER VOLTAGE

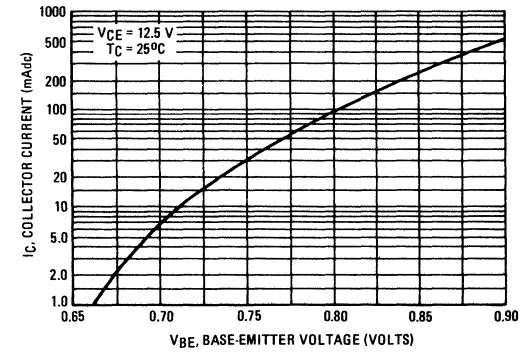


FIGURE 14 – OUTPUT CAPACITANCE versus VOLTAGE

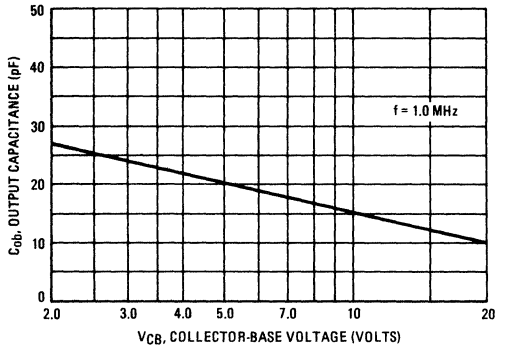


FIGURE 15 – INPUT CAPACITANCE versus VOLTAGE

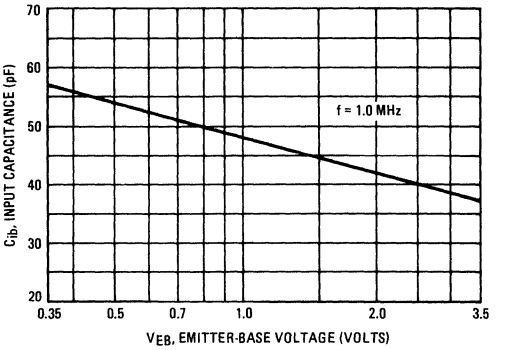


FIGURE 16 – DC SAFE OPERATING AREA

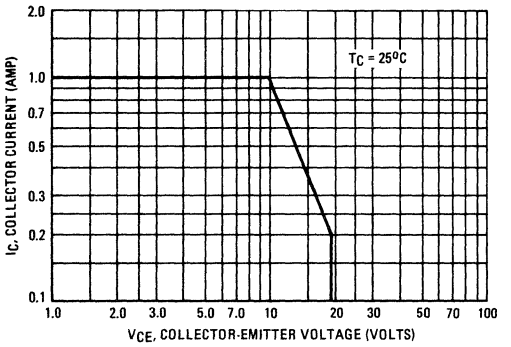


FIGURE 17 – RF POWER DISSIPATION