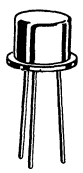
2N4428 (SILICON)

NPN SILICON RF POWER TRANSISTOR

. . . designed primarily for use in large signal VHF and UHF amplifier output stages in military and industrial communications applications.

- High Power Output –
  P_{out} = 0.75 Watt with 10 dB Gain @ f = 500 MHz
- High Current-Gain–Bandwidth Product –
  f_T = 1000 MHz (Typ) @ I_C = 50 mAdc
- Multiple Emitter Construction for Excellent High Frequency Performance

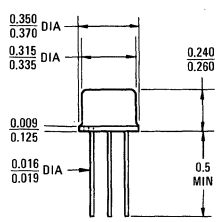
NPN SILICON RF POWER TRANSISTOR



*MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	35	Vdc
Collector-Base Voltage	V_{CB}	55	Vdc
Emitter-Base Voltage	V_{EB}	3.5	Vdc
Collector Current – Continuous	I_C	425	mAdc
Base Current – Continuous	I_B	150	mAdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	3.5 20	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C

*Indicates JEDEC Registered Data.



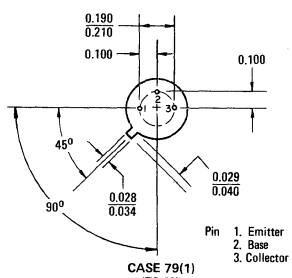
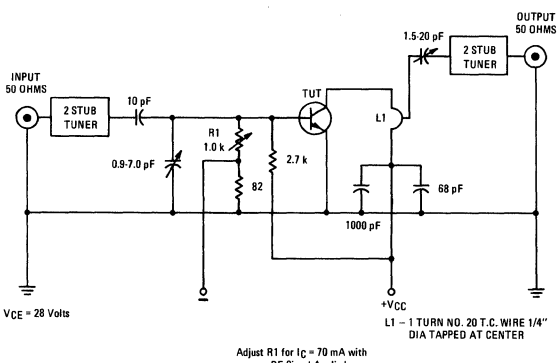


FIGURE 1 – 500 MHz TEST CIRCUIT



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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (I_C = 20 mAdc, I_B = 0)	$V_{CEO(sus)}$	35	–	–	Vdc
Collector-Emitter Sustaining Voltage (I_C = 20 mAdc, R_{BE} = 10 ohms)	$V_{CER(sus)}$	55	–	–	Vdc
Collector Cutoff Current (V_{CE} = 55 Vdc, V_{BE} = -1.5 Vdc)	I_{CEX}	–	–	1.0	mAdc
Emitter Cutoff Current (V_{EB} = 3.5 Vdc, I_C = 0)	I_{EBO}	–	–	0.1	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 50 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	20	–	200	–
(I_C = 400 mAdc, V_{CE} = 5.0 Vdc)		5.0	–	–	
DYNAMIC CHARACTERISTICS					
Current-Gain–Bandwidth Product (I_C = 50 mAdc, V_{CE} = 20 Vdc, f = 200 MHz)	f_T	700	1000	–	MHz
Output Capacitance (V_{CB} = 28 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	–	1.2	3.5	pF
FUNCTIONAL TEST					
Power Input (Figure 1) (P_{out} = 750 mW, V_{CE} = 28 Vdc, R_S = 50 Ohms, f = 500 MHz)	P_{in}	–	–	75	mW
Collector Efficiency (Figure 1) (P_{out} = 750 mW, V_{CE} = 28 Vdc, R_S = 50 Ohms, f = 500 MHz)	η	35	–	–	%

*Indicates JEDEC Registered Data.

FIGURE 2 – CURRENT-GAIN–BANDWIDTH PRODUCT

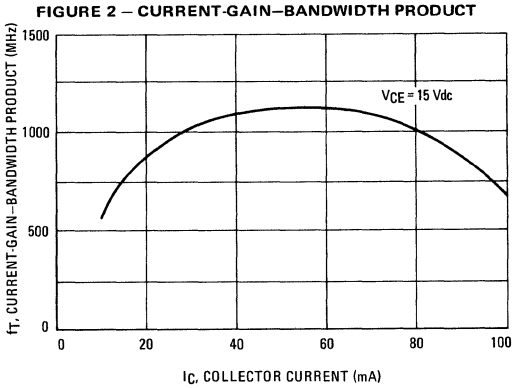


FIGURE 3 – OUTPUT POWER versus FREQUENCY