

2N4427

The RF Line

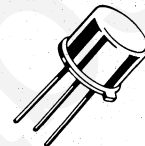
NPN SILICON HIGH FREQUENCY TRANSISTOR

... 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.

- Specified 175 MHz, 12 Vdc Characteristics –
 Output Power = 1.0 Watt
 Minimum Gain = 10 dB
 Efficiency = 50%



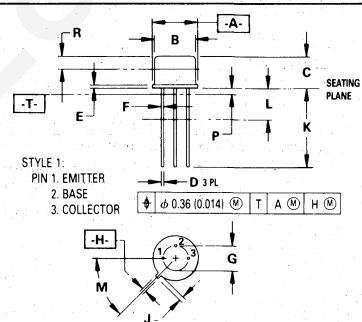
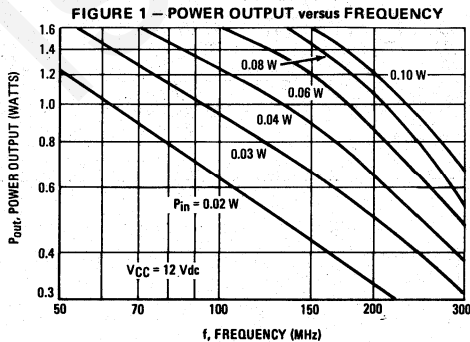
Island Labs



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Collector-Emitter Voltage	V_{CEO}	20	Vdc
*Collector-Base Voltage	V_{CB}	40	Vdc
*Emitter-Base Voltage	V_{EB}	2.0	Vdc
*Collector Current – Continuous	I_C	400	mAdc
*Base Current – Continuous	I_B	400	mAdc
Total Device Dissipation @ $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	1.0 5.71	Watt mW/ $^\circ C$
*Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	3.5 20	Watts mW/ $^\circ C$
*Storage Temperature Range	T_{stg}	-65 to + 200	$^\circ C$

*Indicates JEDEC Registered Data



- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.
 - DIMENSION J MEASURED FROM DIMENSION A MAXIMUM.
 - DIMENSION B SHALL NOT VARY MORE THAN 0.25 (0.010) IN ZONE R. THIS ZONE CONTROLLED FOR AUTOMATIC HANDLING.
 - DIMENSION F APPLIES BETWEEN DIMENSION P AND L. DIMENSION D APPLIES BETWEEN DIMENSION L AND K MINIMUM. LEAD DIAMETER IS UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.51	9.39	0.335	0.370
B	7.75	8.50	0.305	0.335
C	6.10	6.60	0.240	0.260
D	0.41	0.53	0.016	0.021
E	0.23	1.04	0.009	0.041
F	0.41	0.48	0.016	0.019
G	5.08 BSC		0.200 BSC	
H	0.72	0.86	0.028	0.034
J	0.74	1.14	0.029	0.045
K	12.70	19.05	0.500	0.750
L	6.35	—	0.250	—
M	45° BSC		45° BSC	
P	—	1.27	—	0.050
R	2.54	—	0.100	—

CASE 79-04
TO-205AD
(TO-39)

2N4427

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
*Collector-Emitter Sustaining Voltage ($I_C = 5.0 \text{ mA}$, $I_B = 0$)	$V_{CE0(sus)}$	20	—	Vdc
*Collector-Emitter Sustaining Voltage ($I_C = 5.0 \text{ mA}$, $R_{BE} = 10 \text{ ohms}$)	$V_{CER(sus)}$	40	—	Vdc
*Collector Cutoff Current ($V_{CE} = 12 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	—	0.02	mA
*Collector Cutoff Current ($V_{CE} = 40 \text{ Vdc}$, $V_{BE} = -1.5 \text{ Vdc}$) ($V_{CE} = 12 \text{ Vdc}$, $V_{BE} = -1.5 \text{ Vdc}$, $T_C = +150^\circ\text{C}$)	I_{CEV}	—	0.1 5.0	mA
*Emitter Cutoff Current ($V_{EB} = 2.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	0.1	mA
ON CHARACTERISTICS				
*DC Current Gain ($I_C = 100 \text{ mA}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 360 \text{ mA}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	10 5.0	200 —	—
*Collector-Emitter Saturation Voltage ($I_C = 100 \text{ mA}$, $I_B = 20 \text{ mA}$)	$V_{CE(sat)}$	—	0.5	Vdc
DYNAMIC CHARACTERISTICS				
*Current-Gain – Bandwidth Product ($I_C = 50 \text{ mA}$, $V_{CE} = 15 \text{ Vdc}$, $f = 200 \text{ MHz}$)	f_T	500	—	MHz
*Output Capacitance ($V_{CB} = 12 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{ob}	—	4.0	pF
FUNCTIONAL TEST				
*Power Input (Figure 2) ($P_{out} = 1.0 \text{ W}$, $V_{CC} = 12 \text{ Vdc}$, $f = 175 \text{ MHz}$)	P_{in}	—	100	mW
Common-Emitter Amplifier Power Gain ($P_{in} = 100 \text{ mW}$, $V_{CC} = 12 \text{ Vdc}$, $f = 175 \text{ MHz}$)	G_{pe}	10	—	dB
*Collector Efficiency (Figure 2) ($P_{out} = 1.0 \text{ W}$, $V_{CC} = 12 \text{ Vdc}$, $f = 175 \text{ MHz}$)	η	50	—	%

*Indicates JEDEC Registered Data

FIGURE 2 – 175 MHz RF AMPLIFIER CIRCUIT FOR POWER-OUTPUT TEST

