

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

T-33-05

2N3553

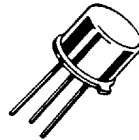
The RF Line

NPN SILICON HIGH-FREQUENCY TRANSISTOR

... designed for amplifier and oscillator applications in military and industrial equipment. Suitable for use as output, driver or pre-driver stages in VHF equipment.

- Specified 175 MHz, 28 Vdc Characteristics -
 - Output Power = 2.5 Watts
 - Minimum Gain = 10 dB
 - Efficiency = 50%

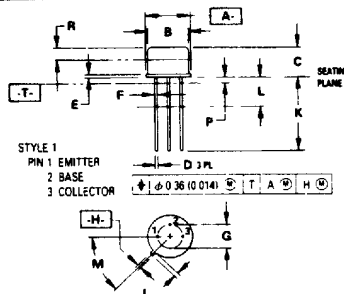
**2.5 W - 175 MHz
HIGH FREQUENCY
TRANSISTOR
NPN SILICON**



***MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	40	Vdc
Collector-Base Voltage	V _{CB}	65	Vdc
Emitter-Base Voltage	V _{EB}	4.0	Vdc
Collector Current	I _C	1.0	Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	7.0 40	Watts mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C

*Indicates JEDEC Registered Data.

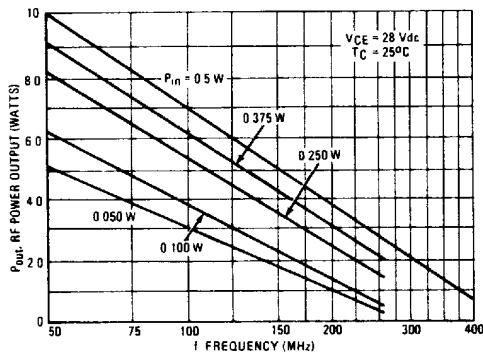


- NOTES
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M 1982
 - CONTROLLING DIMENSION INCH
 - DIMENSION J MEASURED FROM DIMENSION A MAXIMUM
 - DIMENSION B SHALL NOT VARY MORE THAN 0.25 (0.010) IN ZONE R. THIS ZONE CONTROLLED FOR AUTOMATIC HANDLING
 - DIMENSION F APPLIES BETWEEN DIMENSION P AND L. DIMENSION 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)**

FIGURE 1 - OUTPUT POWER versus FREQUENCY



2

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1) (I _C = 200 mA, I _B = 0)	V _{CE(sus)}	40	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 0.1 mA, I _C = 0)	V _{(B)EBO}	40	—	—	Vdc
Collector Cutoff Current (V _{CE} = 30 Vdc, I _B = 0)	I _{CEO}	—	—	0.1	mA
Collector Cutoff Current (V _{CE} = 30 Vdc, V _{BE(off)} = 1.5 Vdc, T _C = 200°C) (V _{CE} = 65 Vdc, V _{BE(off)} = 1.5 Vdc)	I _{CEx}	—	—	5.0 1.0	mA
Emitter Cutoff Current (V _{BE} = 4.0 Vdc, I _C = 0)	I _{EBO}	—	—	0.1	mA
ON CHARACTERISTICS					
DC Current Gain (I _C = 250 mA, V _{CE} = 5.0 Vdc)	h _{FE}	10	—	—	—
Collector-Emitter Saturation Voltage (I _C = 250 mA, I _B = 50 mA)	V _{CE(sat)}	—	—	1.0	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain-Bandwidth Product (I _C = 100 mA, V _{CE} = 28 Vdc, f = 100 MHz)	f _T	—	500	—	MHz
Output Capacitance (V _{CE} = 30 Vdc, I _E = 0, f = 100 kHz)	C _{ob}	—	8.0	10	pF
FUNCTIONAL TESTS					
Power Input (V _{CE} = 28 Vdc, P _{out} = 2.5 Watts, f = 175 MHz)	P _{in}	—	—	0.25	Watt
Common-Emitter Amplifier Power Gain (V _{CE} = 28 Vdc, P _{out} = 2.5 Watts, f = 175 MHz)	G _{pe}	10	—	—	dB
Collector Efficiency (V _{CE} = 28 Vdc, P _{out} = 2.5 Watts, f = 175 MHz)	η	50	—	—	%

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

FIGURE 2 - 175 MHz TEST CIRCUIT SCHEMATIC

