

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

MM4019

The RF Line

PNP 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 UHF and VHF equipment.

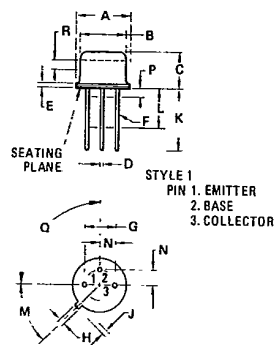
- Specified 175 MHz, 28 Vdc Characteristics –
Output Power = 2.5 Watts
Efficiency = 50%

**2.5 W – 175 MHz
HIGH FREQUENCY
TRANSISTOR
PNP SILICON**



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	40	Vdc
Collector-Base Voltage	V _{CB}	60	Vdc
Emitter-Base Voltage	V _{EB}	4.0	Vdc
Collector Current – Continuous	I _C	1.0	Adc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	5.0 28.6	Watts mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	–	0.500	–
L	6.35	–	0.250	–
M	45° NOM	–	45° NOM	–
P	–	1.27	–	0.050
Q	90° NOM	–	90° NOM	–
R	2.54	–	0.100	–

All JEDEC dimensions and notes apply.

CASE 79-02
TO-39

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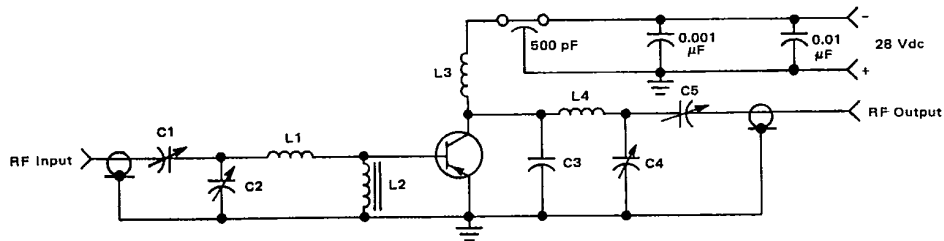
MM4019

ELECTRICAL CHARACTERISTICS (T_A = 25° unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 10 mA, I _B = 0)	V _{(BR)CEO}	40	—	—	Vdc
Collector-Base Breakdown Voltage (I _C = 10 mA, I _E = 0)	V _{(BR)CBO}	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 0.1 A, I _C = 0)	V _{(BR)EBO}	4.0	—	—	Vdc
Collector Cutoff Current (V _{CE} = 30 Vdc, I _B = 0)	I _{CEO}	—	—	0.1	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	—	750	—	MHz
Output Capacitance (V _{CB} = 30 Vdc, I _E = 0, f = 100 kHz)	C _{ob}	—	7.5	—	pF
FUNCTIONAL TEST					
Power Input (P _{out} = 2.5 W, V _{CC} = 28 Vdc, f = 175 MHz)	P _{in}	—	—	0.25	Watt
Power Output (P _{in} = 0.5 W, V _{CC} = 28 Vdc, f = 400 MHz)	P _{out}	—	2.0	—	Watts
Collector Efficiency (P _{out} = 2.5 W, V _{CC} = 28 Vdc, f = 175 MHz)	η	50	—	—	%

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FIGURE 1 - 175 MHz TEST CIRCUIT



- C1,C2 3.0-30 pF, ARCO 481 or equivalent.
- C3 40 pF
- C4,C5 5.0-80 pF, ARCO 462 or equivalent.
- L1 80 nH, 3 Turns #18 AWG, 1/4" I.D., 1/4" Length
- L2 Ferrite Choke, VK-200 Ferroxcube, Q < 5
- L3 0.15 μH, RF Choke
- L4 27 nH, 2 Turns #18 AWG, 1/4" I.D., 3/8" Length