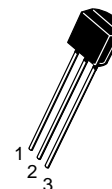
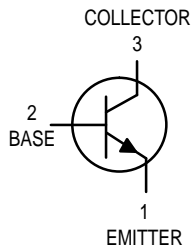


High Frequency Transistor

NPN Silicon

MPS5179

Motorola Preferred Device



CASE 29-04, STYLE 1
TO-92 (TO-226AA)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	12	Vdc
Collector–Base Voltage	V_{CBO}	20	Vdc
Emitter–Base Voltage	V_{EBO}	2.5	Vdc
Collector Current — Continuous	I_C	50	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	200 1.14	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	300 1.71	mW mW/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage ($I_C = 3.0 \text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	12	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 0.001 \text{ mAdc}$, $I_E = 0$)	$V_{(BR)CBO}$	20	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 0.01 \text{ mAdc}$, $I_C = 0$)	$V_{(BR)EBO}$	2.5	—	Vdc
Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$)	I_{CBO}	— —	0.02 1.0	μAdc

ON CHARACTERISTICS

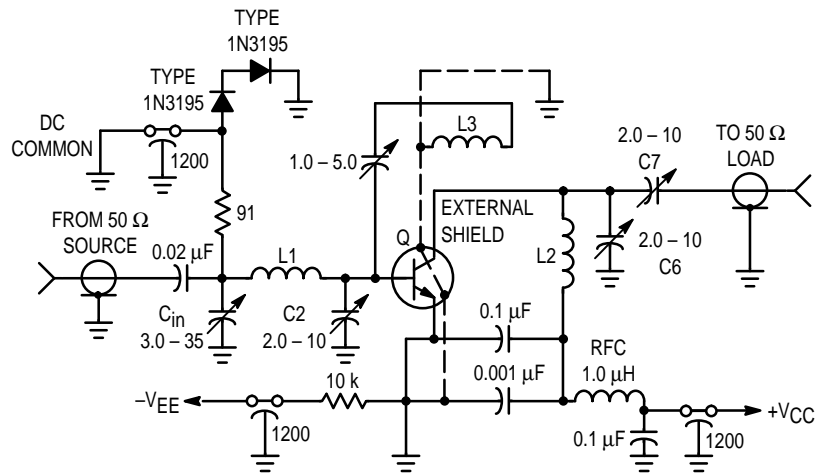
DC Current Gain ($I_C = 3.0 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)	h_{FE}	25	250	—
Collector–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.4	Vdc
Base–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$)	$V_{BE(sat)}$	—	1.0	Vdc

Preferred devices are Motorola recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ⁽¹⁾ ($I_C = 5.0 \text{ mAdc}$, $V_{CE} = 6.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	900	2000	MHz
Collector-Base Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 0.1 \text{ to } 1.0 \text{ MHz}$)	C_{cb}	—	1.0	pF
Small Signal Current Gain ($I_C = 2.0 \text{ mAdc}$, $V_{CE} = 6.0 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	25	300	—
Collector Base Time Constant ($I_E = 2.0 \text{ mAdc}$, $V_{CB} = 6.0 \text{ Vdc}$, $f = 31.9 \text{ MHz}$)	$r_b \cdot C_c$	3.0	14	ps
Noise Figure (See Figure 1) ($I_C = 1.5 \text{ mAdc}$, $V_{CE} = 6.0 \text{ Vdc}$, $R_S = 50 \text{ ohms}$, $f = 200 \text{ MHz}$)	NF	—	5.0	dB
Common-Emitter Amplifier Power Gain (See Figure 1) ($V_{CE} = 6.0 \text{ Vdc}$, $I_C = 5.0 \text{ mAdc}$, $f = 200 \text{ MHz}$)	G_{pe}	15	—	dB

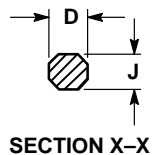
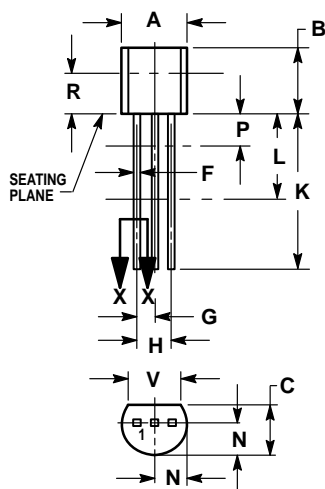
1. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.



- L1 1-3/4 Turns, #18 AWG, 0.5" L, 0.5" Diameter
- L2 2 Turns, #16 AWG, 0.5" L, 0.5" Diameter
- L3 2 Turns, #13 AWG, 0.25" L, 0.5" Diameter (Position 1/4" from L2)

Figure 1. 200 MHz Amplifier Power Gain and Noise Figure Circuit

PACKAGE DIMENSIONS



SECTION X-X

**CASE 029-04
(TO-226AA)
ISSUE AD**


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

STYLE 1:

1. EMITTER
2. BASE
3. COLLECTOR

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MPS5179/D
