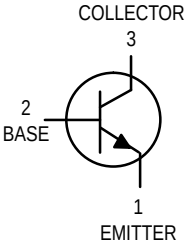
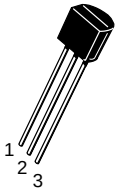
Amplifier Transistor
NPN Silicon

MPS4124





CASE 29–04, STYLE 1
TO–92 (TO–226AA)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CE}	25	Vdc
Collector–Base Voltage	V_{CB}	30	Vdc
Emitter–Base Voltage	V_{EB}	5.0	Vdc
Collector Current — Continuous	I_C	200	mAdc
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	625 5.0	mW mW/°C
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (I_C = 1.0 mA, I_B = 0)	$V_{(BR)CEO}$	25	—	Vdc
Collector–Base Breakdown Voltage (I_C = 10 μA, I_E = 0)	$V_{(BR)CBO}$	30	—	Vdc
Emitter–Base Breakdown Voltage (I_C = 0, I_E = 10 μA)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current (V_{CB} = 20 V, I_E = 0)	I_{CBO}	—	50	nAdc
Emitter Cutoff Current (V_{EB} = 3.0 V, I_C = 0)	I_{EBO}	—	50	nAdc

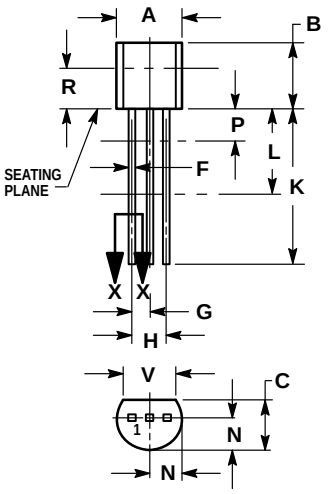
(Replaces MPS4123/D)

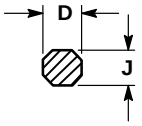
MOTOROLA

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I_C = 2.0 mA, V_{CE} = 1.0 V) (I_C = 50 mA, V_{CE} = 1.0 V)	h_{FE}	 120 60	 360 —	—
Collector–Emitter Saturation Voltage (I_C = 50 mA, I_B = 5.0 mA)	$V_{CE(sat)}$	 —	 0.3	Vdc
Base–Emitter Saturation Voltage (I_C = 50 mA, I_B = 5.0 mA)	$V_{BE(sat)}$	 —	 0.95	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product (I_C = 10 mA, V_{CE} = 20 V, f = 100 MHz)	f_T	 170	 —	MHz
Output Capacitance (V_{CB} = 5.0 V, I_E = 0, f = 1.0 MHz)	C_{ob}	 —	 4.0	pF
Input Capacitance (V_{EB} = 0.5 V, I_C = 0, f = 1.0 MHz)	C_{ib}	 —	 13.5	pF
Small–Signal Current Gain (I_C = 2.0 mA, V_{CE} = 1.0 V, f = 1.0 kHz)	h_{fe}	 120	 480	—
Noise Figure (I_C = 100 μA, V_{CE} = 5.0 V, R_S = 1.0 kΩ, f = 1.0 kHz)	NF	 —	 5.0	dB

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.

	INCHES		MILLIMETERS	
DIM	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:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

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