

Plastic Medium Power NPN Silicon Transistor

... designed for power output stages for television, radio, phonograph and other consumer product applications.

- Suitable for Transformerless, Line-Operated Equipment
- Thermopad† Construction Provides High Power Dissipation Rating for High Reliability

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	350	Vdc
Collector-Base Voltage	V_{CB}	375	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current — Continuous Peak	I_C	0.5 1.0	Adc
Base Current	I_B	0.25	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	20 0.16	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	6.25	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

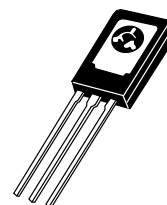
Collector-Emitter Sustaining Voltage ($I_C = 1.0 \text{ mAdc}$, $I_B = 0$)	BV_{CEO}	350	—	Vdc
Collector Cutoff Current (At rated voltage)	I_{CBO}	—	100	μAdc
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	100	μAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 50 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$)	h_{FE}	30	240	—
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BD159

**0.5 AMPERE
POWER TRANSISTOR
NPN SILICON
350 VOLTS
20 WATTS**



**CASE 77-09
TO-225AA TYPE**



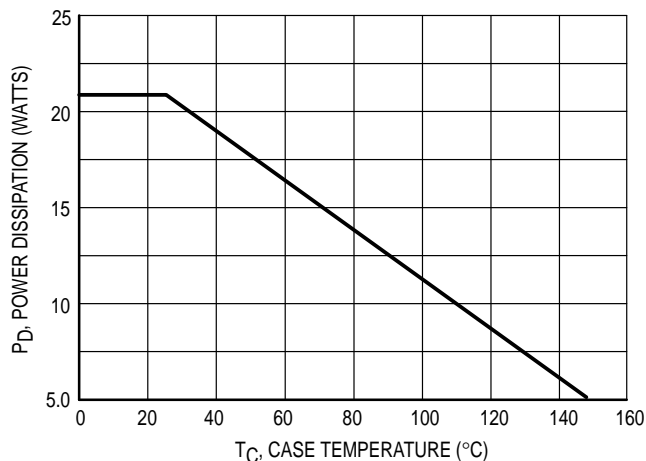


Figure 1. Power–Temperature Derating Curve

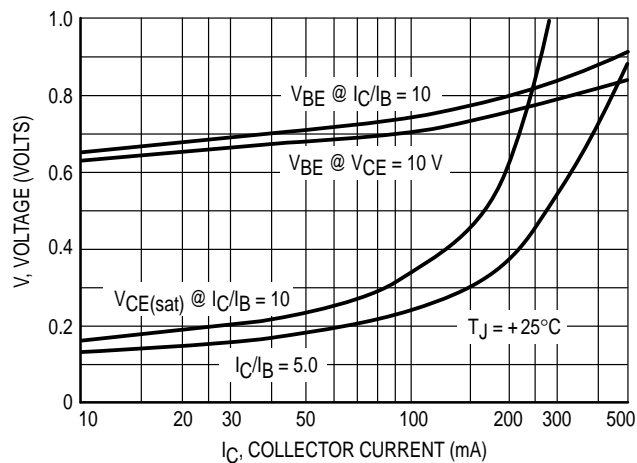


Figure 2. “On” Voltages

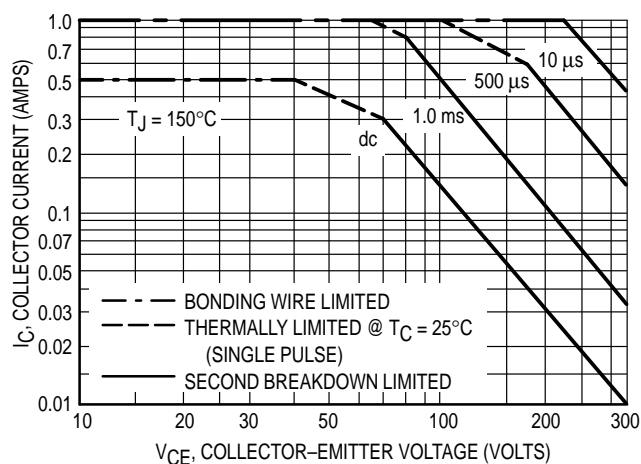


Figure 3. DC Safe Operating Area

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below, the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.

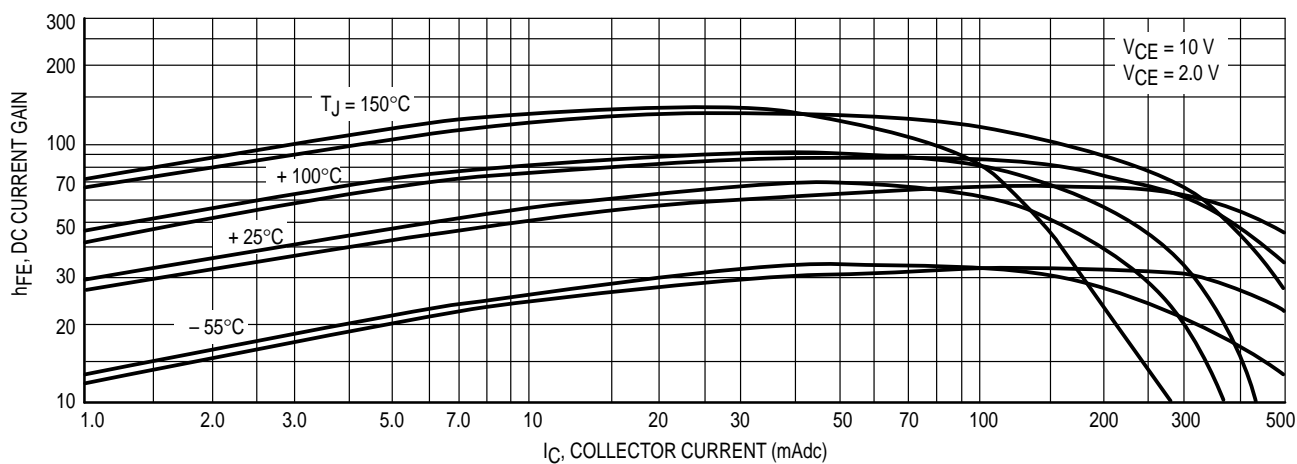
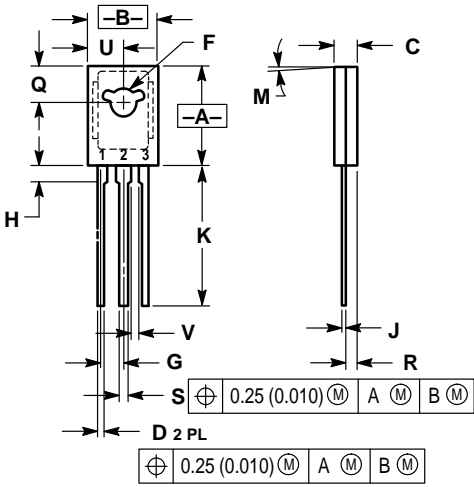


Figure 4. Current Gain

PACKAGE DIMENSIONS




- NOTES:
- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

- STYLE 1:
- PIN 1. EMITTER
 - 2. COLLECTOR
 - 3. BASE

CASE 77-09
TO-225AA TYPE
ISSUE W

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USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; SPD, Strategic Planning Office, 141,
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609
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ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

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