

6367254 MOTOROLA SC (XSTRS/R F)

96D 80559

D 7-33-09

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

BD175,-6,-10,-16
BD177,-6,-10
BD179,-6,-10

PLASTIC MEDIUM POWER
SILICON NPN TRANSISTOR

... designed for use in 5 to 10 Watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

- DC Current Gain— $h_{FE} = 40$ (Min) @ $I_C = 0.15$ Adc
- BD 175, 177, 179 are complementary with BD 176, 178, 180
- Available in HFE groups -6, -10, -16

MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector-Emitter Voltage	V_{CEO}	BD 175 BD 177 BD 179	45 60 80	Vdc
Collector-Base Voltage	V_{CBO}	BD 175 BD 177 BD 179	45 60 80	Vdc
Emitter-Base Voltage	V_{EBO}		5	Vdc
Collector Current	I_C		3.0	Adc
Base Current	I_B		1.0	Adc
Total Device Dissipation $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D		30 240	Watts mW/ $^\circ\text{C}$
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}	4.16	$^{\circ}\text{C/W}$

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

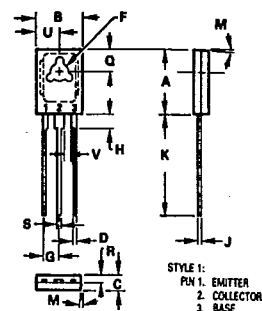
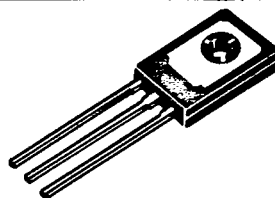
Characteristic	Symbol	Type	Min	Max	Unit
Collector-Emitter Sustaining Voltage* ($I_C = 0.1 \text{ A dc}$, $I_B = 0$)	V_{CE0}	BD 175 BD 177 BD 179	45 60 80	— — —	Vdc
Collector Cutoff Current ($V_{CB} = 45 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 60 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 80 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	BD 175 BD 177 BD 179	— — —	0.1 0.1 0.1	mA
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}		—	1.0	mA
DC current Gain ($I_C = 0.15 \text{ A}$, $V_{CE} = 2 \text{ V}$) ($I_C = 1 \text{ A}$, $V_{CE} = 2 \text{ V}$)	h_{FE}		40 63 100 15	100 160 250	
Collector-Emitter Saturation Voltage* ($I_C = 1 \text{ A dc}$, $I_B = 0.1 \text{ A dc}$)	$V_{CE(sat)}$		—	0.8	Vdc
Base-Emitter On Voltage* ($I_C = 1 \text{ A dc}$, $V_{CE} = 2.0 \text{ Vdc}$)	$V_{BE(on)}$		—	1.3	Vdc
Current-Gain-Bandwidth Product ($I_C = 250 \text{ mA dc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	f_T		3.0	—	MHz

* Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

3 AMPERE
POWER TRANSISTOR

NPN SILICON

45, 60, 80 VOLTS
30 WATTS



NOTES:
1. MT = MAIN TERMINAL
2. LEADS, TRUE POSITIONED WITHIN 0.25mm (0.010")
DIA TO DIM A & B AT MAXIMUM MATERIAL
CONDITION

DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	10.80	11.04	0.425	0.435
B	7.50	7.74	0.295	0.305
C	2.42	2.66	0.095	0.105
D	0.51	0.65	0.020	0.024
F	2.83	3.17	0.115	0.125
G	2.32	2.46	0.091	0.097
H	1.27	2.41	0.050	0.095
J	0.39	0.63	0.015	0.025
K	14.61	16.63	0.575	0.655
M	3" TYP		3" TYP	
O	3.76	4.01	0.148	0.158
R	1.15	1.39	0.045	0.055
S	0.84	0.88	0.025	0.035
U	2.69	3.30	0.145	0.130
V	1.02	-	0.040	-

CASE 77-05
TQ-126

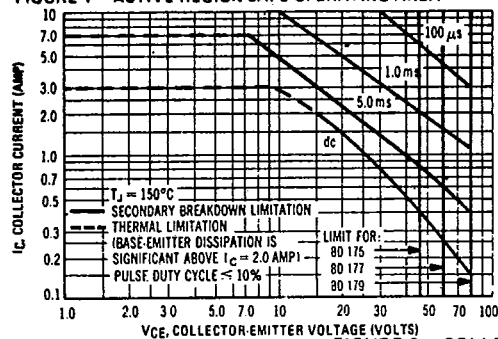
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FIGURE 1 - ACTIVE-REGION SAFE OPERATING AREA



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 2 - COLLECTOR SATURATION REGION

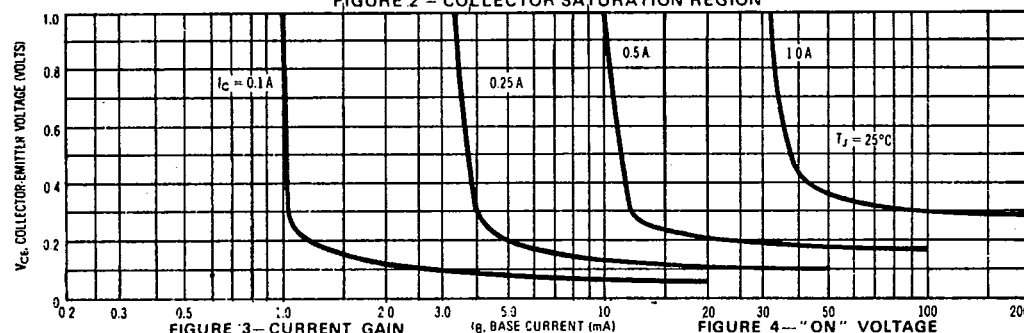


FIGURE 3 - CURRENT GAIN

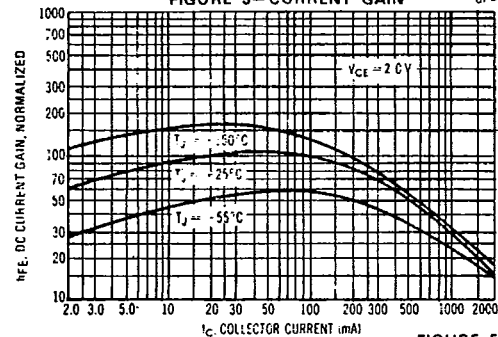


FIGURE 4 - "ON" VOLTAGE

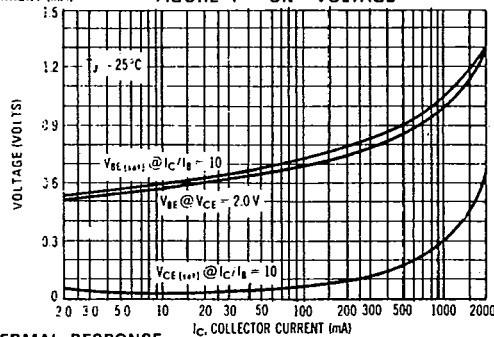


FIGURE 5 - THERMAL RESPONSE

