

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

3 AMPERE
POWER TRANSISTOR

NPN SILICON

45, 60, 80 VOLTS
30 WATTS

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	$^\circ\text{C}$

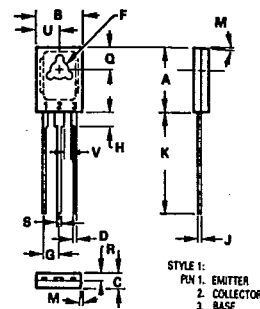
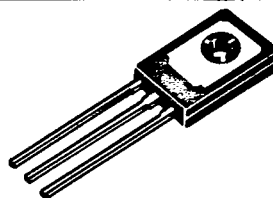
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	4.16	°C/W

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

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

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



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	
	MM	IN	MM	IN
A	10.80	11.04	0.425	0.435
B	7.50	7.74	0.295	0.305
C	2.41	2.66	0.095	0.105
D	5.51	0.66	0.020	0.024
F	2.93	3.17	0.115	0.125
G	2.32	2.45	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	18.63	0.575	0.655
M	3" TYP		3" TYP	
Q	3.76	4.01	0.148	0.158
R	1.15	1.29	0.045	0.055
S	0.54	0.86	0.025	0.036
U	3.69	3.93	0.145	0.155
V	1.02		0.040	

CASE 77-05
TO-126

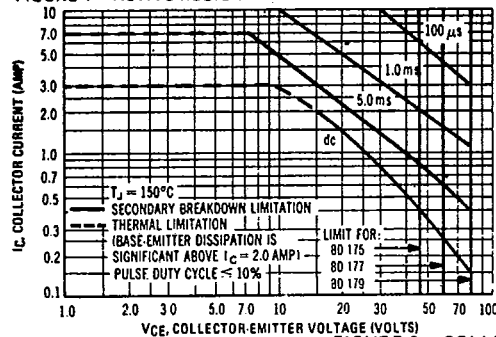
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FIGURE 1 - ACTIVE-REGION SAFE OPERATING AREA



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

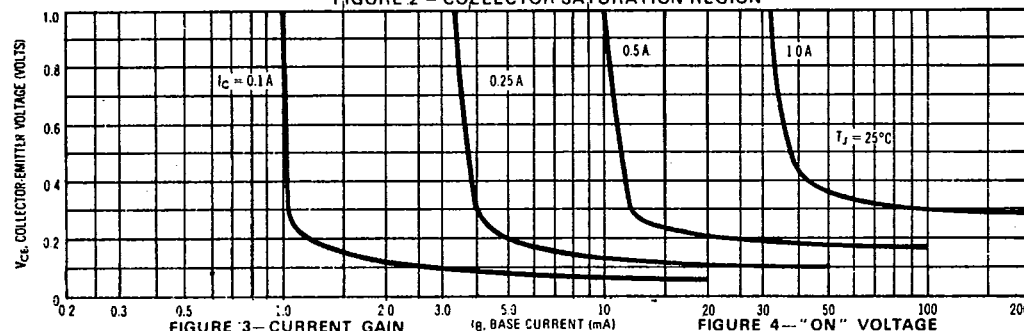


FIGURE 3 - CURRENT GAIN

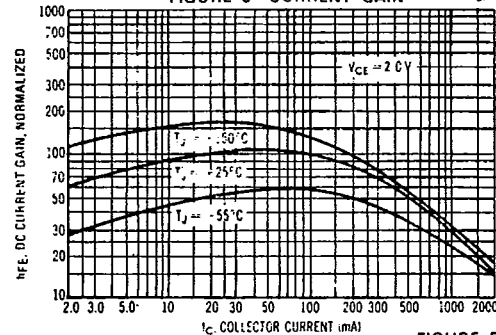


FIGURE 4 - "ON" VOLTAGE

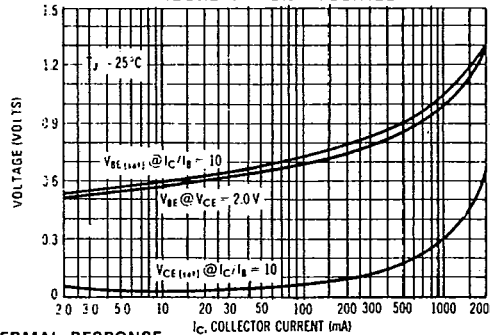


FIGURE 5 - THERMAL RESPONSE

