

6367254 MOTOROLA SC (XSTRS/R F)

96D 80593

D
T-33-11

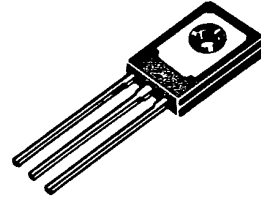
**MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA**

**BD433, BD435
BD437, BD439
BD441**

PLASTIC MEDIUM POWER SILICON
NPN TRANSISTOR

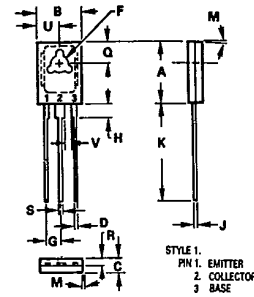
4 AMPERE
POWER TRANSISTOR
NPN SILICON

... for amplifier and switching applications Complementary
types: BD434/436/438/440/442



MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector Emitter Voltage	V _{CEO}	BD433	22	V _{dc}
		BD435	32	
		BD437	45	
		BD439	60	
		BD441	80	
Collector Base Voltage	V _{CBO}	BD433	22	V _{dc}
		BD435	32	
		BD437	45	
		BD439	60	
		BD441	80	
Emitter Base Voltage	V _{EBO}		5	V _{dc}
Collector current	I _C		4	A _{dc}
Base Current	I _B		1	A _{dc}
Total Device Dissipation T _C = 25°C Derate above 25°C	P _D		36	Watts mW/°C
			288	
Operating and Storage Junction Temperature range.	I _J , I _{stg}		-55 to +150	°C



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	0.66	0.020	0.026
F	2.93	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	0.29	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	1.29	0.045	0.055
S	0.64	0.88	0.025	0.035
U	3.68	3.93	0.145	0.155
V	1.02	—	0.040	—

CASE 77-05
TO-126

THERMAL CHARACTERISTICS

	Symbol	Max.	Unit
Thermal Resistance Junction to Case	θ_{JC}	3.5	°C/W

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

Characteristics	Symbol	Min.	Typ.	Max.	Unit	
Collector Emitter Breakdown Voltage ($I_C = 100\text{ mA}$, $I_B = 0$)	BV _{CEO}	22			V _{dc}	
BD433		32				
BD435		45				
BD437		60				
BD439		80				
BD441						
Collector Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$, $I_B = 0$)	BV _{CBO}	22			V _{dc}	
BD433		32				
BD435		45				
BD437		60				
BD439		80				
BD441						
Emitter Base Breakdown Voltage ($I_E = 100\ \mu\text{A}$, $I_C = 0$)	BV _{EBO}	5			V _{dc}	
Collector Cutoff Current ($V_{CB} = 22\text{ V}$, $I_E = 0$)	I _{CBO}			0.1	mAdc	
BD433				0.1		
($V_{CB} = 32\text{ V}$, $I_E = 0$)		BD435				0.1
($V_{CB} = 45\text{ V}$, $I_E = 0$)		BD437				0.1
($V_{CB} = 60\text{ V}$, $I_E = 0$)		BD439				0.1
($V_{CB} = 80\text{ V}$, $I_E = 0$)	BD441			0.1		
Emitter Cutoff Current ($V_{EB} = 5\text{ V}$)	I _{EBO}			1	mAdc	
DC Current Gain ($I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$)	H _{FE}	40				
BD433		40				
BD435		30				
BD437		20				
BD439		15				
BD441						
DC Current Gain ($I_C = 500\text{ mA}$, $V_{CE} = 1\text{ V}$)	H _{FE}	85		475		
BD433		85		475		
BD435		85		375		
BD437		40		475		
BD439		40		475		
BD441						
DC Current Gain ($I_C = 2\text{ A}$, $V_{CE} = 1\text{ V}$)	H _{FE}	50				
BD433		50				
BD435		40				
BD437		25				
BD439		15				
BD441						
Collector Saturation Voltage ($I_C = 2\text{ A}$, $I_B = 0.2\text{ A}$)	V _{CE(sat)}			0.5	V _{dc}	
BD433				0.5		
BD435				0.7		
BD437				0.8		
BD439				0.8		
BD441						
Base-Emitter on voltage ($I_C = 2\text{ A}$, $V_{CE} = 1\text{ V}$)	V _{BE(ON)}			1.1 1.5	V _{dc}	
Current Gain Bandwidth Product ($V_{CE} = 1\text{ V}$, $I_C = 250\text{ mA}$, $f = 1\text{ MHz}$)	f _T	3			MHz	

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FIGURE 1 - COLLECTOR SATURATION REGION

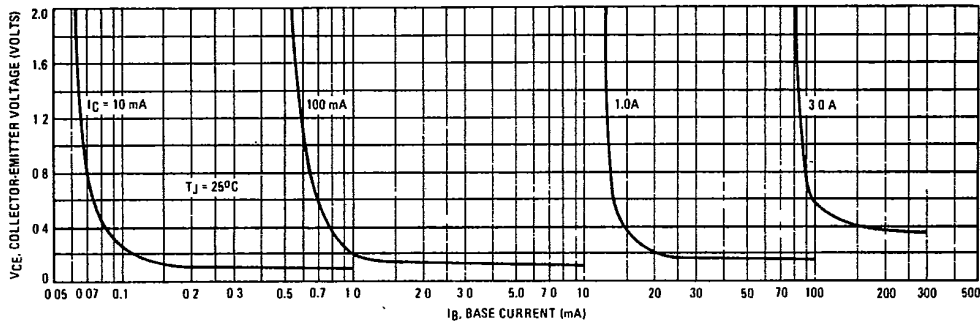


FIGURE 2 - CURRENT GAIN

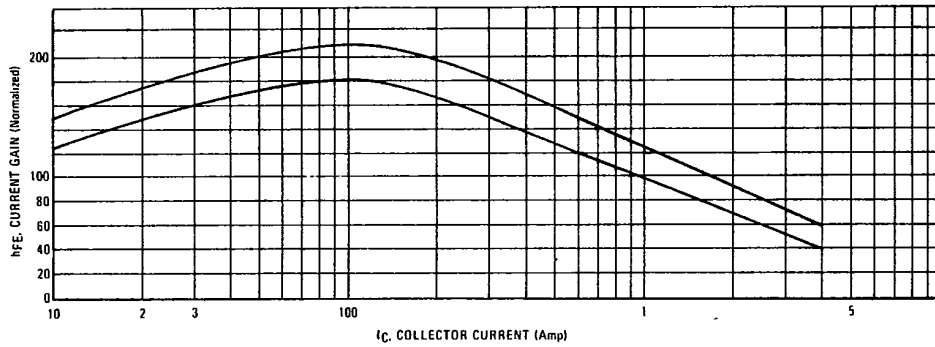


FIGURE 3 - "ON" VOLTAGE

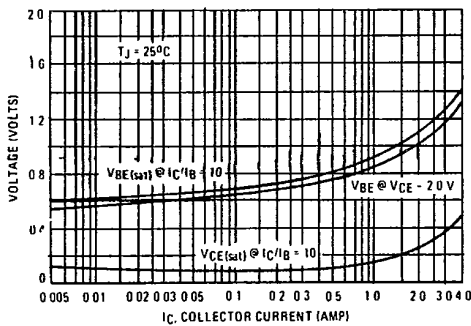


FIGURE 4 - ACTIVE REGION SAFE OPERATING AREA

