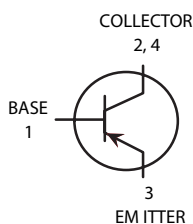


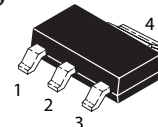
### PNP Silicon Planar High Current Transistor

**(Pb)** Lead(Pb)-Free



#### SOT-223

1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR



#### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ )

Rating	Symbol	Value	Unit
Collector to Base Voltage	$V_{CB0}$	-100	V
Collector to Emitter Voltage	$V_{CEO}$	-60	V
Collector to Base Voltage	$V_{EBO}$	-6	V
Collector Current	$I_C(\text{DC})$	-5	A
Collector Current	$I_C(\text{Pulse})$	-15	A
Total Device Dissipation $T_A=25^\circ\text{C}$	$P_D$	3	W
Junction Temperature	$T_j$	+150	$^\circ\text{C}$
Storage, Temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

\*Device mounted in a typical manner on a P.C.B with copper 4 inches x 4 inches(min).

#### Device Marking

PZT159=159

#### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Max	Unit
Collector-Base Breakdown Voltage $I_C=-100\mu\text{A}, I_E=0$	$BV_{CB0}$	-100	-	-	V
Collector-Emitter Breakdown Voltage $I_C=-1\mu\text{A}, R_B \leq 1\text{k}\Omega$	$BV_{CER}$	-100	-	-	V
Collector-Emitter Breakdown Voltage <sup>(1)</sup> $I_C=-10\text{mA}, I_B=0$	$BV_{CEO}$	-60	-	-	V
Emitter-Base Breakdown Voltage $I_E=-100\mu\text{A}, I_C=0$	$BV_{EBO}$	-6	-	-	V
Collector Cut-Off Current $V_{CB}=-80\text{V}, I_E=0$	$I_{CBO}$	-	-	-50	nA
Collector Cut-Off Current $V_{CB}=-80\text{V}, R \leq 1\text{k}\Omega$	$I_{CER}$	-	-	-50	nA
Emitter-Cut-Off Current $V_{EB}=-6\text{V}, I_C=0$	$I_{EBO}$	-	-	-10	nA

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)**

Characteristic	Symbol	Min	Typ	Max	Unit
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**ON CHARACTERISTICS<sup>(1)</sup>**

DC Current Gain V <sub>CE</sub> =-1V, I <sub>C</sub> =-10mA	h <sub>FE1</sub>	100	200	-	
V <sub>CE</sub> =-1V, I <sub>C</sub> =-2A	h <sub>FE2</sub>	100	200	300	-
V <sub>CE</sub> =-1V, I <sub>C</sub> =-5A	h <sub>FE3</sub>	75	90	-	-
V <sub>CE</sub> =-1V, I <sub>C</sub> =-10A	h <sub>FE4</sub>	10	25	-	-
Collector-Emitter Saturation Voltage I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA	V <sub>CE(sat)</sub>	-	-20	-50	mV
I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA		-	-85	-140	
I <sub>C</sub> =-2A, I <sub>B</sub> =-200mA		-	-155	-210	
I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA		-	-370	-460	
Base-Emitter Saturation Voltage I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA	V <sub>BE(sat)</sub>	-	-1.08	-1.24	V
Base-Emitter On Voltage V <sub>CE</sub> =-1V, I <sub>C</sub> =-5A	V <sub>BE(on)</sub>	-	-0.935	-1.07	V

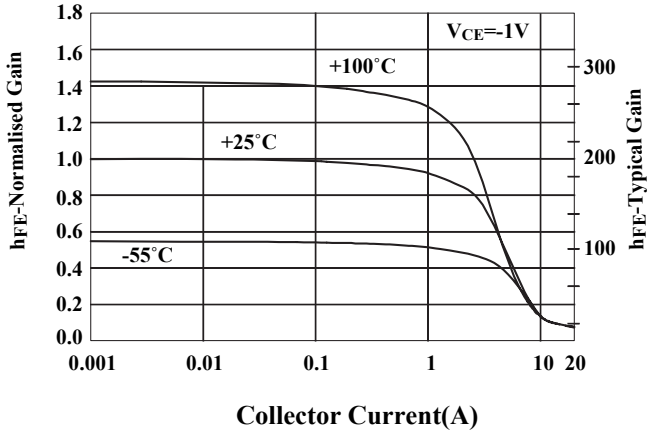
**DYNAMIC CHARACTERISTICS**

Transition Frequency V <sub>CE</sub> =-10V, I <sub>C</sub> =-100mA, f=50MHz	f <sub>T</sub>	-	120	-	MHz
Output Capacitance V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz	C <sub>ob</sub>	-	74	-	pF

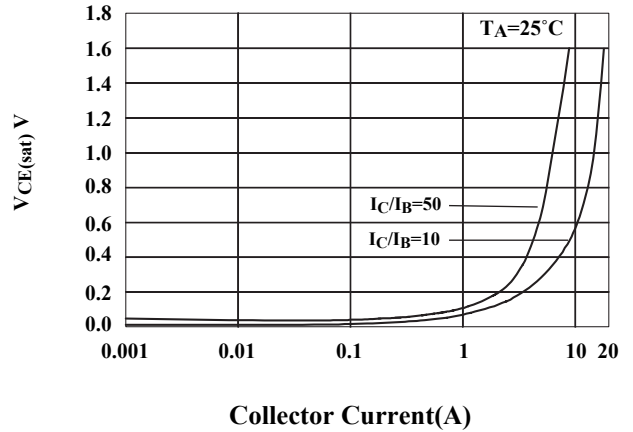
**SWITCHING TIMES**

Switching Times I <sub>C</sub> =-2A, I <sub>B1</sub> =-200mA V <sub>CC</sub> =-10V, I <sub>B2</sub> =-200mA	t <sub>on</sub>	-	82	-	ns
	t <sub>off</sub>	-	350	-	

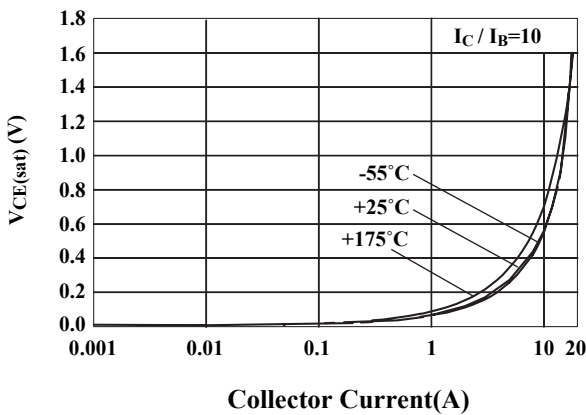
Note 1.Pulse Test : Pulse width < 300μs, Duty cycle ≤ 20%.



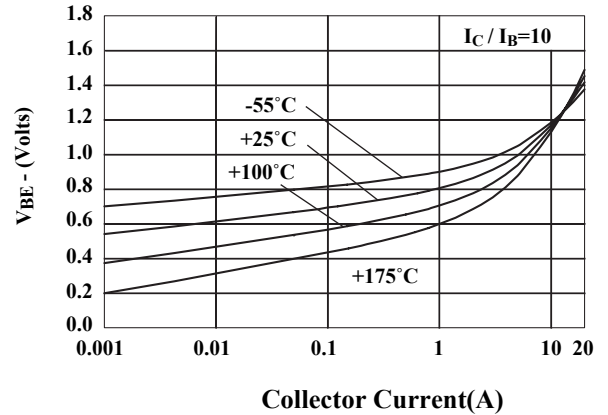
**Fig.1 Current Gain & Collector Current**



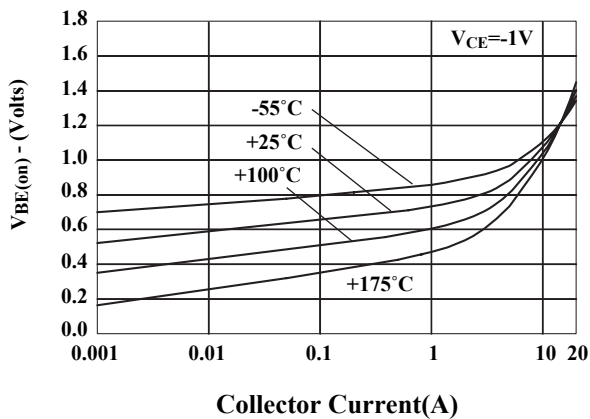
**Fig.2 Saturation Voltage & Collector Current**



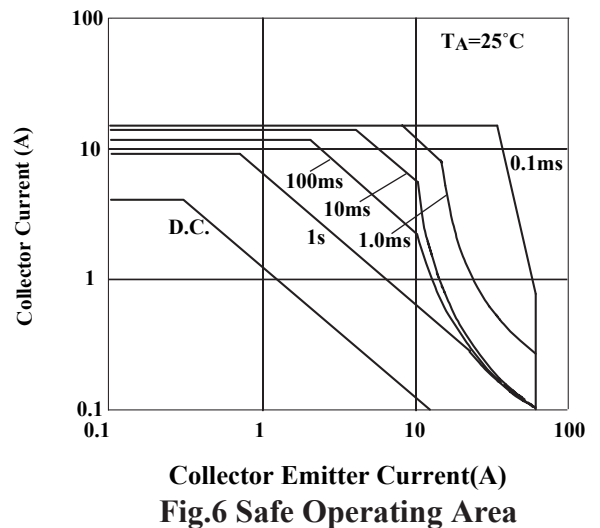
**Fig.3 Saturation Voltage & Collector Current**



**Fig.4 Saturation Voltage & Collector Current**



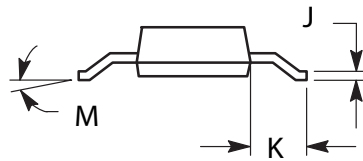
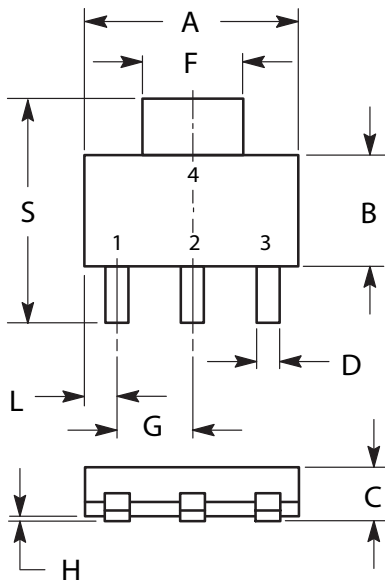
**Fig.5 On Voltage & Collector Current**



**Fig.6 Safe Operating Area**

## SOT-223 Outline Dimensions

unit:mm



DIM	MILLIMETERS	
	MIN	MAX
A	6.30	6.70
B	3.30	3.70
C	1.50	1.75
D	0.60	0.89
F	2.90	3.20
G	2.20	2.40
H	0.020	0.100
J	0.24	0.35
K	1.50	2.00
L	0.85	1.05
M	0°	10°
S	6.70	7.30