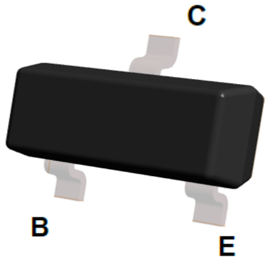
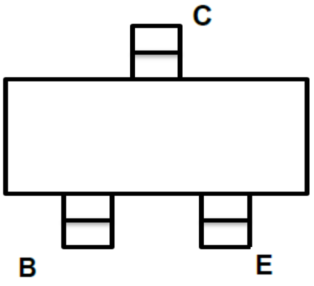
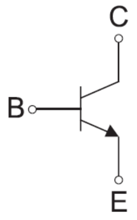
General Purpose Transistors NPN Silicon



Top View



SOT-23



Product Summary

● **V_{CEO}**	400V
● **I_c**	200mA
● **P_C**	350mW

FEATURE

- High Collector-Emitter Voltage
- Complement to MMBTA94

■ MAXIMUM RATINGS (T_A=25℃unless otherwise noted)

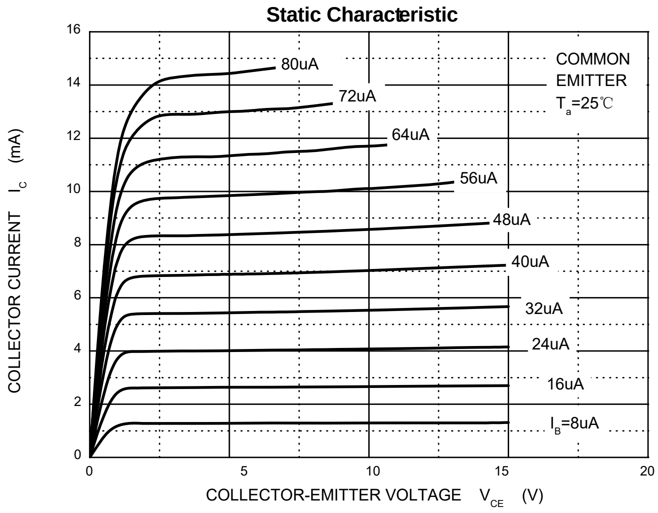
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	400	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current -Continuous	I_C	0.2	A
Power Dissipation	P_C	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55～+150	℃

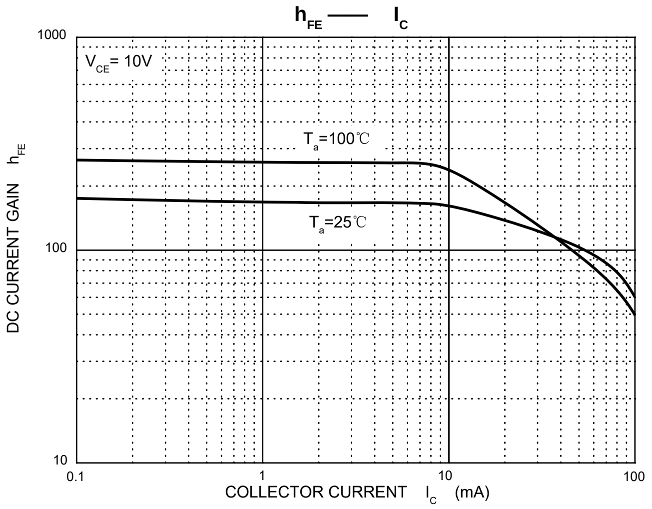
■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

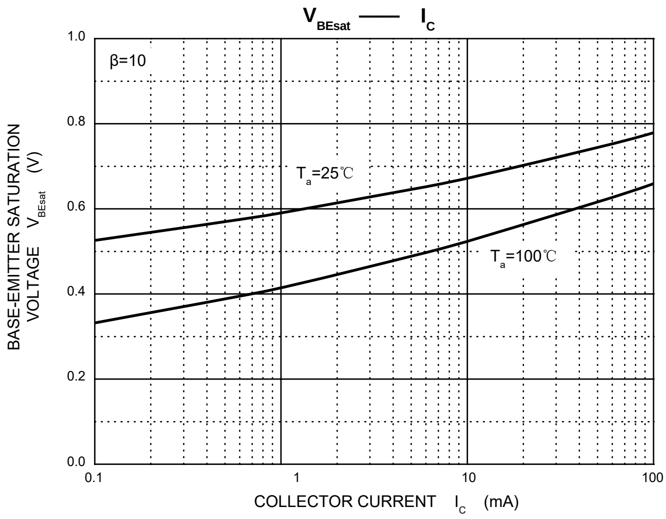
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	400			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$*	I_C=1mA, I_B=0	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=400V, I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=4V, I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$ *	V_{CE}=10V, I_C=1mA	40			
	$h_{FE(2)}$ *	V_{CE}=10V, I_C=10mA	50		200	
	$h_{FE(3)}$ *	V_{CE}=10V, I_C=50mA	45			
	$h_{FE(4)}$ *	V_{CE}=10V, I_C=100mA	40			
Collector-emitter saturation voltage	$V_{CE(sat)1}$*	I_C=1mA, I_B=0.1mA			0.4	V
	$V_{CE(sat)2}$*	I_C=10mA, I_B=1mA			0.5	V
	$V_{CE(sat)3}$*	I_C=50mA, I_B=5mA			0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$*	I_C=10mA, I_B=1mA			0.75	V
Collector output capacitance	C_{ob}	V_{CB}=20V, I_E=0, f=1MHz			7	pF
Emitter input capacitance	C_{ib}	V_{EB}=0.5V, I_C=0, f=1MHz			130	pF
Transition frequency	f_T	V_{CE}=20V, I_C=10mA,f=30MHz	50			MHz

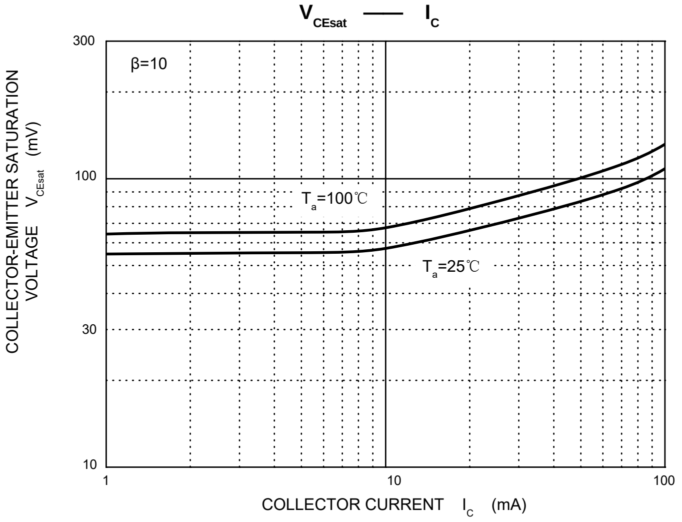
*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

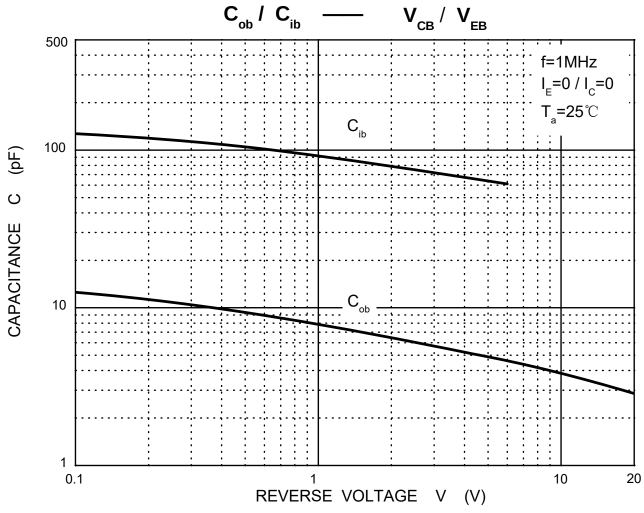
■ Typical Performance Characteristics

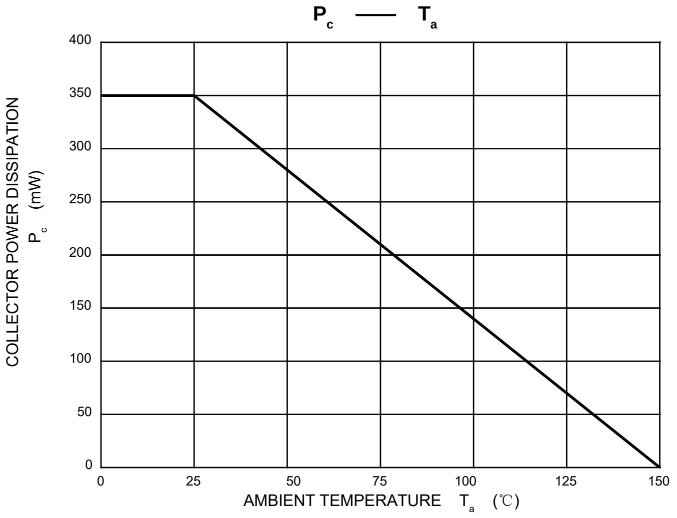

Static Characteristic


h_{FE} — I_C

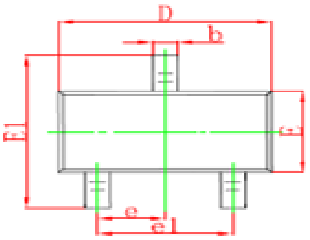

V_{BEsat} — I_C

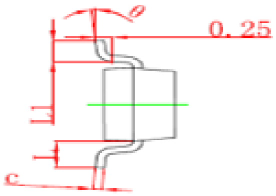

V_{CEsat} — I_C

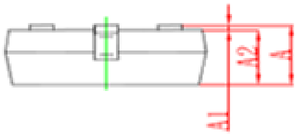

C_{ob} / C_{ib} — V_{CB} / V_{EB}


P_c — T_a

■ SOT-23 Package information







Symbol	Dimentions in Millimeter		Dimentions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0 °	8 °	0 °	8 °

■ SOT-23 Suggested Pad Layout