

Features

- Complementary Type MMBT593

1. BASE
2. EMITTER
3. COLLECTOR



Package: SOT-23

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

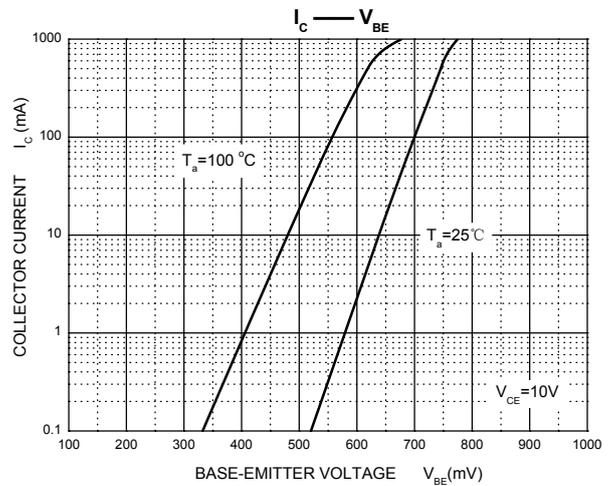
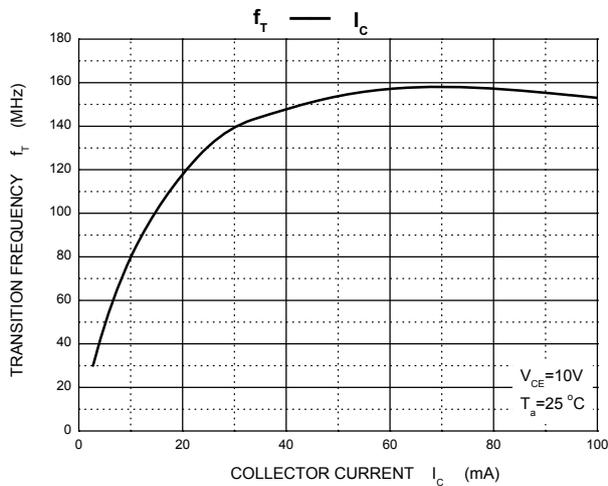
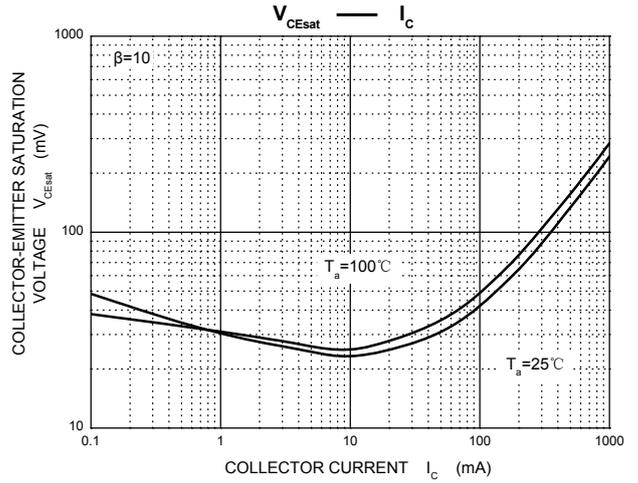
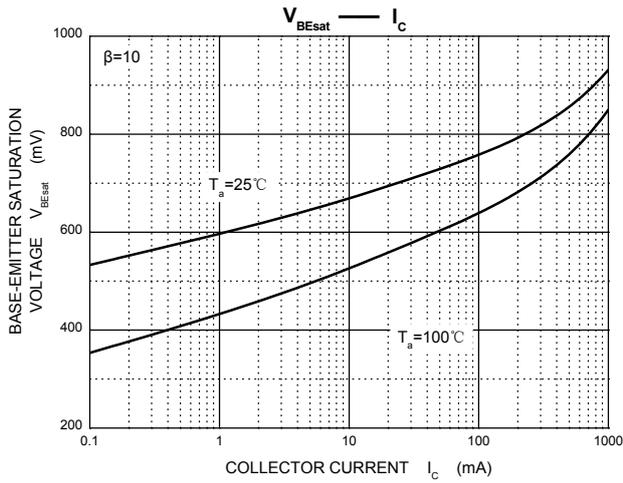
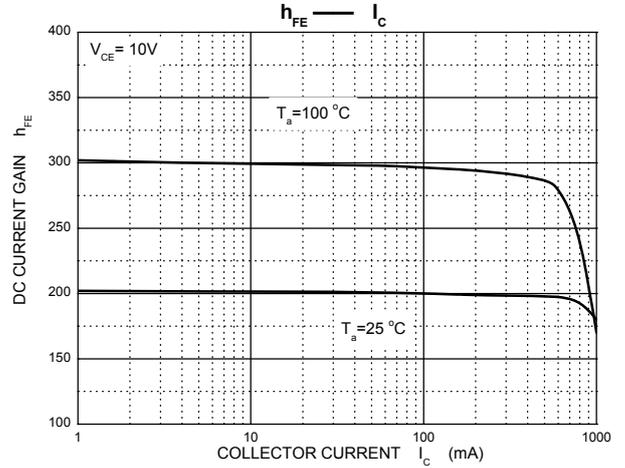
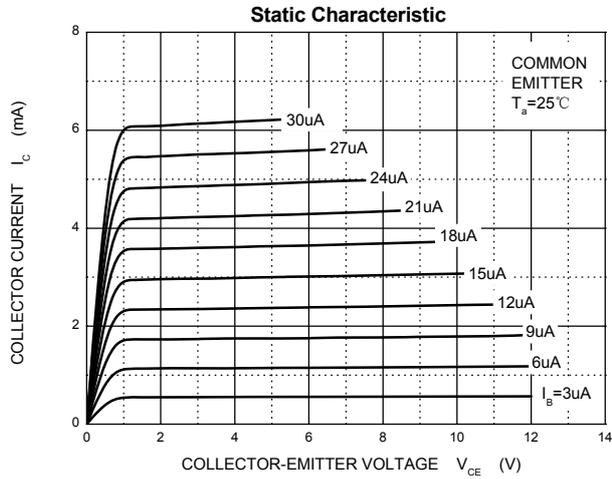
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	1000	mA
Collector Power Dissipation	P_C	250	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	500	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to+150	$^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

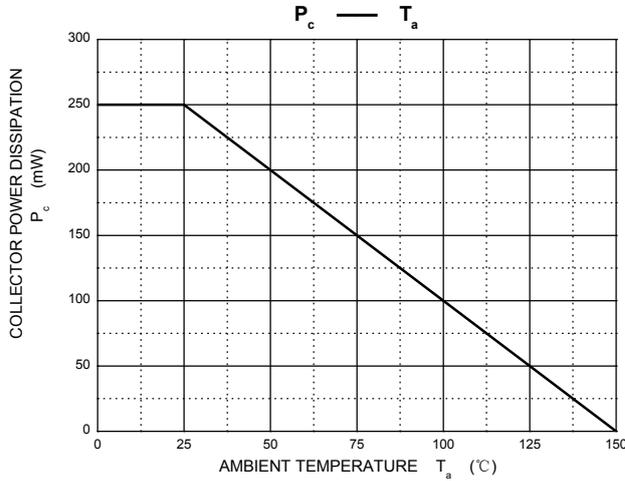
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	120	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	100	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	5	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB}=100\text{V}, I_E=0$	-	0.1	μA
Collector Cut-off Current	I_{CES}	$V_{CES}=100\text{V}, I_E=0$	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$	-	0.1	μA
DC Current Gain	$h_{FE(1)}$ *	$V_{CE}=10\text{V}, I_C=1\text{mA}$	100	-	-
	$h_{FE(2)}$ *	$V_{CE}=10\text{V}, I_C=250\text{mA}$	100	300	-
	$h_{FE(3)}$ *	$V_{CE}=10\text{V}, I_C=0.5\text{A}$	60	-	-
	$h_{FE(4)}$ *	$V_{CE}=10\text{V}, I_C=1\text{A}$	20	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$ *	$I_C=500\text{mA}, I_B=50\text{mA}$	-	0.3	V -
	$V_{CE(sat)2}$ *	$I_C=1\text{A}, I_B=100\text{mA}$	-	0.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$ *	$I_C=1\text{A}, I_B=100\text{mA}$	-	1.15	V
Base-Emitter Voltage	V_{BE} *	$V_{CE}=10\text{V}, I_C=1\text{A}$	-	1	V
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$	150	-	MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	-	10	pF

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycles $\leq 2.0\%$.

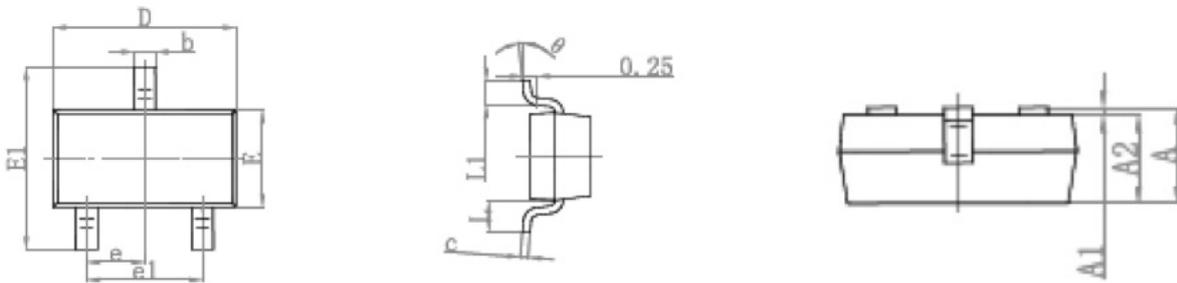
Typical Electrical Characteristic Curves



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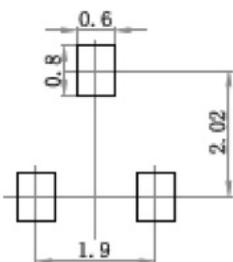


Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions 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	0.080	0.150	0.003	0.006
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	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05 mm.
 3. The pad layout is for reference purposes only.