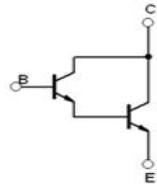
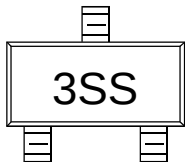


SOT-23 Plastic-Encapsulate Transistors**MMBTA28**

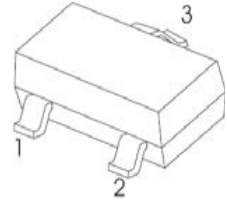
DARLINGTON TRANSISTOR (NPN)

FEATURES

- Darlington Amplifier
- High Current Gain

MARKING**Equivalent Circuit**

SOT - 23



1. BASE
2. EMITTER
3. COLLECTOR

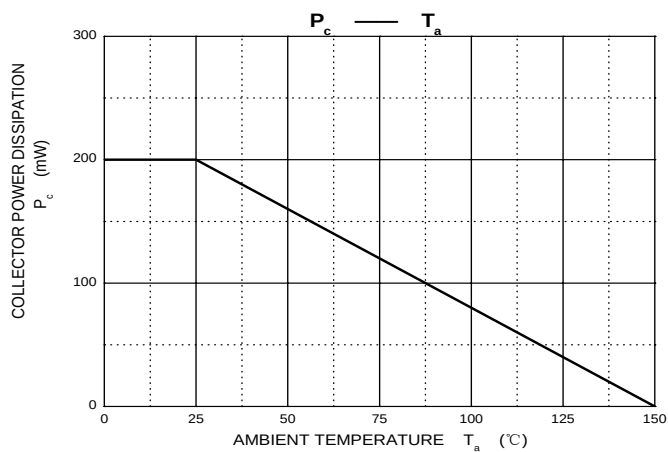
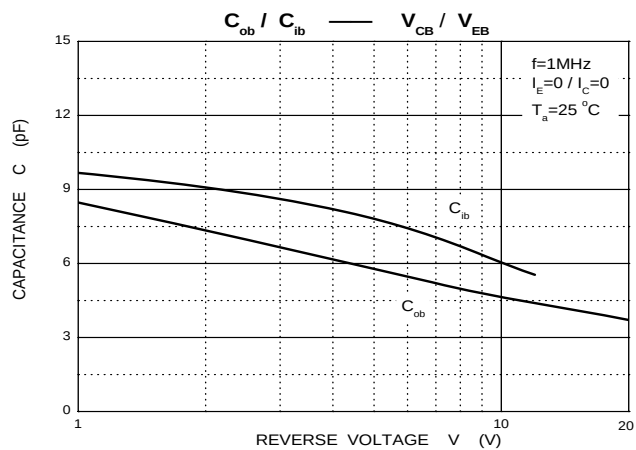
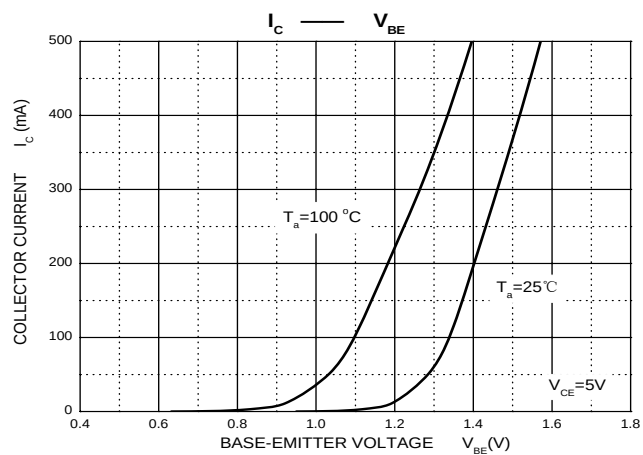
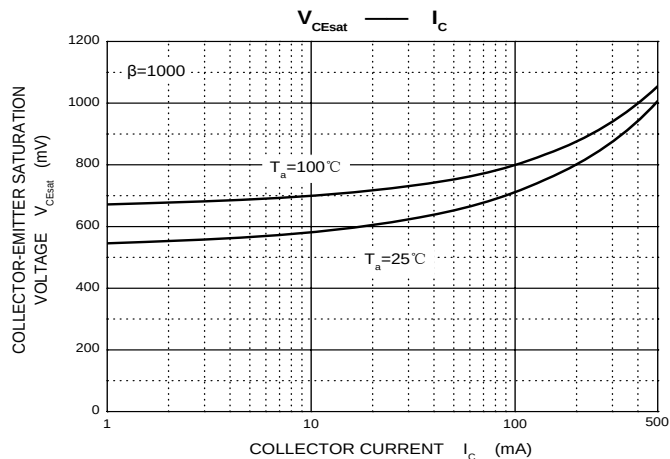
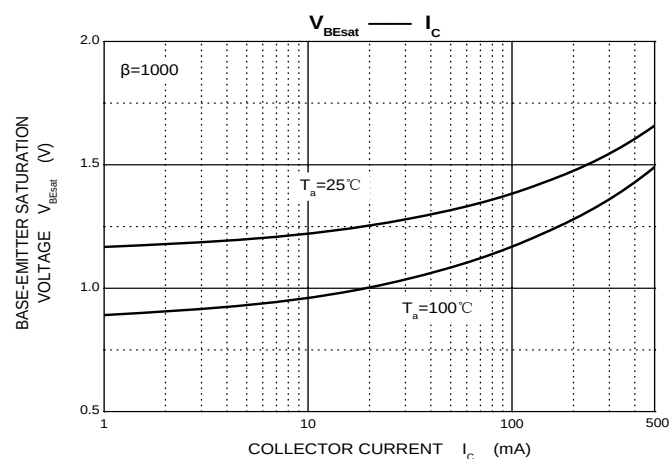
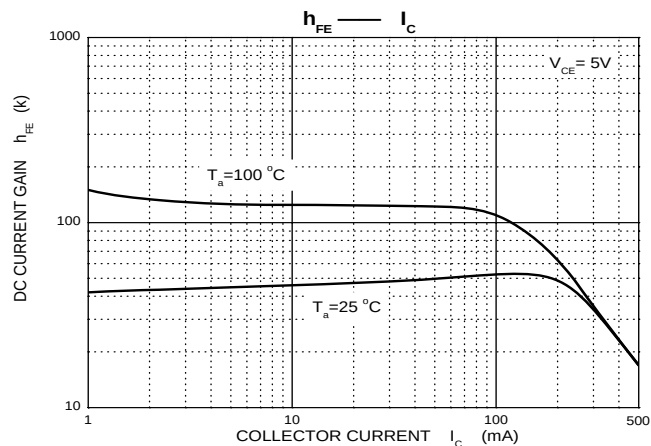
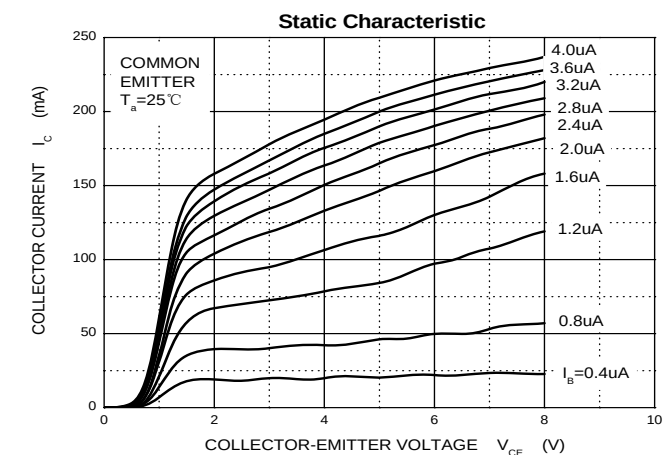
MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	80	V
V_{CEO}	Collector-Emitter Voltage	80	V
V_{EBO}	Emitter-Base Voltage	12	V
I_C	Collector Current	500	mA
P_C	Collector Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	625	$^{\circ}\text{C}/\text{W}$
T_J, T_{stg}	Operation Junction and Storage Temperature Range	$-55 \sim +150$	$^{\circ}\text{C}$

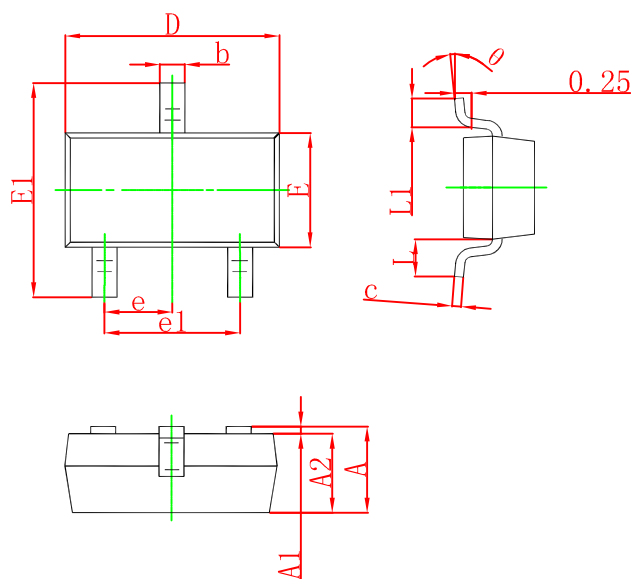
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	80			V
Collector-emitter sustain voltage	$V_{CEO(sus)}$	$I_C=100\mu\text{A}, V_{BE}=0$	80			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	12			V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$			0.1	μA
Collector cut-off current	I_{CES}	$V_{CE}=60\text{V}, V_{BE}=0$			0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=10\text{V}, I_C=0$			0.1	μA
DC current gain	$h_{FE(1)}^*$	$V_{CE}=5\text{V}, I_C=10\text{mA}$	10			K
	$h_{FE(2)}^*$	$V_{CE}=5\text{V}, I_C=100\text{mA}$	10			K
Collector-emitter saturation voltage	$V_{CE(sat)1}^*$	$I_C=10\text{mA}, I_B=0.01\text{mA}$			1.2	V
	$V_{CE(sat)2}^*$	$I_C=100\text{mA}, I_B=0.1\text{mA}$			1.5	V
Base-emitter voltage	V_{BE}^*	$V_{CE}=5\text{V}, I_C=100\text{mA}$			2	V
Collector output capacitance	C_{ob}	$V_{CB}=1\text{V}, I_E=0, f=1\text{MHz}$			8	pF
Transition frequency	f_T	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	125			MHz

Typical Characteristics

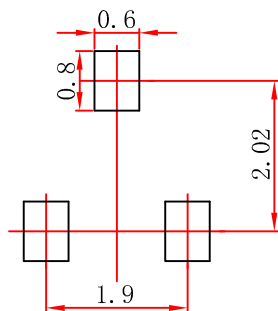


Package Outline Dimensions (SOT-23)



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 (SOT-23)



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