

SOT-23 Plastic-Encapsulate Transistor (PNP)

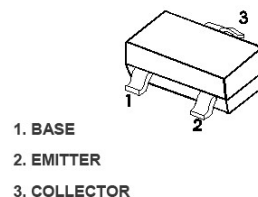
Feature

- Complementary to MMBT3904
- Power Dissipation of 200mW
- High Stability and High Reliability

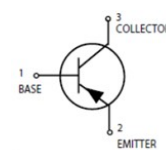
Mechanical Data

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

SOT-23



Marking: 2A



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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter -Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55-+150	$^{\circ}\text{C}$
Thermal resistance From junction to ambient	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$

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

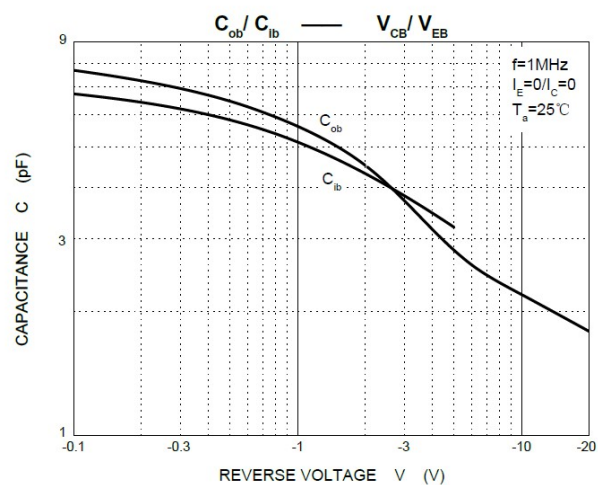
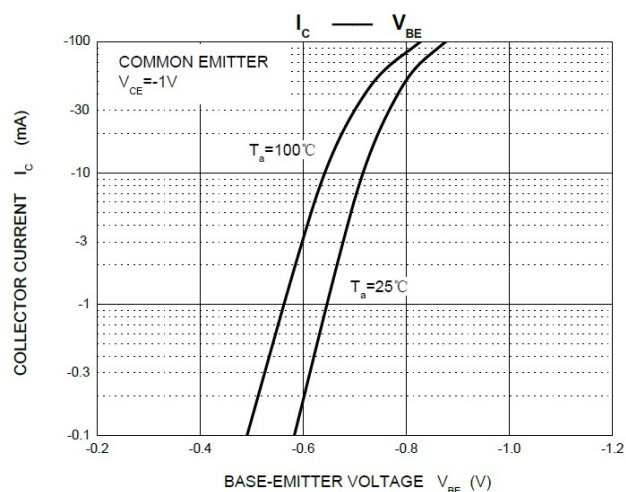
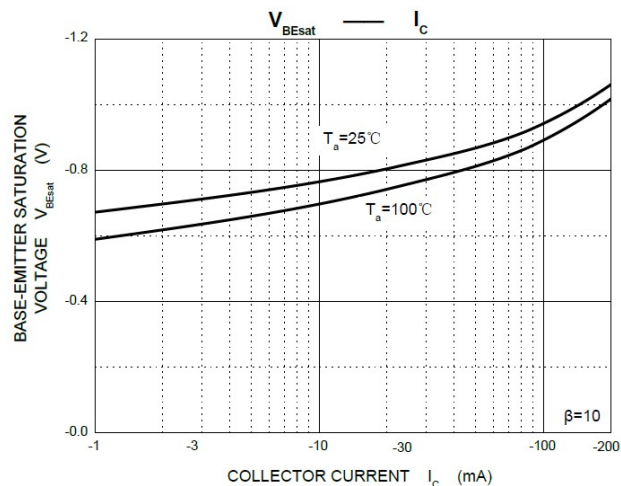
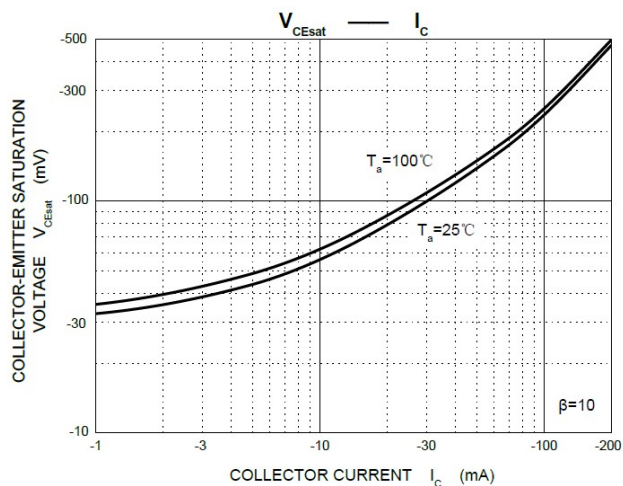
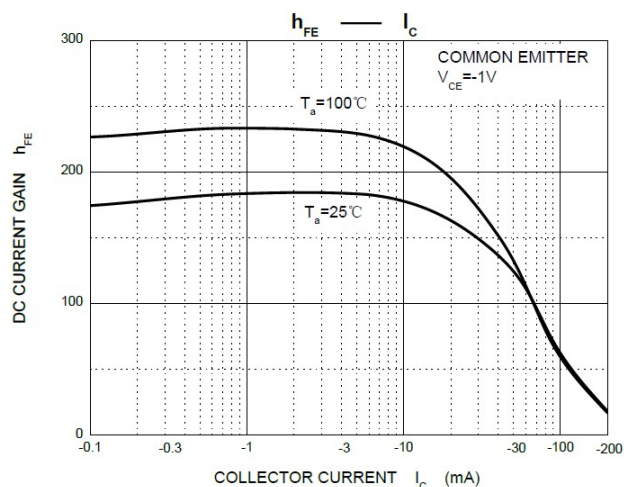
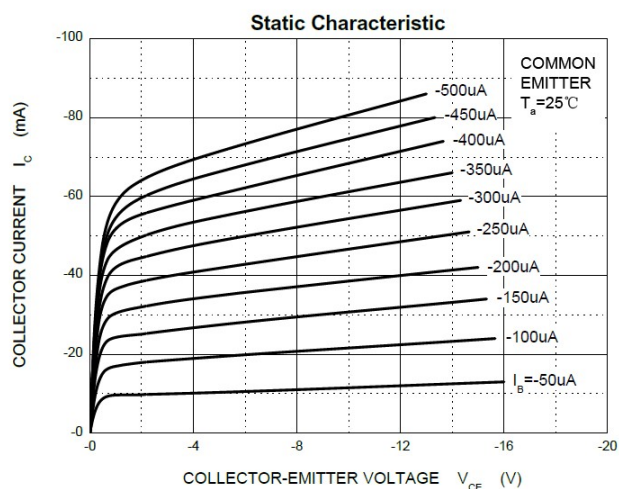
Parameter	Symbol	Test Condition	Limit		Unit
			Min	Max	
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5		V
Collector cut-off current	I_{CEX}	$V_{CE}=-30\text{V}, V_{EB}(\text{off})=-3\text{V}$		-100	nA
Collector cut-off current	I_{CBO}	$V_{CB}=-40\text{V}, I_E=0$		-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$		-50	nA
DC current gain	$h_{FE(1)}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	100	300	
	$h_{FE(2)}$	$V_{CE}=-1\text{V}, I_C=-50\text{mA}$	60		
	$h_{FE(3)}$	$V_{CE}=-1\text{V}, I_C=-100\text{mA}$	30		
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$		-0.30	V
Base -emitter saturation voltage	$V_{BE(sat)}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$		-0.95	V
Transition frequency	f_T	$V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$	300		MHz
Delay time	t_d	$V_{CC}=-3\text{V}, V_{BE}(\text{off})=-0.5\text{V}, I_C=-10\text{mA}, I_{B1}=-1\text{mA}$		35	nS
Rise time	t_r	$V_{CC}=-3\text{V}, V_{BE}(\text{off})=-0.5\text{V}, I_C=-10\text{mA}, I_{B1}=-1\text{mA}$		35	nS
Storage time	t_s	$V_{CC}=-3\text{V}, I_C=-10\text{mA}, I_{B1}=I_{B2}=-1\text{mA}$		225	nS
Fall time	t_f	$V_{CC}=-3\text{V}, I_C=-10\text{mA}, I_{B1}=I_{B2}=-1\text{mA}$		75	nS

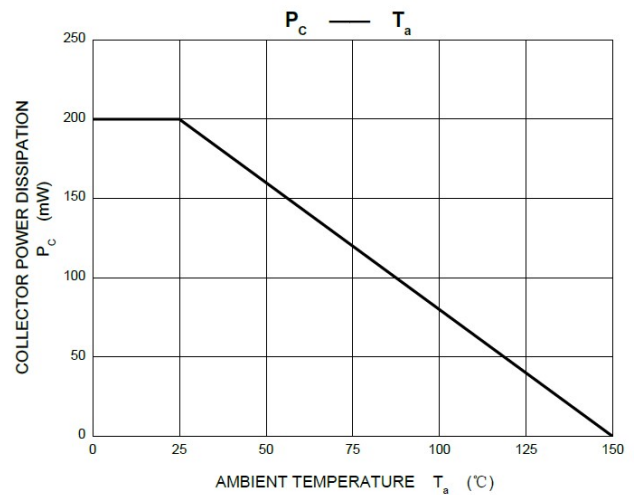
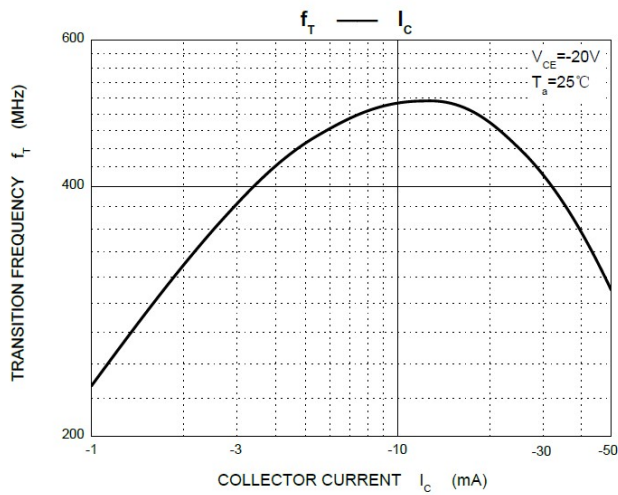
Classification of h_{FE}

H_{FE}	100~300	
Rank	L	H
Range	100~200	200~300

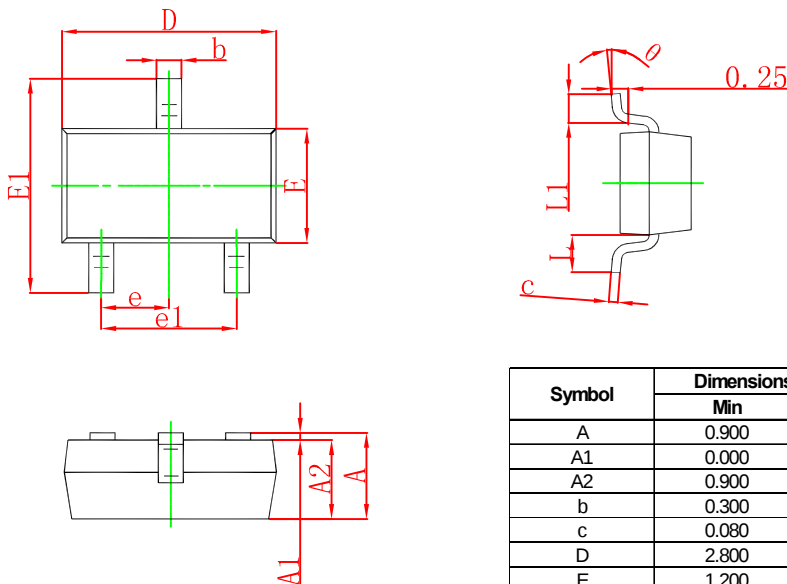


Typical Characteristics



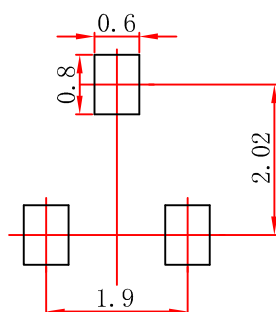


SOT-23 Package Dimension



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°

SOT-23 Suggested Pad Layout



Notes:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.