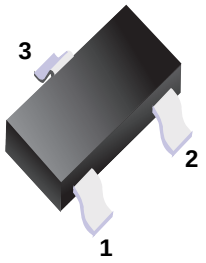
MMBT3904T

NPN Transistor



1.Base
2.Emitter
3.Collector

■ Simplified outline(SOT-523)

■ Features

- Small Package
- Complementary to MMBT3906T

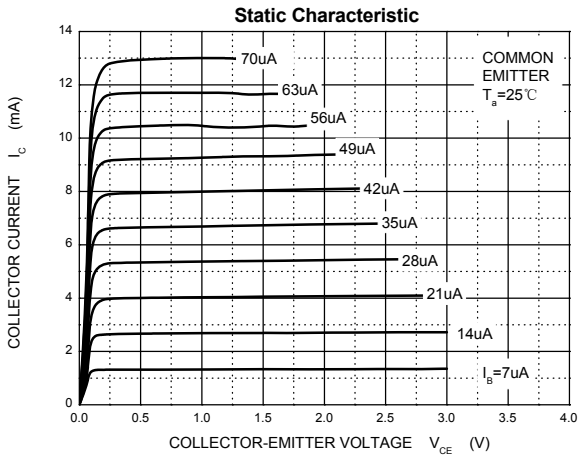
■ Absolute Maximum Ratings Ta = 25℃

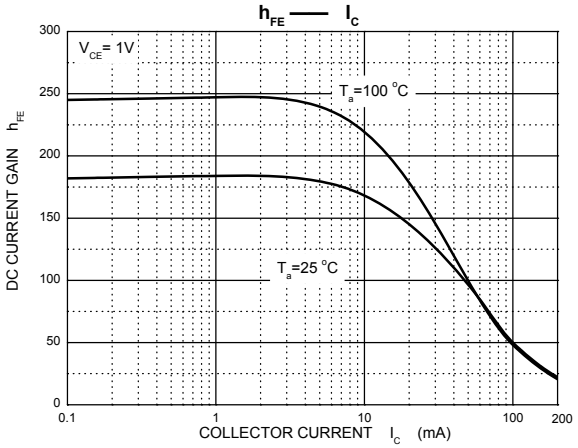
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	40	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	200	mA
Collector Power Dissipation	P_C	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	°C/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

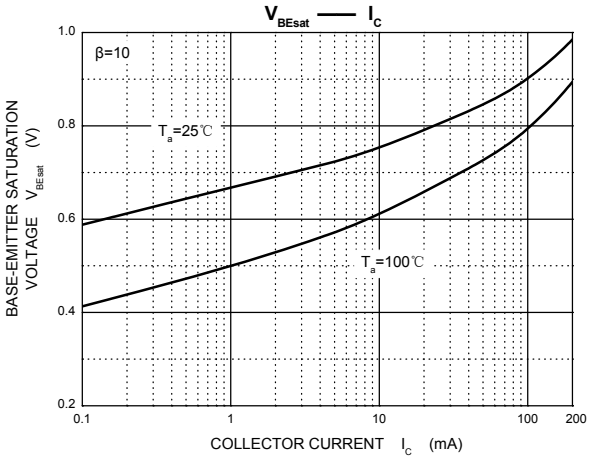
■ Electrical Characteristics Ta = 25℃

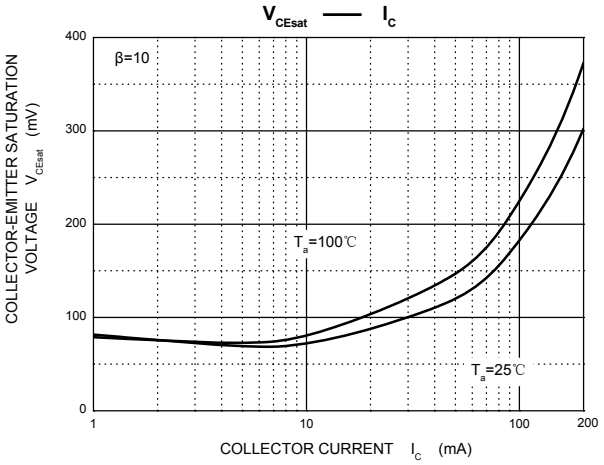
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= 100 μA， I_E= 0	60			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= 1 mA， I_B= 0	40			
Emitter - base breakdown voltage	V_{EBO}	I_E= 100 μ A， I_C= 0	6			
Collector-base cut-off current	I_{CBO}	V_{CB}= 60 V , I_E= 0			100	nA
Collector cut-off current	I_{CEX}	V_{CE}= 30 V , $V_{EB(off)}$=3V			50	
Emitter cut-off current	I_{EBO}	V_{EB}= 5V , I_C=0			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10 mA, I_B=1mA			0.2	V
		I_C= 50 mA, I_B= 5mA			0.3	
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C=10 mA, I_B=1mA	0.65		0.85	
		I_C= 50 mA, I_B= 5mA			0.95	
DC current gain	$h_{FE(1)}$	V_{CE}= 10V, I_C= 0.1mA	40			
	$h_{FE(2)}$	V_{CE}= 10V, I_C= 1mA	70			
	$h_{FE(3)}$	V_{CE}= 10V, I_C= 10mA	100		300	
	$h_{FE(4)}$	V_{CE}= 10V, I_C= 50mA	60			
Delay time	t_d	V_{CC}=3V, $V_{BE(off)}$=-0.5V I_C=10mA, I_{B1}=1mA			35	nS
Rise time	t_r				35	
Storage time	t_s	V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA			200	
Fall time	t_f				50	
Collector output capacitance	C_{ob}	V_{CB}= 5V, I_E= 0,f=1MHz			4	pF
Base input capacitance	C_{ib}	V_{EB}=0.5V, I_C=0, f=1MHz			8	
Transition frequency	f_T	V_{CE}= 20V, I_C= 10mA,f=100MHz	300			MHz

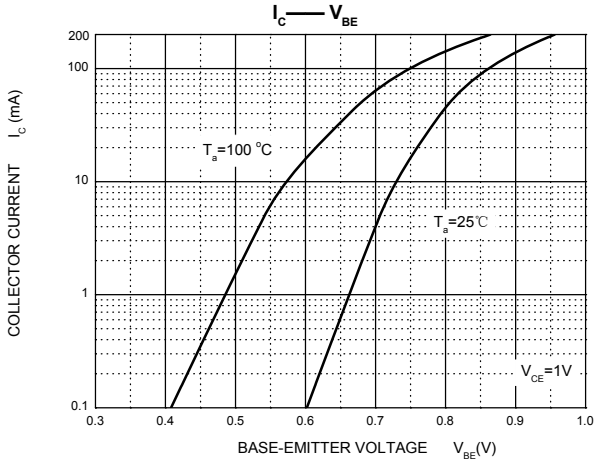
■ Typical Characterisitics

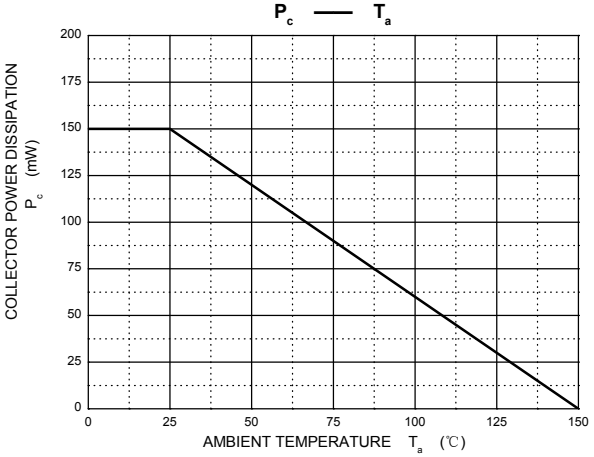




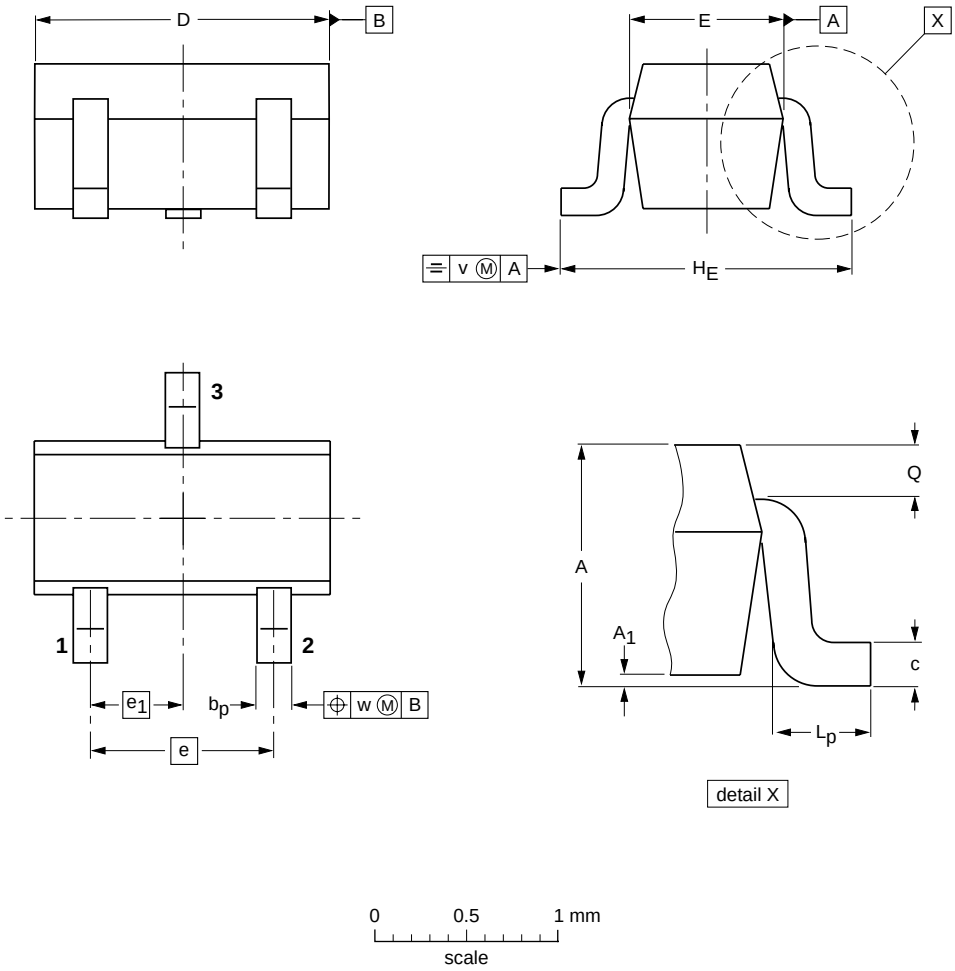








■ SOT-523



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2