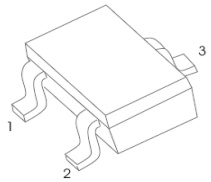
TKMMBT3904T

TRANSISTOR (NPN)

SOT-523 Plastic-Encapsulate Transistors

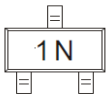
SOT－523



1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

- Complementary to MMBT3906T
- Small Package

MARKING: 

1N = Device code

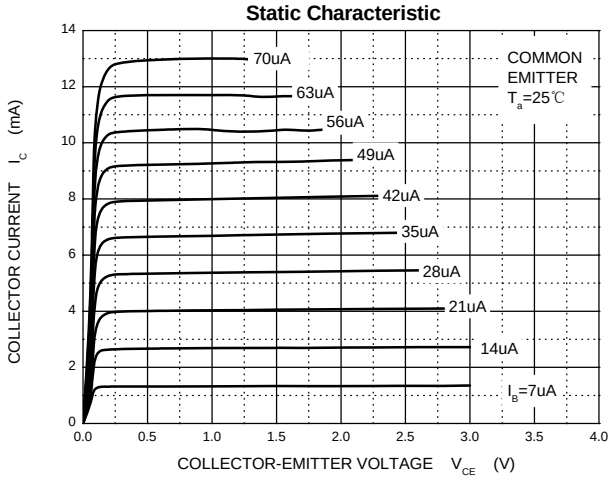
MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

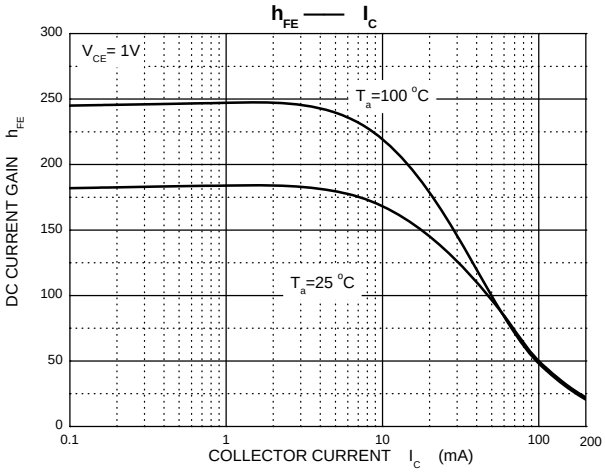
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	200	mA
P_C	Collector Power Dissipation	150	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	833	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150	℃

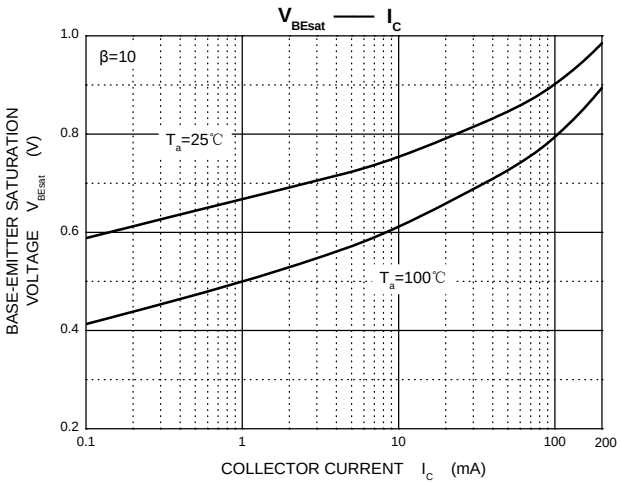
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

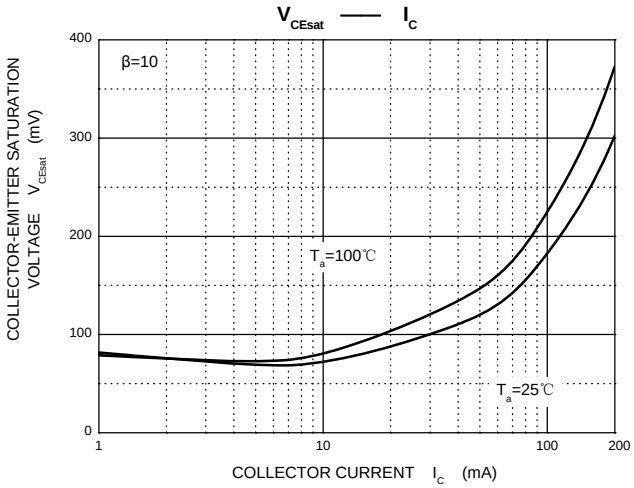
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA, I_B=0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Collector cut-off current	I_{CEX}	V_{CE}=30V,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

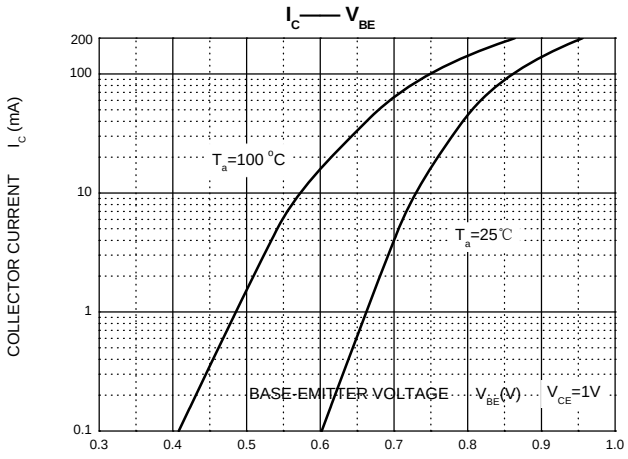
Typical Characteristics

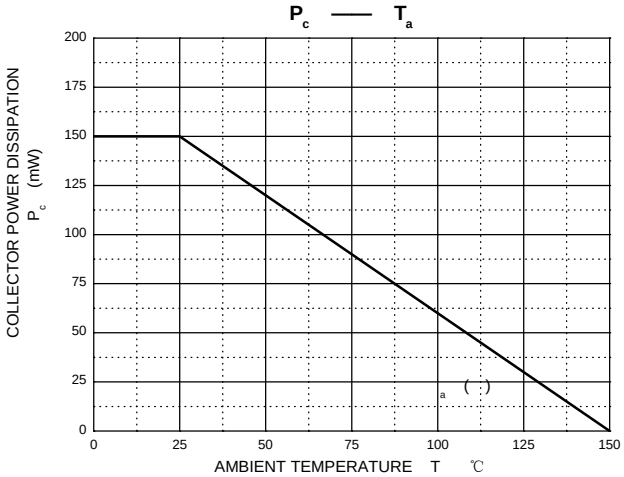




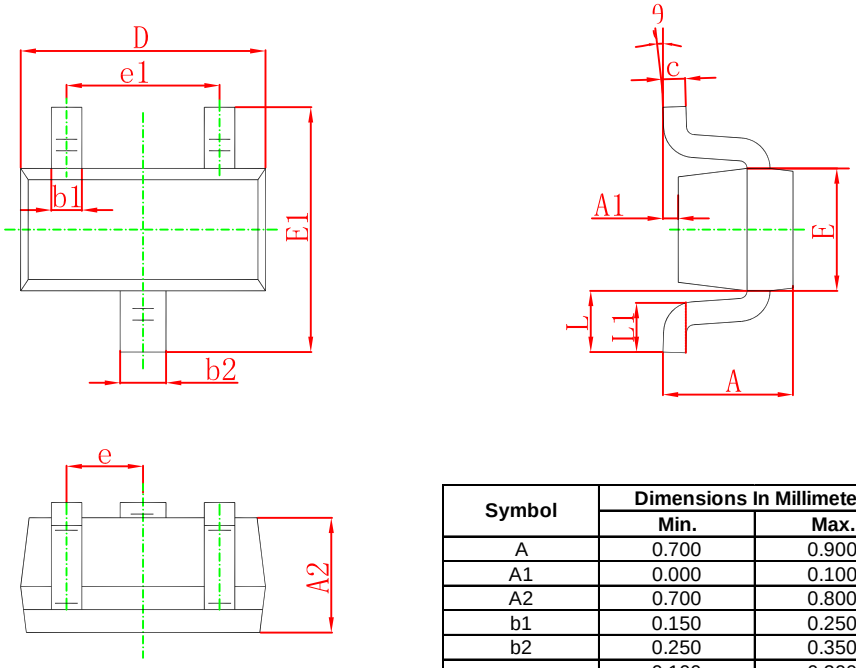






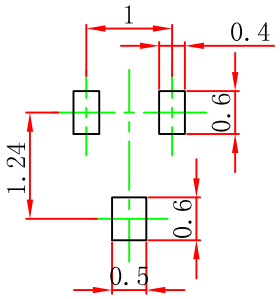


SOT-523 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



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