



MMBT3904T Transistor(NPN)

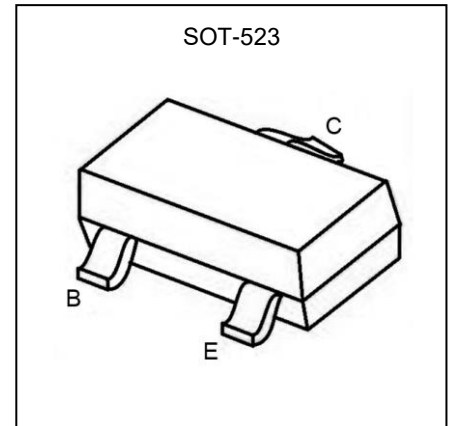
Feature

- Switching Transistor
- Collector-emitter voltage $V_{CE}=40V$
- Collector current $I_c=0.2A$

Marking: 1N

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

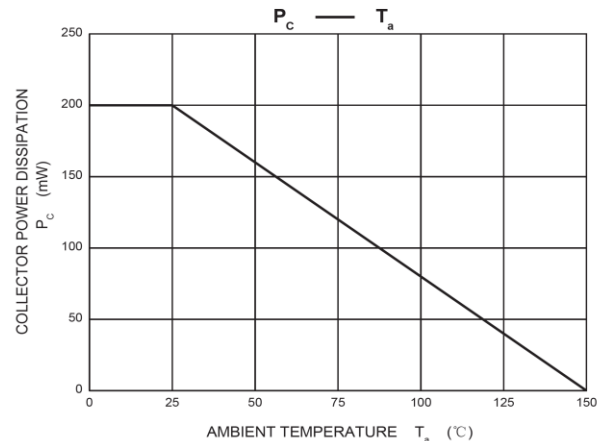
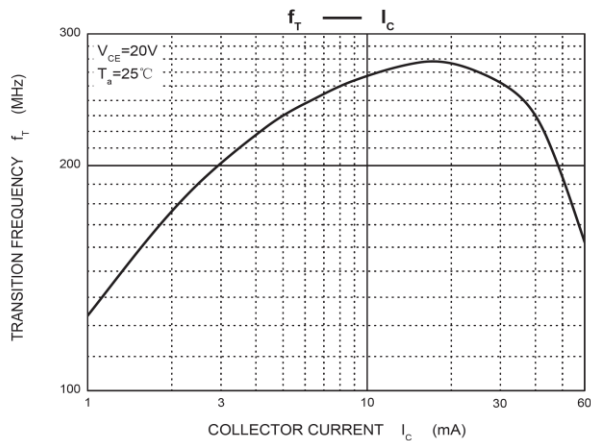
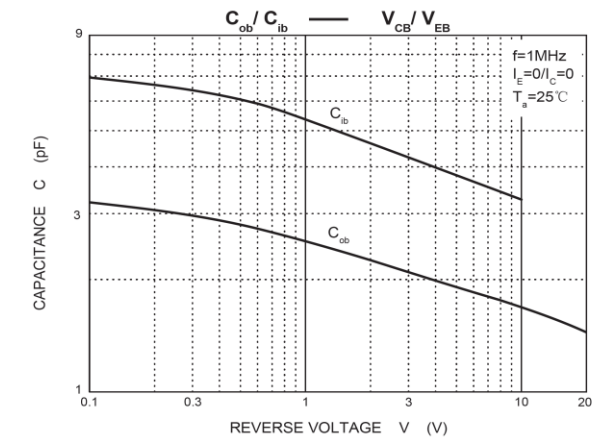
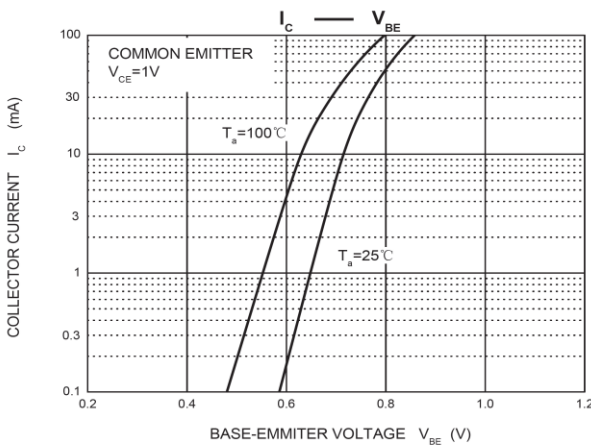
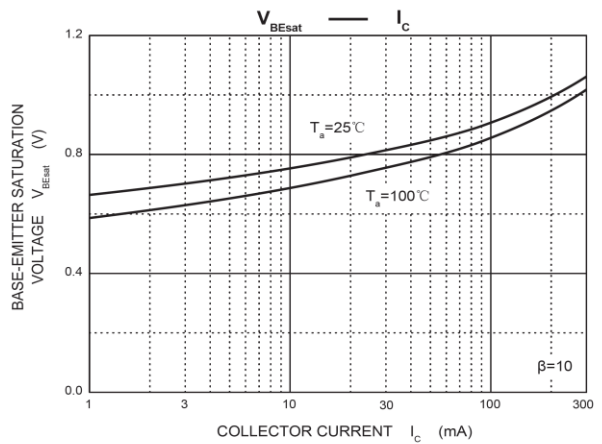
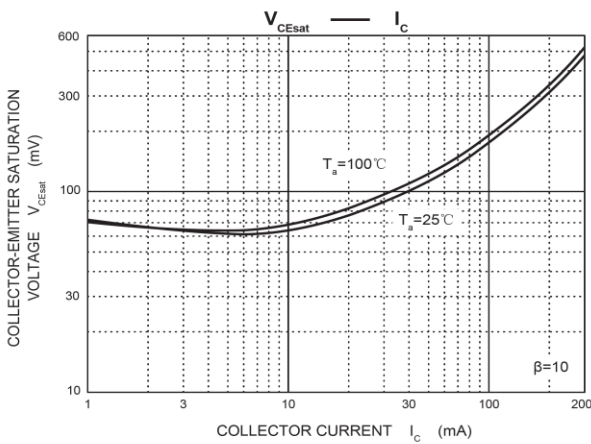
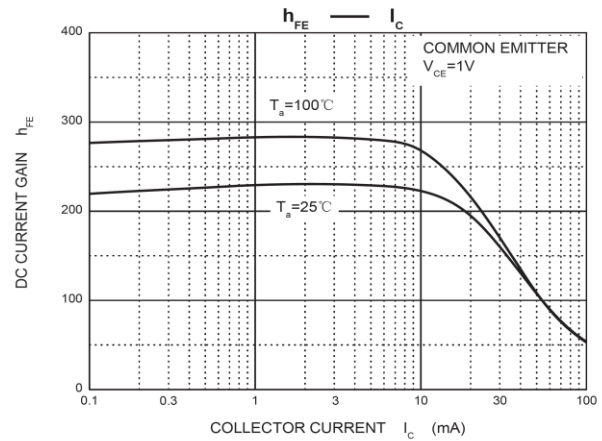
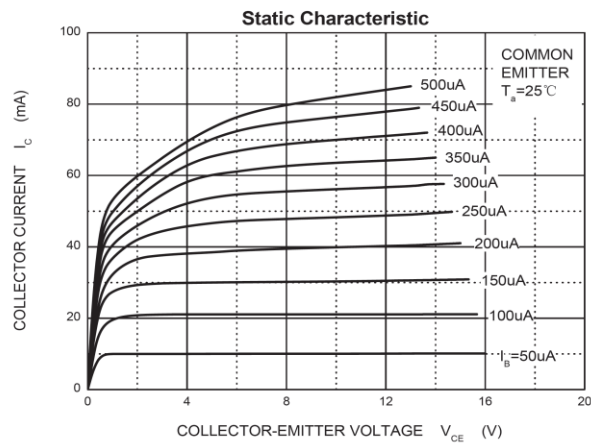
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	60	V
Collector-Emitter Voltage	V_{CE0}	40	V
Emitter-Base Voltage	V_{EB0}	6	V
Collector Current -Continuous	I_c	0.2	A
Power Dissipation	P_d	0.15	W
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$



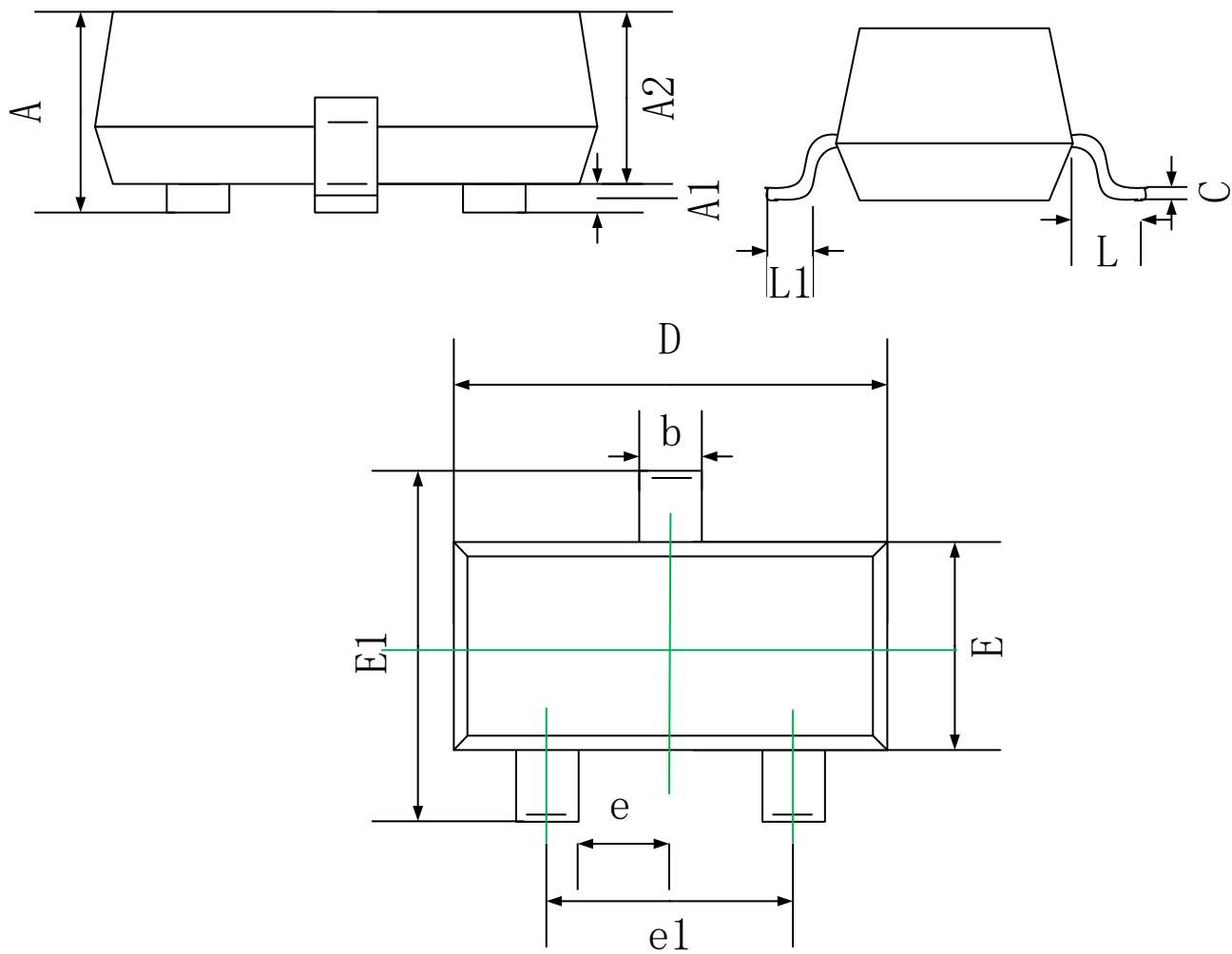
ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_c=10\mu A, I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_c=1mA, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_c=0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB}=60V, I_E=0$		100	nA
Collector cut-off current	I_{CEX}	$V_{CE}=30V, V_{EB(off)}=3V$		50	nA
Base cut-off current	I_{BEX}			50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5V, I_c=0$		100	nA
DC current gain	h_{FE1}	$V_{CE}=1V, I_c=0.1mA$	40		
	h_{FE2}	$V_{CE}=1V, I_c=1mA$	70		
	h_{FE3}	$V_{CE}=1V, I_c=10mA$	100	300	
	h_{FE4}	$V_{CE}=1V, I_c=50mA$	60		
	h_{FE5}	$V_{CE}=1V, I_c=100mA$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_c=50mA, I_B=5mA$		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_c=50mA, I_B=5mA$		0.95	V
Transition frequency	f_T	$V_{CE}=20V, I_c=10mA, f=100MHz$	300		MHZ
Delay Time	t_d	$V_{CC}=3V, I_C=10mA,$		35	ns
Rise Time	t_r	$V_{BE(off)}=-0.5V, I_{B1}=1mA$		35	ns
Storage Time	t_s	$V_{CC}=3V, I_C=10mA,$		200	ns
Fall Time	t_f	$I_{B1}=I_{B2}=1mA$		50	ns

Typical Characteristics



SOT-523 Package Information



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b	0.250	0.350
c	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500 TYP	
e1	0.900	1.100
L	0.55 REF	
θ	0°	8°