

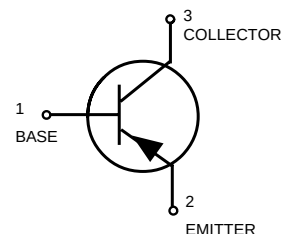
»Features

$V_{CE} = -40V$

$I_C = -0.2A$

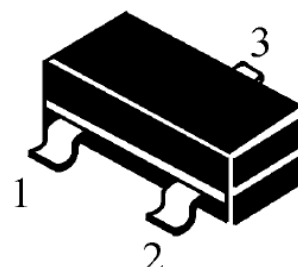
$f_T = 250MHz$ @ $V_{CE} = -20V$, $I_C = -10mA$, $f = 100MHz$

»Pin Configurations



»General Description

- As complementary type the NPN transistor MMBT3904T is recommended
- Epitaxial planar die construction
- Epoxy UL: 94V-0
- SOT-523 Plastic Package.



»Absolute Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise noted

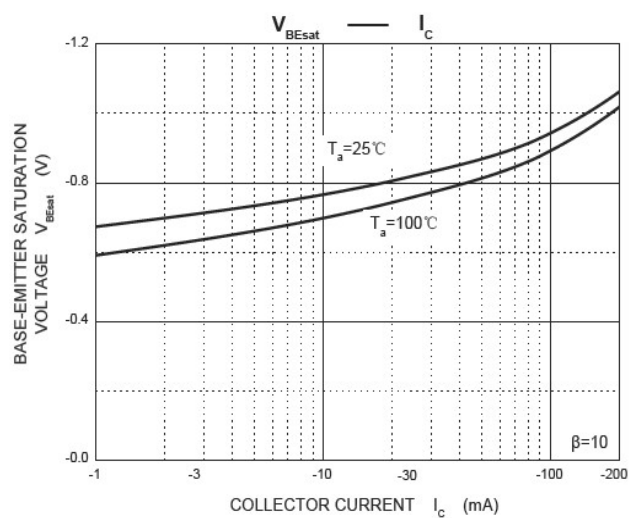
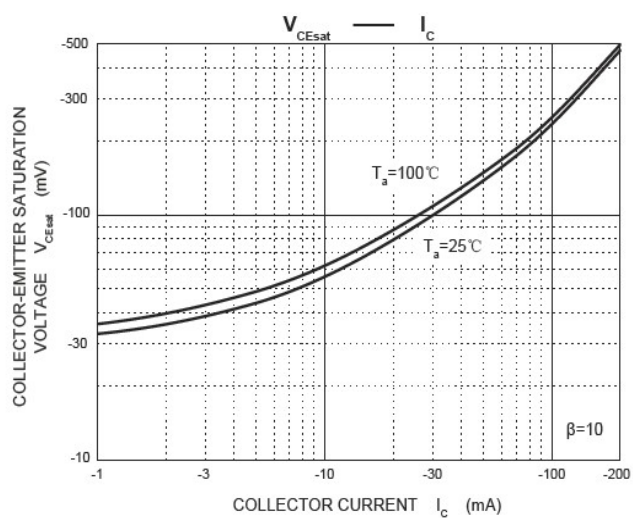
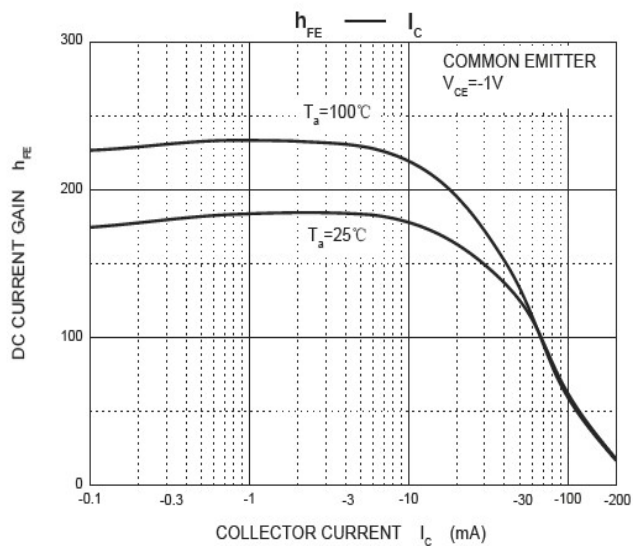
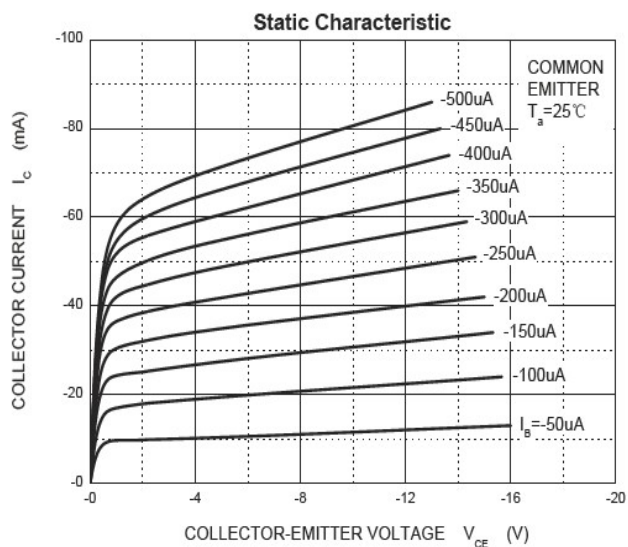
Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-40	V
Collector-Emitter Voltage	V_{CE0}	-40	V
Emitter -Base Voltage	V_{EB0}	-5	V
Collector Current-Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55-+150	$^\circ C$
Thermal resistance From junction to ambient	$R_{\theta JA}$	833	$^\circ C/W$

» **Electrical Characteristics** @ $T_A=25^{\circ}\text{C}$ unless otherwise noted

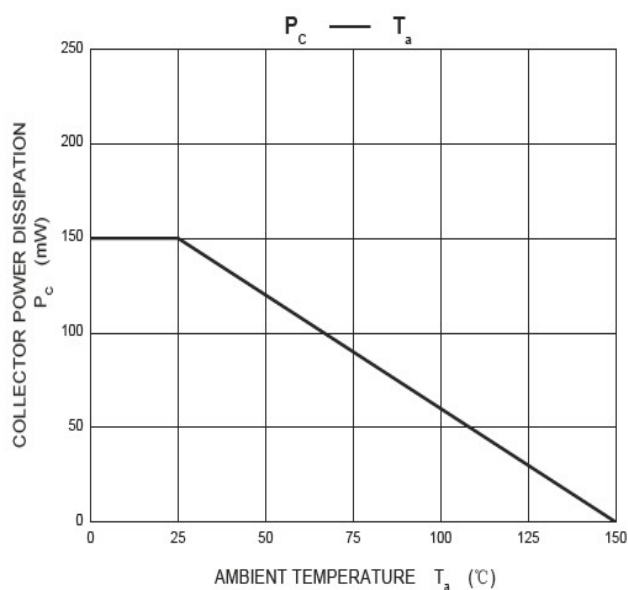
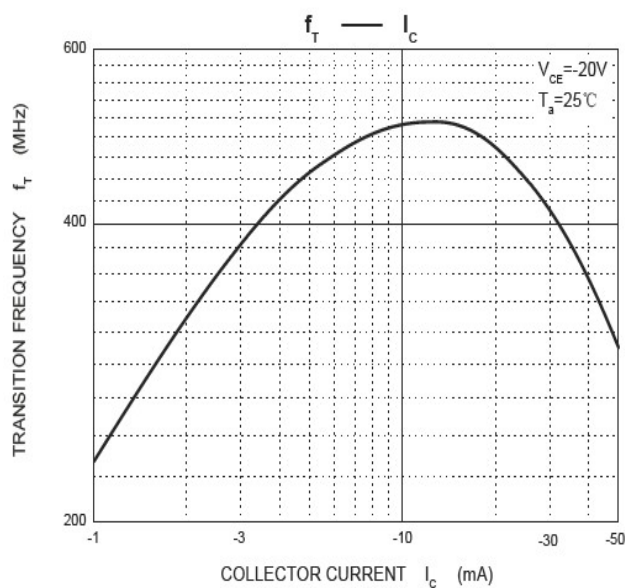
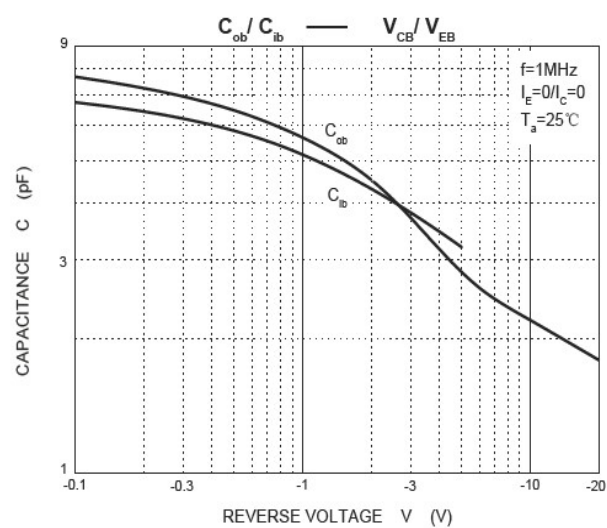
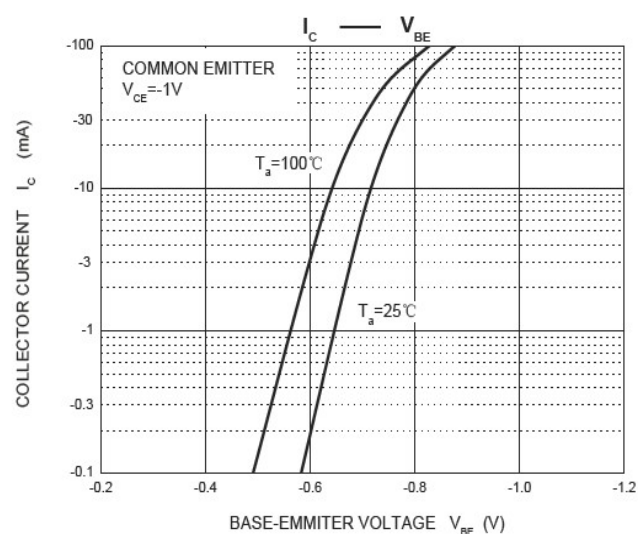
Parameter	Symbols	Test Condition	Limits		Unit
			Min	Max	
Collector-base breakdown voltage	V(BR)CBO	$I_C=-10\mu\text{A}$, $I_E=0$	-40		V
Collector-emitter breakdown voltage	V(BR)CEO	$I_C=-1\text{mA}$, $I_B=0$	-40		V
Emitter-base breakdown voltage	V(BR)EBO	$I_E=-10\mu\text{A}$, $I_C=0$	-5		V
Collector cut-off current	ICBO	$V_{CB}=-40\text{V}$, $I_E=0$		-100	nA
Emitter cut-off current	IEBO	$V_{EB}=-5\text{V}$, $I_C=0$		-100	nA
Collector cut-off current	ICEX	$V_{CE}=-30\text{V}$, $V_{EB(\text{off})}=-3\text{V}$		-50	nA
DC current gain	hFE(1)	$V_{CE}=-1\text{V}$, $I_C=-0.1\text{mA}$	60		
	hFE(2)	$V_{CE}=-1\text{V}$, $I_C=-1\text{mA}$	80		
	hFE(3)	$V_{CE}=-1\text{V}$, $I_C=-10\text{mA}$	100	300	
	hFE(4)	$V_{CE}=-1\text{V}$, $I_C=-50\text{mA}$	60		
	hFE(5)	$V_{CE}=-2\text{V}$, $I_C=-100\text{mA}$	30		
Collector-emitter saturation voltage	VCE(sat)	$I_C=-10\text{mA}$, $I_B=-1\text{mA}$		-0.25	V
		$I_C=-50\text{mA}$, $I_B=-5\text{mA}$		-0.40	V
Base-emitter saturation voltage	VBE(sat)	$I_C=-10\text{mA}$, $I_B=-1\text{mA}$	-0.65	-0.85	V
		$I_C=-50\text{mA}$, $I_B=-5\text{mA}$		-0.95	V
Transition frequency	fT	$V_{CE}=-20\text{V}$, $I_C=-10\text{mA}$, $f=100\text{MHz}$	250		MHz
Collector output capacitance	Cob	$V_{CB}=-5\text{V}$, $I_E=0$, $f=1\text{MHz}$		4.5	pF
Input capacitance	Cib	$V_{EB}=-5\text{V}$, $I_E=0$, $f=1\text{MHz}$		10	pF
Noise figure	NF	$V_{CE}=-5\text{V}$, $I_C=-0.1\text{mA}$		4	dB
Delay time	td	$V_{CC}=-3\text{V}$, $V_{BE(\text{off})}=-0.5\text{V}$, $I_C=-10\text{mA}$, $I_{B1}=-1\text{mA}$		35	nS
Rise time	tr			35	nS
Storage time	ts	$V_{CC}=-3\text{V}$, $I_C=-10\text{mA}$, $I_{B1}=I_{B2}=-1\text{mA}$		225	nS
Fall time	tf			75	nS

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$

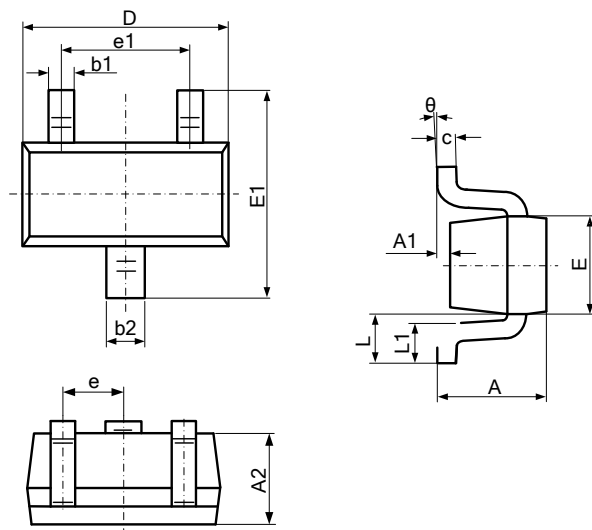
»Typical Performance Characteristics (T_J = 25 °C, unless otherwise noted)



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»Package Information SOT-523



Symbol	Dimensions			
	Millimeter		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	0.325	0.010	0.013
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.750	0.850	0.030	0.033
E1	1.450	1.750	0.057	0.069
e	0.50 BSC		0.02 BSC	
e1	0.900	1.100	0.035	0.043
L	0.300	0.500	0.012	0.020
L1	0.028	0.440	0.011	0.017
θ	0	8°	0	8°

»Ordering information

Order code	Package	Marking	Base qty	Delivery mode
MMBT3906T	SOT-523	3N	3K	Tape and reel