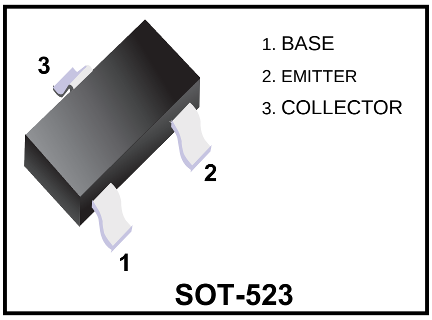
Plastic-Encapsulate Transistors

TRANSISTOR (PNP)

FEATURES

- Epitaxial Planar Die Construction
- Complementary NPN Type Available
- Also Available in Lead Free Version



Marking Code	
MMBT3906T	3N

MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

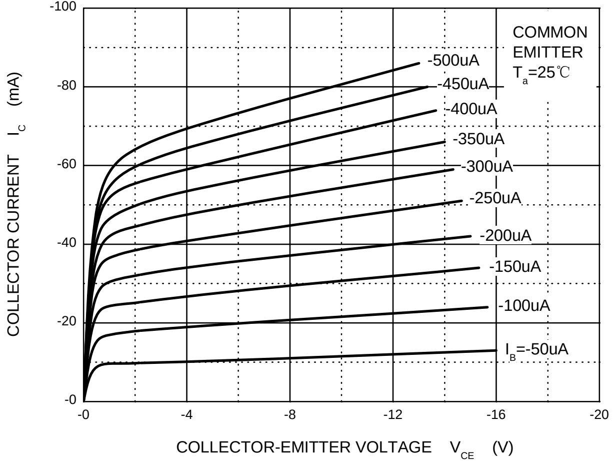
Characteristics	Symbols	Value	Units
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current -Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	℃/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Maximum Ratings at Tc=25°C unless otherwise specified

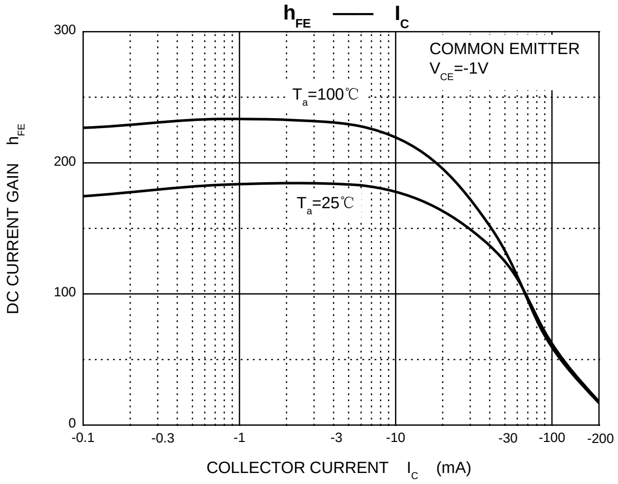
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-10μA,I_E=0	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-1mA,I_B=0	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-10μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-30V,I_E=0			-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-0.1	μA
Collector cut-off current	I_{CEX}	V_{CB}=-30V,$V_{BE(off)}$=-3V			-0.05	μA
DC current gain	$h_{FE(1)}$	V_{CE}=-1V,I_C=-0.1mA	60			
	$h_{FE(2)}$	V_{CE}=-1V,I_C=-1mA	80			
	$h_{FE(3)}$	V_{CE}=-1V,I_C=-10mA	100		300	
	$h_{FE(4)}$	V_{CE}=-1V,I_C=-50mA	60			
	$h_{FE(5)}$	V_{CE}=-1V,I_C=-100mA	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C=-10mA,I_B=-1mA			-0.25	V
	$V_{CE(sat)2}$	I_C=-50mA,I_B=-5mA			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	I_C=-10mA,I_B=-1mA	-0.65		-0.85	V
	$V_{BE(sat)2}$	I_C=-50mA,I_B=-5mA			-0.95	V
Transition frequency	f_T	V_{CE}=-20V,I_C=-10mA,f=100MHz	250			MHz
Collector output capacitance	C_{obo}	V_{CB}=-5V,I_E=0,f=1MHz			4.5	pF
Input capacitance	C_{iob}	V_{EB}=-0.5V,I_E=0,f=1MHz			10	pF
Noise figure	NF	V_{CE}=-5V,I_c=0.1mA,			4	dB
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	ns
Storage time	t_S	V_{CC}=-3V, I_C=-10mA I_{B1}= I_{B2}=-1mA			225	ns
Fall time	t_f				75	ns

Typical Characteristics

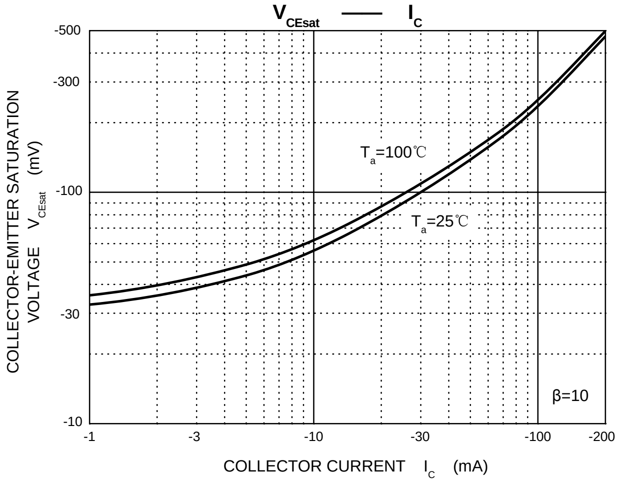
Static Characteristic



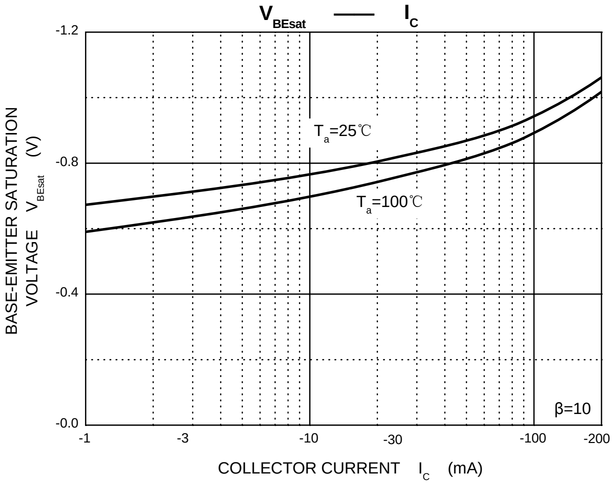
h_{FE} —— I_C



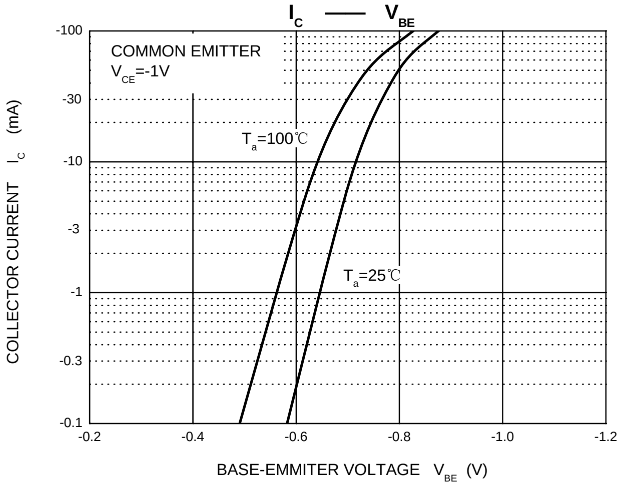
V_{CEsat} —— I_C



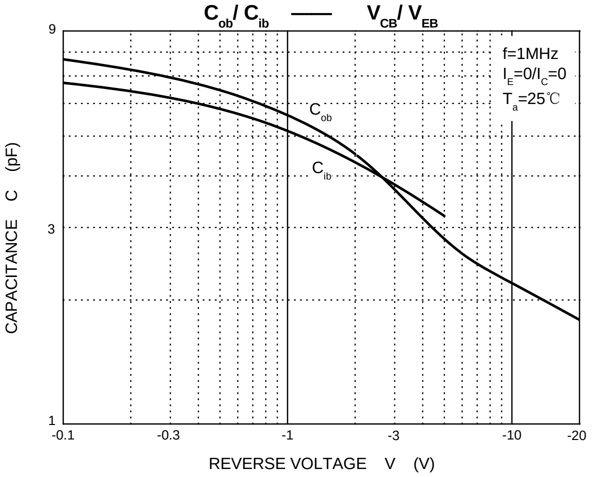
V_{BEsat} —— I_C



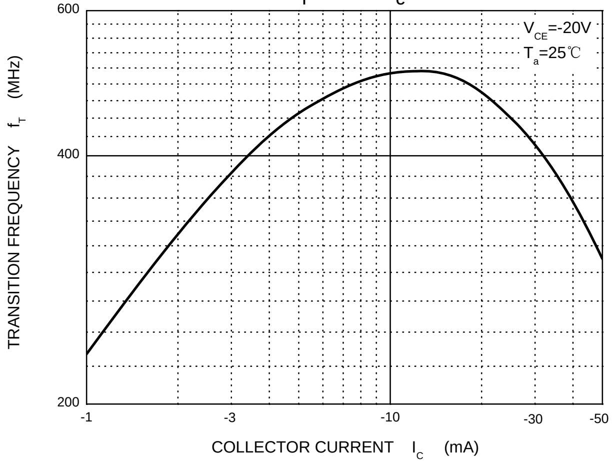
I_C —— V_{BE}



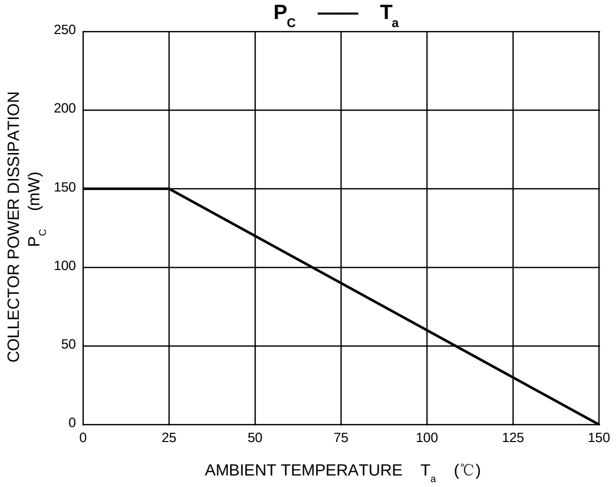
C_{ob}/ C_{ib} —— V_{CB}/ V_{EB}



f_T —— I_C



P_C —— T_a

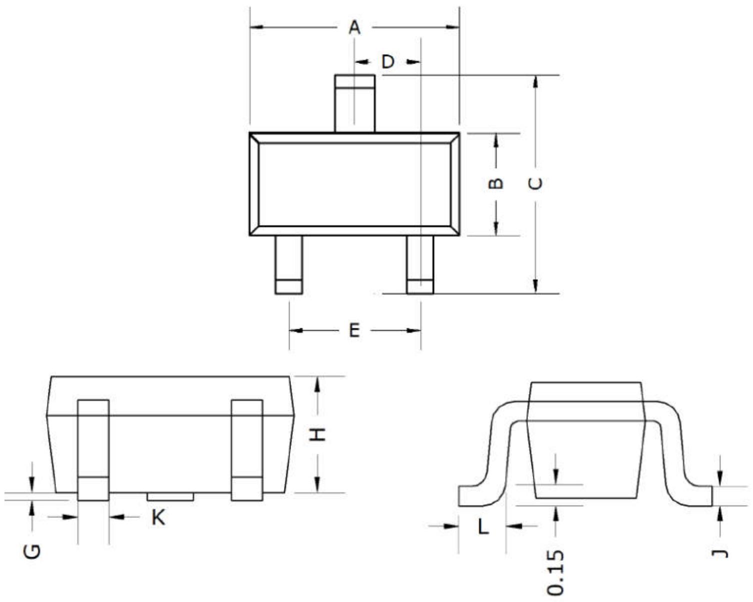


Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-523	Tape/Reel,7”reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

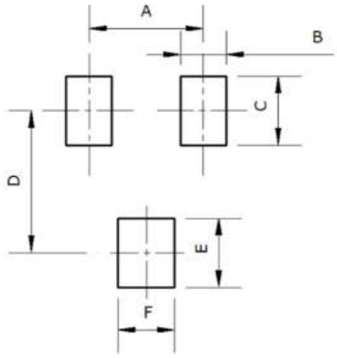
Package Dimensions

SOT-523



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.50	1.70	59	67
B	0.75	0.85	30	33
C	1.45	1.75	57	69
D	0.50TYP		0.020TYP	
E	0.90	1.10	35	43
G	0.00	0.10	0	4
H	0.60	0.80	24	31
J	0.10	0.20	4	8
K	0.15	0.35	6	14
L	0.26	0.46	10	18

The recommended mounting pad size



Millimeter (mm)	
Dim.	TYP
A	1.00
B	0.40
C	0.60
D	1.24
E	0.60
F	0.50

Disclaimer

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