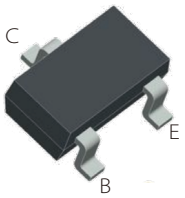
FEATURES

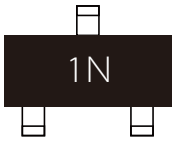
- Complementary to MMBT3906T
- Small Package



SOT-523

MECHANICAL DATA

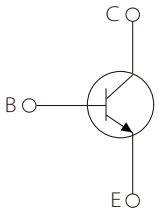
- SOT-523 small outline plastic package
- Epoxy UL: 94V-0
- Mounting position: Any



Marking

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

MAXIMUM RATINGS (T_A=25°C)

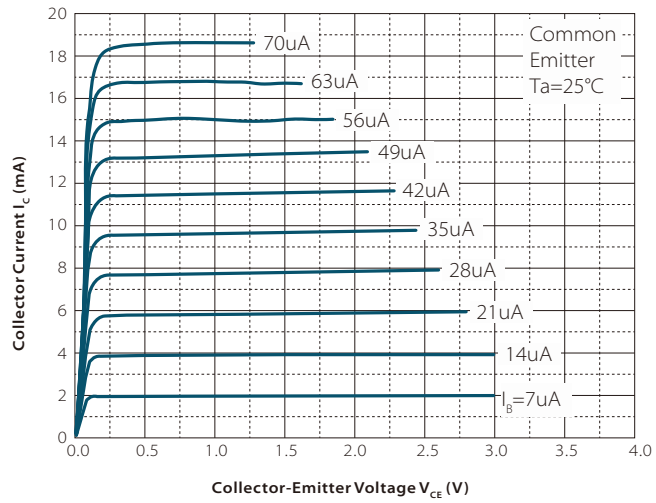
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	
Emitter-Base Voltage	V_{EBO}	6	
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	150	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	833	°C/W
Junction Temperature	T_J	150	°C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

ELECTRICAL CHARACTERISTICS (T_A=25°C)

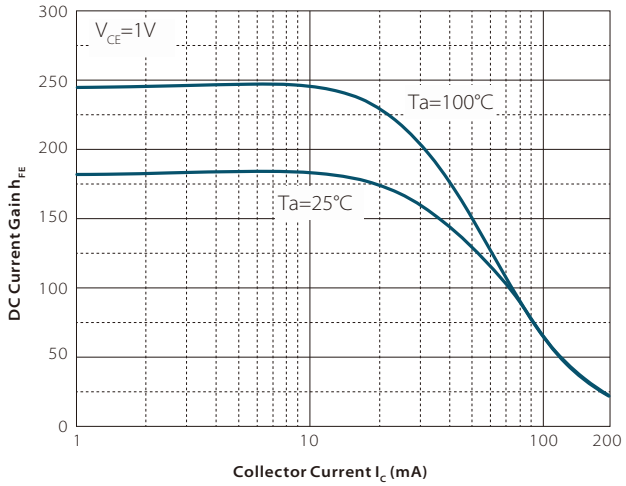
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10uA,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	40			
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10uA,I_C=0	6			
Collector cut-off current	I_{CEX}	V_{CE}=30V, I_C=0			50	nA
Emitter cut-off current	I_{EBO}	V_{EB}=5V, I_C=0			100	
DC current gain	h_{FE}	V_{CE}=1V, I_C=1mA	70			
		V_{CE}=1V, I_C=10mA	100		300	
		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	
Base-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	
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
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				35	ns
Storage time	t_S	V_{CC}=3V, I_C=10mA I_{B1}=I_{B2}=1mA			200	ns
Fall time	t_f				50	ns

TYPICAL CHARACTERISTICS

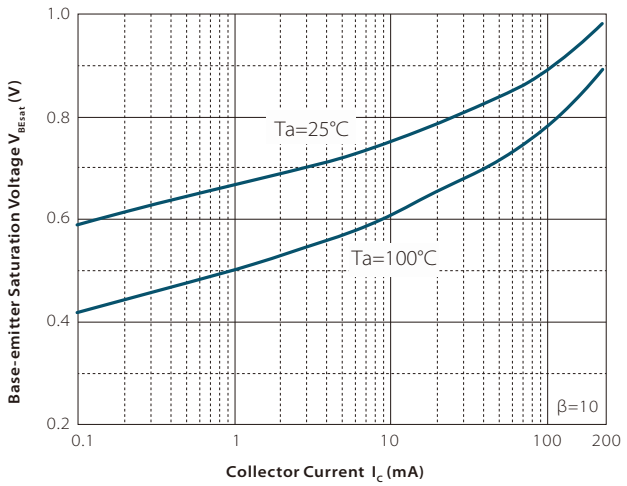
Static Characteristic



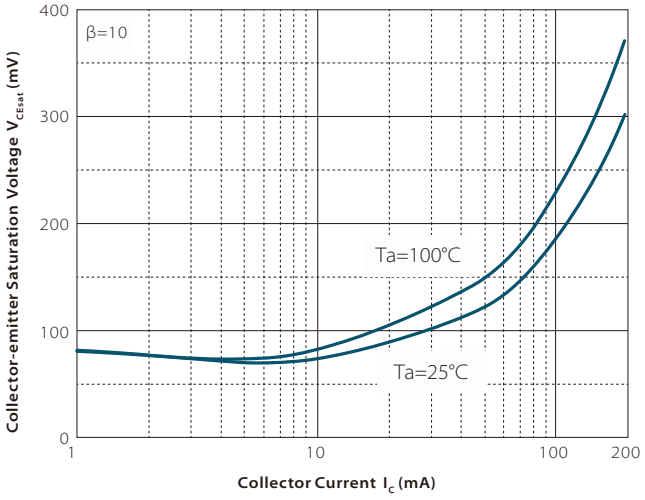
h_{FE} ——— I_C



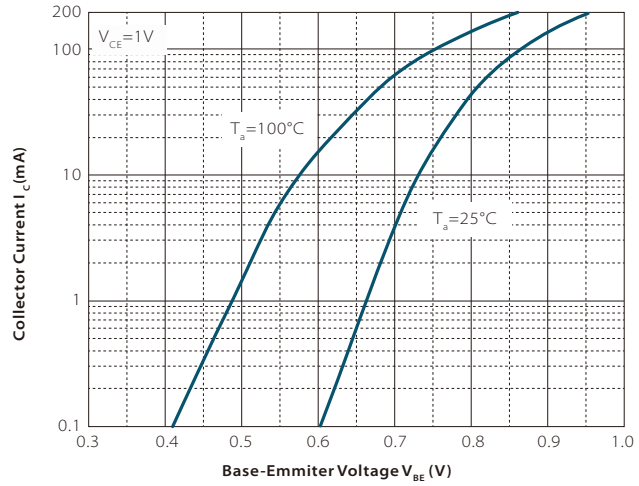
$V_{BE\ sat}$ ——— I_C



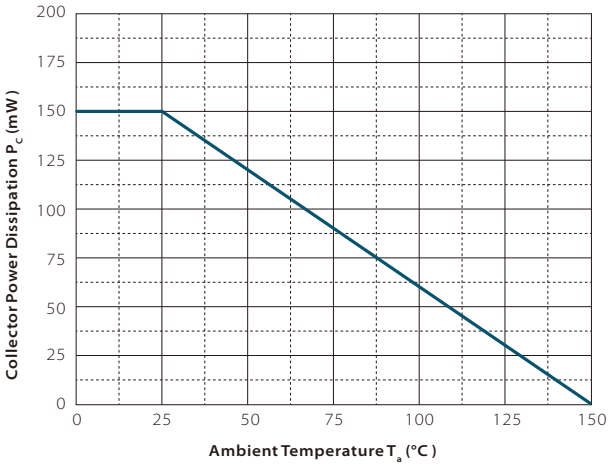
$V_{CE\ sat}$ ——— I_C



I_C ——— V_{BE}

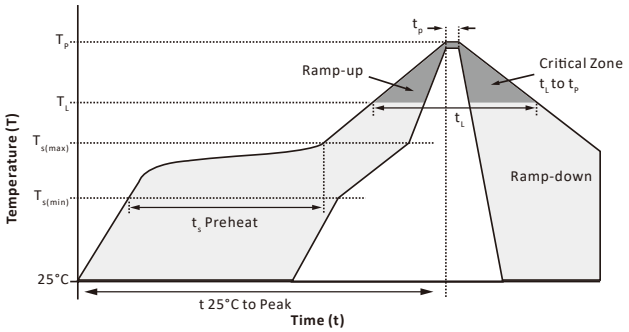


P_C ——— T_a

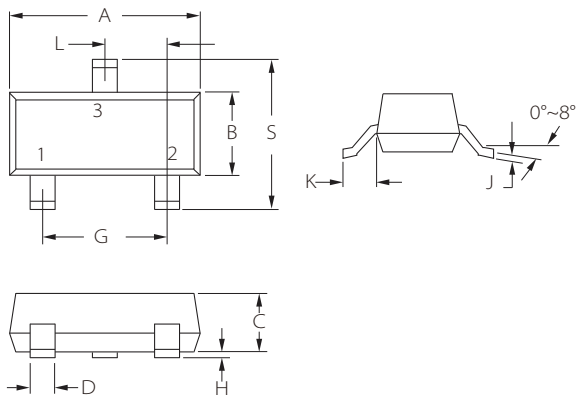


SOLDERING PARAMETERS

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
	$T_{S(max)}$ to T_L - Ramp-up Rate	3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes max.
Do not exceed		260°C

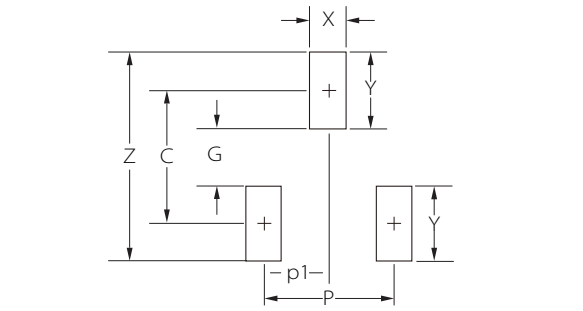


SOT-523 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.70	0.059	0.067
B	0.75	0.85	0.029	0.033
C	0.60	0.80	0.023	0.031
D	0.15	0.30	0.005	0.012
G	1.00BSC		0.039BSC	
H	0.00	0.10	0.000	0.004
J	0.10	0.20	0.004	0.008
K	(0.22)		(0.009)	
L	0.50BSC		0.020BSC	
S	1.45	1.75	0.057	0.069

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
C	(1.40)	(0.055)
P	1.00	0.039
p1	0.50	0.020
G	0.60	0.024
X	0.40	0.016
Y	0.80	0.031
Z	2.20	0.087

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
MMBT3904T	SOT-523	3000PCS	7″

To find your local partner within Semiwell's website : www.semiwell.com.cn