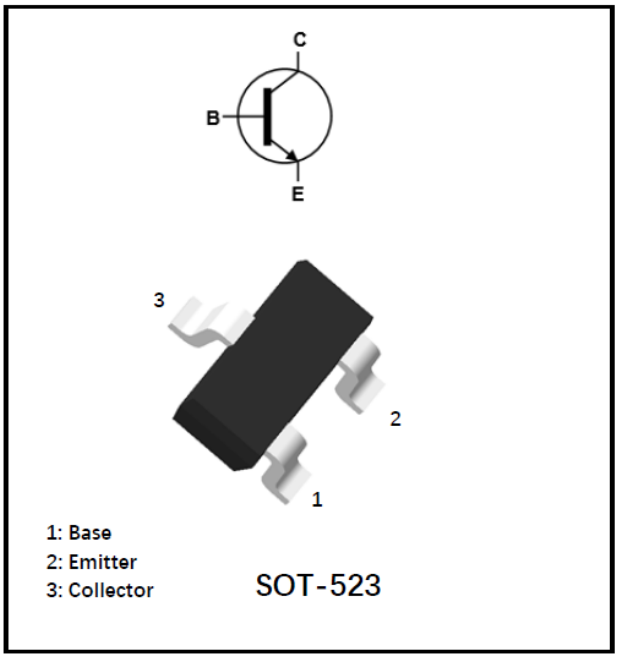
NPN General Purpose Amplifier



Features

- Moisture Sensitivity Level 1
- Surface mount package ideally Suited for Automatic Insertion
- Epoxy meets UL-94 V-0 flammability rating, halogen-free

Mechanical Data

- **Package**: SOT-523
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** 1N

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Emitter Voltage	V_{CEO}	V	I_C=1.0mAdc, I_B=0	40
Collector-Base Voltage	V_{CBO}	V	I_C=10uAdc, I_E=0	60
Emitter-Base Voltage	V_{EBO}	V	I_E=10uAdc, I_C=0	6.0
Collector Current	I_C	mA		200
Collector Power Dissipation	P_C	mW		150
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	℃/W		833
Operation Junction Temperature	T_J	℃		-55 to +150
Storage Temperature	T_{STG}	℃		-55 to +150

■Electrical Characteristics (Ta=25℃ unless otherwise specified)

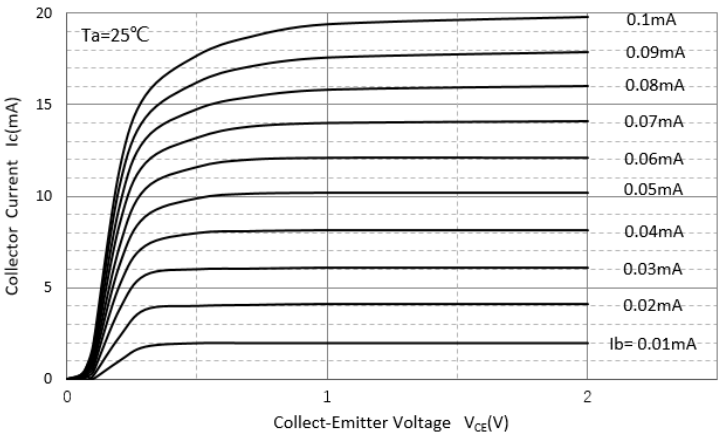
Item	Symbol	Unit	Conditions	Min	Max
Collector-Emitter Voltage	V_{CEO}	V	I_C=1.0mAdc, I_B=0	40	
Collector-Base Voltage	V_{CBO}	V	I_C=10uAdc, I_E=0	60	
Emitter-Base Voltage	V_{EBO}	V	I_E=10uAdc, I_C=0	6.0	
Collector-base Cut-off Current	I_{CBO}	nA	V_{CB}=30Vdc		50
Emitter-base cut-off current	I_{EBO}	nA	V_{EB}=5Vdc		50
Collector-emitter Cut-off Current	I_{CEX}	nA	V_{CE}=30Vdc,V_{EB}=3Vdc		50
DC Current Gain	h_{FE}		I_C=0.1mAdc, V_{CE}=1.0Vdc	40	
			I_C=1.0mAdc, V_{CE}=1.0Vdc	70	
			I_C=10mAdc, V_{CE}=1.0Vdc	100	300
			I_C=50mAdc, V_{CE}=1.0Vdc	60	
			I_C=100mAdc, V_{CE}=1.0Vdc	30	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	I_C=10mAdc, I_B=1.0mAdc		0.2
			I_C=50mAdc, I_B=5.0mAdc		0.3
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	V	I_C=10mAdc, I_B=1.0mAdc	0.65	0.85
			I_C=50mAdc, I_B=5.0mAdc		0.95
Collector-base Output Capacitance	Cobo	pF	V_{CB}=5.0Vdc, f=1.0MHz, I_E=0		4
Transition frequency	f_T	MHz	I_C=10mA, V_{CE}=20V, f=100MHz	300	
Delay Time	td	ns	V_{CC}=3.0V,V_{BE}=0.5V,I_C=10mA, I_{B1}=1.0mA	35	
Rise Time	tr	ns		35	
Storage Time	ts	ns	V_{CC}=3.0V,I_C=10mA, I_{B1}=I_{B2}=1.0mA	200	
Fall Time	tf	ns		50	

■ Ordering Information (Example)

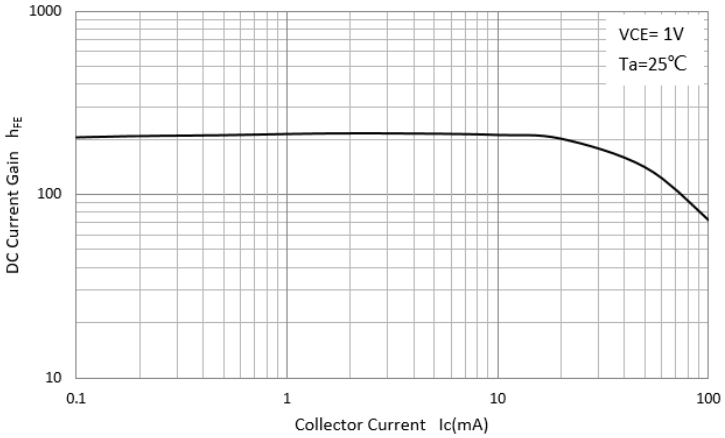
Prefered P/N	Packing Code	Unit Weight(G)	Minimum Package(Pcs)	Inner Box Quantity(Pcs)	Outer Carton Quantity(Pcs)	Delivery Mode
MMBT3904T	F2	Approximate 0.0027	3000	30000	120000	7” reel

■ **Characteristics** (Typical)

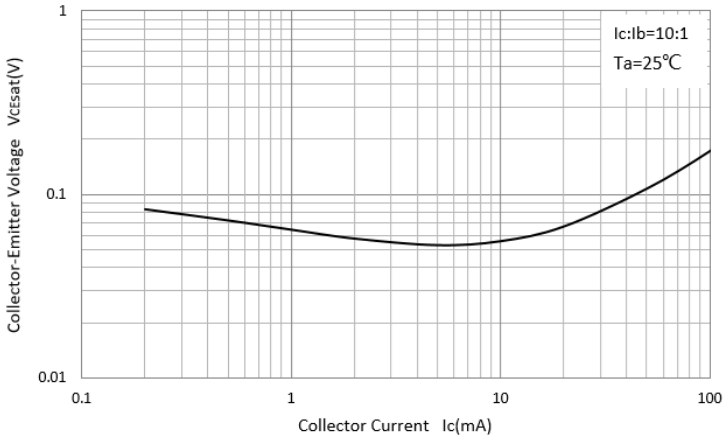
Static Characteristic



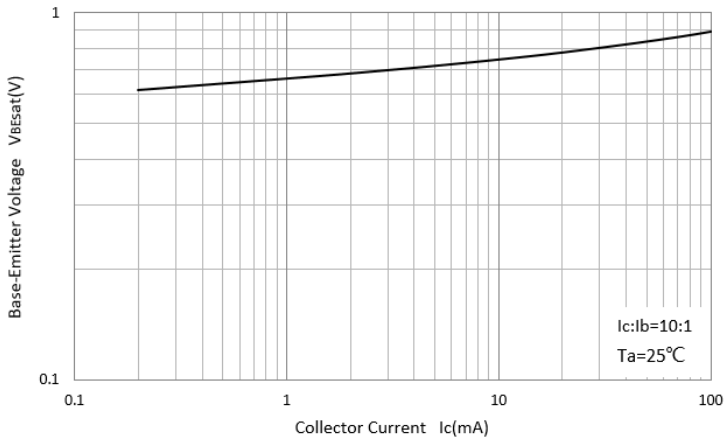
DC Current Gain



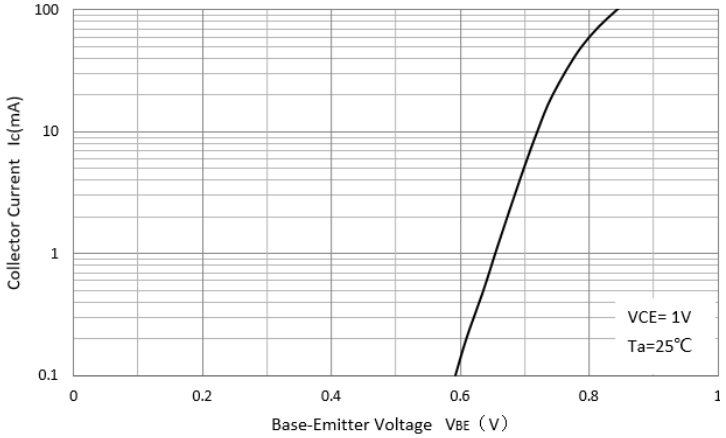
Collector-Emitter Saturation Voltage



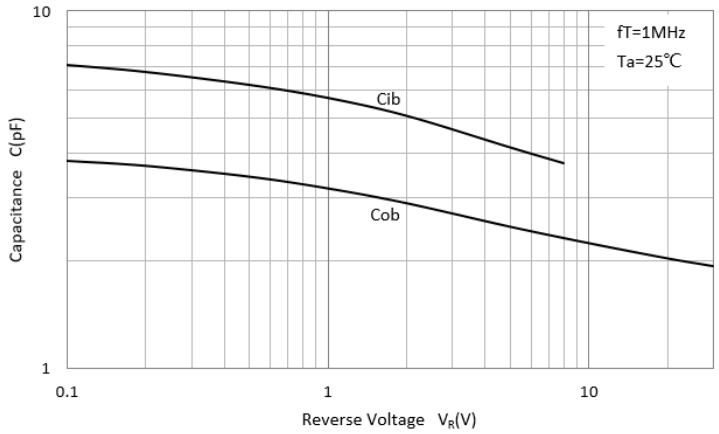
Base-Emitter Saturation Voltage



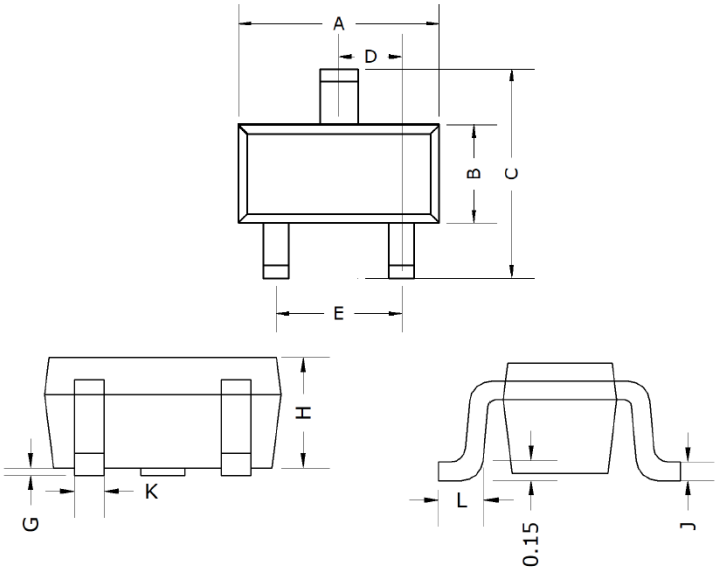
Base-Emitter On Voltage



Cob/Cib-V_{CB}/V_{EB}

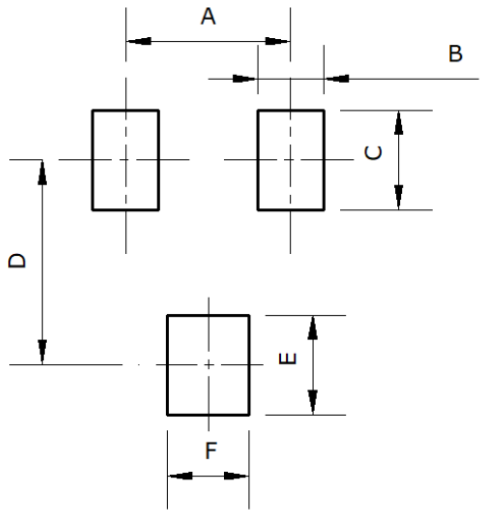


■ SOT-523 Package Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.059	0.067	1.50	1.70
B	0.030	0.033	0.75	0.85
C	0.057	0.069	1.45	1.75
D	0.020TYP		0.50TYP	
E	0.035	0.043	0.90	1.10
G	0.000	0.004	0.00	0.10
H	0.024	0.031	0.60	0.80
J	0.004	0.008	0.10	0.20
K	0.006	0.014	0.15	0.35
L	0.010	0.018	0.26	0.46

■ SOT-523 Suggested Pad Layout



DIMENSIONS	
DIM	MM (TYP)
A	1.00
B	0.40
C	0.60
D	1.24
E	0.60
F	0.50

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