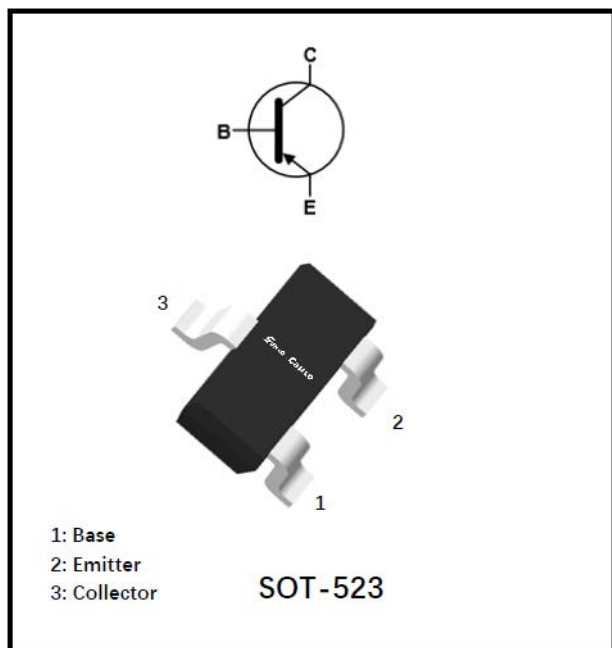


NPN General Purpose Amplifier



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:** 1P

■Maximum Ratings (Ta=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Emitter Voltage	V_{CEO}	V	$I_C=10\text{mA}$, $I_B=0$	40
Collector-Base Voltage	V_{CBO}	V	$I_C=10\text{uA}$, $I_E=0$	75
Emitter-Base Voltage	V_{EBO}	V	$I_E=10\text{uA}$, $I_C=0$	6
Collector Current	I_C	mA		600
Collector Power Dissipation	P_C	mW		150
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	°C/W		833
Operation Junction Temperature	T_J	°C		-55 to +150
Storage Temperature	T_{STG}	°C		-55 to +150

MMBT2222AT

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

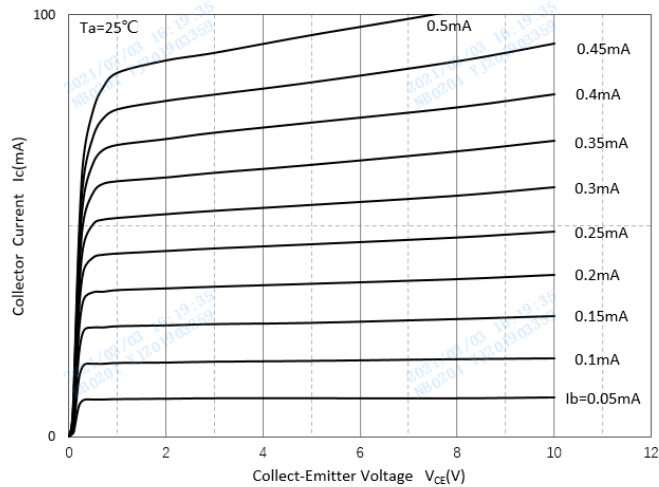
Item	Symbol	Unit	Conditions	Min	Max
Collector-Emitter Voltage	V_{CEO}	V	$I_C=10\text{mA}$, $I_B=0$	40	
Collector-Base Voltage	V_{CBO}	V	$I_C=10\mu\text{A}$, $I_E=0$	75	
Emitter-Base Voltage	V_{EBO}	V	$I_E=10\mu\text{A}$, $I_C=0$	6	
Collector-base Cut-off Current	I_{CBO}	nA	$V_{CB}=70\text{Vdc}$		100
Emitter-base cut-off current	I_{EBO}	nA	$V_{EB}=3\text{Vdc}$		100
Collector-emitter Cut-off Current	I_{CEX}	nA	$V_{CE}=60\text{Vdc}$, $V_{EB}=3\text{Vdc}$		10
DC Current Gain	h_{FE}		$I_C=0.1\text{mA}$, $V_{CE}=10\text{Vdc}$	35	
			$I_C=1\text{mA}$, $V_{CE}=10\text{Vdc}$	50	
			$I_C=10\text{mA}$, $V_{CE}=10\text{Vdc}$	75	
			$I_C=150\text{mA}$, $V_{CE}=10\text{Vdc}$	100	300
			$I_C=500\text{mA}$, $V_{CE}=10\text{Vdc}$	40	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	$I_C=150\text{mA}$, $I_B=15\text{mA}$		0.3
			$I_C=500\text{mA}$, $I_B=50\text{mA}$		1
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	V	$I_C=150\text{mA}$, $I_B=15\text{mA}$		1.2
			$I_C=500\text{mA}$, $I_B=50\text{mA}$		2
Collector-base Output Capacitance	C_{obo}	pF	$V_{CB}=10\text{Vdc}$, $f=1.0\text{MHz}$, $I_E=0$		8
Transition frequency	f_T	MHz	$I_C=20\text{mA}$, $V_{CE}=20\text{V}$, $f=100\text{MHz}$	300	
Delay Time	t_d	ns	$V_{CC}=30\text{V}$, $V_{BE}=0.5\text{V}$, $I_C=150\text{mA}$, $I_{B1}=15\text{mA}$		10
Rise Time	t_r	ns			25
Storage Time	t_s	ns	$V_{CC}=30\text{V}$, $I_C=150\text{mA}$, $I_{B1}=I_{B2}=15\text{mA}$		225
Fall Time	t_f	ns			60

■ Ordering Information (Example)

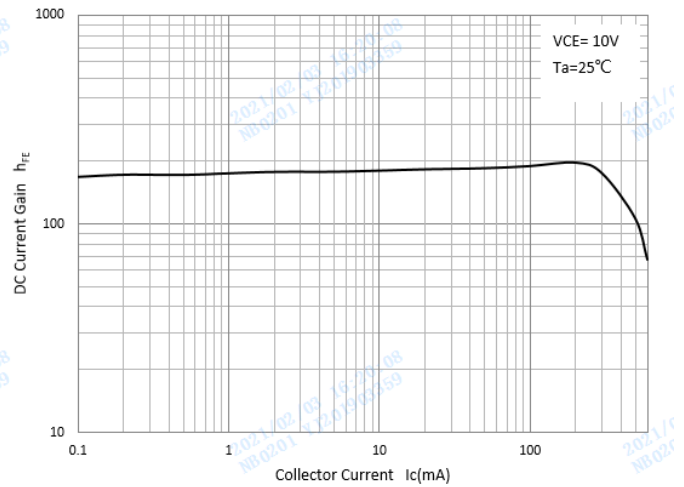
Preferred P/N	Packing Code	Unit Weight(G)	Minimum Package(Pcs)	Inner Box Quantity(Pcs)	Outer Carton Quantity(Pcs)	Delivery Mode
MMBT2222AT	F2	Approximate 0.0027	3000	30000	120000	7" reel

■ Characteristics (Typical)

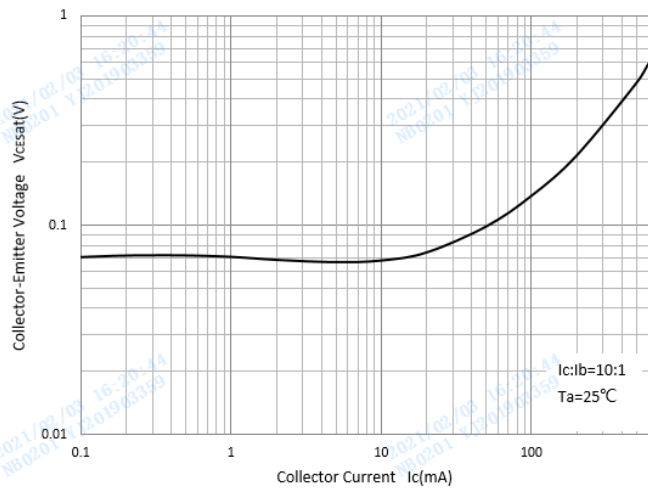
Static Characteristic



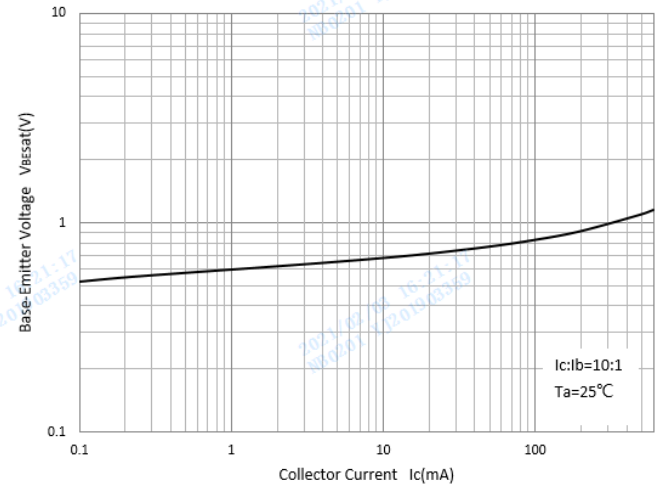
DC Current Gain



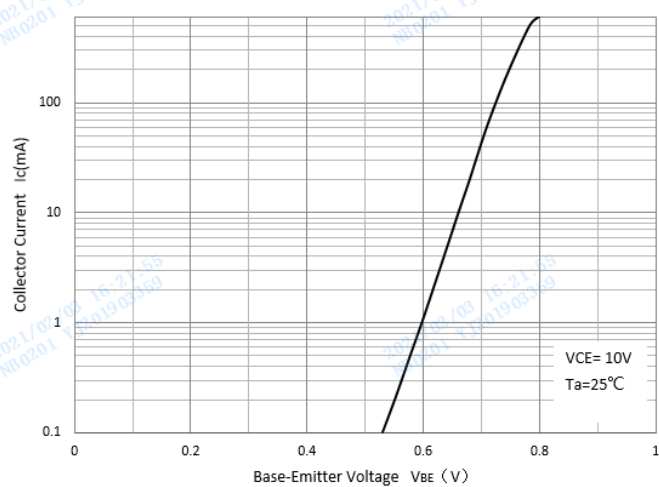
Collector-Emitter Saturation Voltage



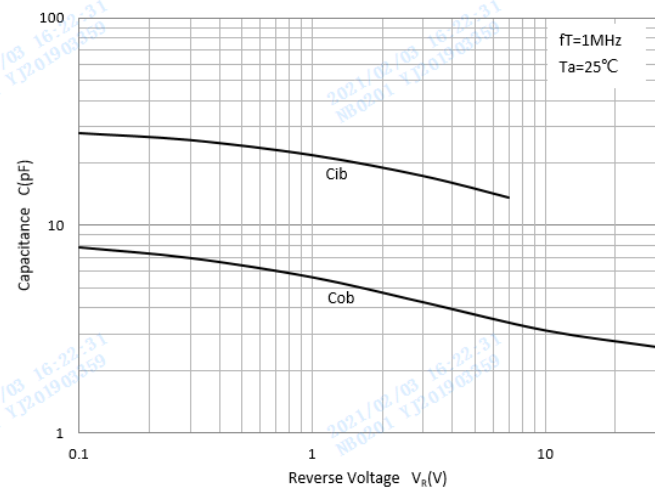
Base-Emitter Saturation Voltage

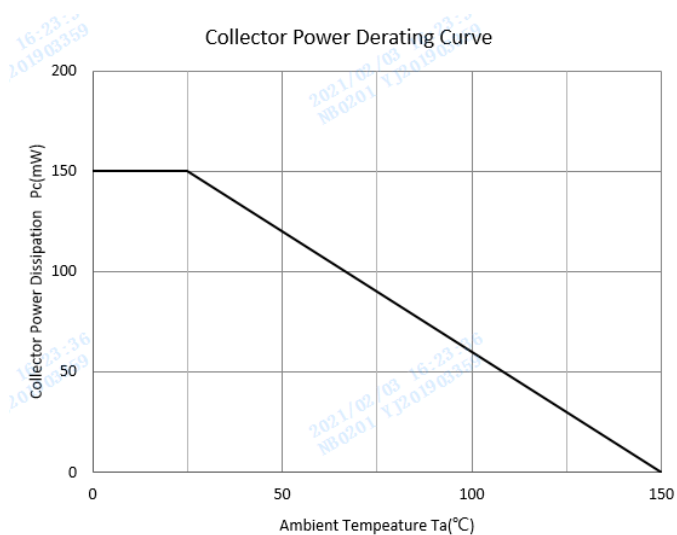


Base-Emitter On Voltage

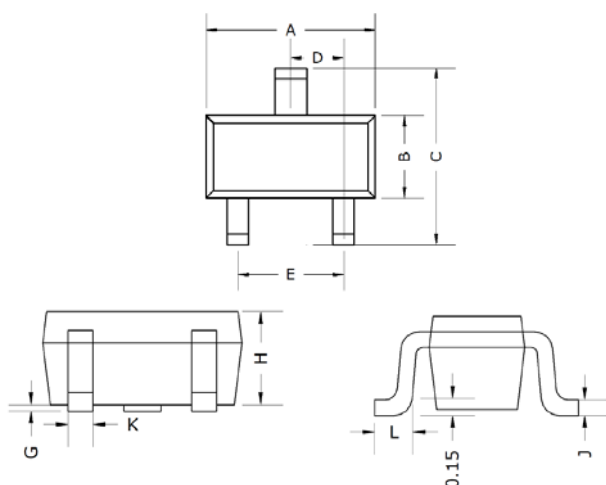


$C_{ob}/C_{ib}-V_{CE}/V_{EB}$



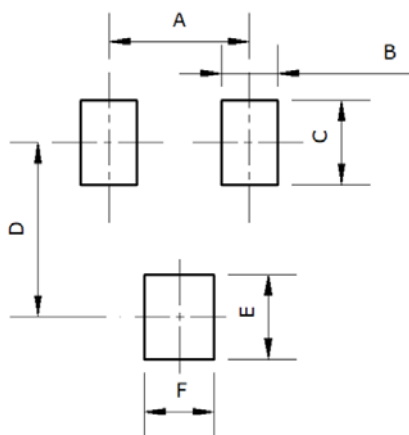


■ SOT-523 Package Outline Dimensions



DIM	DIMENSIONS			
	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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