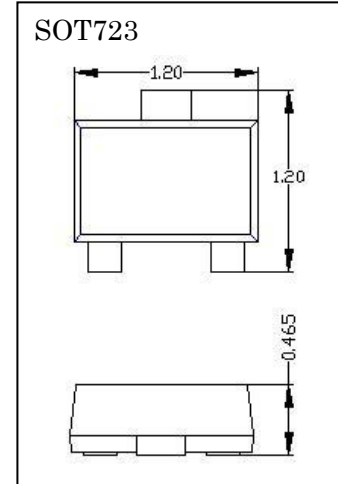
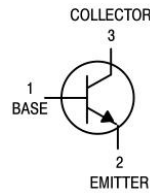


### PNP General Purpose Amplifier

- ◇ Epitaxial planar die construction
- ◇ Operating and Storage Junction Temperatures:  $-55^{\circ}\text{C}$  to  $150^{\circ}\text{C}$
- ◇ Small Outline Surface Mount Package
- ◇ RoHS compliant / Green EMC

Device Marking Code	
MMBT2222AM	1P

Circuit Diagram



#### Maximum Ratings (Ta = 25 °C)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	75	V
$V_{CEO}$	Collector-Emitter Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	6.0	V
$I_C$	Collector Current-Continuous	600	mA
$P_D$	Total Device Dissipation	265	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	470	$^{\circ}\text{C}/\text{W}$
$T_j, T_{stg}$	Junction and Storage Temperature	-55 to +150	$^{\circ}\text{C}$

#### Off Electrical Characteristics Ta = 25 °C

Symbol	Parameter	Test Conditions	Min	Max	Units
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C=10.0\text{mA}, I_B=0$	40	-	V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C=10\mu\text{A}, I_E=0$	75	-	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E=10\mu\text{A}, I_C=0$	6.0	-	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=60\text{V}, I_E=0$		10	nA
$I_{CEX}$	Collector Cutoff Current	$V_{CE}=60\text{V}, V_{EB(off)}=3.0\text{V}$		0.01	$\mu\text{A}$
$I_{EBO}$	Emitter cut-off current	$V_{EB}=3\text{V}, I_C=0$		0.1	$\mu\text{A}$
$I_{BL}$	Base Cutoff Current	$V_{CE}=60\text{V}, V_{EB(off)}=3.0\text{V}$		20	nA



## PNP General Purpose Amplifier

### On Electrical Characteristics Ta=25 °C

Symbol	Parameter	Test Conditions	Min	Max	Units
h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> =0.1mA , V <sub>CE</sub> =10V	35	-	-
		I <sub>C</sub> =1.0mA , V <sub>CE</sub> =10V	50	-	
		I <sub>C</sub> =10mA , V <sub>CE</sub> =10V	75	-	
		I <sub>C</sub> =150mA , V <sub>CE</sub> =10V (Note 1)	100	300	
		I <sub>C</sub> =150mA , V <sub>CE</sub> =1.0V (Note 1)	50	-	
		I <sub>C</sub> =500mA , V <sub>CE</sub> =10V (Note 1)	40	-	
V <sub>CE</sub> (Sat)	Collector–Emitter Saturation Voltage (Note 1)	(I <sub>C</sub> =150mA , I <sub>B</sub> =15mA )	-	0.3	V
		(I <sub>C</sub> =500mA,I <sub>B</sub> =50mA)	-	1.0	
V <sub>BE</sub> (Sat)	Base–Emitter Saturation Voltage (Note 1)	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.6	1.2	V
		I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	-	2.0	

### Small-Signal Characteristics

Symbol	Parameter	Test Conditions	Min	Max	Units
f <sub>T</sub>	Current–Gain – Bandwidth Product(Note 2)	I <sub>C</sub> =20mA, V <sub>CE</sub> =20V , f=100MHz	300	-	MHz
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> =10V,I <sub>E</sub> =0, f=1.0MHz	-	8.0	pF
C <sub>ibo</sub>	Input Capacitance	V <sub>EB</sub> =0.5V,I <sub>C</sub> =0,f=1.0MHz	-	25	pF

Note 1. Pulse Test: Pulse Width ≤ 300 us, Duty Cycle ≤ 2.0%.

Note 2. f<sub>T</sub> is defined as the frequency at which |h<sub>fe</sub>| extrapolates to unity.

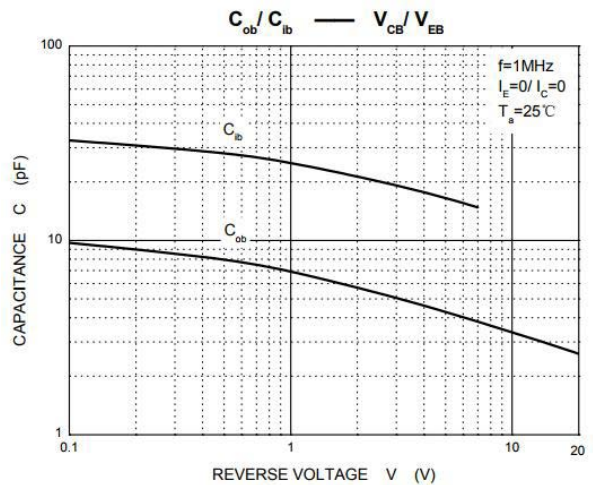
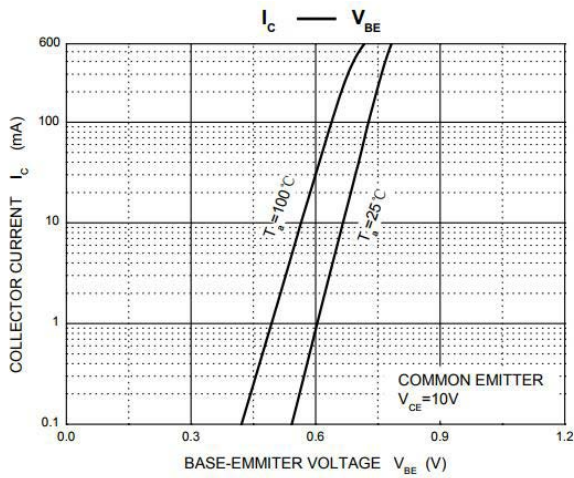
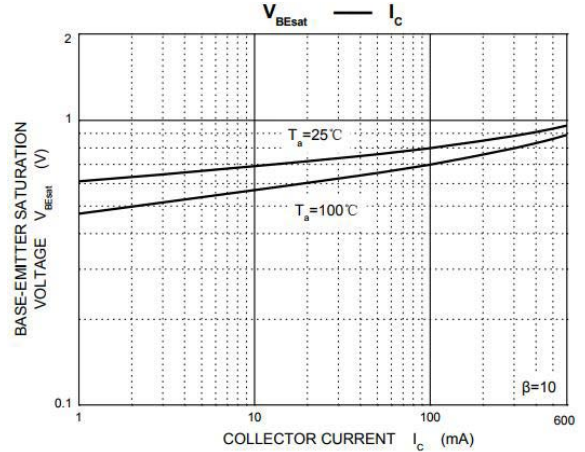
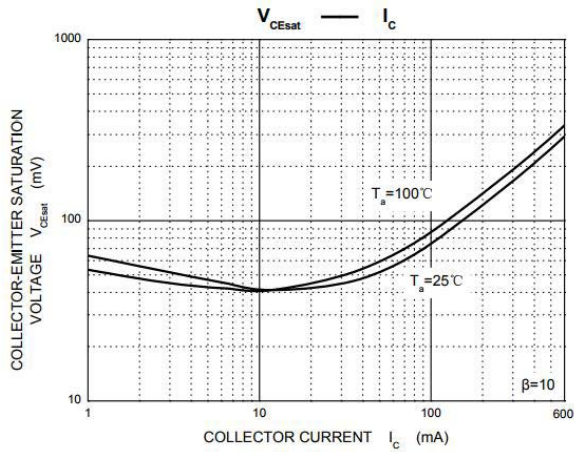
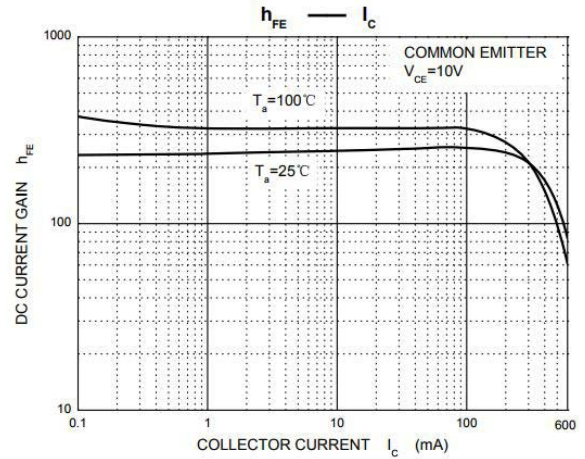
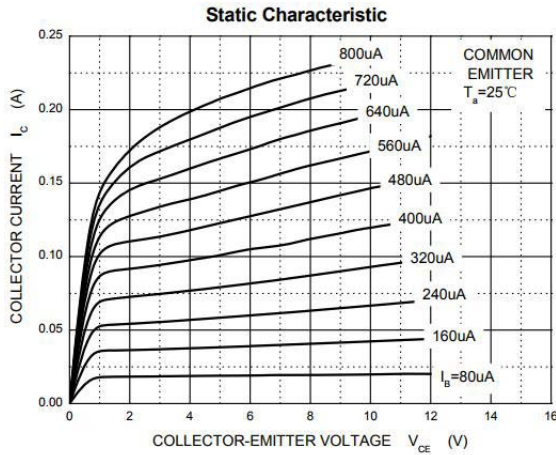
### Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Max	Units
t <sub>d</sub>	Delay Time	V <sub>CC</sub> =30V,I <sub>C</sub> =150mA , V <sub>BE</sub> (off)=-0.5V I <sub>B1</sub> =15mA	-	10	ns
t <sub>r</sub>	Rise Time		-	25	
t <sub>s</sub>	Storage Time	(V <sub>CC</sub> =30V ,I <sub>C</sub> =150mA , I <sub>B1</sub> =I <sub>B2</sub> =15mA )	-	225	
t <sub>f</sub>	Fall Time		-	60	



# PNP General Purpose Amplifier

## Typical Characteristics



## PNP General Purpose Amplifier

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT2222AM	SOT723	Tape & Reel 8000pcs /7" Reel	8mm	4mm	Conductive	

### PACKAGE DIMENSIONS

