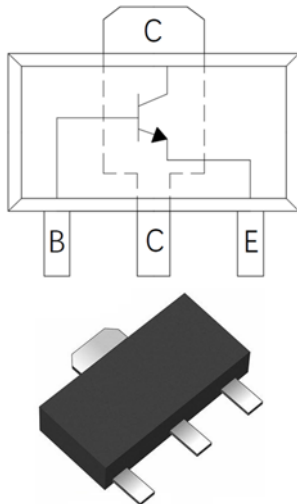


NPN General Purpose Amplifier Transistor

SOT-89



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package:** SOT-89
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions		Value
Device marking code			MMBTA05X		A05X
			MMBTA06X		A06X
Collector-base voltage	V_{CBO}	V	MMBTA05X	$I_C=100\mu\text{A}, I_E=0$	60
		V	MMBTA06X		80
Collector-emitter voltage	V_{CEO}	V	MMBTA05X	$I_C=1\text{mA}, I_B=0$	60
		V	MMBTA06X		80
Emitter-base voltage	V_{EBO}	V	$I_E=100\mu\text{A}, I_C=0$		4
Collector current	I_C	mA			500
Power dissipation	P_D	mW			300
Junction temperature	T_J	$^\circ\text{C}$			-55 to +150
Storage temperature	T_{STG}	$^\circ\text{C}$			-55 to +150



MMBTA05X THRU MMBTA06X

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■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V _{(BR)CBO}	V	MMBTA05X	I _C =100μA, I _E =0		
			MMBTA06X			
Collector-emitter breakdown voltage	V _{(BR)CEO}	V	MMBTA05X	I _C =1mA, I _B =0		
			MMBTA06X			
Emitter-base breakdown voltage	V _{(BR)EBO}	V	I _E =100μA, I _C =0	4		
Collector-base cut-off current	I _{CBO}	nA	V _{CB} =60V			100
Emitter-base cut-off current	I _{EBO}	nA	V _{EB} =3V			100
Collector-emitter cut-off current	I _{CES}	nA	V _{CE} =60V			100
DC current gain	h _{FE1}		V _{CE} =1V, I _C =10mA	100		400
	h _{FE2}		V _{CE} =1V, I _C =100mA	100		
Collector-emitter saturation voltage	V _{CE(sat)}	V	I _C =100mA, I _B =10mA			0.25
Base-emitter saturation voltage	V _{BE(sat)}	V	I _C =100mA, I _B =10mA			1.2
Transition frequency	f _T	MHz	V _{CE} =2V, I _C =10mA, f=100MHz	100		

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R _{θJ-A} ⁽¹⁾	°C/W	416.6
Thermal resistance, junction-to-case	R _{θJ-C} ⁽¹⁾	°C/W	100

Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint

■ Ordering Information

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
MMBTA05X MMBTA06X	F2	Approximate 0.055	1000	8000	32000	7" reel



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■ Characteristics

Fig 1: Static Characteristics

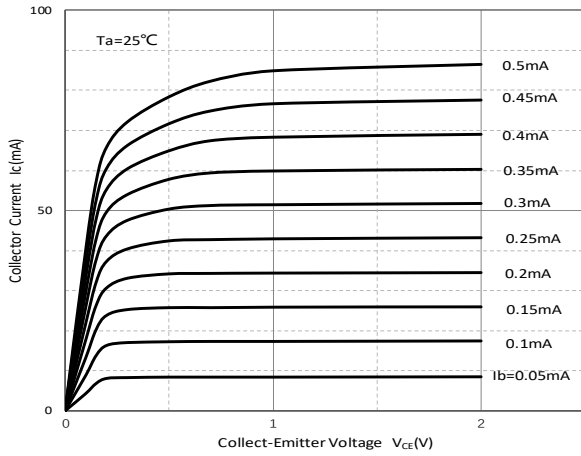


Fig 2: DC Current Gain

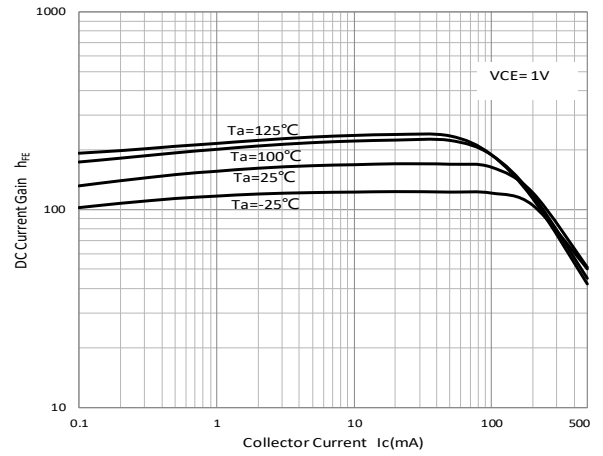


Fig 3: Collector-Emitter Saturation Voltage

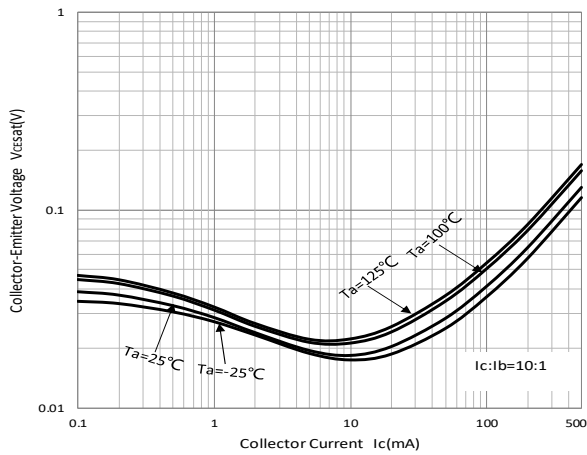


Fig 4: Base-Emitter Saturation Voltage

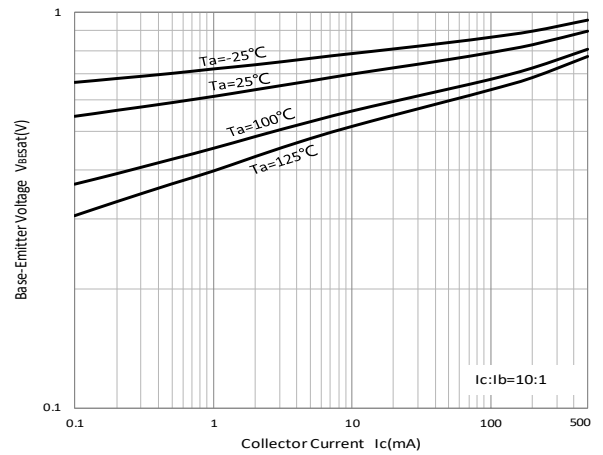


Fig 5: Base-Emitter On Voltage

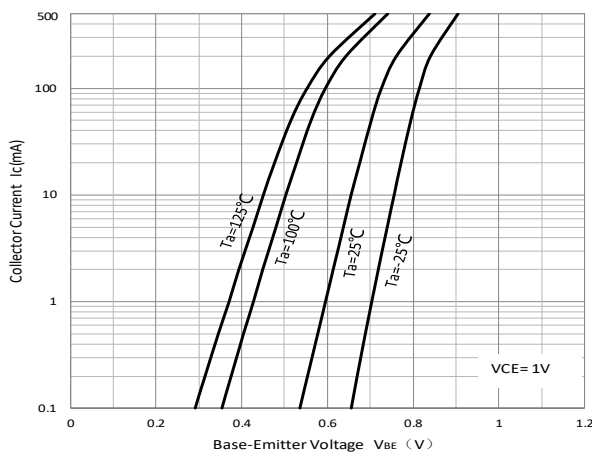
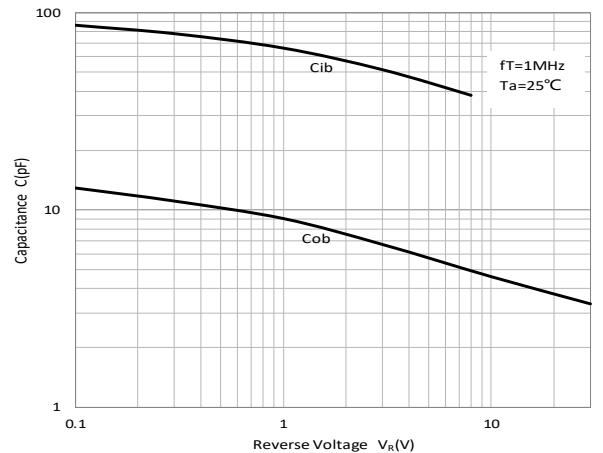


Fig 6: Cob/Cib- V_{CB}/V_{EB}

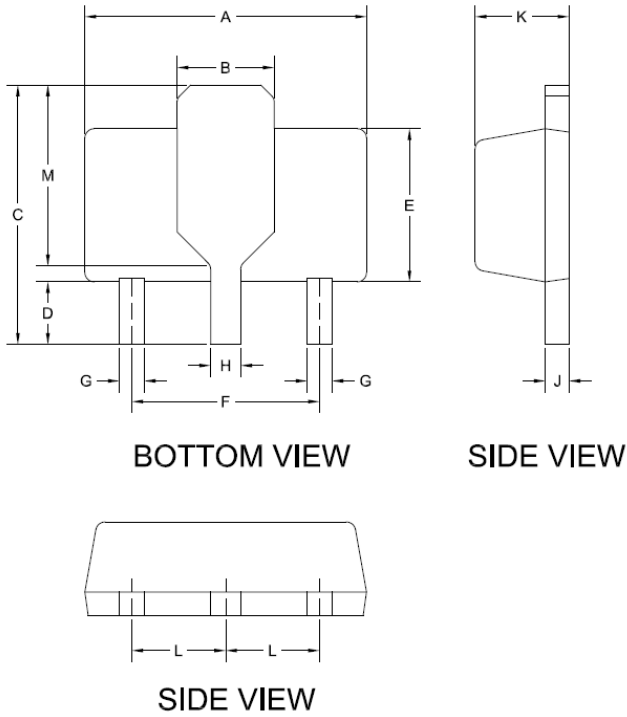




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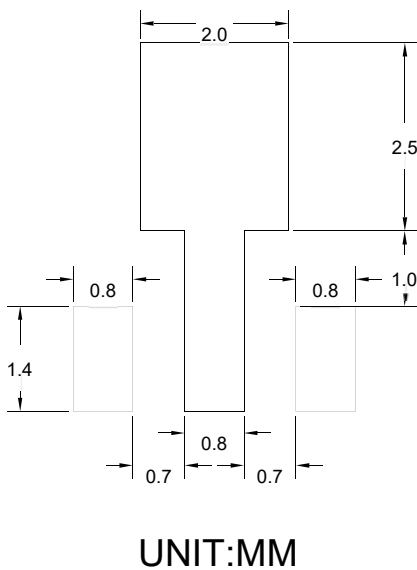
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■ Outline Dimensions



DIM	INCHES		MM	
	MIN.	MAX.	MIN.	MAX.
A	0.173	0.181	4.400	4.600
B	0.061 TYP.		1.550 TYP.	
C	0.155	0.167	3.940	4.250
D	0.031	0.047	0.800	1.200
E	0.094	0.102	2.400	2.600
F	0.118 TYP.		3.00 TYP.	
G	0.014	0.019	0.360	0.480
H	0.017	0.022	0.440	0.560
J	0.014	0.017	0.350	0.440
K	0.055	0.063	1.400	1.600
L	0.059 TYP.		1.500 TYP.	
M	0.108 TYP.		2.750 TYP.	

■ Suggested Pad Layout





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