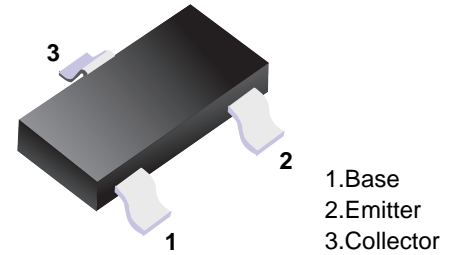


# MMBTH10

■ NPN Transistors

■ Features

- Collector Current Capability  $I_c=0.05A$
- Collector Emitter Voltage  $V_{CE0}=25V$



■ Simplified outline(SOT-23)

■ Classification of hfe

Marking	3EM
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■ Absolute Maximum Ratings  $T_a = 25^{\circ}C$

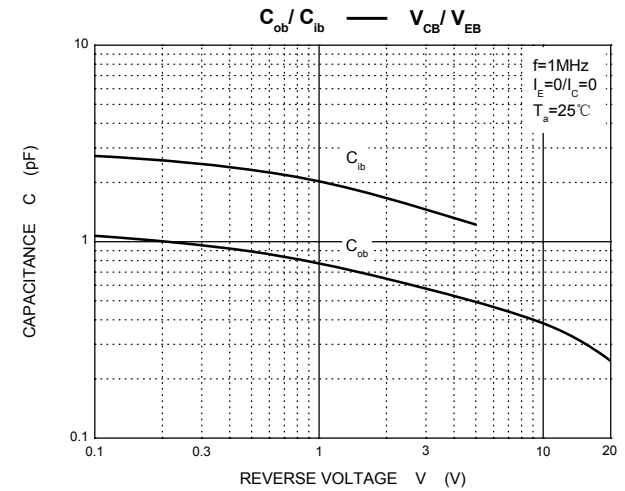
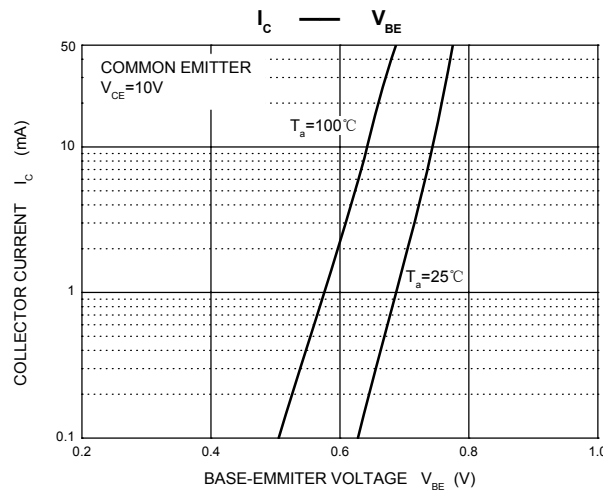
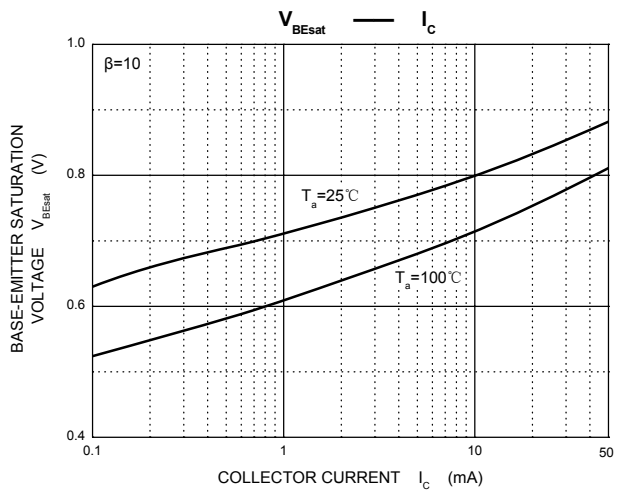
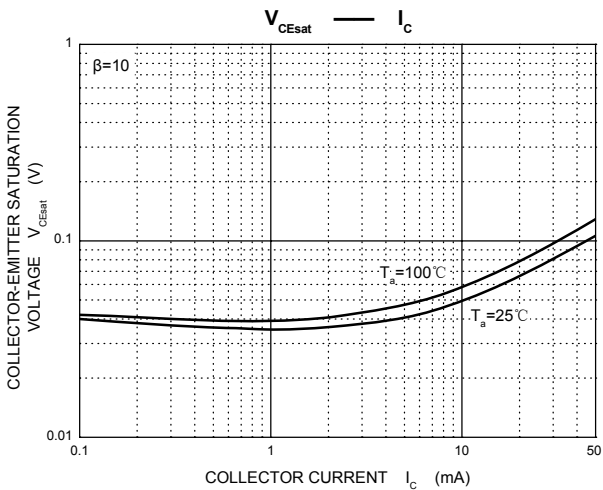
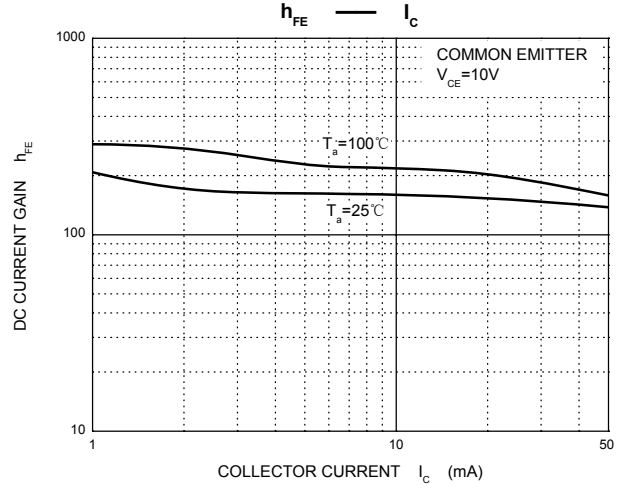
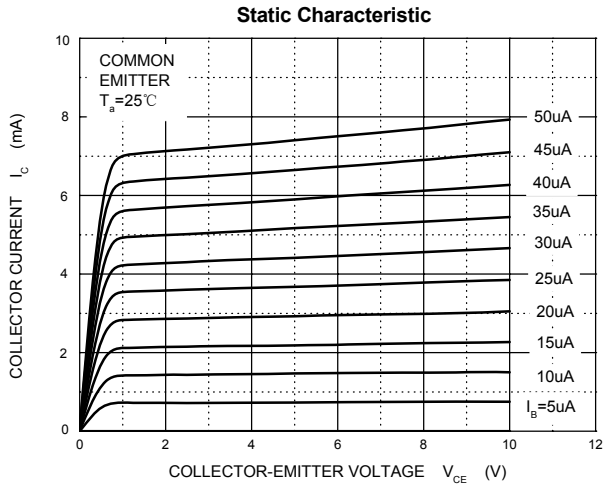
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	30	V
Collector - Emitter Voltage	$V_{CEO}$	25	
Emitter - Base Voltage	$V_{EBO}$	3	
Collector Current - Continuous	$I_c$	0.05	A
Collector Power Dissipation	$P_c$	225	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	-55 to +150	

■ Electrical Characteristics  $T_a = 25^{\circ}C$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_c= 100 \mu A, I_E= 0$	30			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_c= 1 mA, I_B= 0$	25			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E= 10 \mu A, I_C= 0$	3			
Collector-base cut-off current	$I_{CBO}$	$V_{CB}=25 V, I_E= 0$			100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}= 2V, I_C=0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_c=4 mA, I_B=0.4mA$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_c=4 mA, I_B=0.4mA$			1.2	
Base - emitter saturation voltage	$V_{BE}$	$V_{CE}=10V, I_c= 4 mA$			0.95	
DC current gain	$h_{FE}$	$V_{CE}= 10V, I_c= 4mA$	60			
Collector output capacitance	$C_{ob}$	$V_{CB}= 10V, I_E= 0, f=1MHz$			0.7	pF
Transition frequency	$f_t$	$V_{CE}= 10V, I_c= 4mA, f=100MHz$	650			MHz

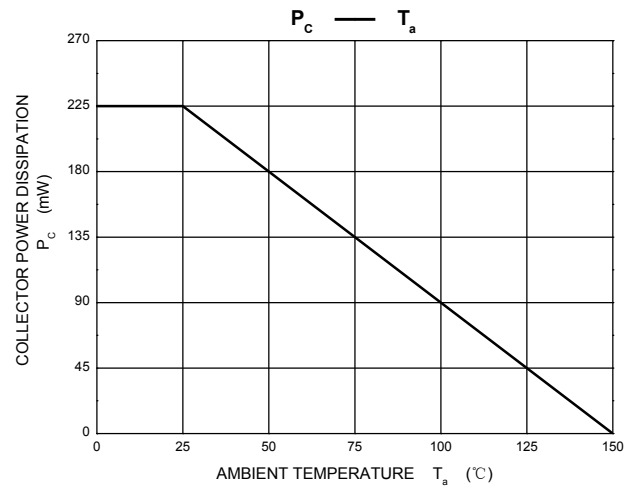
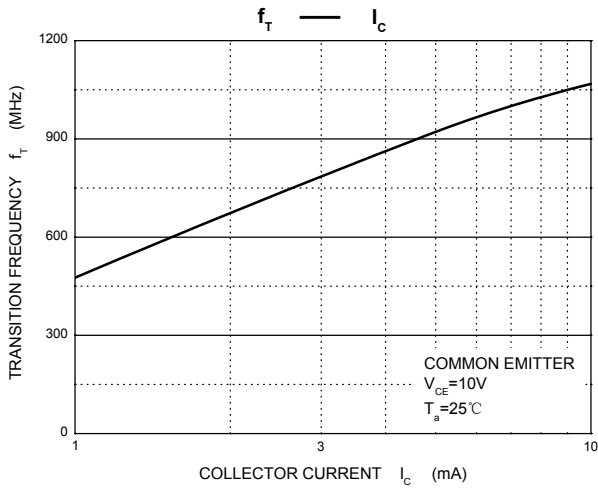
**MMBTH10**

■ Typical Characteristics



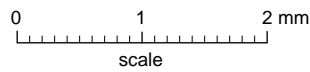
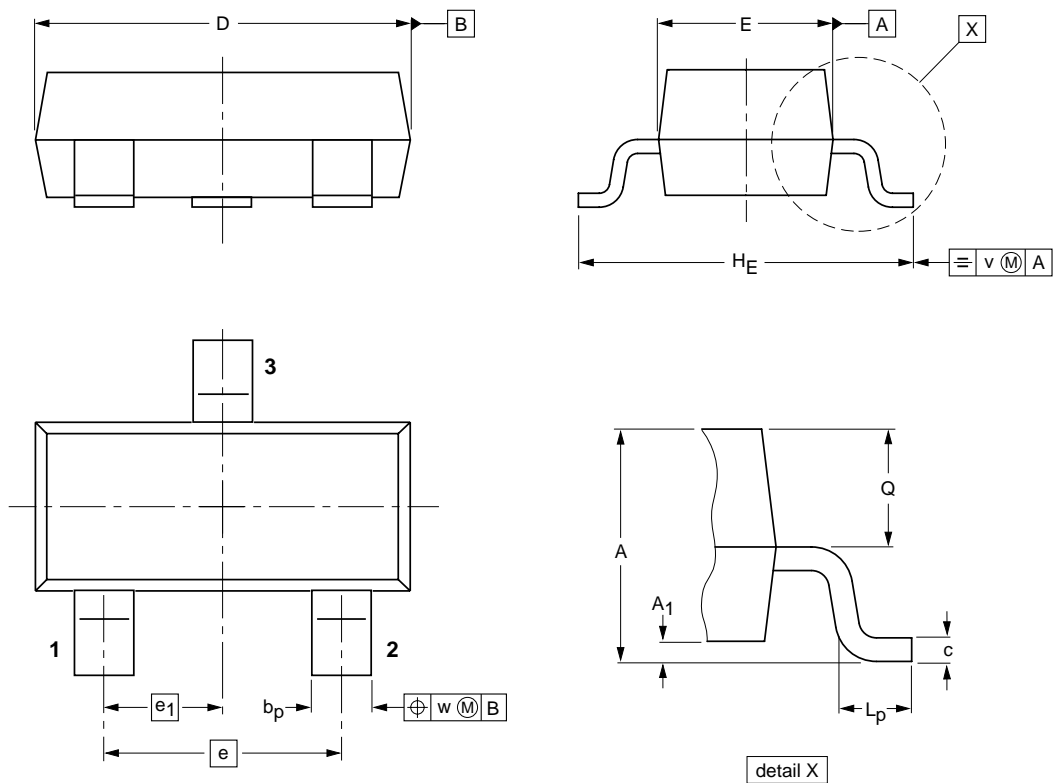
**MMBTH10**

■ Typical Characteristics



**MMBTH10**

■ SOT-23



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1