



# SOT-23 Plastic-Encapsulate Transistors

## MMBTH10 TRANSISTOR (NPN)

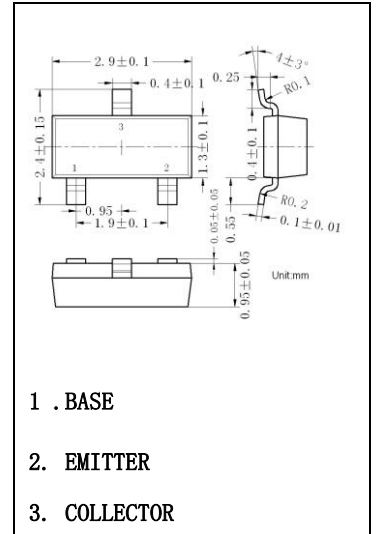
### FEATURES

VHF/UHF Transistor

Marking: 3EM

MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Emitter-Base Voltage	3	V
$I_C$	Collector Current	50	mA
$P_C$	Collector Power Dissipation	225	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	556	$^\circ\text{C}/\text{W}$
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

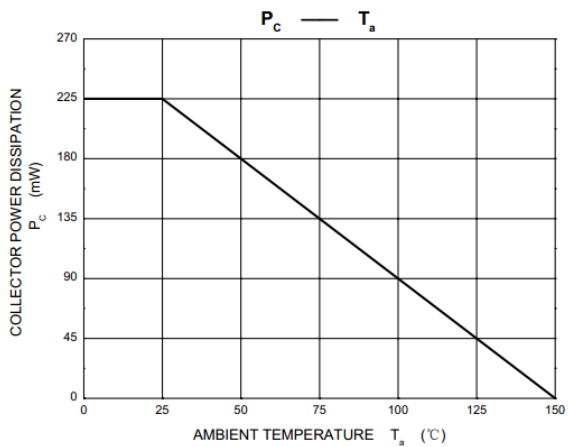
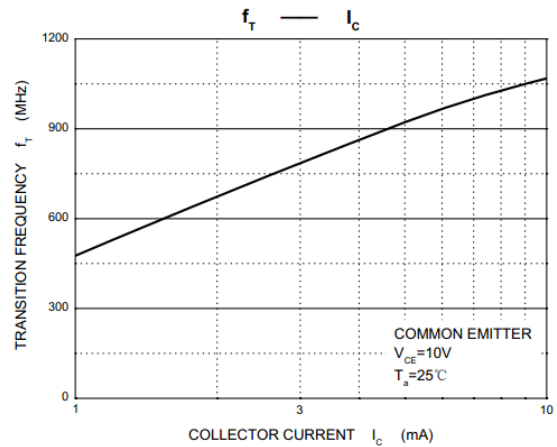
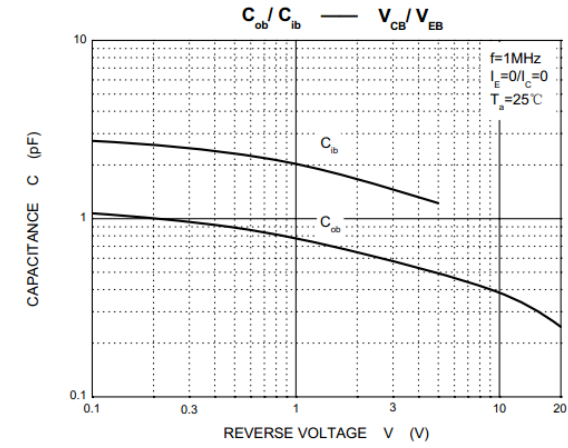
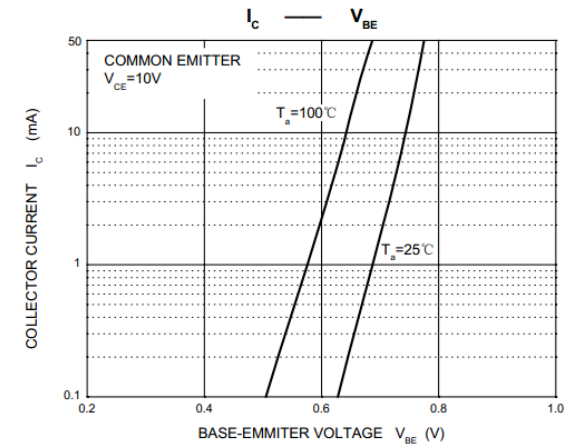
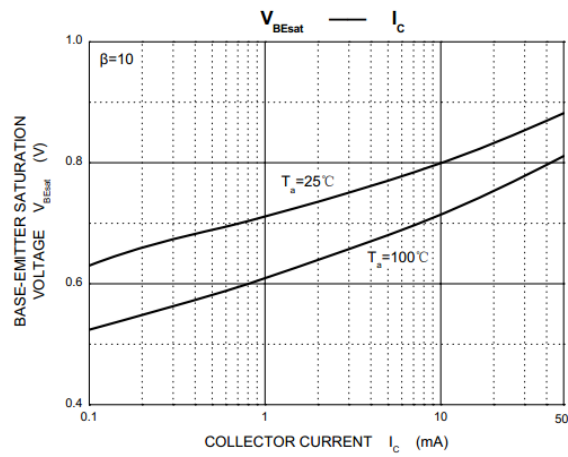
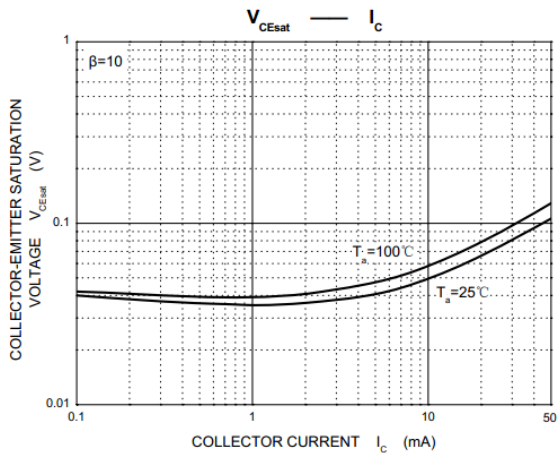
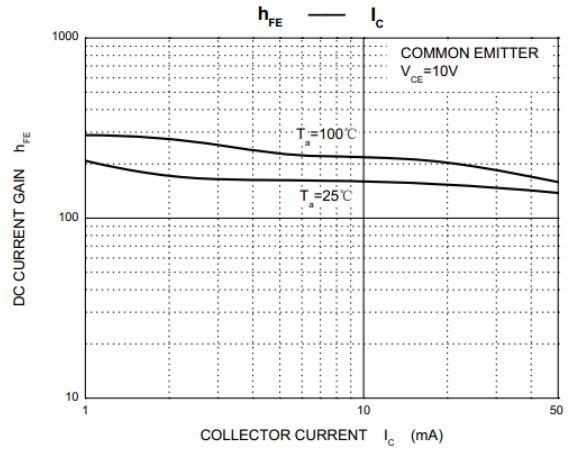
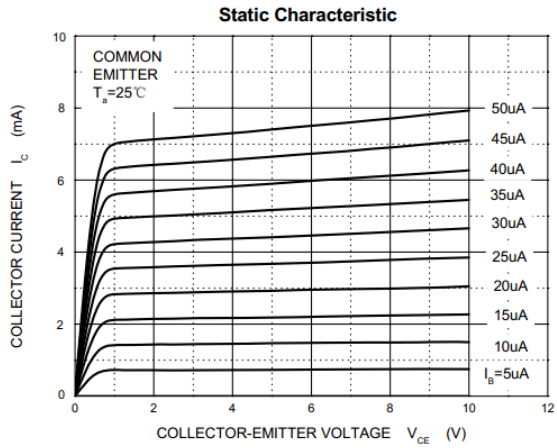


- 1 . BASE
2. EMITTER
3. COLLECTOR

### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	25			V
Emitter-Base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	3			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=25\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=2\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=10\text{V}, I_C=4\text{mA}$	60		200	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=4\text{mA}, I_B=0.4\text{mA}$			0.5	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=10\text{V}, I_C=4\text{mA}$			0.95	V
Transition frequency	$f_T$	$V_{CE}=10\text{V}, I_C=4\text{mA}, f=100\text{MHZ}$	650			MHZ
Collector output capacitance	$C_{ob}$	$V_{CE}=10\text{V}, I_E=0, f=1\text{MHZ}$			0.7	pF

# Typical Characteristics



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