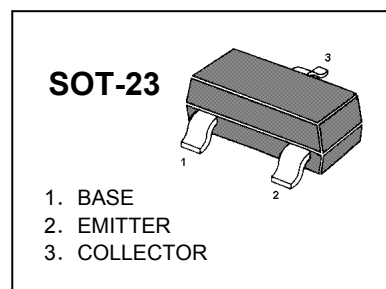


MMBTH10 TRANSISTOR (NPN)

FEATURES

- VHF/UHF Transistor

MARKING: 3EM



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

Symbol	Parameter	Value	Unit
V_{CB0}	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	$^{\circ}\text{C}$

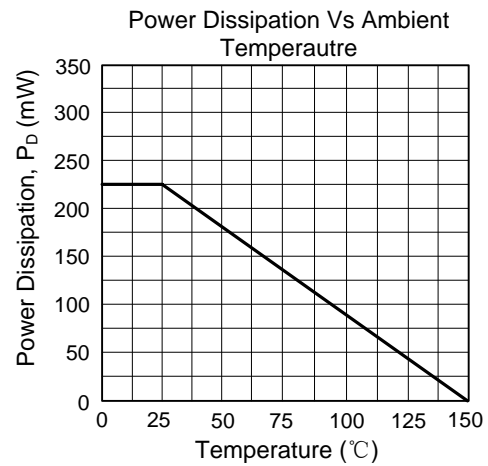
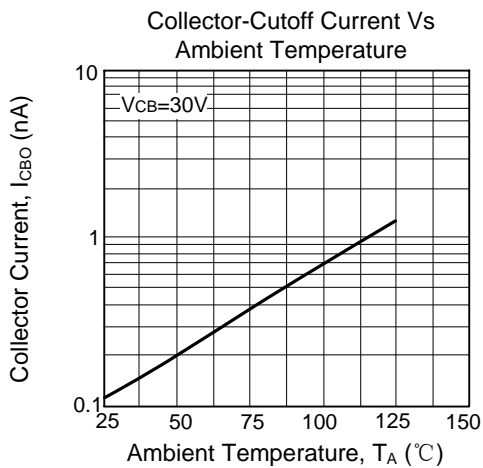
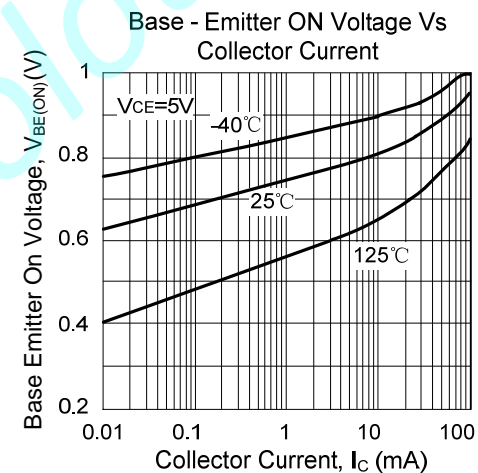
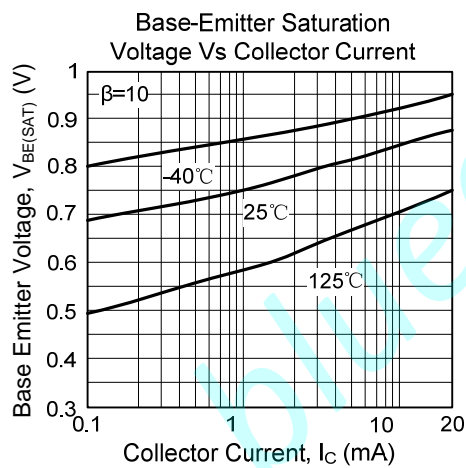
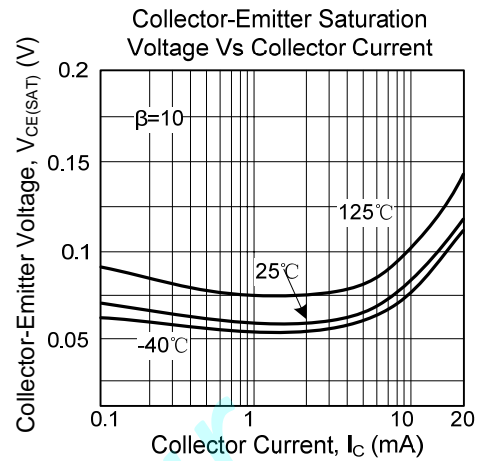
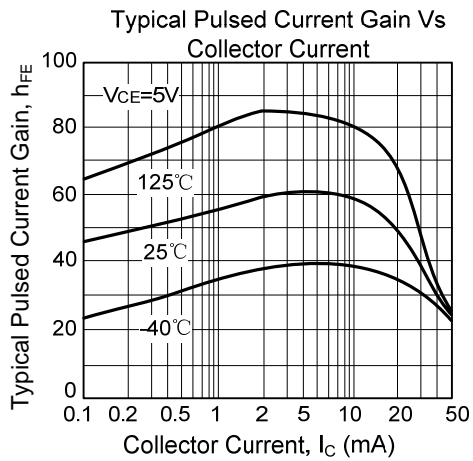
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

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	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=2\text{V}$, $I_C=0$			0.1	μA
DC current gain	h_{FE}	$V_{CE}=10\text{V}$, $I_C=4\text{mA}$	60			
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}	$V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$			0.7	pF

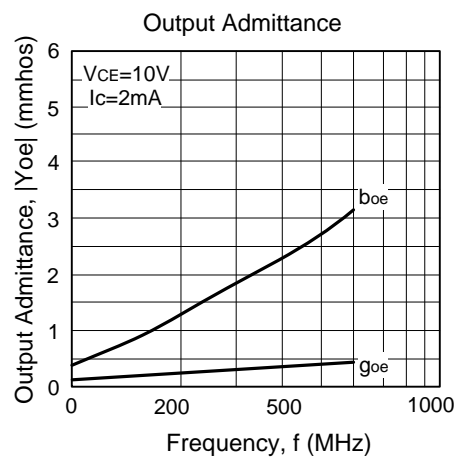
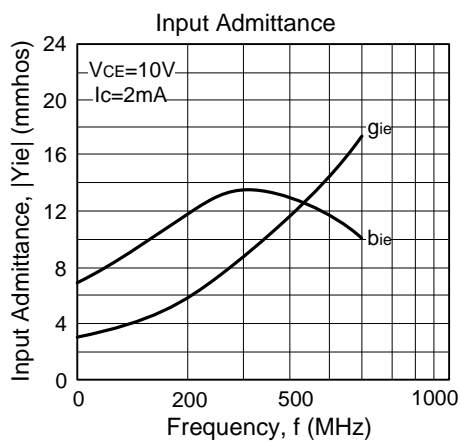
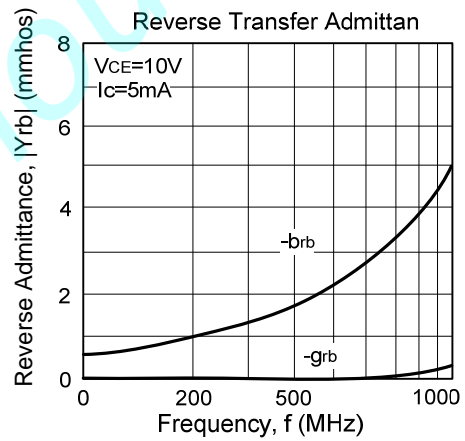
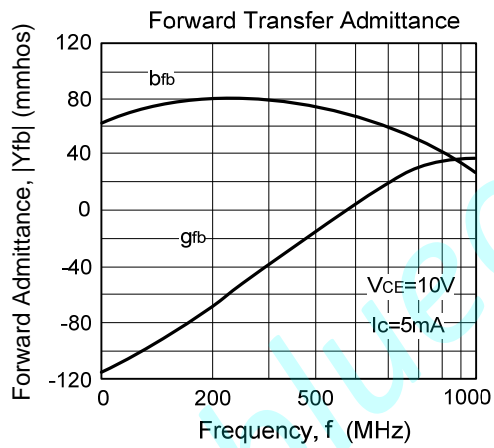
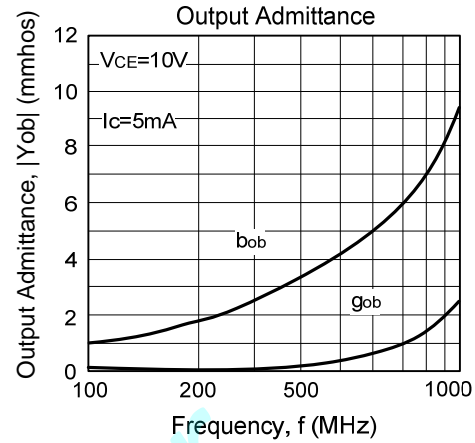
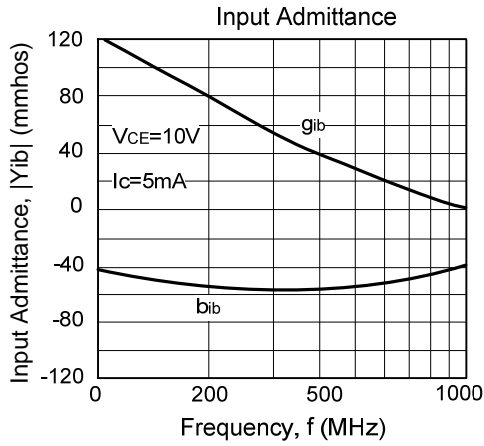
■ CLASSIFICATION OF h_{FE}

RANK	A	B	C
RANGE	60-100	90-130	120-200

Typical Characteristics



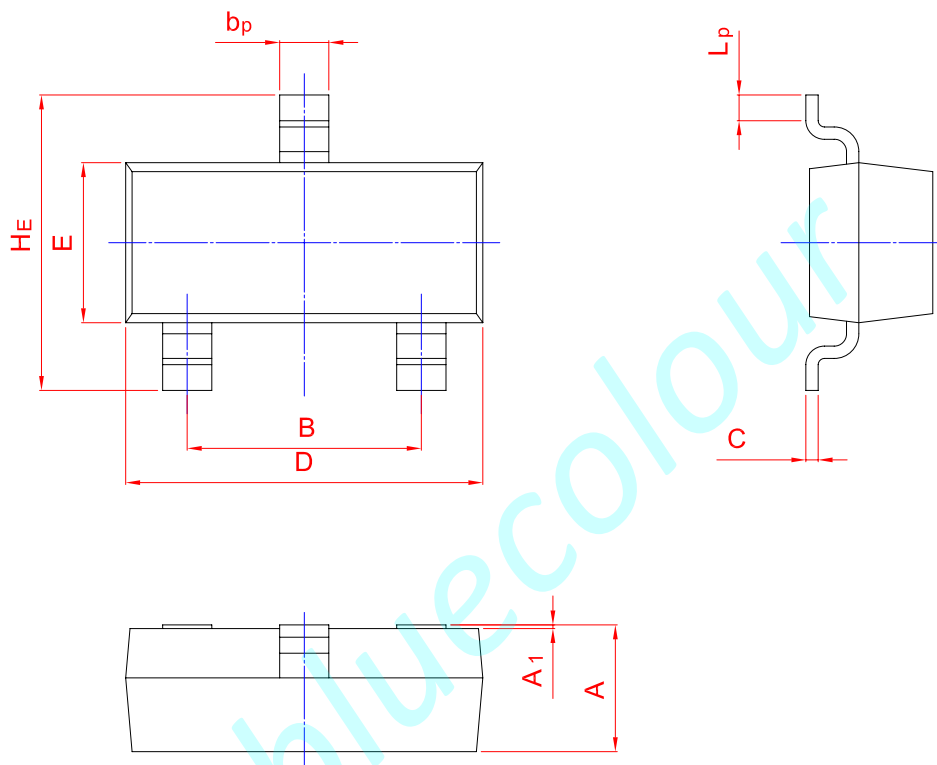
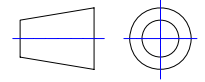
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20