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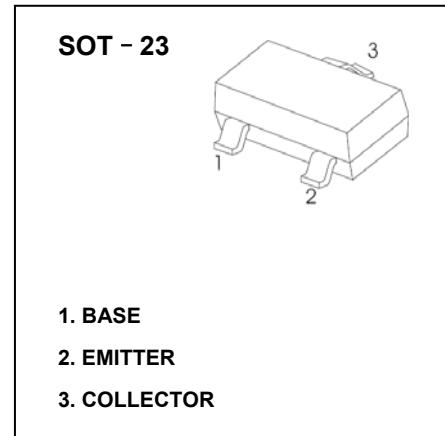
## SOT-23 Plastic-Encapsulate Transistors

**MMBT4401** TRANSISTOR (NPN)**FEATURES**

- Switching Transistor

**MARKING:2X****MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$  unless otherwise noted)**

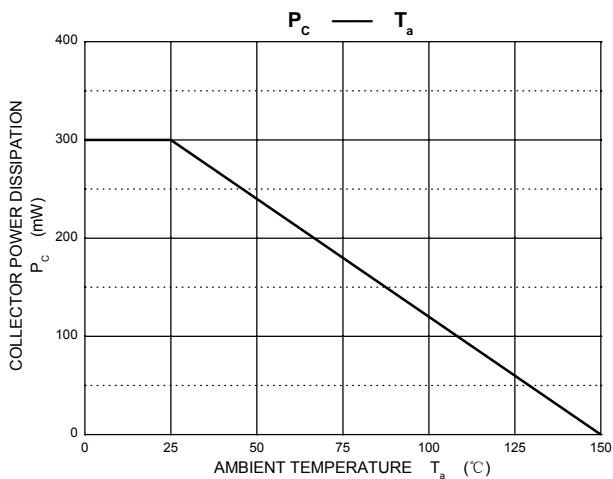
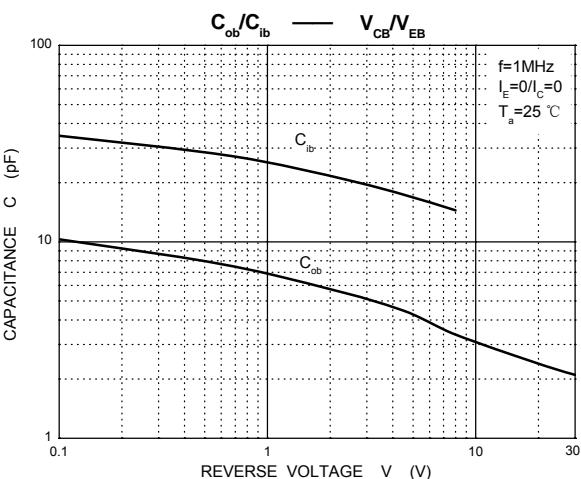
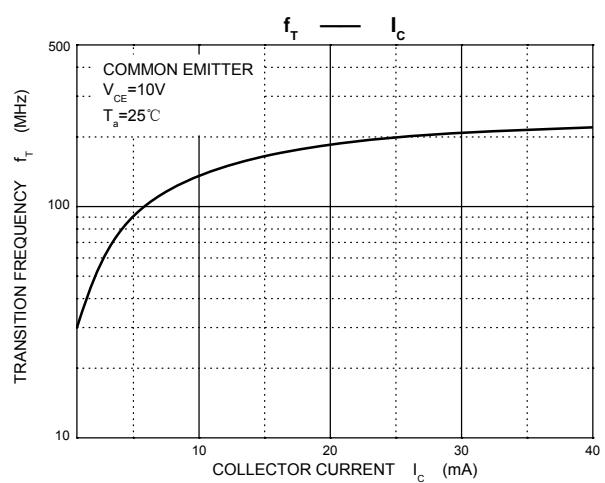
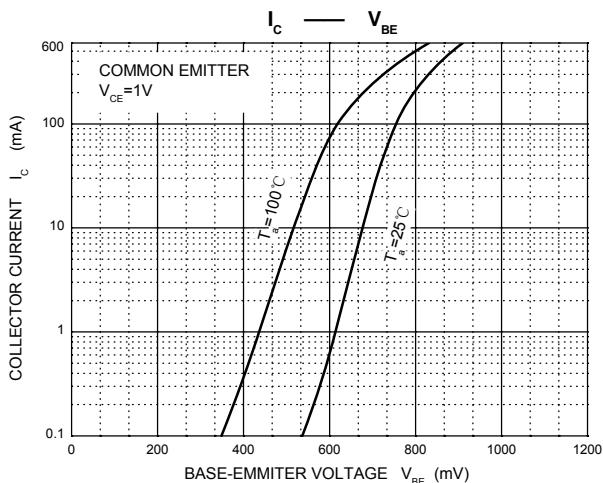
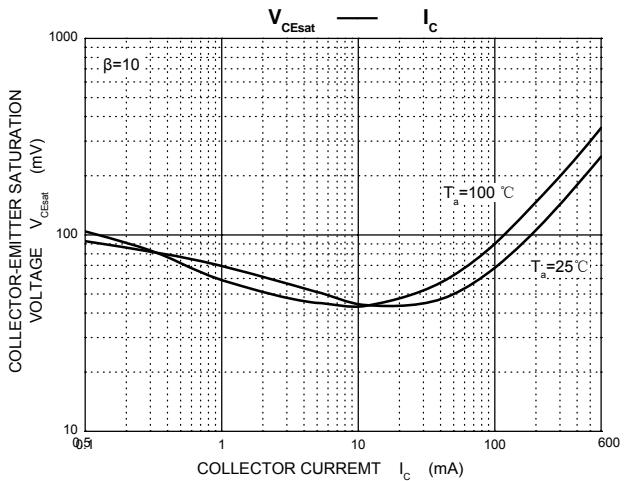
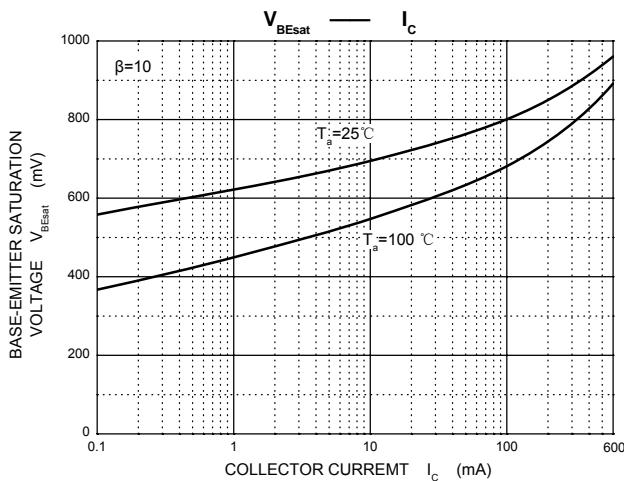
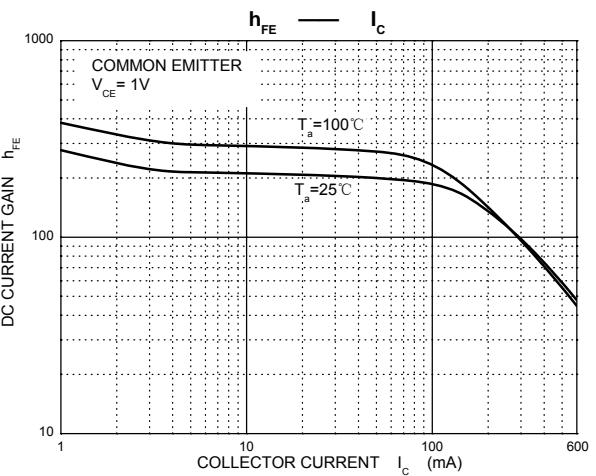
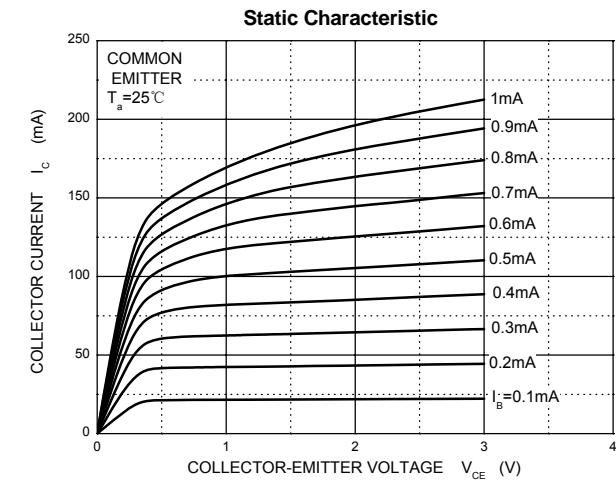
Symbol	Parameter	Value	Unit
$V_{\text{CBO}}$	Collector-Base Voltage	60	V
$V_{\text{CEO}}$	Collector-Emitter Voltage	40	V
$V_{\text{EBO}}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current	600	mA
$P_c$	Collector Power Dissipation	300	mW
$R_{\text{QJA}}$	Thermal Resistance From Junction To Ambient	417	$^\circ\text{C}/\text{W}$
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{\text{stg}}$	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	$V_{(\text{BR})\text{CBO}}$	$I_C=100\mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	$I_C=1\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	$I_E=100\mu\text{A}, I_C=0$	6			V
Collector cut-off current	$I_{\text{CEO}}$	$V_{\text{CE}}=30\text{V}, I_B=0$			100	nA
Collector cut-off current	$I_{\text{CBO}}$	$V_{\text{CB}}=50\text{V}, I_E=0$			100	nA
Emitter cut-off current	$I_{\text{EBO}}$	$V_{\text{EB}}=5\text{V}, I_C=0$			100	nA
DC current gain	$\text{h}_{\text{FE}}$	$V_{\text{CE}}=1\text{V}, I_C=150\text{mA}$	100		300	
Collector-emitter saturation voltage	$V_{\text{CE}(\text{sat})}$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.4	V
Collector-emitter saturation voltage	$V_{\text{BE}(\text{sat})}$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.95	V
Transition frequency	$f_T$	$V_{\text{CE}}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	250			MHz
Delay time	$t_d$	$V_{\text{CC}}=30\text{V}, V_{\text{BE}(\text{off})}=-2\text{V}$ $I_C=150\text{mA}, I_{B1}=15\text{mA}$			15	ns
Rise time	$t_r$				20	ns
Storage time	$t_s$	$V_{\text{CC}}=30\text{V}, I_C=150\text{mA}, I_B=I_{B2}=15\text{mA}$			225	ns
Fall time	$t_f$				30	ns

# Typical Characteristics

MMBT4401



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