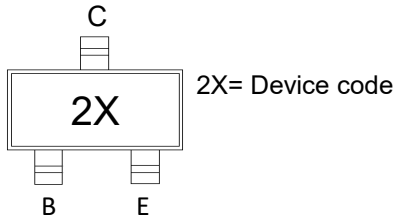
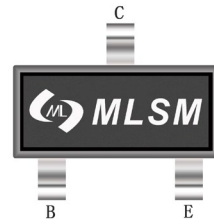


Features

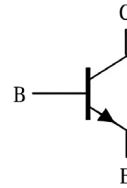
- Switching Transistor



Marking and pin assignment



SOT-23 top view



Schematic diagram



Halogen-Free

Maximum Ratings (Ta=25°C unless otherwise noted)

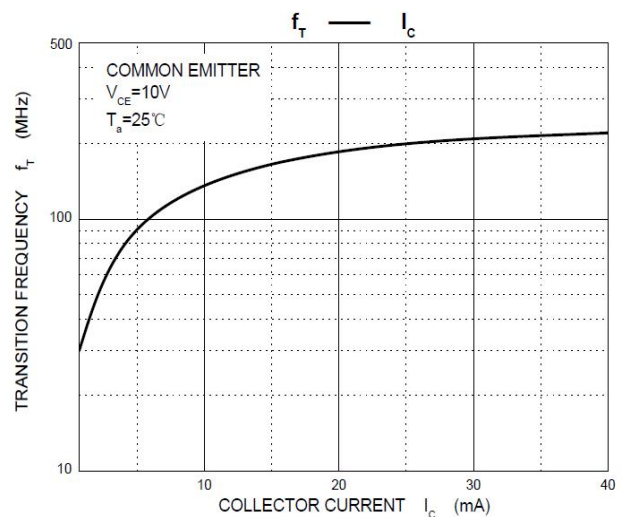
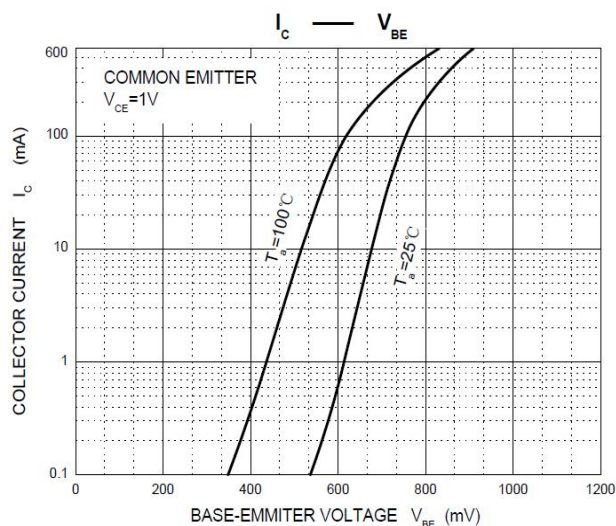
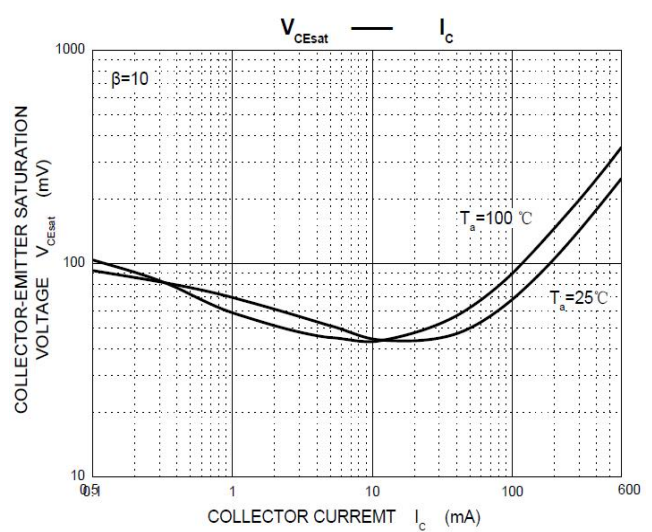
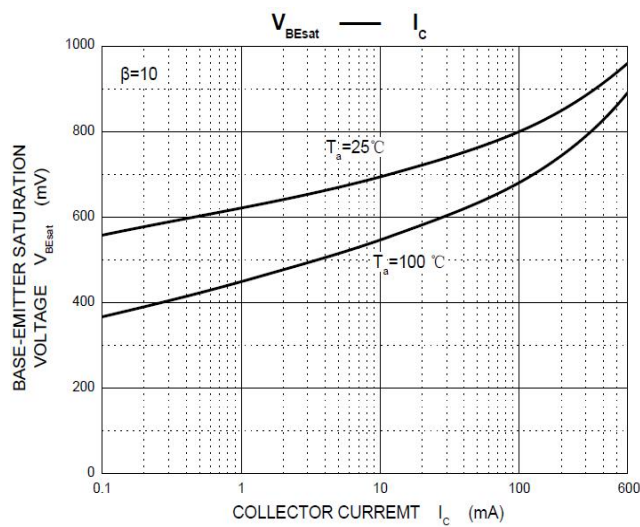
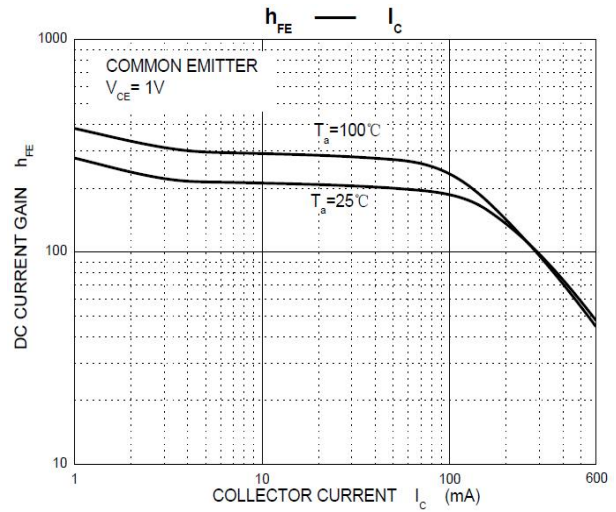
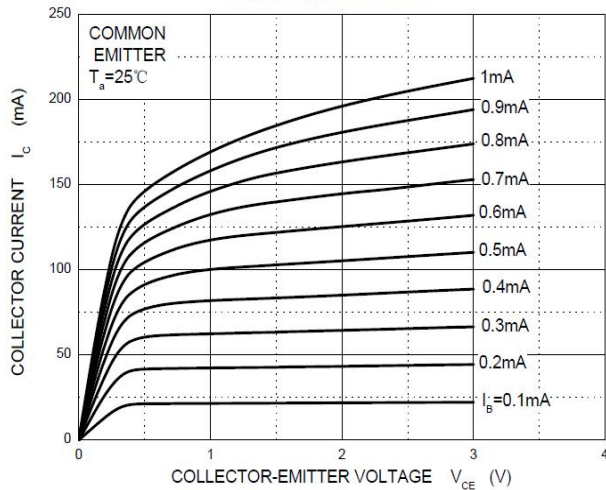
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	417	°C/W
T_J, T_{STG}	Operating and Storage Temperature Range	-55~+150	°C

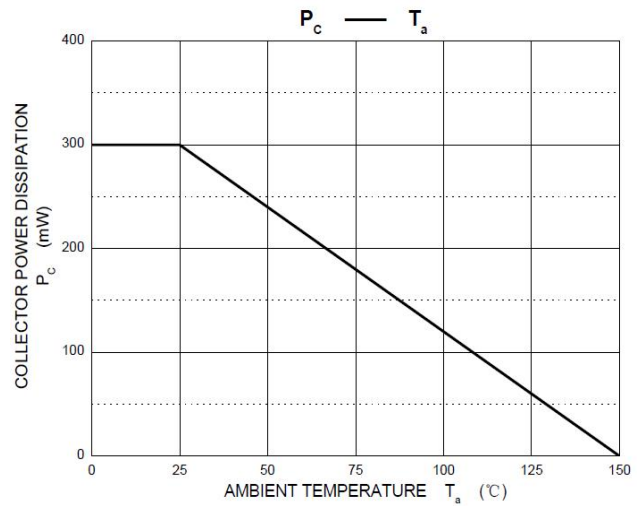
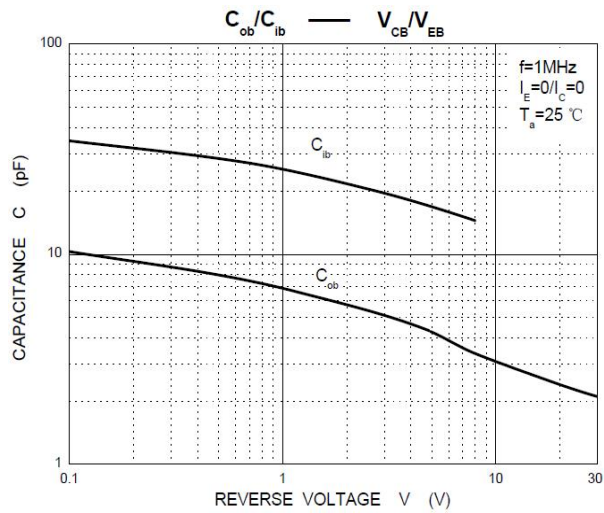
Electrical Characteristics (Ta=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=100\mu A, I_E=0$	60	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=1mA, I_B=0$	40	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=100\mu A, I_C=0$	6	--	--	V
I_{CBO}	Collector cut-off current	$V_{CE}=50V, I_E=0$	--	--	0.1	μA
I_{CEX}	Collector cut-off current	$V_{CB}=35V, V_{EB}=0.4V$	--	--	0.1	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=5V, I_C=0$	--	--	0.1	μA
h_{FE1}	DC current gain	$V_{CE}=1V, I_C=0.1mA$	20	--	--	
h_{FE2}		$V_{CE}=1V, I_C=1mA$	40	--	--	
h_{FE3}		$V_{CE}=1V, I_C=10mA$	80	--	--	
h_{FE4}		$V_{CE}=1V, I_C=150mA$	100	--	300	
h_{FE5}		$V_{CE}=2V, I_C=500mA$	40	--	--	
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C=150mA, I_B=15mA$	--	--	0.4	V
$V_{CE(sat)}$		$I_C=500mA, I_B=50mA$	--	--	0.75	V
$V_{BE(sat)}$	base-emitter voltage	$I_C=150mA, I_B=15mA$	--	--	0.95	V
$V_{BE(sat)}$	Base-emitter saturation voltage	$I_C=500mA, I_B=50mA$	--	--	1.2	V
f_T	Transition frequency	$V_{CE}=10V, I_C=20mA, f=100MHz$	250	--	--	MHz
t_d	Delay time	$V_{CC}=30V, V_{BE(off)}=-2V, I_C=150mA, I_{B1}=15mA$	--	--	15	ns
t_r	Rise time		--	--	20	ns
t_s	Storage time	$V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA$	--	--	225	ns
t_f	Fall time		--	--	60	ns

Typical Operating Characteristics

Static Characteristic

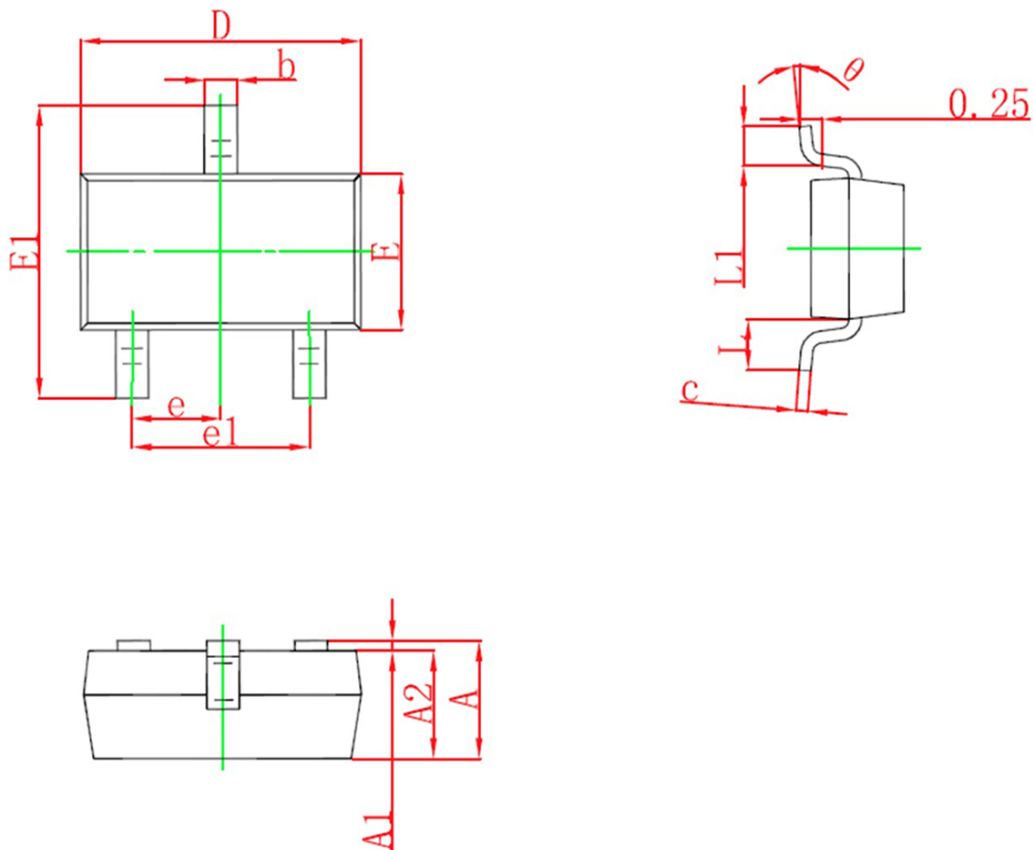




Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MMBT4401	SOT-23	2X	3,000	45,000	180,000	7"reel

SOT-23 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°