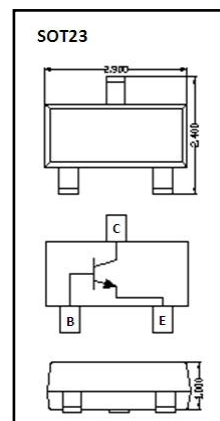


DATA SHEET

MMBT4401

- ◇ Capable of 300mWatts of Power Dissipation
- ◇ Operating and Storage Junction Temperatures: -55°C to 150°C
- ◇ Surface Mount SOT-23 Package
- ◇ RoHS compliant / Green EMC

Device Marking Code	
MMBT4401	2X



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

Symbol	Parameter	Value	Unit
V_{CB0}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EB0}	Emitter-Base Voltage	6	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	417	$^{\circ}\text{C}/\text{W}$
T_j	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	$-55 \sim +150$	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS @ 25°C Unless Otherwise Specified

Symbol	Parameter	Test Conditions	Min	Max	Units
V_{CEO}	Collector-Emitter Breakdown Voltage	$I_C=1.0\text{mA}$, $I_B=0$	40		V
V_{CB0}	Collector-Base Breakdown Voltage	$I_C=100\mu\text{A}$, $I_E=0$	60		V
V_{EB0}	Emitter-Base Breakdown Voltage	$I_E=100\mu\text{A}$, $I_C=0$	6.0		V
I_{CBO}	Collector Cutoff Current	$V_{CB}=50\text{V}$, $I_E=0$		100	nA
I_{CEX}	Collector Cutoff Current	$V_{CE}=35\text{V}$, $V_{BE}=0.4\text{V}$		100	nA

I_{EBO}	Emitter cut-off current	$V_{EB}=5V, I_C=0V$		100	nA
h_{FE}	DC Current Gain	$I_C=0.1mA, V_{CE}=1.0V$ $I_C=1.0mA, V_{CE}=1.0V$ $I_C=10mA, V_{CE}=1.0V$ $I_C=150mA, V_{CE}=1.0V$ $I_C=500mA, V_{CE}=2.0V$	20 40 80 100 40	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$		0.4 0.75	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$	0.75	0.95 1.2	V
f_T	Current Gain-Bandwidth Product	$I_C=20mA,$ $V_{CE}=10V, f=100MHz$	250		MHZ
C_{cb}	Collector-Base Capacitance	$V_{CB}=5.0V, I_E=0, f=1.0MHz$		6.5	PF
C_{eb}	Emitter-Base Capacitance	$V_{BE}=0.5V, I_C=0, f=1.0MHz$		30	PF

SWITCHING CHARACTERISTICS

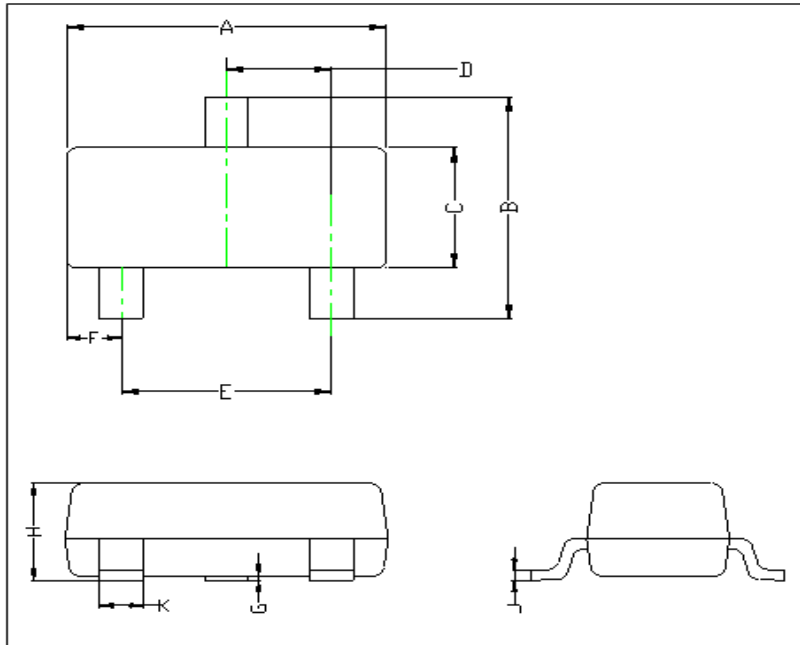
Symbol	Parameter	Test Conditions	Min	Max	Units
t_d	Delay Time	$V_{CC}=30V, V_{BE}=0.2V$ $I_C=150mA, I_{B1}=15mA$		15	ns
t_r	Rise Time			20	ns
t_s	Storage Time	$V_{CC}=30V, I_C=150mA$ $I_{B1}=I_{B2}=15mA$		225	ns
t_f	Fall Time			30	ns

ORDERING INFORMATION

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
MMBT4401	SOT23	Tape & Reel 3000pcs / 7" Reel	8mm	4mm	Conductive	

PACKAGE DIMENSIONS

Package Outline : SOT23



SOT23 Package Outline

Symbol	Dimensions in mm	
	Min.	Max.
A	2.800	3.040
B	2.100	2.640
C	1.200	1.400
D	0.890	1.030
E	1.780	2.050
F	0.450	0.600
G	0.013	0.100
H	0.900	1.110
J	0.090	0.180
K	0.370	0.510

Note:

1. Halogen free, EMC
2. Pb free solder
3. Lead thickness solder plating
4. Lead frame CAC-5
5. Other Tolerance ± 0.05
6. Dimensions are exclusive of Burrs Mold Flash and Tie Bar extrusions
7. Unit : mm

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