

TRANSISTOR(NPN)

FEATURES

Switching transistor

MARKING : MMBT4401=2X

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

Symbol	meter	Value	Units
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 -Continuous	600	m A
P_C	Collector Power dissipation	0.3	W
T_j	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	357	$^{\circ}\text{C}/\text{mW}$

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

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

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}$, $I_E=0$			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}$, $I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}$, $I_C=0$			V
Collector cut-off current	I_{CBO}	$V_{CB}=50\text{V}$, $I_E=0$		0.1	μA
Collector cut-off current	I_{CEO}	$V_{CE}=30\text{V}$, $I_B=0$		0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$		0.1	μA
DC current gain	h_{FE}	$V_{CE}=1\text{V}$, $I_C=150\text{mA}$		300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=150\text{mA}$, $I_B=15\text{mA}$		0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=150\text{mA}$, $I_B=15\text{mA}$		0.95	V
Transition frequency	f_T	$V_{CE}=10\text{V}$, $I_C=20\text{mA}$ $f=100\text{MHz}$	250		MHz

The above data are for reference only.

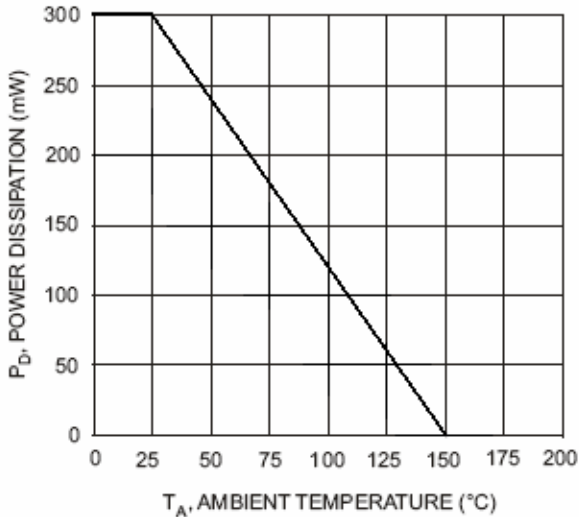


Fig. 1 Max Power Dissipation vs Ambient Temperature

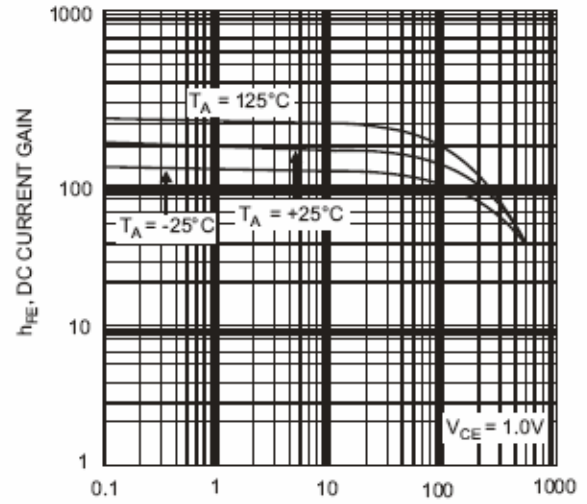


Fig. 2 Typical DC Current Gain vs Collector Current

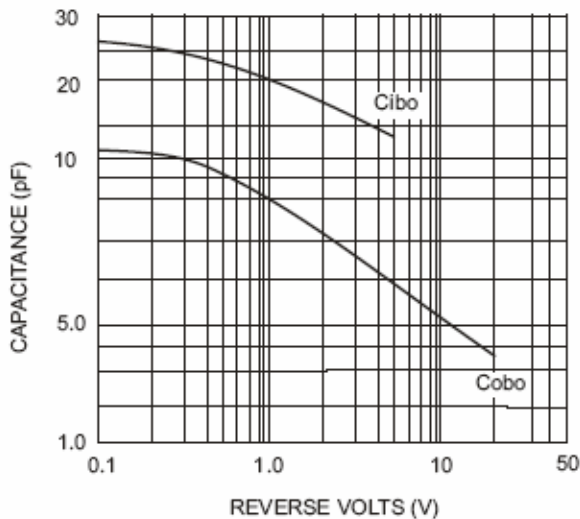


Fig. 3 Typical Capacitance

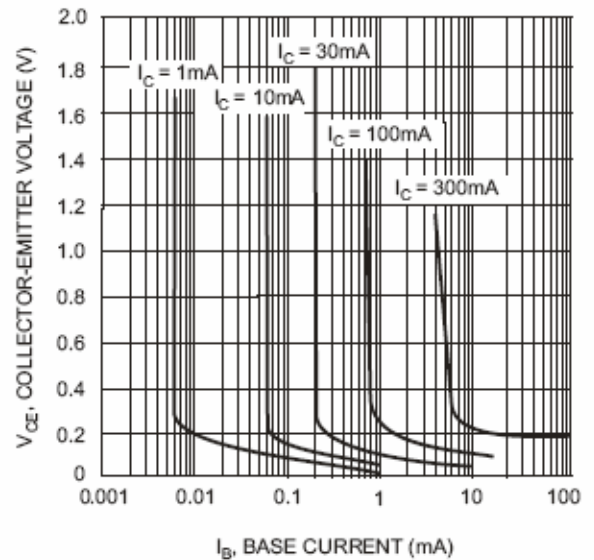


Fig. 4 Typical Collector Saturation Region

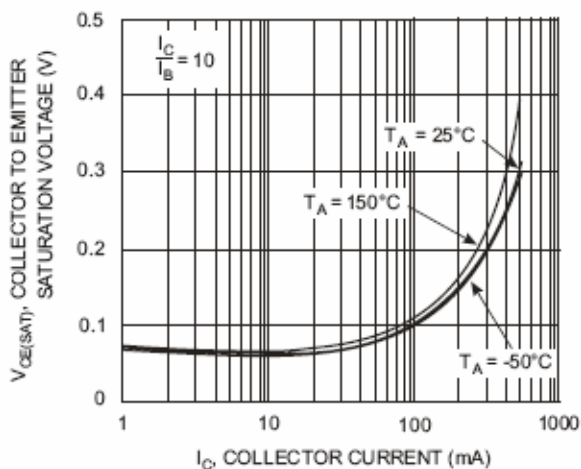


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

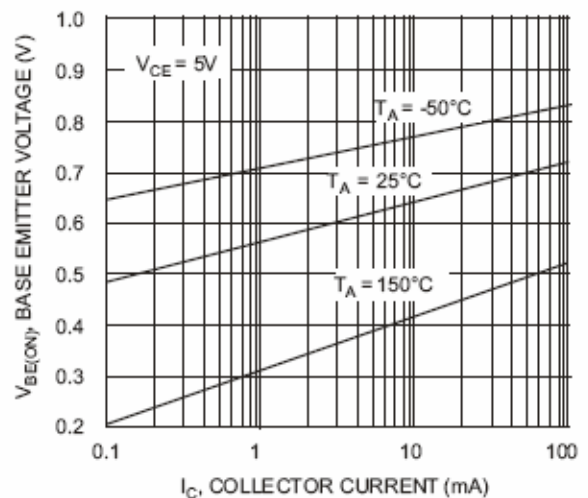
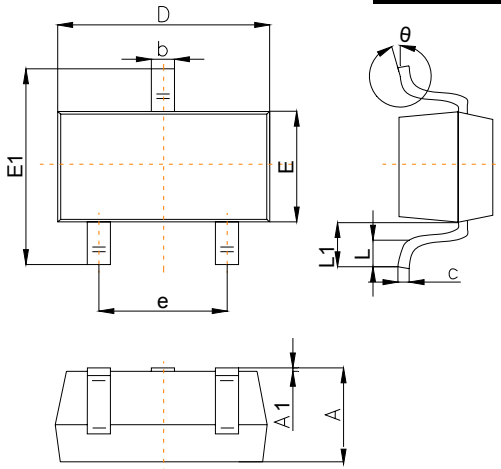


Fig. 6 Base Emitter Voltage vs. Collector Current

The curve above is for reference only.

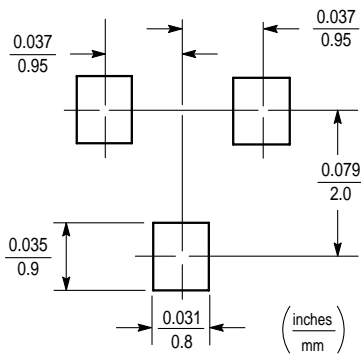
Outlitne Drawing

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.90		1.40
A1	0.00		0.10
b	0.30		0.50
c	0.08		0.20
D	2.80	2.90	3.10
E	1.20		1.60
E1	2.25		2.80
e	1.80	1.90	2.00
L	0.10		0.50
L1	0.4		0.55
θ	0°		10°

Suggested Pad Layout



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	330	3000	203×203×195	45000	438×438×220	180000