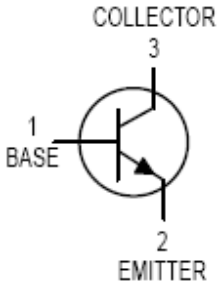
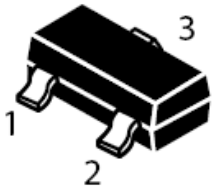
LITE-ON SEMICONDUCTORS

MMBT4401

NPN General Purpose Transistor





FEATURES

- For switching and amplifier applications.
- Complementary PNP Type Available (MMBT4403)

MECHANICAL DATA

- Case: SOT-23 Plastic
- Case material: “Green” molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead Free in RoHS 2002/95/EC Compliant

Maximum Ratings @ T_A = 25℃

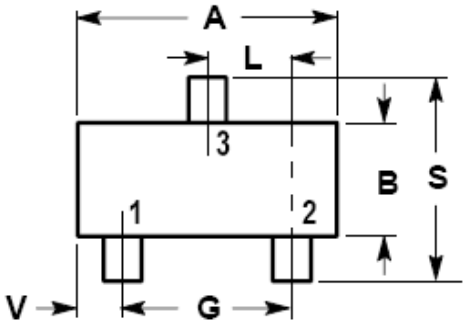
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current -Continuous	I_C	600	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance, Junction to Ambient	$R_{\Theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55~+150	℃

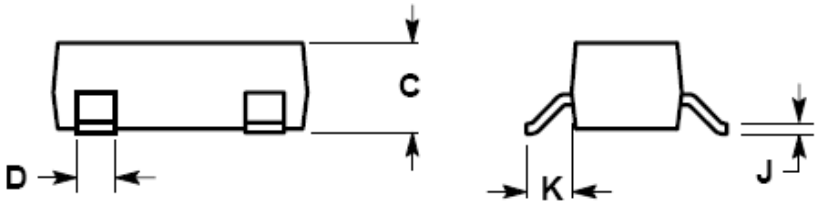
Electrical Characteristics @ T_A = 25℃ unless otherwise specified

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	I_C=100μA,I_E=0	V_{CBO}	60			V
Collector-emitter breakdown voltage	I_C=1mA,I_B=0	V_{CEO}	40			V
Emitter-base breakdown voltage	I_E=100μA,I_C=0	V_{EBO}	6			V
Collector-base cut-off current	V_{CB}=50V,I_E=0	I_{CBO}			0.1	uA
Collector-emitter cut-off current	V_{CB}=60V,V_{EB}=3V	I_{CEX}			12	nA
Emitter-base cut-off current	V_{EB}=5V,I_C=0	I_{EBO}			0.1	uA
DC current gain	V_{CE}=1V,I_C=150mA	h_{FE}	100		300	
Collector-emitter saturation voltage	I_C=150mA,I_B=15mA	V_{CE}(sat)			0.4	V
Base-emitter saturation voltage	I_C=150mA,I_B=15mA	V_{BE}(sat)			0.95	V
Transition frequency	V_{CE}=10V,I_C=20mA, f=200MHz	f_T	250			MHz

REV. 5, Jan-2013, KSNR12

SOT-23 Outline Dimension





Symbol	Dimension In Millimeters	
	Min	Max.
A	2.80	3.04
B	1.20	1.40
C	0.89	1.11
D	0.37	0.50
G	1.78	2.04
J	0.085	0.177
K	0.35	0.69
L	0.89	1.02
S	2.10	2.64
V	0.45	0.60

Device Marking:

Device P/N	Marking code
MMBT4401	2X

Electrical characteristic curves

Fig.1 Power Dissipation vs. Ambient Temperature

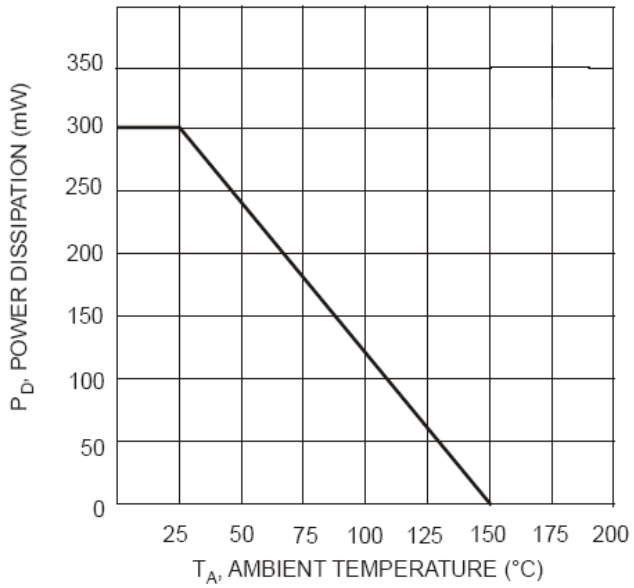


Fig.2 DC Current Gain vs. Collector Current

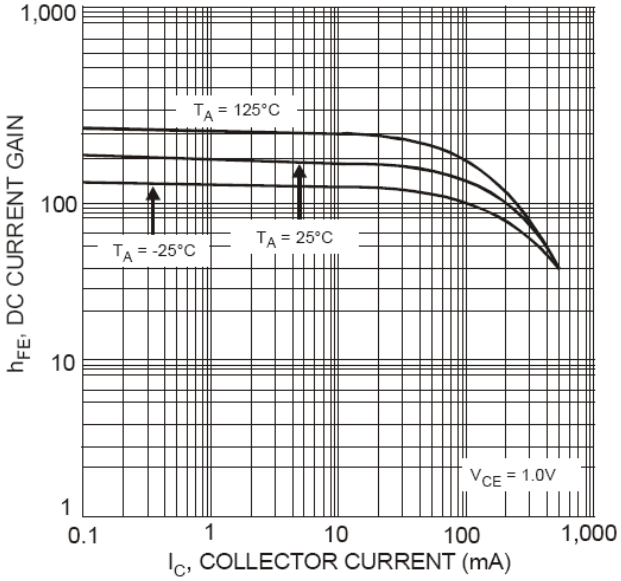


Fig.3 Typical Capacitance

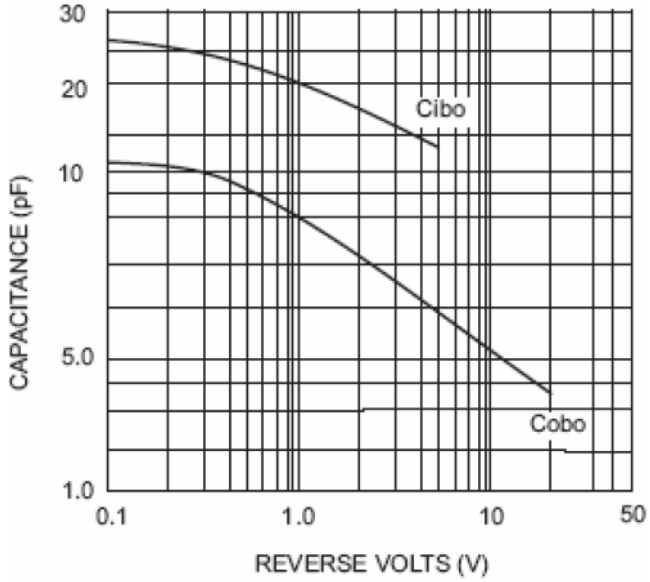


Fig.4 Collector Saturation Region

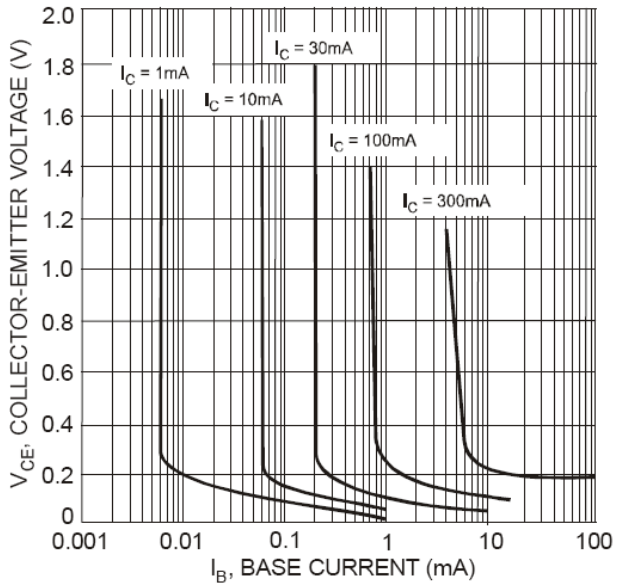


Fig.5 Collector Emitter Saturation Voltage vs. Collector Current

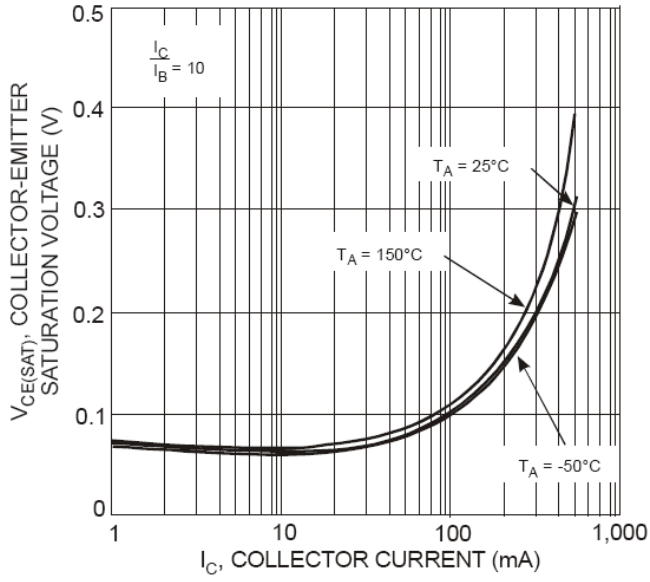
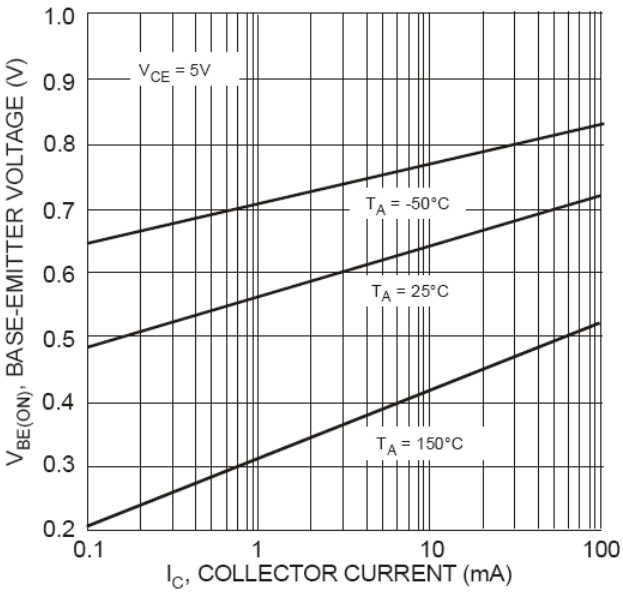


Fig.6 Base-Emitter Voltage vs. Collector Current



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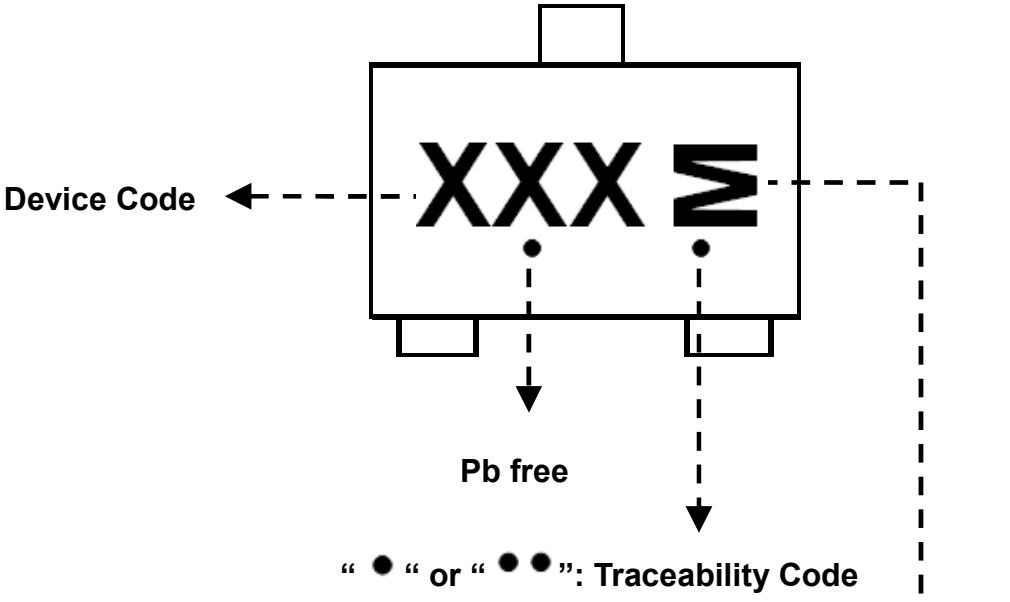
New Marking Rule Notification

Range: In order to have well management in process control, the new marking rule is applied to small signal device including Switching Diode, Transistor and Schottky Diode.

Package: SOT-23 / SOT-323 / SOT-523



Odd Year	Even Year
1	E
2	F
3	H
4	J
5	K
6	L
7	N
8	P
9	U
T	X
V	Y
C	Z