

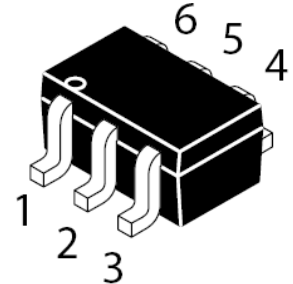
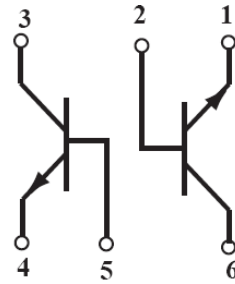
NPN/NPN Multi-Chip Transistor

FEATURES

- Ideal for Low Power Amplification and Switching

MECHANICAL DATA

- Case: SOT-363 Plastic
- Case material: "Green" molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead Free in RoHS 2002/95/EC Compliant



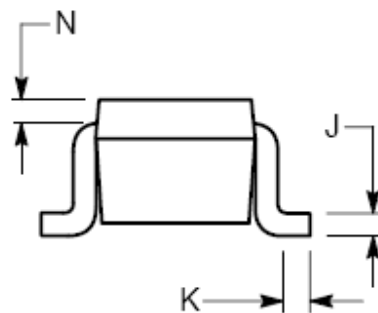
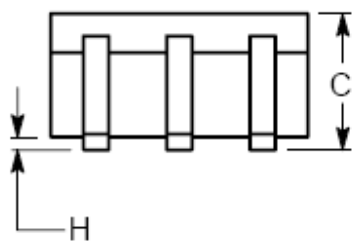
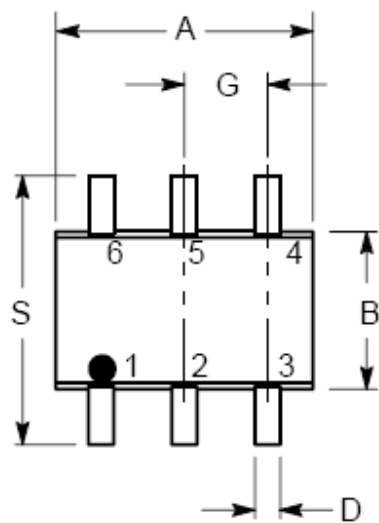
Maximum Ratings @ $T_A = 25^\circ\text{C}$

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	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55~+150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$I_C=100\mu\text{A}, I_E=0$	V_{CBO}	60			V
Collector-emitter breakdown voltage	$I_C=1\text{mA}, I_B=0$	V_{CEO}	40			V
Emitter-base breakdown voltage	$I_E=100\mu\text{A}, I_C=0$	V_{EBO}	6			V
Collector-base cut-off current	$V_{CB}=50\text{V}, I_E=0$	I_{CBO}			0.1	μA
Collector-emitter cut-off current	$V_{CE}=35\text{V}, I_B=0$	I_{CEO}			0.5	μA
Emitter-base cut-off current	$V_{EB}=5\text{V}, I_C=0$	I_{EBO}			0.1	μA
DC current gain	$V_{CE}=1\text{V}, I_C=0.1\text{mA}$	h_{FE1}	20			
	$V_{CE}=1\text{V}, I_C=1\text{mA}$	h_{FE2}	40			
	$V_{CE}=1\text{V}, I_C=10\text{mA}$	h_{FE3}	80			
	$V_{CE}=1\text{V}, I_C=150\text{mA}$	h_{FE4}	100		300	
	$V_{CE}=2\text{V}, I_C=500\text{mA}$	h_{FE5}	40			
Collector-emitter saturation voltage	$I_C=150\text{mA}, I_B=15\text{mA}$	$V_{CE(sat)1}$			0.4	V
	$I_C=500\text{mA}, I_B=50\text{mA}$	$V_{CE(sat)2}$			0.75	V
Base-emitter saturation voltage	$I_C=150\text{mA}, I_B=15\text{mA}$	$V_{BE(sat)1}$	0.75		0.95	V
	$I_C=500\text{mA}, I_B=50\text{mA}$	$V_{BE(sat)2}$			1.2	V
Transition frequency	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	f_T	250			MHz
Collector output capacitance	$V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$	C_{ob}			6.5	pF
Delay time	$V_{CC}=30\text{V}, V_{BE}=2\text{V}$	T_d			15	nS
Rise time	$I_C=150\text{mA}, I_{B1}=15\text{mA}$	T_r			20	nS
Storage time	$V_{CC}=30\text{V}, I_C=150\text{mA}$	T_s			225	nS
Fall time	$I_{B1}=-I_{B2}=15\text{mA}$	T_f			30	nS

SOT-363 Outline Dimension



Symbol	Dimension In Millimeters	
	Min	Max.
A	1.89	2.20
B	1.15	1.35
C	0.80	1.10
D	0.10	0.30
G	0.65 BSC	
H	---	0.10
J	0.10	0.25
K	0.10	0.30
N	0.20 REF	
S	2.00	2.20

Device Marking :

Device P/N	Marking code
MMDT4401	2X

Electrical characteristic curves

Fig.1 Power Dissipation vs. Ambient Temperature

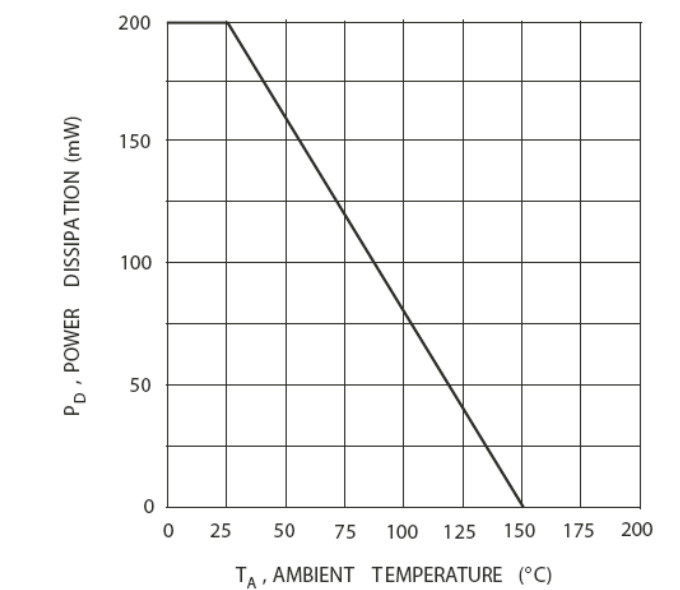


Fig.3 Typical Capacitance

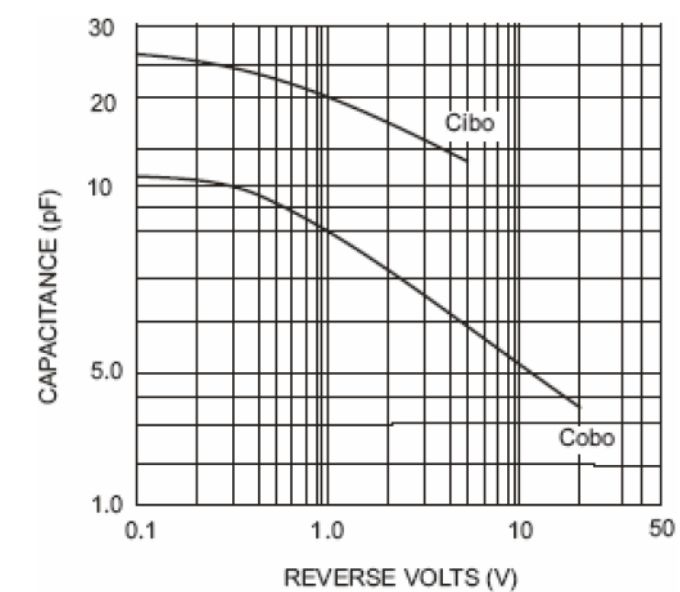


Fig.5 Collector Emitter Saturation Voltage vs. Collector Current

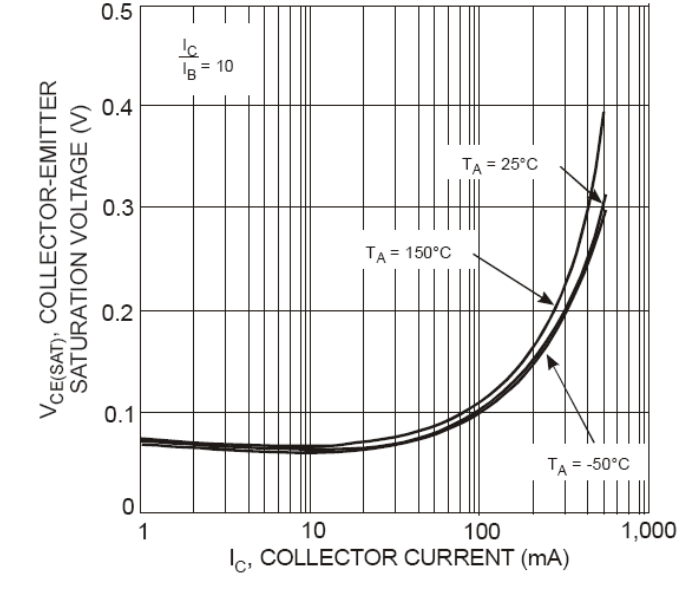


Fig.2 DC Current Gain vs. Collector Current

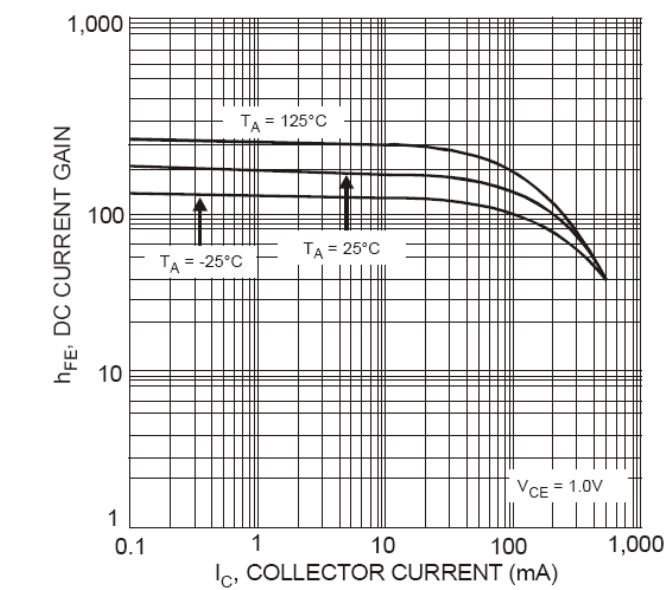


Fig.4 Collector Saturation Region

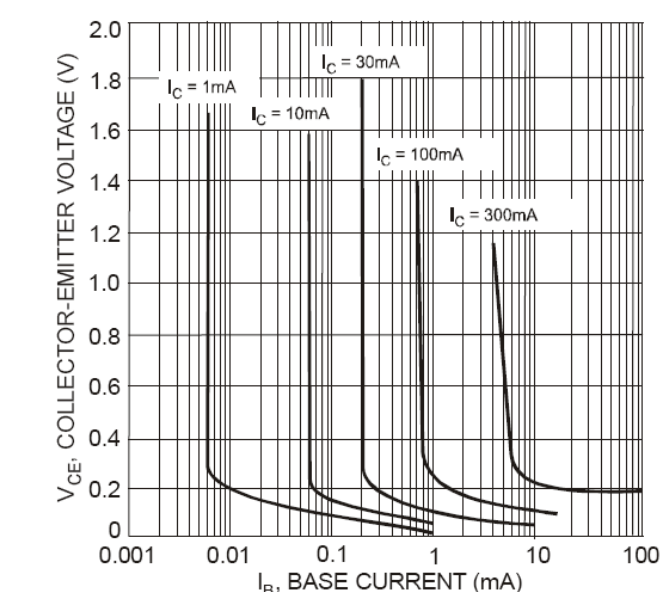


Fig.6 Base-Emitter Voltage vs. Collector Current

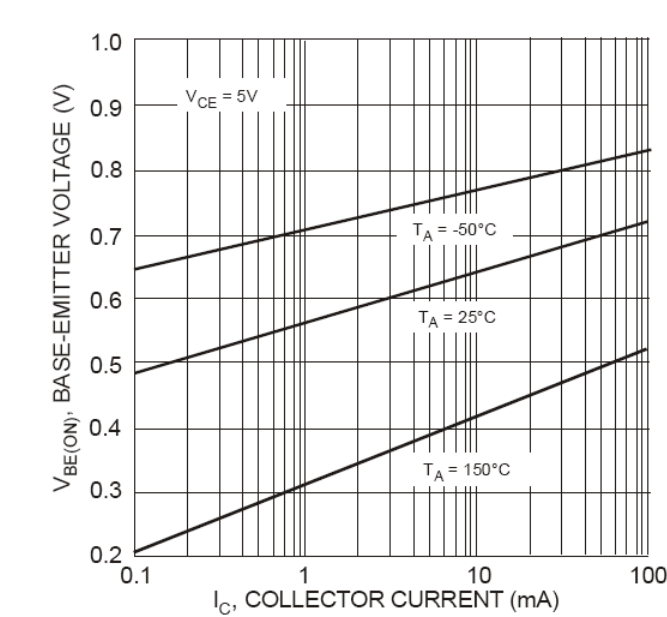
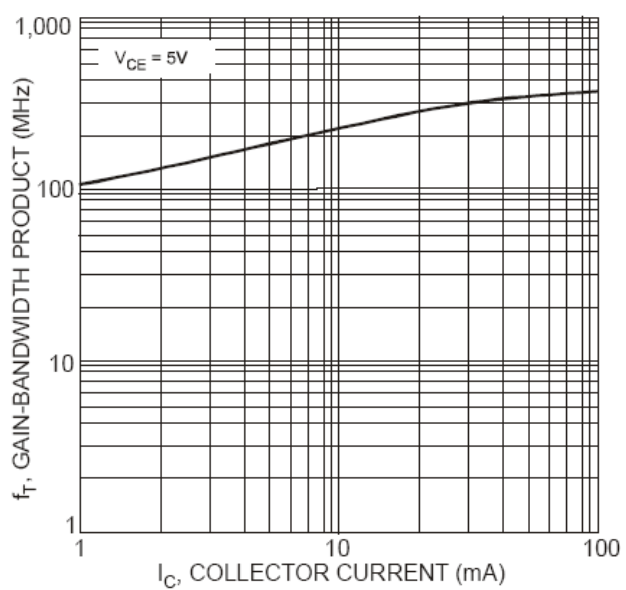


Fig.7 Gain-Bandwidth Product vs. Collector Current



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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-363

