

Plastic-Encapsulate Transistors

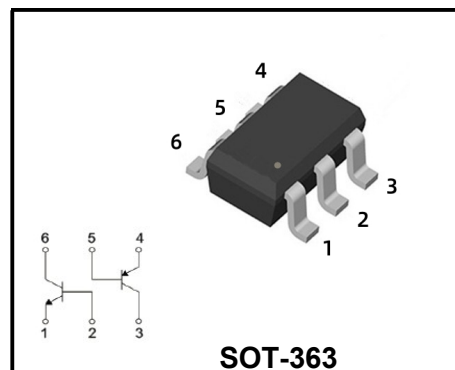
DUAL TRANSISTOR(NPN+PNP)

FEATURES

- ◆ Epitaxial Planar Die Construction
- ◆ Ideal for low Power Amplification and Switching
- ◆ One 5551(NPN), one 5401(PNP)

Mechanical Data

- ◆ Case: SOT-363
- ◆ Epoxy UL: 94V-0
- ◆ Mounting Position: Any



SOT-363

Marking Code

MMBT5451DW

KNM

Maximum Ratings TR1(NPN)5551 (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55~+150	°C
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	625	°C/W

Electrical Characteristics of TR1(NPN)5551 (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Collector-base breakdown voltage	$I_C=100\mu A, I_E=0$	$V_{(BR)CBO}$	180			V
Collector-emitter breakdown voltage	$I_C=1mA, I_B=0$	$V_{(BR)CEO}$	160			V
Emitter-base breakdown voltage	$I_E=10\mu A, I_C=0$	$V_{(BR)EBO}$	6			V
Collector cut-off current	$V_{CB}=120V, I_E=0$	I_{CBO}			50	nA
Emitter cut-off current	$V_{EB}=4V, I_C=0$	I_{EBO}			50	nA
DC current gain	$V_{CE}=5V, I_C=1mA$	h_{FE1}	80			
	$V_{CE}=5V, I_C=10mA$	h_{FE2}	100		300	
	$V_{CE}=5V, I_C=50mA$	h_{FE3}	30			
Collector-emitter saturation voltage	$I_C=10mA, I_B=1mA$	$V_{CE(sat)}$			0.15	V
	$I_C=50mA, I_B=5mA$				0.20	V
Base-emitter saturation voltage	$I_C=10mA, I_B=1mA$	$V_{BE(sat)}$			1.00	V
	$I_C=50mA, I_B=5mA$				1.00	V
Transition frequency	$V_{CE}=10V, I_C=10mA, f=100MHz$	f_T	100		300	MHz
Collector output capacitance	$V_{CB}=10V, I_E=0, f=1MHz$	C_{ob}			6.0	PF
Noise figure	$V_{CE}=5V, I_C=0.2mA, f=1kHz, R_g=1K\Omega, \Delta f=200MHz$	NF			8.0	dB

*Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2.0\%$

Maximum Ratings TR2(PNP)5401 (Ratings at 25°C ambient temperature unless otherwise specified.)

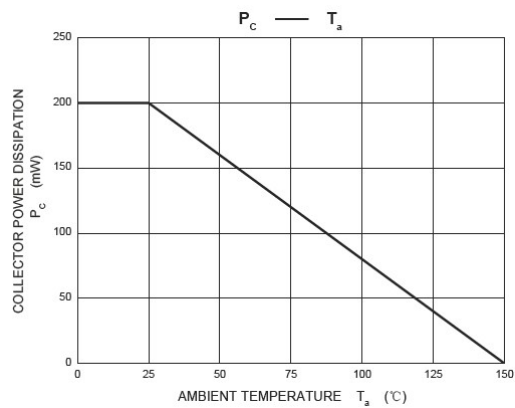
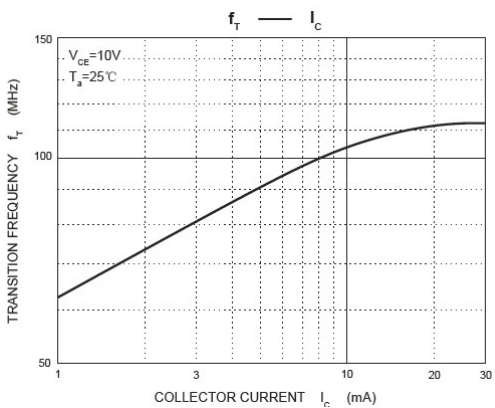
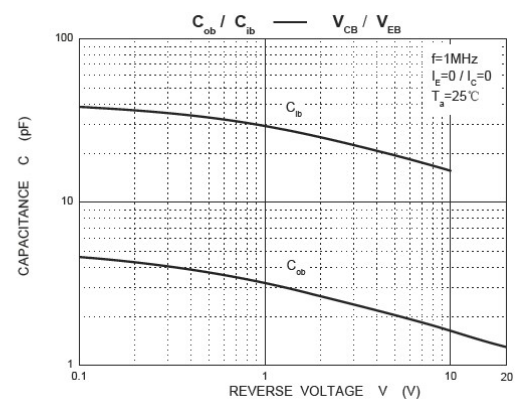
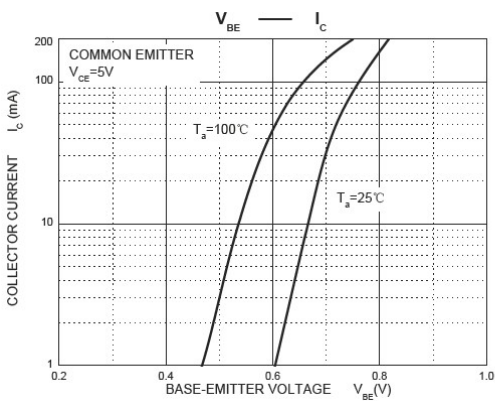
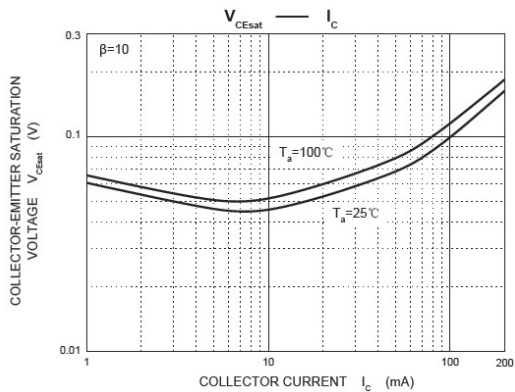
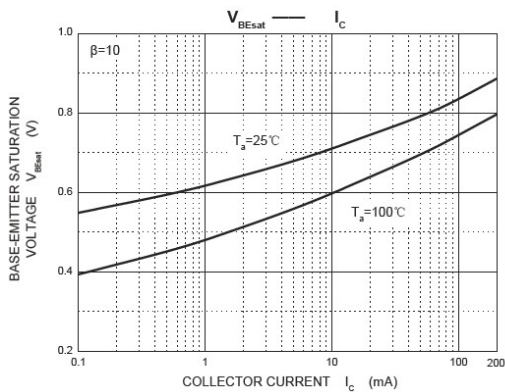
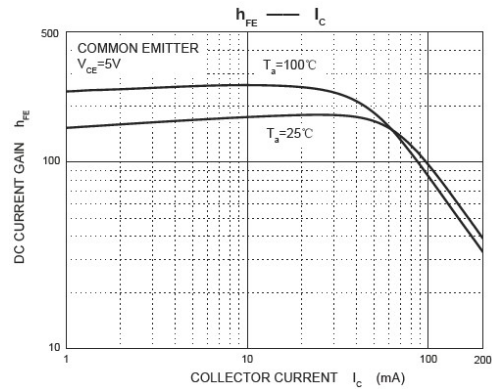
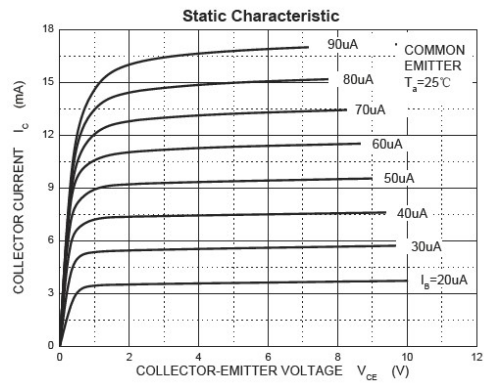
Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter -Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_c	-200	mA
Collector Power Dissipation	P_c	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55-+150	°C
Thermal resistance From junction to ambient	$R_{\theta JA}$	625	°C/W

Electrical Characteristics of TR2 (PNP)5401 (Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Test Condition	Symbols	Limits			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	$I_C=-100\mu A, I_E=0$	$V_{(BR)CBO}$	-160			V
Collector-emitter breakdown voltage	$I_C=-1mA, I_B=0$	$V_{(BR)CEO}$	-150			V
Emitter-base breakdown voltage	$I_E=-10\mu A, I_C=0$	$V_{(BR)EBO}$	-5			V
Collector cut-off current	$V_{CB}=-120V, I_E=0$	I_{CBO}			-50	nA
Emitter cut-off current	$V_{EB}=-3V, I_C=0$	I_{EBO}			-50	nA
DC current gain	$V_{CE}=-5V, I_C=-1mA$	h_{FE1}	50			
	$V_{CE}=-5V, I_C=-10mA$	h_{FE2}	100		300	
	$V_{CE}=-5V, I_C=-50mA$	h_{FE3}	50			
Collector-emitter saturation voltage	$I_C=-10mA, I_B=-1mA$	$V_{CE(sat)}$			-0.20	V
	$I_C=-50mA, I_B=-5mA$				-0.50	V
Base-emitter saturation voltage	$I_C=-10mA, I_B=-1mA$	$V_{BE(sat)}$			-1.00	V
	$I_C=-50mA, I_B=-5mA$				-1.00	V
Transition frequency	$V_{CE}=-10V, I_C=-10mA, f=100MHz$	f_T	100		300	MHz
Collector output capacitance	$V_{CB}=-10V, I_E=0, f=1MHz$	C_{ob}			6.0	pF
Noise figure	$V_{CE}=-5V, I_C=-0.2mA, f=1kHz, R_g=1K\Omega, \Delta f=200MHz$	NF			8.0	dB

*Pulse test: pulse width≤300us,duty cycle≤2.0%

Typical Characteristics



Ordering information

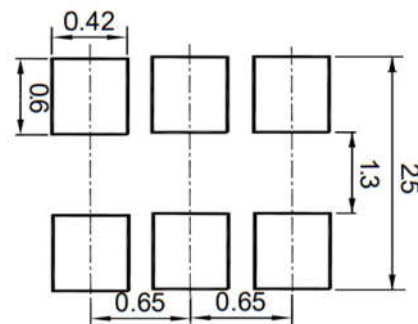
Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

Package Dimensions

SOT-363

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

The recommended mounting pad size



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