MMBT5551 Small Signal NPN Transistor

Rev.1.3

FEATURE:

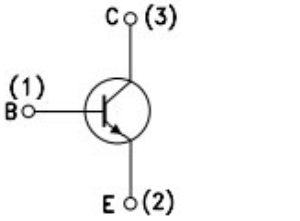
- Complementary to MMBT5401.
- Power dissipation of 300mW.
- High stability and high reliability.

MECHANICAL DATA:

- SOT-23 small outline plastic package
- Epoxy UL: 94V-0
- Mounting position: Any
- Marking:G1

SOT-23

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS(T_A=25℃,unless otherwise specified.)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to 150	℃
Max. operating junction temperature	T_j	150	℃
Collector-emitter voltage (I_B=0)	V_{CEO}	160	V
Collector-base voltage (I_E=0)	V_{CBO}	180	V
Emitter-base voltage (I_C=0)	V_{EBO}	6	V
Collector current DC	I_C	600	mA
Collector power dissipation	P_C	300	mW

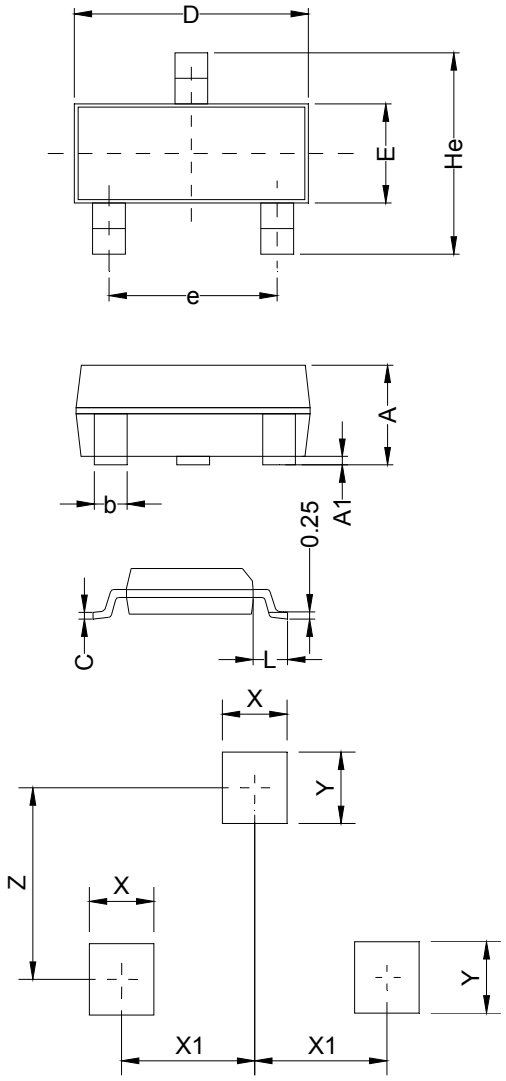
ELECTRICAL CHARACTERISTICS (T_A=25℃,unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$V_{(BR)CBO}$	I_C=100μA, I_E=0	180	-	-	V
$V_{(BR)CEO}$	I_C=1mA, I_B=0	160	-	-	V
$V_{(BR)EBO}$	I_E=10μA, I_C=0	6	-	-	V
I_{CBO}	V_{CB}=120V, I_E=0	-	-	50	nA
I_{EBO}	V_{EB}=4V, I_C=0	-	-	50	nA
h_{FE}*	I_C=1mA,V_{CE}=5V I_C=10mA,V_{CE}=5V I_C=50mA,V_{CE}=5V	80 100 30	- 300 -	-	
$V_{CE(sat)}$ *	I_C=10mA,I_B=1mA I_C=50mA,I_B=5mA	-	-	0.15 0.20	V
$V_{BE(sat)}$ *	I_C=10mA,I_B=1mA I_C=50mA,I_B=5mA	-	-	1.0 1.0	V
I_{CES}	V_{CB}=10V	-	-	50	nA
	V_{CB}=75V	-	-	100	
f_T	V_{CE}=10V, I_C=10mA,f=100MHz	100	-	300	MHz
* Pulsed: pulse duration = 300μs, duty cycle ≤2%					

THERMAL RESISTANCES

Symbol	Parameter	Value (Max.)	Unit
$R_{th(J-A)}$	junction to ambient	416	℃/W

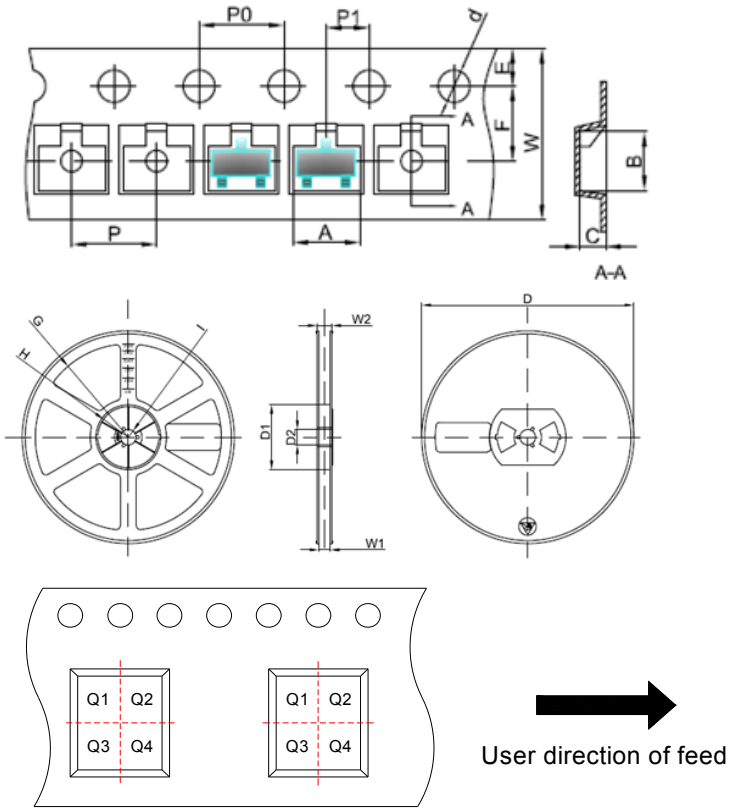
PACKAGE MECHANICAL DATA



Land Pattern

Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.063	1.15	0.035	0.042	0.045
A1	0.00	0.075	0.14	0.000	0.003	0.006
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.07	0.10	0.15	0.003	0.004	0.006
D	2.80	2.90	3.00	0.110	0.114	0.118
e	1.80	1.90	2.00	0.071	0.075	0.079
E	1.20	1.30	1.40	0.047	0.051	0.055
L	0.55REF			0.022REF		
He	2.25	2.40	2.55	0.089	0.094	0.100
X	0.80			0.031		
X1	0.95			0.037		
Y	0.80			0.031		
Z	2.02			0.080		

TAPE AND REEL SPECIFICATION-SOT-23



Pin 1 quadrant: Q3

Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

Symbol	Millimeters	Inches
	Typ.	Typ.
A	3.15	0.124
B	2.77	0.109
C	1.22	0.048
d	Φ1.50	Φ0.059
E	1.75	0.069
F	3.50	0.138
P0	4.00	0.157
P	4.00	0.157
P1	2.00	0.079
W	8.00	0.315
D	Φ178	Φ7.008
D1	54.40	2.142
D2	13.00	0.512
G	R78.00	R3.071
H	R25.60	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	12.30	0.484

ORDERING INFORMATION

Part Number	Package	Reel Size	Quantity Per Reel
MMBT5551	SOT-23	7 Inch	3,000 pcs

FIG.1: Static characteristic

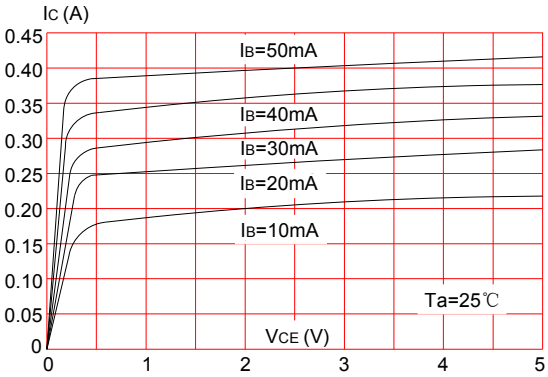


FIG.2: Collector current vs. DC current gain

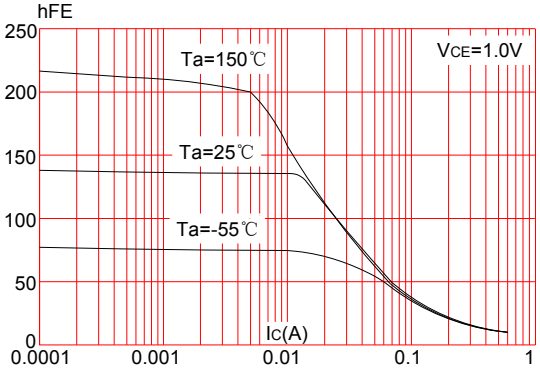


FIG.3: Base current vs. collector emitter saturation voltage

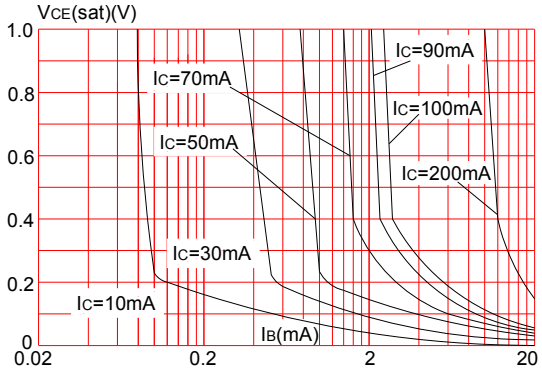


FIG.4: Collector current vs. base emitter voltage(on)

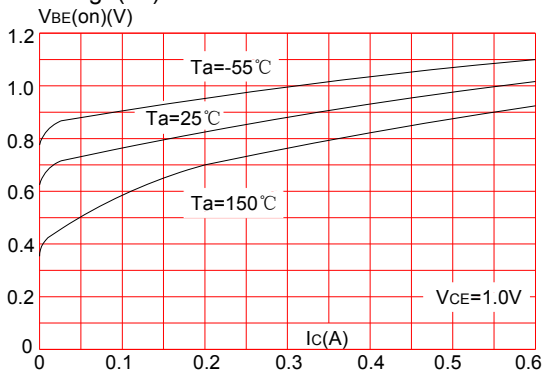


FIG.5: Collector current vs. base emitter saturation voltage

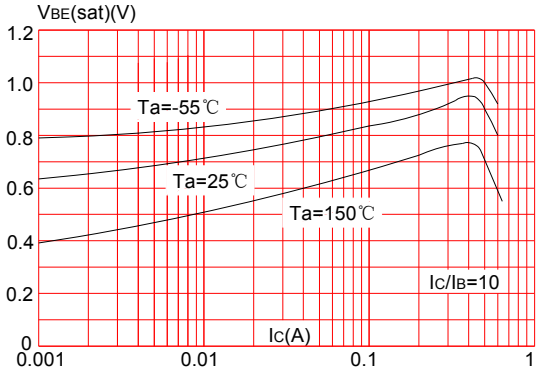


FIG.6: Collector current vs. collector emitter saturation voltage(IC/IB=5)

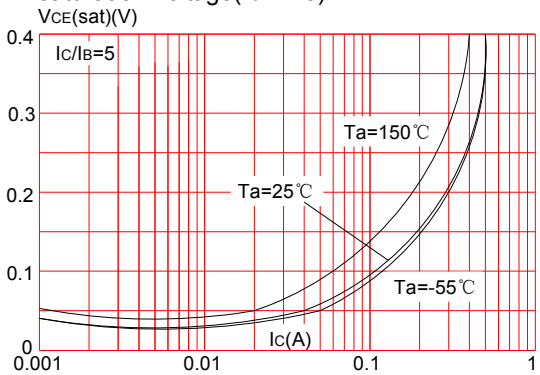


FIG.7: Collector current vs. collector emitter saturation voltage(IC/IB=10)

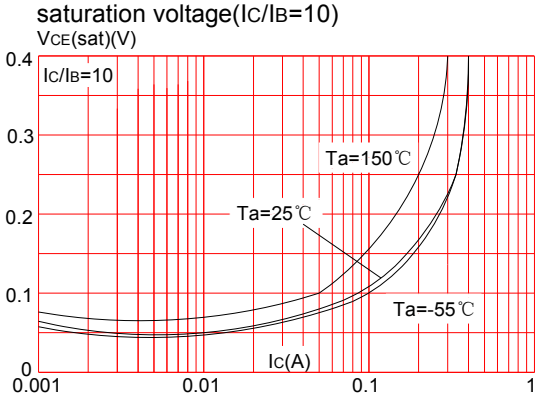


FIG.8: Capacitance characteristic

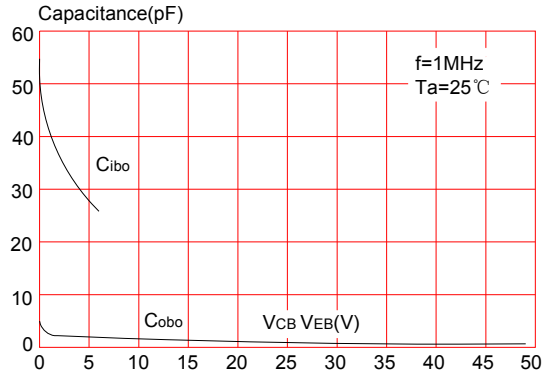


FIG.9: Power derating curve