



# MMBT5551

## NPN HIGH VOLTAGE TRANSISTOR

**VOLTAGE** 160 Volts **POWER** 250 mWatts

### FEATURES

- NPN Silicon, planar design
- Collector-emitter voltage  $V_{CE} = 160V$
- Collector current  $I_C = 600mA$
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: SOT-23, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams
- Marking: M51

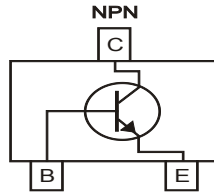
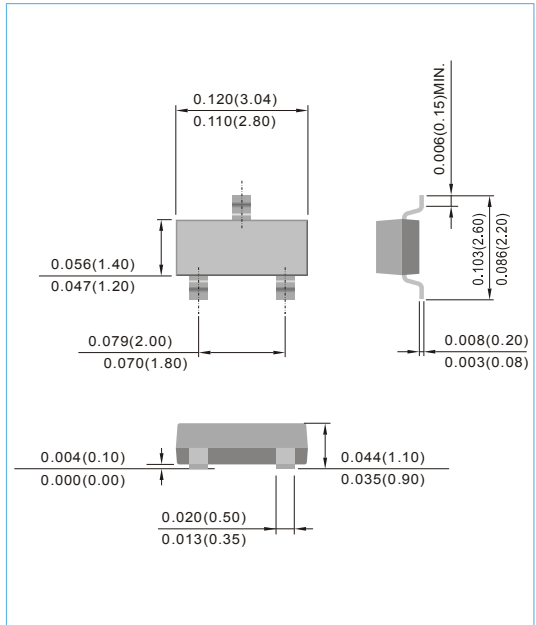


Fig.34(TOP VIEW)

### SOT-23

Unit : inch(mm)



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

PARAMETER	SYMBOL	VALUE	UNITS
Collector - Emitter Voltage	$V_{CEO}$	160	V
Collector - Base Voltage	$V_{CBO}$	180	V
Emitter - Base Voltage	$V_{EBO}$	6	V
Collector Current Continuous	$I_C$	600	mA

### THERMAL CHARACTERISTICS ( $T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNITS
Max Power Dissipation (Note 1)	$P_D$	250	mW
Thermal Resistance ,Junction to Ambient (Note 1)	$R_{\theta JA}$	325	$^{\circ}C/W$
Operating Junction Temperature and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}C$

#### NOTES:

1. Mounted on FR-4 PCB, single sided copper, mini pad.



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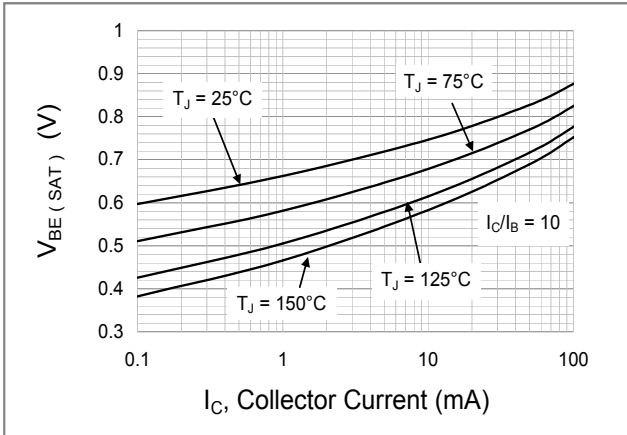
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Collector - Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, I <sub>B</sub> =0A	160	-	-	V
Collector - Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0A	180	-	-	V
Emitter - Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0A	6	-	-	V
Collector - Base Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> =120V, I <sub>E</sub> =0A	-	-	50	nA
Emitter - Base Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0A	-	-	50	nA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1mA V <sub>CE</sub> =5V, I <sub>C</sub> =10mA V <sub>CE</sub> =5V, I <sub>C</sub> =50mA	80 80 30	- - -	- 250 -	-
Collector - Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA I <sub>C</sub> =50mA, I <sub>B</sub> =5mA	- -	- -	150 200	mV
Base - Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA I <sub>C</sub> =50mA, I <sub>B</sub> =5mA	- -	- -	1 1	V
Collector-Base Capacitance	C <sub>CBO</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz	-	-	6	pF
Emitter-Base Capacitance	C <sub>EBO</sub>	V <sub>EB</sub> =500mV, I <sub>C</sub> =0A, f=1MHz	-	-	30	pF
Transition frequency	F <sub>T</sub>	I <sub>C</sub> =10mA, V <sub>CE</sub> =10V, f=100MHz	100	-	300	MHz

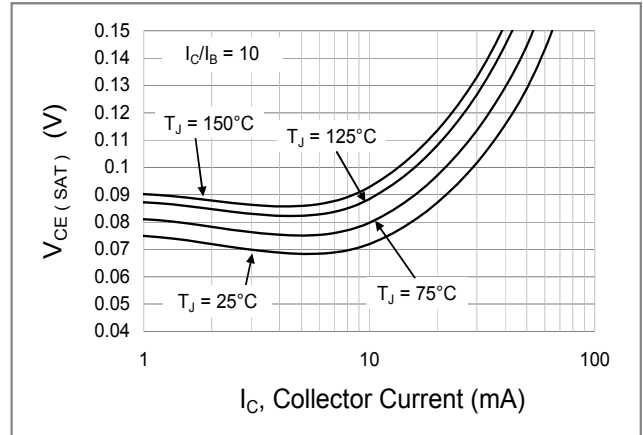


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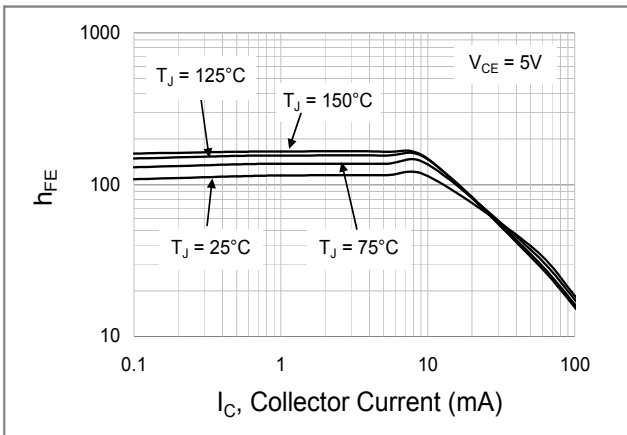
## RATING AND CHARACTERISTIC CURVES



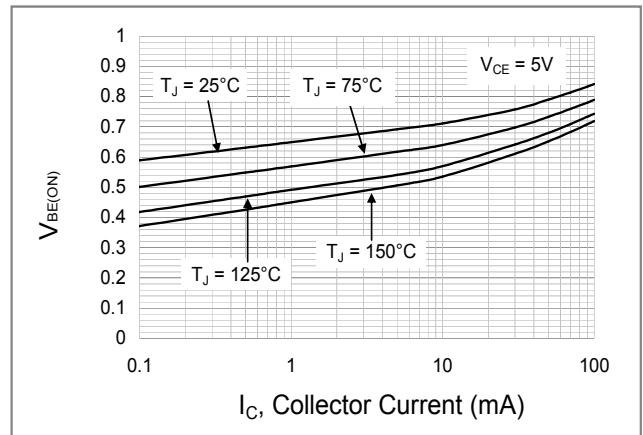
**Fig.1 Base-Emitter Saturation Voltage**



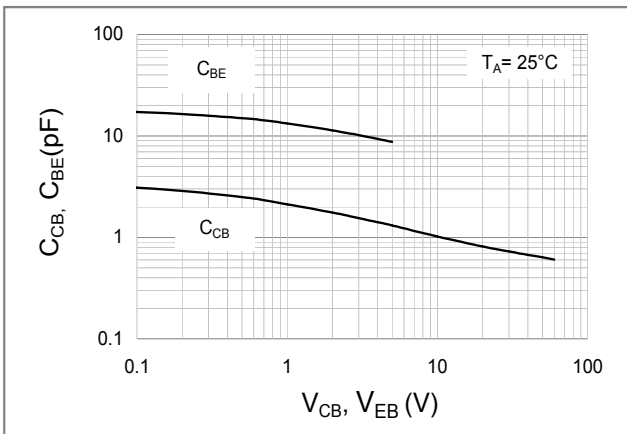
**Fig.2 Collector-Emitter Saturation Voltage**



**Fig.3 Typical DC Current Gain**



**Fig.4 Base-Emitter Voltage vs. Collector Current**

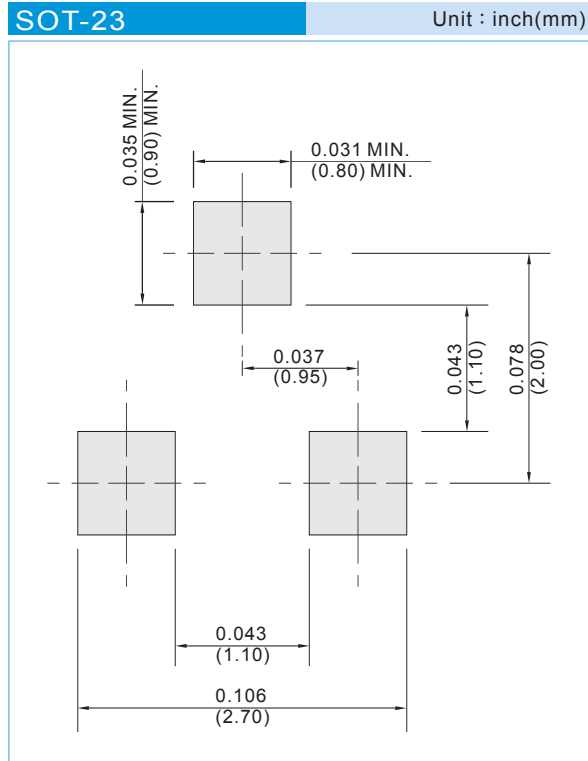


**Fig.5 Typical Capacitance**



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## MOUNTING PAD LAYOUT



## ORDER INFORMATION

- Packing information
  - T/R - 12K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel



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## Part No\_packing code\_Version

MMBT5551\_R1\_00001

MMBT5551\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



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