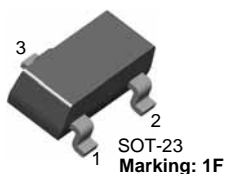


# MMBT5550

## NPN General Purpose Amplifier

- This device is designed for general purpose high voltage amplifiers and gas discharge display drivers.



1. Base 2. Emitter 3. Collector

### Absolute Maximum Ratings \* $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	140	V
$V_{CBO}$	Collector-Base Voltage	160	V
$V_{EBO}$	Emitter-Base Voltage	6.0	V
$I_C$	Collector current - Continuous	600	mA
$T_J, T_{stg}$	Junction and Storage Temperature	-55 ~ +150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 1.0\text{mA}, I_B = 0$	140		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}, I_E = 0$	160		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{mA}, I_C = 0$	6.0		V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 100\text{V}, I_E = 0$ $V_{CB} = 100\text{V}, I_E = 0, T_a = 100^\circ\text{C}$		100 100	nA $\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 4.0\text{V}, I_C = 0$		50	nA
<b>On Characteristics</b>					
$h_{FE}$	DC Current Gain	$I_C = 1.0\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 10\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 50\text{mA}, V_{CE} = 5.0\text{V}$	60 60 20	250	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 50\text{mA}, I_B = 5.0\text{mA}$		0.15 0.25	V V
$V_{BE(sat)}$	Base-Emitter On Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 50\text{mA}, I_B = 5.0\text{mA}$		1.0 1.2	V V

**Electrical Characteristics**  $T_a = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Small Signal Characteristics</b>					
$f_T$	Current Gain Bandwidth Product	$I_C = 10\text{mA}$ , $V_{CE} = 10\text{V}$ , $f = 100\text{MHz}$	50		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 1.0\text{MHz}$		6.0	pF
$C_{ibo}$	Input Capacitance	$V_{BE} = 0.5\text{V}$ , $I_C = 0$ , $f = 1.0\text{MHz}$		30	pF

**Thermal Characteristics**  $T_a = 25^\circ\text{C}$  unless otherwise noted

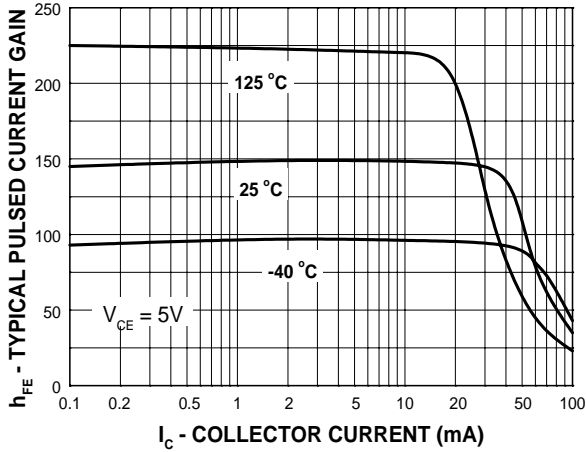
Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	350 2.8	mW mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C/W}$

\* Device mounted on FR-4 PCB  $1.6'' \times 1.6'' \times 0.06''$ **Package Marking and Ordering Information**

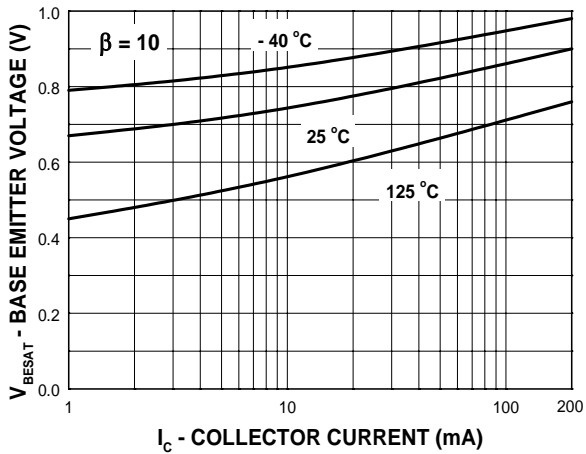
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
1F	MMBT5550	SOT-23	7"	--	3,000

## Typical Performance Characteristics

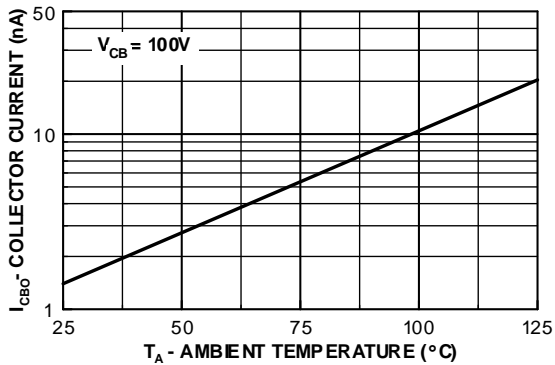
**Figure 1. Typical Pulsed Current Gain vs Collector Current**



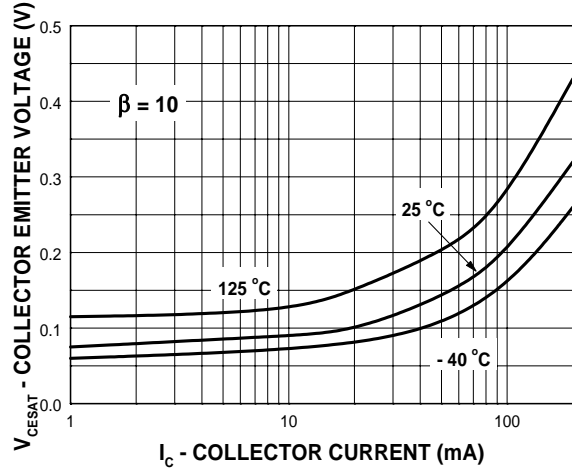
**Figure 3. Base-Emitter Saturation Voltage vs Collector Current**



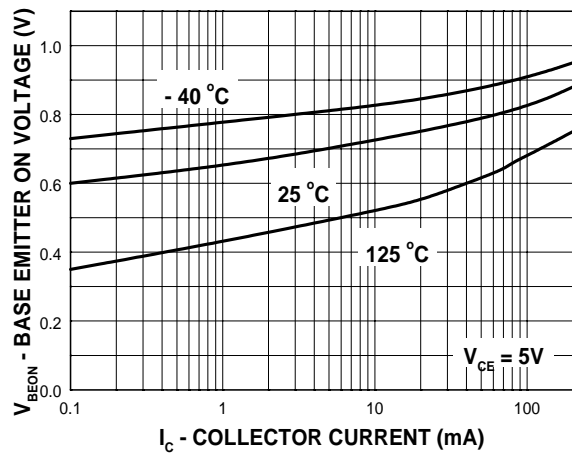
**Figure 5. Collector Cutoff Current vs Ambient Temperature**



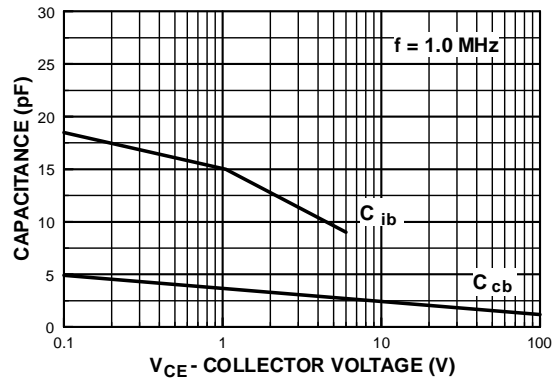
**Figure 2. Collector-Emitter Saturation Voltage vs Collector Current**



**Figure 4. Base-Emitter On Voltage vs Collector Current**

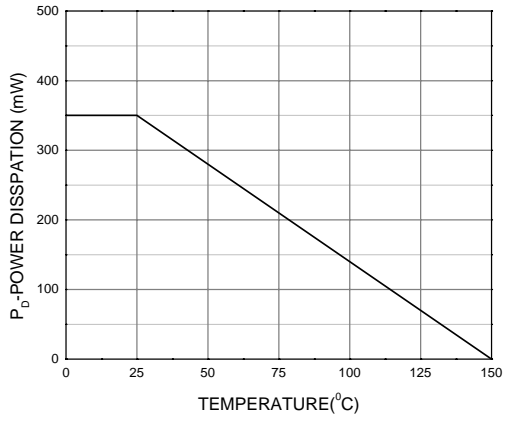


**Figure 6. Input and Output Capacitance vs Reverse Voltage**



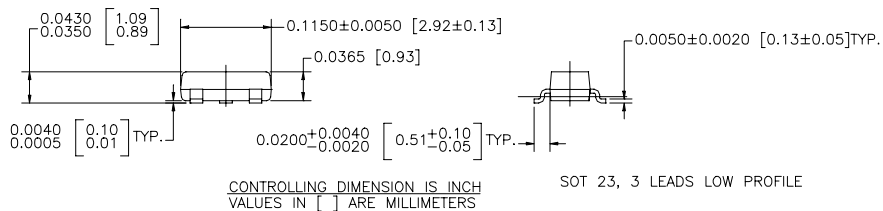
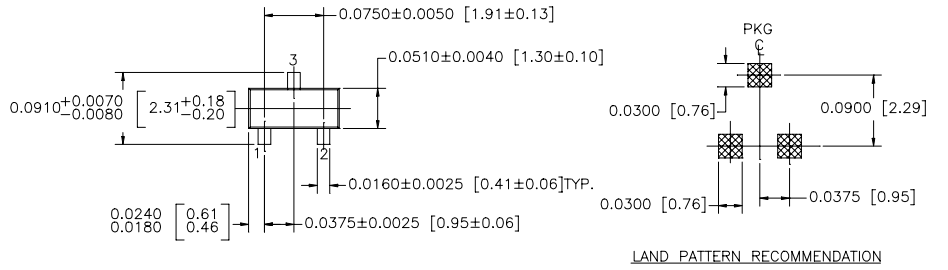
### Typical Performance Characteristics (Continued)

Figure 7. Power Dissipation vs Ambient Temperature



Mechanical Dimensions

SOT-23



NOTE : UNLESS OTHERWISE SPECIFIED

1. STANDARD LEAD FINISH 150 MICRONS / 3.81 MICROMETERS  
 MINIMUM TIN / LEAD (SOLDER) ON ALLOY 42
2. REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE G, DATED JUL 1993

Dimensions in Millimeters

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E <sup>2</sup> C <sub>MOS</sub> <sup>TM</sup>	<i>i-Lo</i> <sup>TM</sup>	OCX <sup>TM</sup>	μSerDes <sup>TM</sup>	VCX <sup>TM</sup>
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FACT <sup>TM</sup>	IntelliMAX <sup>TM</sup>	OPTOLOGIC <sup>®</sup>	SMART START <sup>TM</sup>	
FACT Quiet Series <sup>TM</sup>		OPTOPLANAR <sup>TM</sup>	SPM <sup>TM</sup>	
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Programmable Active Droop <sup>TM</sup>		Power247 <sup>TM</sup>	SuperSOT <sup>TM</sup> -3	
		PowerEdge <sup>TM</sup>	SuperSOT <sup>TM</sup> -6	

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