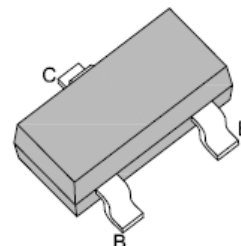
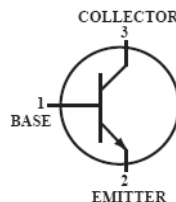


SMD High Voltage Transistor (NPN)

Features

- NPN Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications
- RoHS compliance



SOT-23



Mechanical Data

Case:	SOT-23, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.008 gram

Maximum Ratings ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	MMBT5550	MMBT5551	Unit
	Marking Code	M1F	G1	
V_{CEO}	Collector-Emitter Voltage	140	160	V
V_{CBO}	Collector-Base Voltage	160	180	V
V_{EBO}	Emitter-Base Voltage	6.0		V
I_C	Collector Current-Continuous	600		mA

Thermal Characteristics

Symbol	Description	MMBT5550	MMBT5551	Unit
P_{tot}	Total Device Dissipation FR-5 Board, (Note 1) $T_A=25^{\circ}C$	225		mW
	Derate above $25^{\circ}C$	1.8		mW/ $^{\circ}C$
RθJA	Thermal Resistance from Junction to Ambient	556		$^{\circ}C/W$
P_{tot}	Total Device Dissipation Alumina Substrate, (Note 2) $T_A=25^{\circ}C$,	300		mW
	Derate above $25^{\circ}C$	2.4		mW/ $^{\circ}C$
RθJA	Thermal Resistance from Junction to Ambient	417		$^{\circ}C/W$
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150		$^{\circ}C$

SMD High Voltage Transistor (NPN)

MMBT5550/MMBT5551

Electrical Characteristics ($T_{Ambient}=25^{\circ}\text{C}$ unless noted otherwise)

Off Characteristics

Symbol	Description	MMBT5550		MMBT5551		Unit	Conditions
		Min.	Max.	Min.	Max.		
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 3)	140	-	160	-	V	$I_C=1\text{mA}$, $I_B=0$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	160	-	180	-	V	$I_C=-100\mu\text{A}$, $I_E=0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	6.0	-	6.0	-	V	$I_E=10\mu\text{A}$, $I_C=0$
I_{CBO}	Collector-Base Cut-off Current	-	100	-	-	nA	$V_{CB}=100\text{V}$, $I_E=0$
		-	-	-	50	nA	$V_{CB}=120\text{V}$, $I_E=0$
		-	100	-	50	μA	$V_{CB}=100\text{V}$, $I_E=0$, $T_A=100^{\circ}\text{C}$
I_{EBO}	Emitter-Base Cut-off Current	-	50	-	50	nA	$V_{EB}=4\text{V}$, $I_C=0$

On Characteristics

Symbol	Description	MMBT5550		MMBT5551		Unit	Conditions
		Min.	Max.	Min.	Max.		
h_{FE}	D.C. Current Gain	60	-	80	-		$V_{CE}=5\text{V}$, $I_C=1\text{mA}$
		60	250	80	250		$V_{CE}=5\text{V}$, $I_C=10\text{mA}$
		20	-	30	-		$V_{CE}=5\text{V}$, $I_C=50\text{mA}$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	-	0.15	-	0.15	V	$I_C=10\text{mA}$, $I_B=1\text{mA}$
		-	0.25	-	0.20	V	$I_C=50\text{mA}$, $I_B=5\text{mA}$
$V_{BE(on)}$	Base-Emitter On Voltage	-	1.0	-	1.0	V	$I_C=10\text{mA}$, $I_B=1\text{mA}$
		-	1.2	-	1.0	V	$I_C=50\text{mA}$, $I_B=5\text{mA}$

- Note:**
- FR-5=1.0x0.75x0.062 in.
 - Alumina=0.4x0.3x0.024 in, 99.5% alumina.
 - Pulse Test: Pulse Width=300 μs , Duty Cycle=2.0%.

SMD High Voltage Transistor (NPN)

MMBT5550/MMBT5551

Typical Characteristics Curves

Fig.1- DC Current Gain

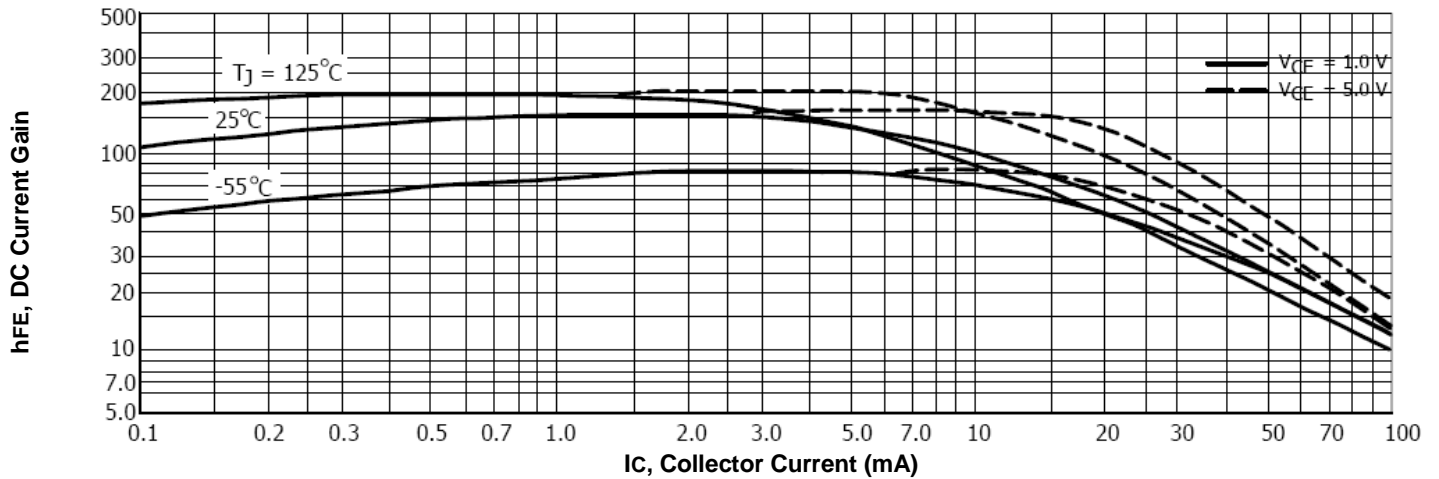
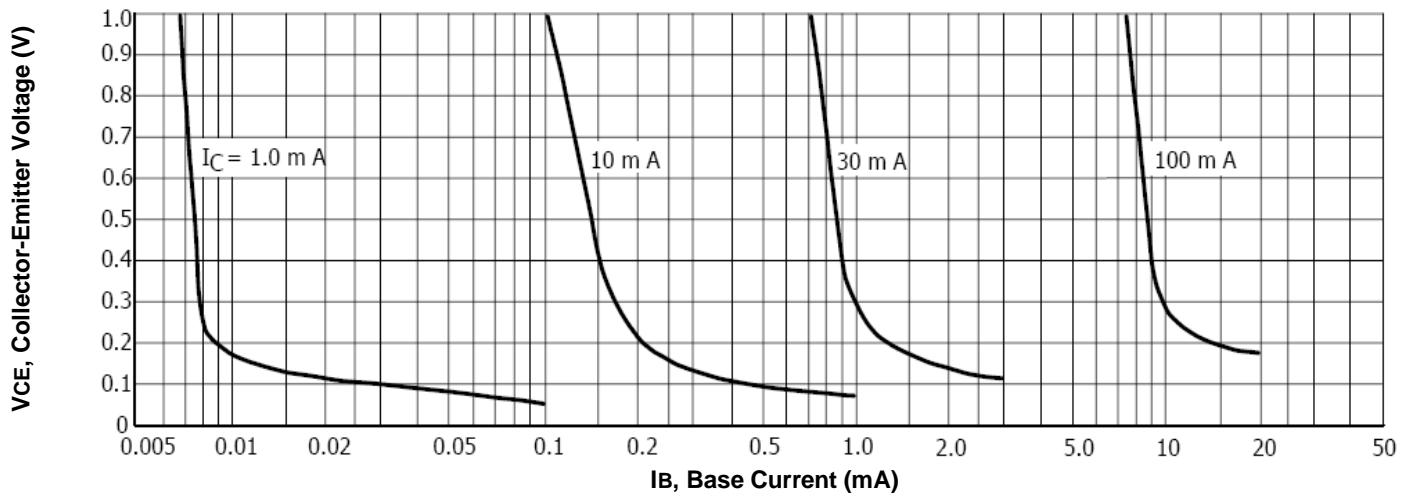


Fig.2- Collector Saturation Region



SMD High Voltage Transistor (NPN)

MMBT5550/MMBT5551

Fig.3- Collector Cut-off Region

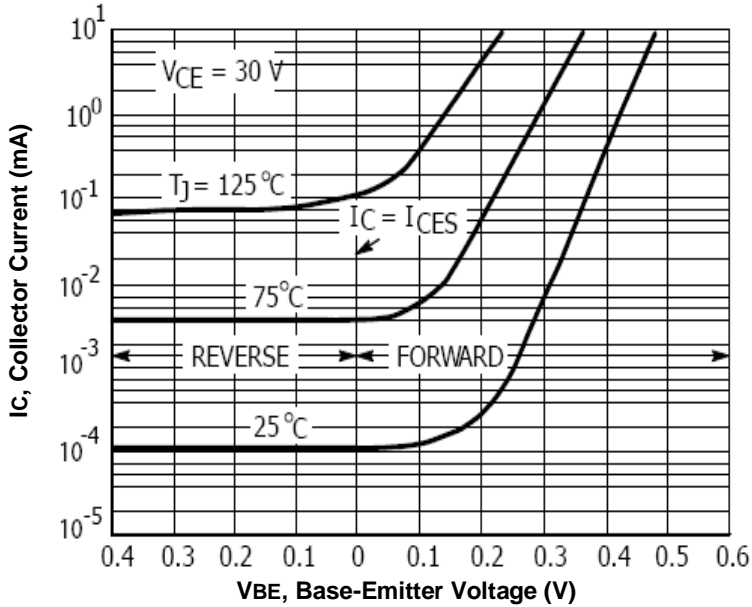


Fig.4- "ON" Voltages

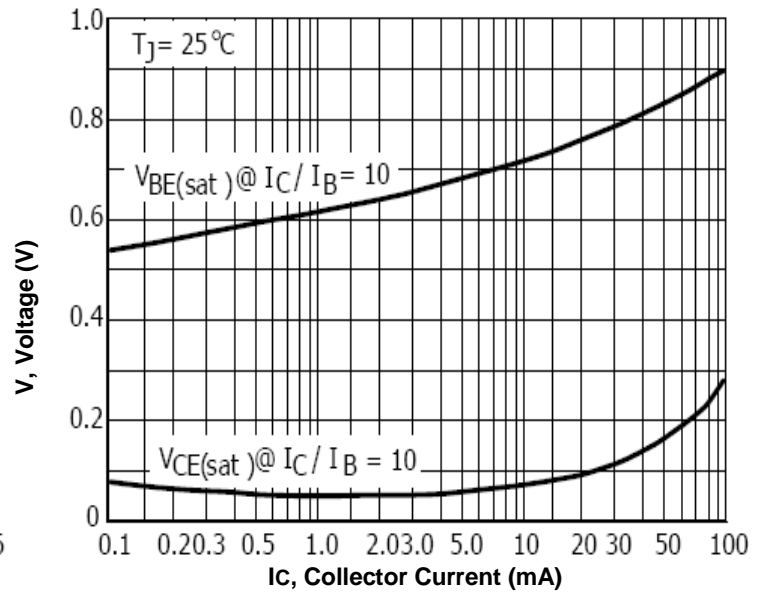


Fig.5- Temperature Coefficient

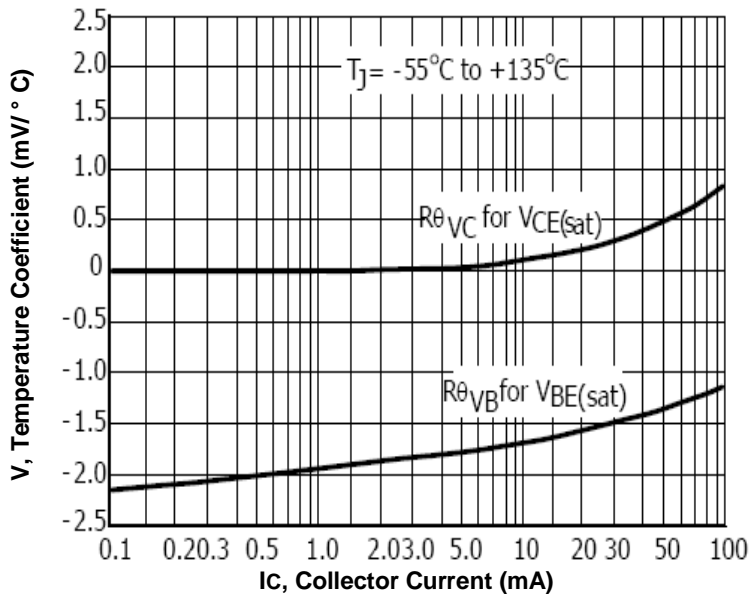
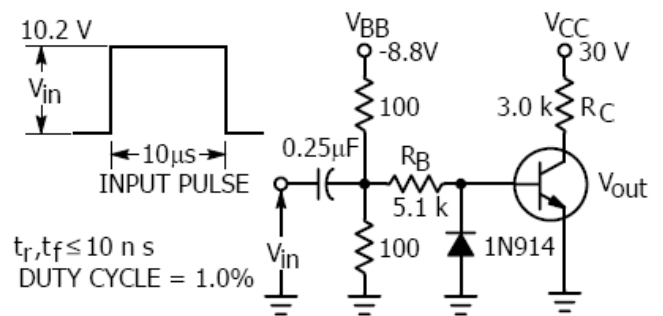


Fig.6-Switching Time Test Circuits



Values Shown are for $I_C @ 10\text{ mA}$

SMD High Voltage Transistor (NPN)

MMBT5550/MMBT5551

Fig.7- Capacitance

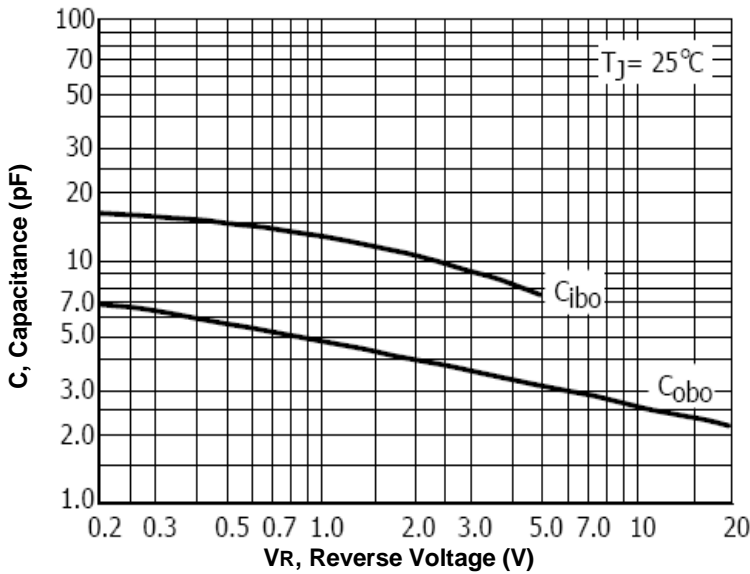


Fig.8- Turn-On Time

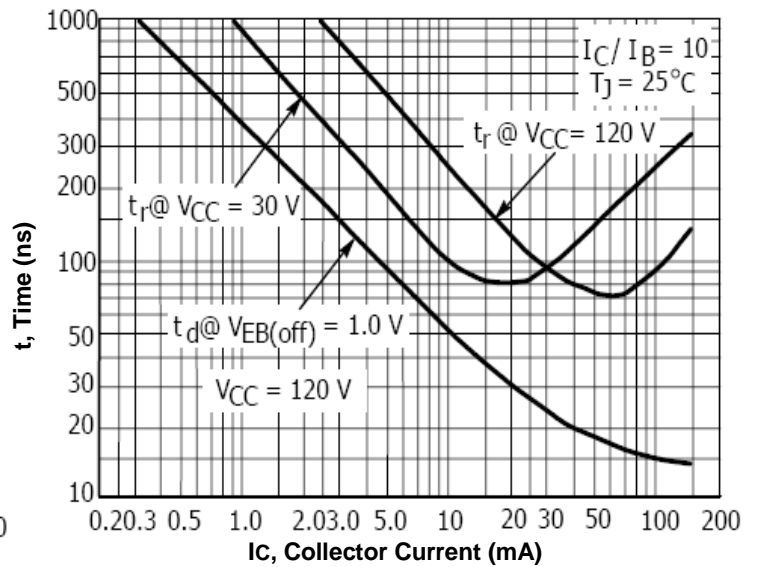
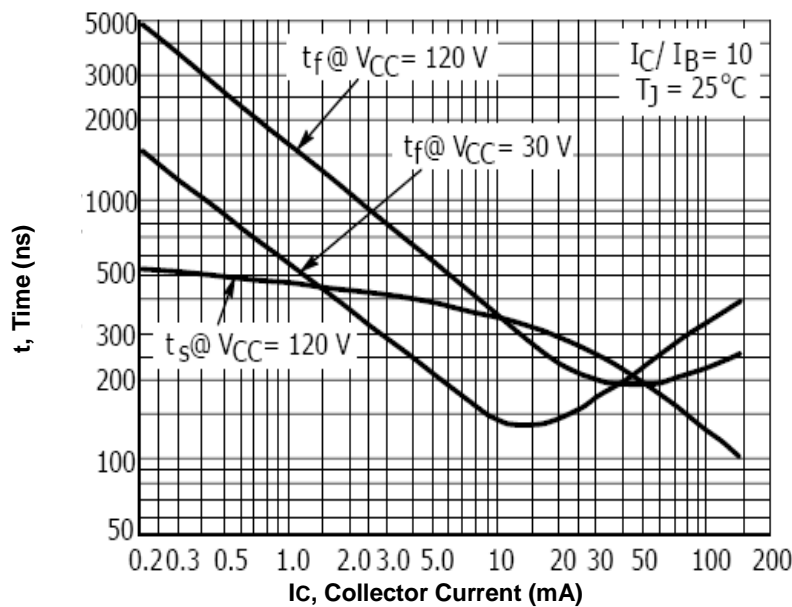


Fig.9- Turn-Off Time

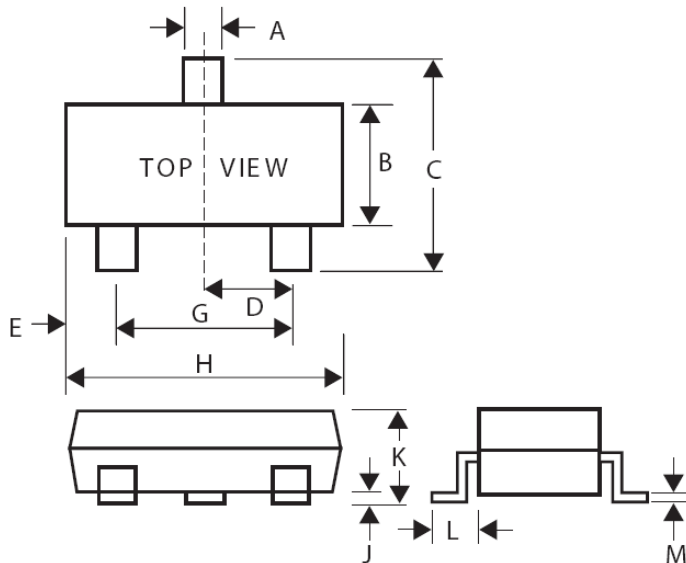


SMD High Voltage Transistor (NPN)

MMBT5550/MMBT5551

Dimensions in mm

SOT-23



Dim	Min	Max
A	0.35	0.51
B	1.19	1.80
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.60
L	0.30	0.61
M	0.076	0.25

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