

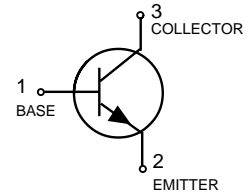
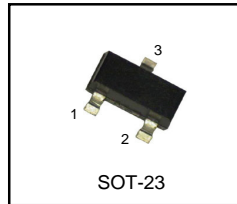
High Voltage Transistors

Lead free product

FEATURE

- We declare that the material of product compliance with RoHS requirements.

MMBT5550G
MMBT5551G



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	140	Vdc
Collector–Base Voltage	V_{CBO}	160	Vdc
Emitter–Base Voltage	V_{EBO}	6.0	Vdc
Collector Current — Continuous	I_C	600	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
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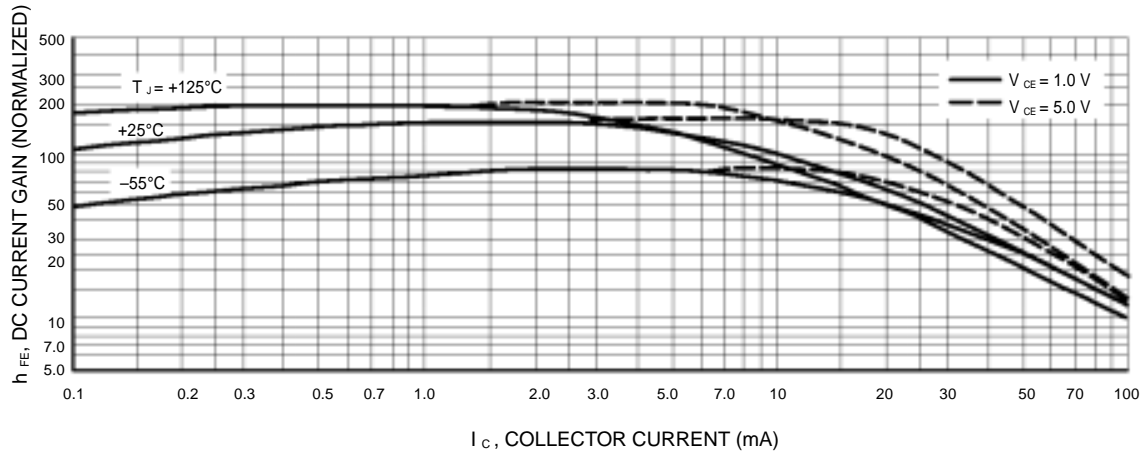
OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage(3) ($I_C = 1.0 \text{ mAdc}, I_E = 0$)	MMBT5550G MMBT5551G	$V_{(BR)CEO}$	140 160	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$)	MMBT5550G MMBT5551G	$V_{(BR)CBO}$	160 180	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 100\text{Vdc}, I_E = 0$)	MMBT5550G	I_{CBO}	—	100	nAdc
($V_{CB} = 120\text{Vdc}, I_E = 0$)	MMBT5551G		—	50	
($V_{CB} = 100\text{Vdc}, I_E = 0, T_A = 100^\circ\text{C}$)	MMBT5550G		—	100	μAdc
($V_{CB} = 120\text{Vdc}, I_E = 0, T_A = 100^\circ\text{C}$)	MMBT5551G		—	50	
Emitter Cutoff Current ($V_{BE} = 4.0\text{Vdc}, I_C = 0$)		I_{EBO}	—	50	nAdc

- FR–5 = $1.0 \times 0.75 \times 0.062 \text{ in.}$
- Alumina = $0.4 \times 0.3 \times 0.024 \text{ in.}$ 99.5% alumina.
- Pulse Test: Pulse Width = $300 \mu\text{s}$, Duty Cycle = 2.0%.

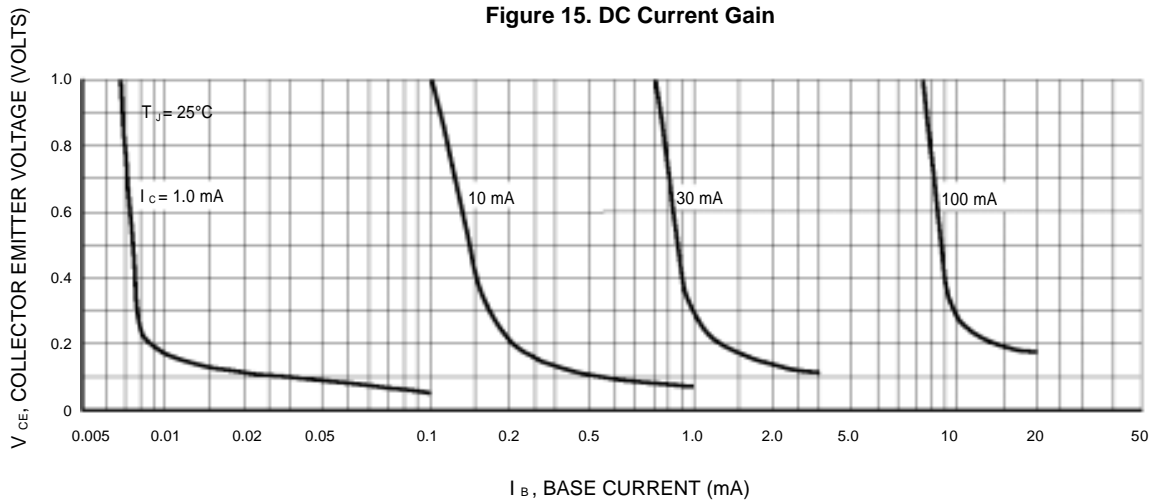
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			—
(I _C = 1.0 mA _{dc} , V _{CE} = 5.0 V _{dc})	MMBT5550G		60	—	
	MMBT5551G		80	—	
(I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc})	MMBT5550G		60	250	
	MMBT5551G		80	250	
(I _C = 50 mA _{dc} , V _{CE} = 5.0V _{dc})	MMBT5550G		20	—	
	MMBT5551G		30	—	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$			V _{dc}
(I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc})	Both Types		—	0.15	
(I _C = 50 mA _{dc} , I _B = 5.0 mA _{dc})	MMBT5550G		—	0.25	
	MMBT5551G		—	0.20	
Base–Emitter Saturation Voltage		$V_{BE(sat)}$			V _{dc}
(I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc})	Both Types		—	1.0	
(I _C = 50 mA _{dc} , I _B = 5.0 mA _{dc})	MMBT5550G		—	1.2	
	MMBT5551G		—	1.0	



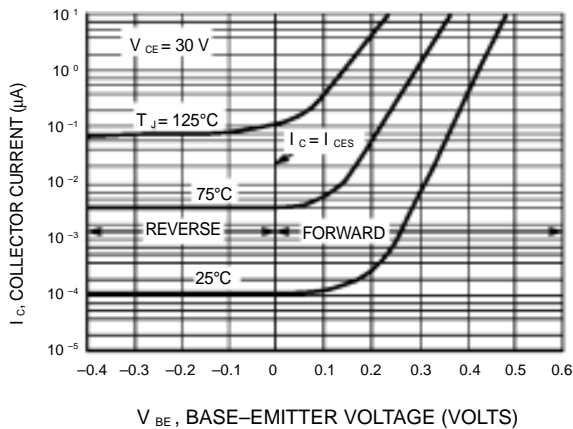
IC, COLLECTOR CURRENT (mA)

Figure 15. DC Current Gain



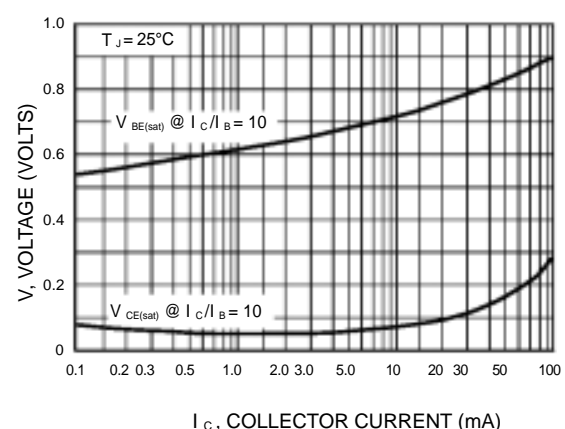
IB, BASE CURRENT (mA)

Figure 16. Collector Saturation Region



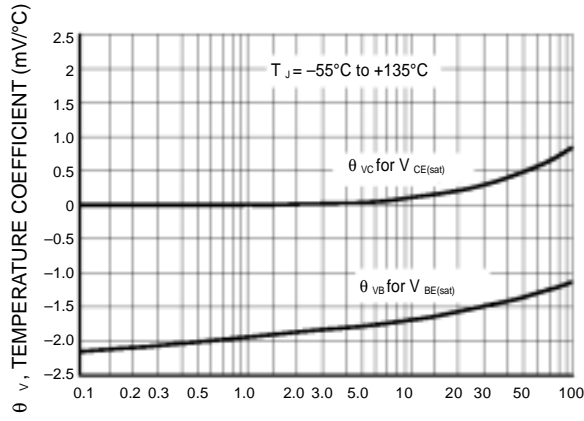
VBE, BASE-EMITTER VOLTAGE (VOLTS)

Figure 3. Collector Cut-Off Region

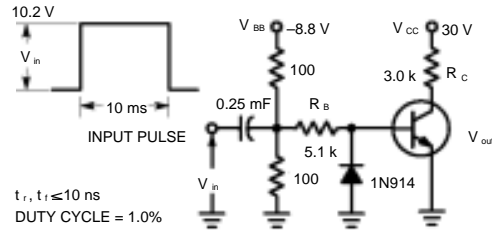


IC, COLLECTOR CURRENT (mA)

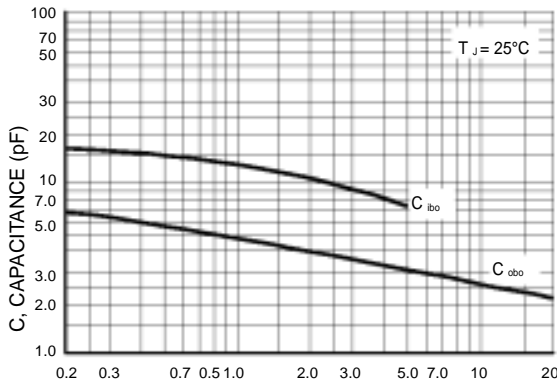
Figure 4. "On" Voltages



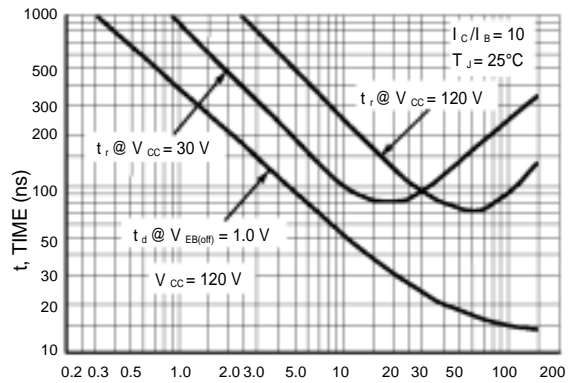
I_C , COLLECTOR CURRENT (mA)
Figure 5. Temperature Coefficients



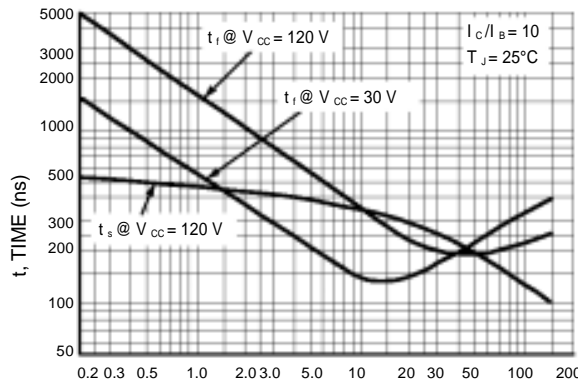
Values Shown are for I_C @ 10 mA
Figure 6. Switching Time Test Circuit



V_R , REVERSE VOLTAGE (VOLTS)
Figure 7. Capacitances Figure



I_C , COLLECTOR CURRENT (mA)
8. Turn-On Time



I_C , COLLECTOR CURRENT (mA)
Figure 9. Turn-Off Time