

High Voltage Transistors

FEATURE

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
MMBT5550LT1 S-MMBT5550LT1	M1F	3000/Tape&Reel
MMBT5550LT3 S-MMBT5550LT3	M1F	10000/Tape&Reel
MMBT5551LT1 S-MMBT5551LT1	G1	3000/Tape&Reel
MMBT5551LT3 S-MMBT5551LT3	G1	10000/Tape&Reel

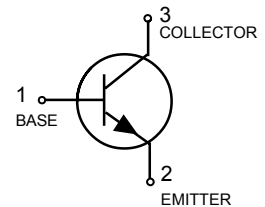
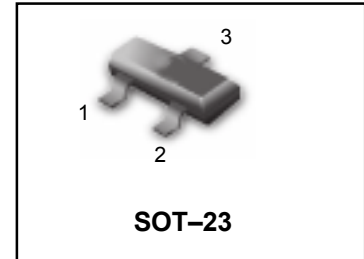
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CEO}	140	Vdc
		160	
Collector - Base Voltage	V _{CB0}	160	Vdc
		180	
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 (Note 1) @T _A = 25 °C Derate Above 25 °C	P _D	225	mW
		1.8	mW/°C
Thermal Resistance, Junction-to-Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate (Note 2) @T _A = 25 °C Derate Above 25 °C	P _D	300	mW
		2.4	mW/°C
Thermal Resistance, Junction-to-Ambient	R _{θJA}	417	°C/W
Junction and Storage Temperature	T _J , T _{stg}	-55 to +150	°C

MMBT5550LT1
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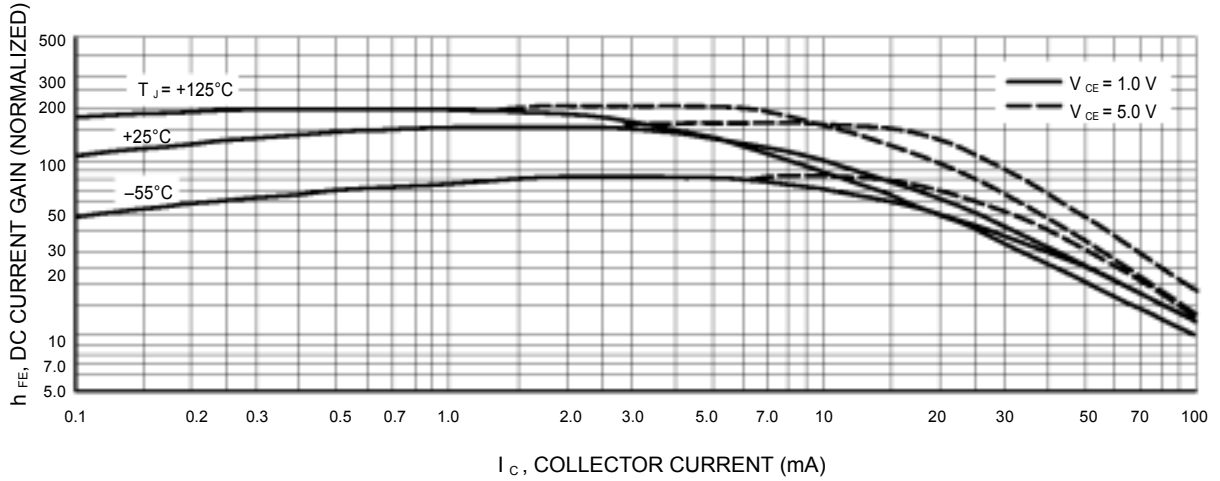
**MMBT5550LT1 MMBT5551LT1
S-MMBT5550LT1 S-MMBT5551LT1**

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

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Collector - Emitter Breakdown Voltage (Note 3) (I _C = 1.0 mA, I _B = 0)	MMBT5550 MMBT5551	V _{(BR)CEO}	140 160	- -	Vdc
Collector - Base Breakdown Voltage (I _C = 100 μA, I _E = 0)	MMBT5550 MMBT5551	V _{(BR)CBO}	160 180	- -	Vdc
Emitter - Base Breakdown Voltage (I _E = 10 μA, I _C = 0)		V _{(BR)EBO}	6.0	-	Vdc
Collector Cutoff Current (V _{CB} = 100 Vdc, I _E = 0) (V _{CB} = 120 Vdc, I _E = 0) (V _{CB} = 100 Vdc, I _E = 0, T _A = 100 °C) (V _{CB} = 120 Vdc, I _E = 0, T _A = 100 °C)	MMBT5550 MMBT5551 MMBT5550 MMBT5551	I _{CBO}	- - - -	100 50 100 50	nAdc μAdc
Emitter Cutoff Current (V _{EB} = 4.0 Vdc, I _C = 0)		I _{EBO}	-	50	nAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = 1.0 mA, V _{CE} = 5.0 Vdc) (I _C = 10 mA, V _{CE} = 5.0 Vdc) (I _C = 50 mA, V _{CE} = 5.0 Vdc)	MMBT5550 MMBT5551 MMBT5550 MMBT5551 MMBT5550 MMBT5551	h _{FE}	60 80 60 80 20 30	- - 250 250 - -	-
Collector - Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)	Both Types MMBT5550 MMBT5551	V _{CE(sat)}	- - -	0.15 0.25 0.20	Vdc
Base - Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)	Both Types MMBT5550 MMBT5551	V _{BE(sat)}	- - -	1.0 1.2 1.0	Vdc
Collector Emitter Cut-off (V _{CB} = 10 V) (V _{CB} = 75 V)	Both Types	I _{CES}	- -	50 100	nA

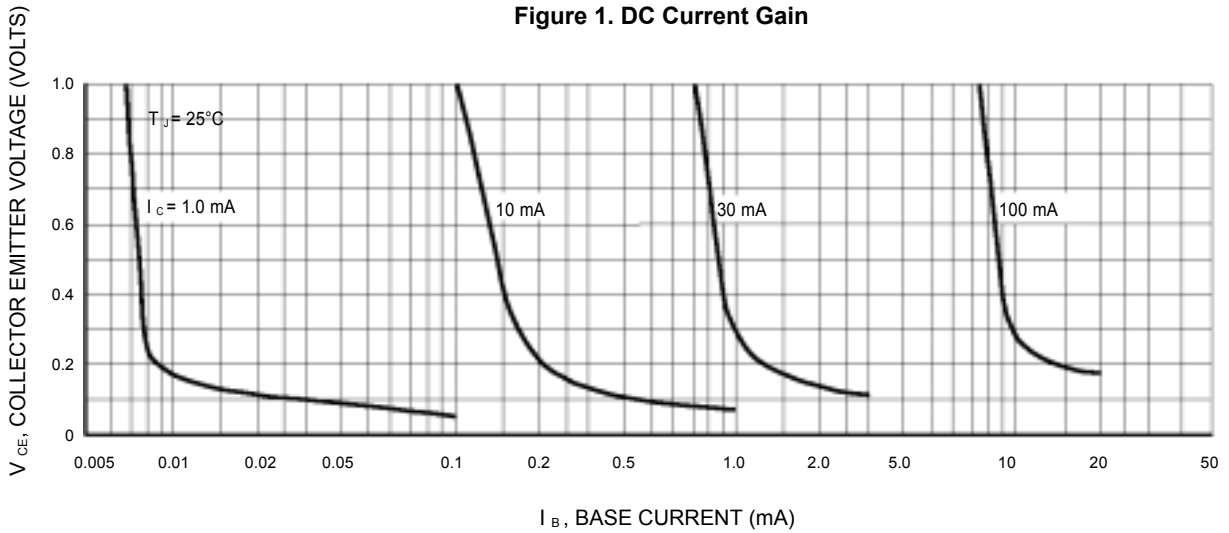
- FR-5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
- Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

**MMBT5550LT1 MMBT5551LT1
S-MMBT5550LT1 S-MMBT5551LT1**



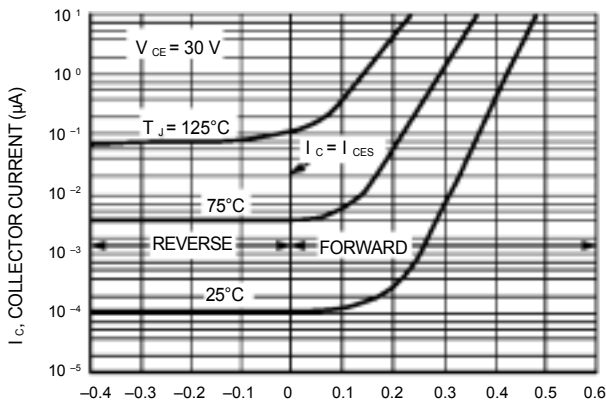
I_C , COLLECTOR CURRENT (mA)

Figure 1. DC Current Gain



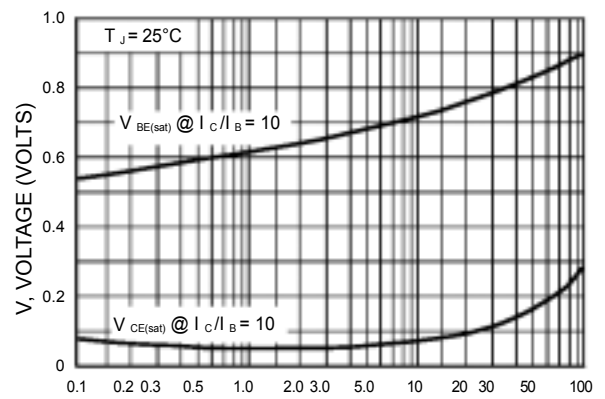
I_B , BASE CURRENT (mA)

Figure 2. Collector Saturation Region



V_{BE} , BASE-EMITTER VOLTAGE (VOLTS)

Figure 3. Collector Cut-Off Region



I_C , COLLECTOR CURRENT (mA)

Figure 4. "On" Voltages

MMBT5550LT1 MMBT5551LT1 S-MMBT5550LT1 S-MMBT5551LT1

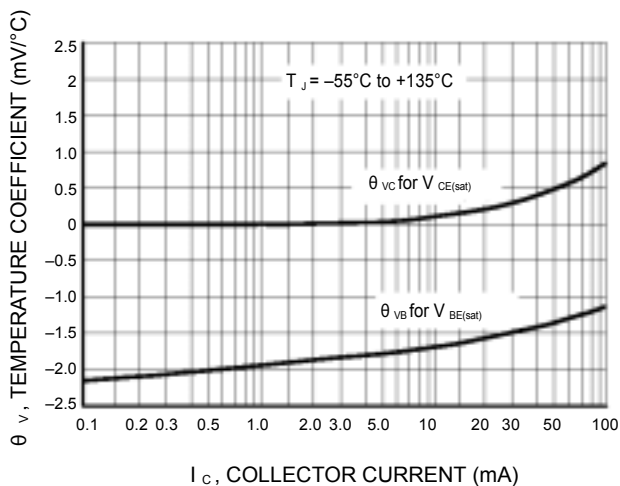
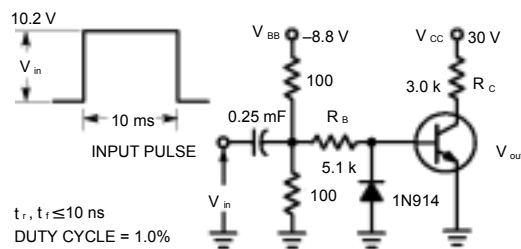


Figure 5. Temperature Coefficients



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

Figure 6. Switching Time Test Circuit

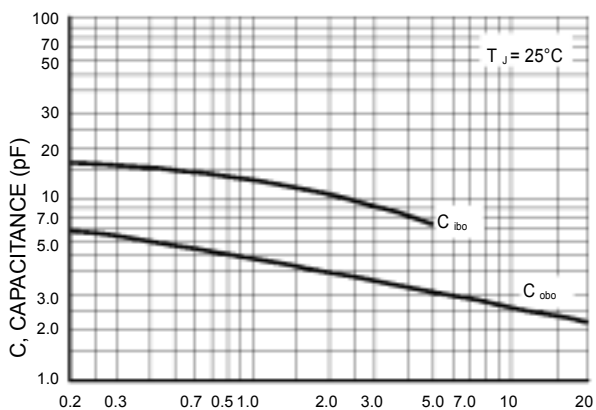
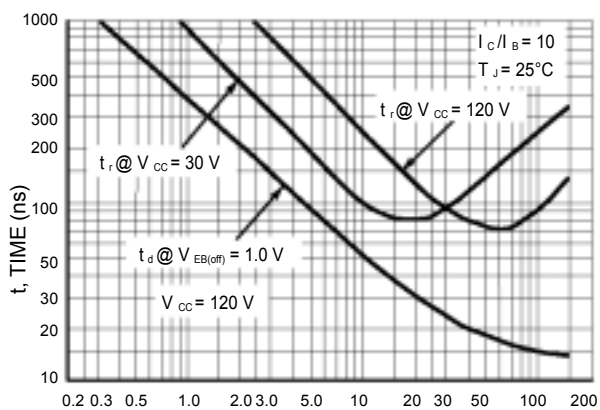


Figure 7. Capacitances



8. Turn-On Time

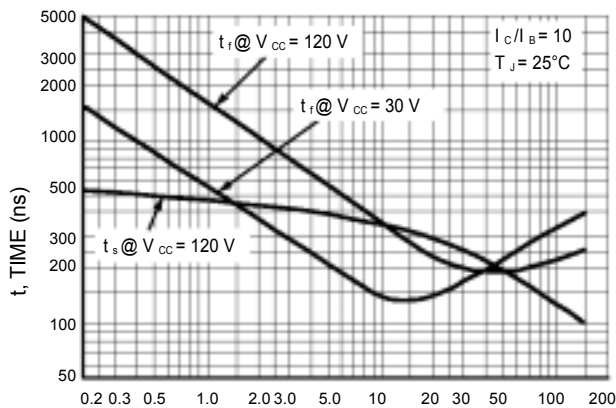
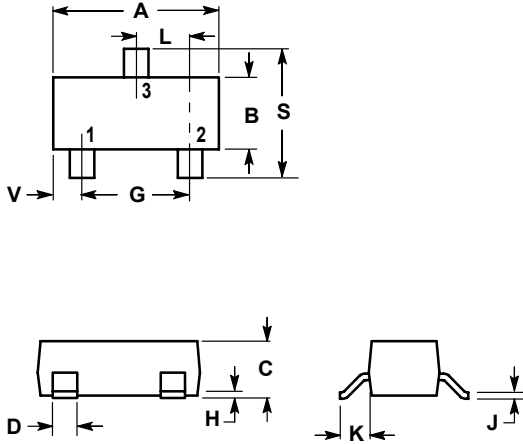


Figure 9. Turn-Off Time

**MMBT5550LT1 MMBT5551LT1
S-MMBT5550LT1 S-MMBT5551LT1**

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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

- PIN 1. BASE
2. EMITTER
3. COLLECTOR

