



DATA SHEET

SEMICONDUCTOR

MMBT5551W

High Voltage Transistors

FEATURE

- Pb-Free package is available.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
MMBT5551W	G1	3000/Tape&Reel
MMBT5551W	G1	10000/Tape&Reel

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, $T_A = 25^\circ\text{C}$	P_D	150	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
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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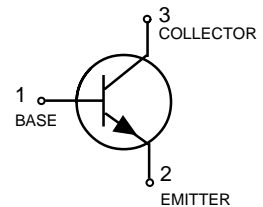
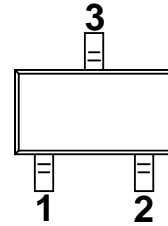
OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage(3) ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$	160	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	180	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 120\text{Vdc}, I_E = 0$)	I_{CBO}	—	50	nAdc
($V_{CB} = 120\text{Vdc}, I_E = 0, T_A = 100^\circ\text{C}$)	MMBT5551W	—	50	μAdc
Emitter Cutoff Current ($V_{BE} = 4.0\text{Vdc}, I_C = 0$)	I_{EBO}	—	50	nAdc

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



SOT–323



ELECTRICAL CHARACTERISTICS

MMBT5551W

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

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain (I _C = 1.0 mA, V _{CE} = 5.0 Vdc)	MMBT5551	h_{FE}	80	—	—
(I _C = 10 mA, V _{CE} = 5.0 Vdc)	MMBT5551		80	250	
(I _C = 50 mA, V _{CE} = 5.0Vdc)	MMBT5551		30	—	
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA)	Both Types	$V_{CE(sat)}$	—	0.15	Vdc
(I _C = 50 mA, I _B = 5.0 mA)	MMBT5551		—	0.20	
Base–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA)	Both Types	$V_{BE(sat)}$	—	1.0	Vdc
(I _C = 50 mA, I _B = 5.0 mA)	MMBT5551		—	1.0	

DEVICE CHARACTERISTICS

MMBT5551W

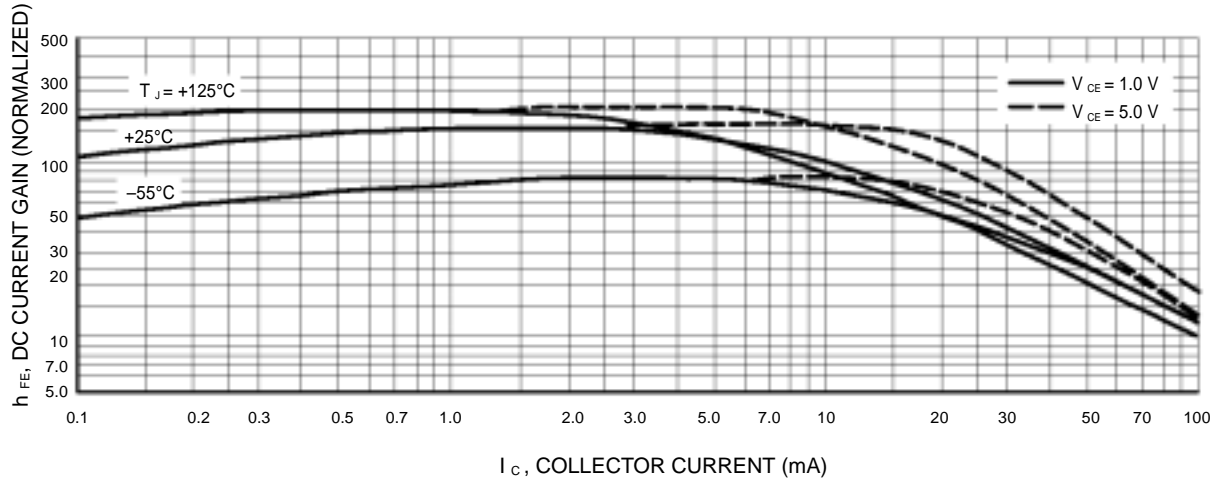


Figure 1. DC Current Gain

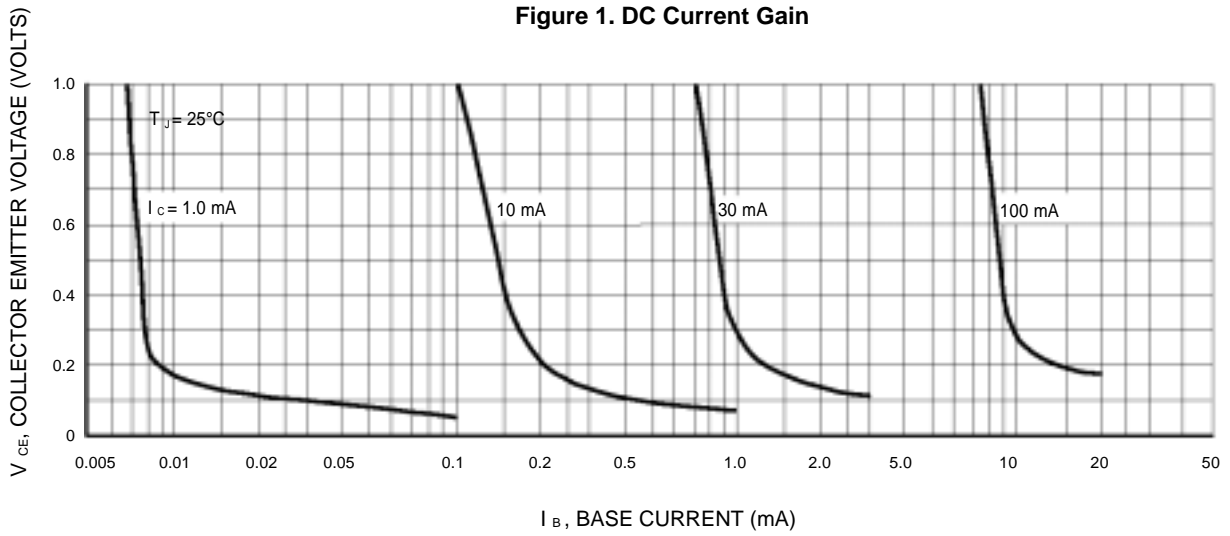


Figure 2. Collector Saturation Region

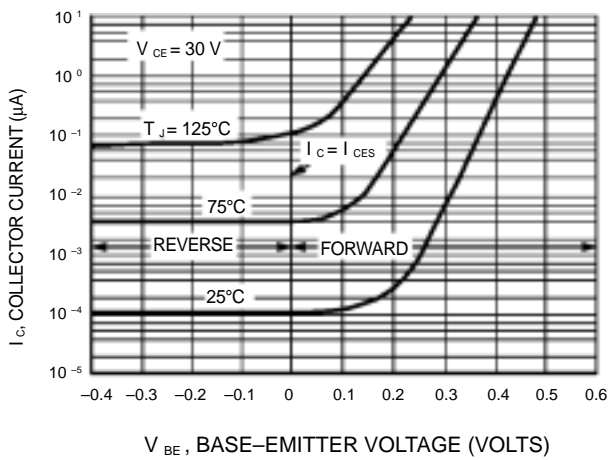


Figure 3. Collector Cut-Off Region

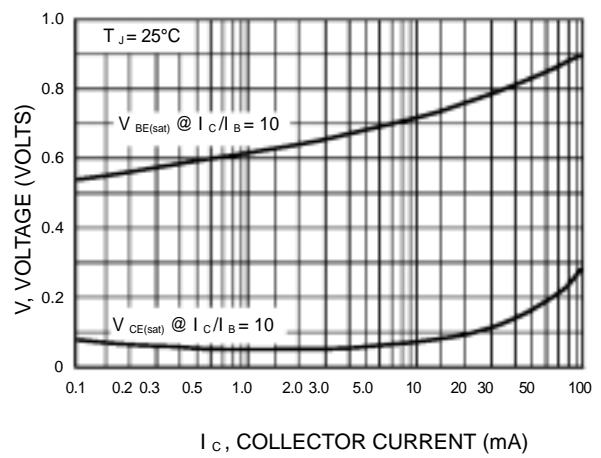


Figure 4. "On" Voltages

DEVICE CHARACTERISTICS

MMBT5551W

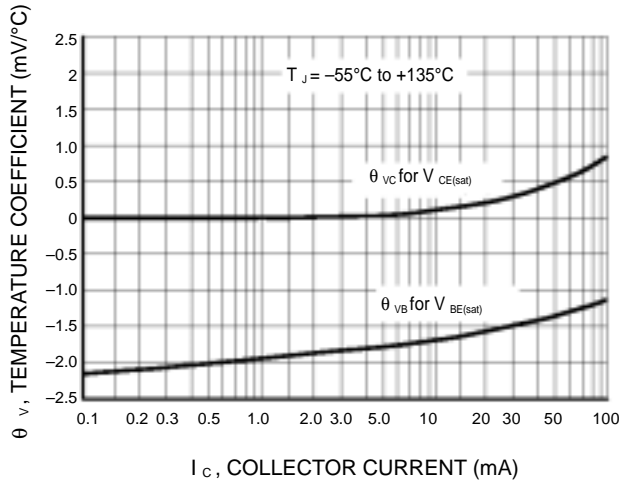
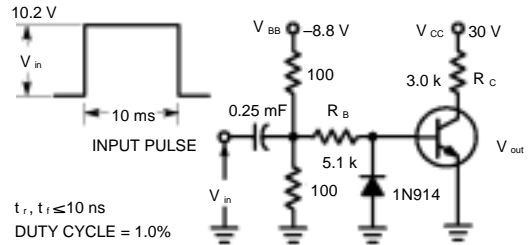


Figure 5. Temperature Coefficients



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

Figure 6. Switching Time Test Circuit

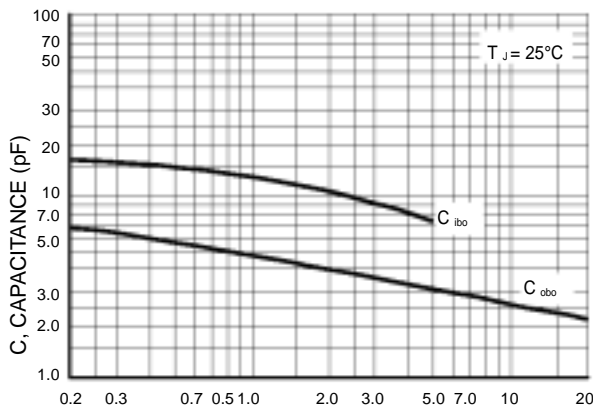
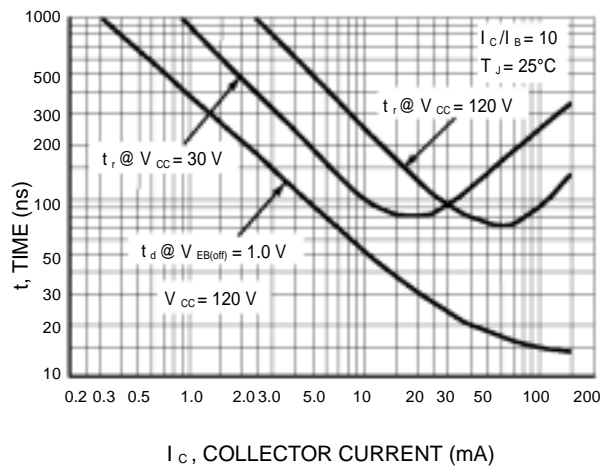


Figure 7. Capacitances Figure



8. Turn-On Time

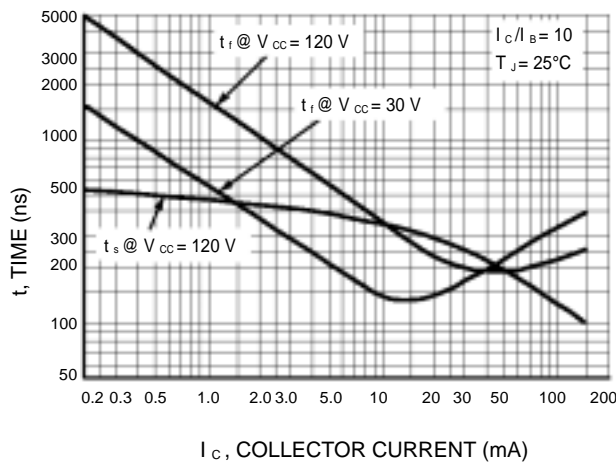


Figure 9. Turn-Off Time

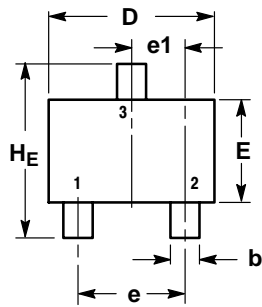
PACKAGE OUTLINE & DIMENSIONS

MMBT5551W

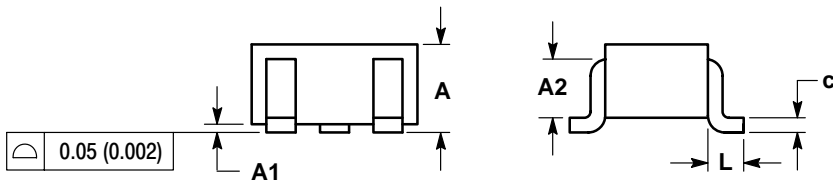
SC-70 (SOT-323)

NOTES:

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



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.425 REF			0.017 REF		
HE	2.00	2.10	2.40	0.079	0.083	0.095



SOLDERING FOOTPRINT*

