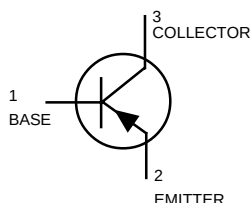


High Voltage Transistor

PNP Silicon



MMBT6520LT1



CASE 318-08, STYLE 6
SOT-23 (TO-236AB)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	–350	Vdc
Collector–Base Voltage	V_{CBO}	–350	Vdc
Emitter–Base Voltage	V_{EBO}	–5.0	Vdc
Base Current	I_B	–250	mA
Collector Current — Continuous	I_C	–500	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	$^\circ\text{C}$

DEVICE MARKING

MMBT6520LT1 = 2Z

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 ($I_C = -1.0\text{ mA}$)	$V_{(BR)CEO}$	–350	—	Vdc
Collector–Base Breakdown Voltage($I_E = -100\text{ }\mu\text{A}$)	$V_{(BR)CBO}$	–350	—	Vdc
Emitter–Base Breakdown Voltage($I_E = -10\text{ }\mu\text{A}$)	$V_{(BR)EBO}$	–5.0	—	Vdc
Collector Cutoff Current($V_{CB} = -250\text{ V}$)	I_{CBO}	—	–50	nA
Emitter Cutoff Current($V_{EB} = -4.0\text{ V}$)	I_{EBO}	—	–50	nA

1. FR–5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

MMBT6520LT1
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -30\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -50\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -100\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)	h_{FE}	20 30 30 20 15	— — 200 200 —	—
Collector–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -1.0\text{ mAdc}$) ($I_C = -20\text{ mAdc}$, $I_B = -2.0\text{ mAdc}$) ($I_C = -30\text{ mAdc}$, $I_B = -3.0\text{ mAdc}$) ($I_C = -50\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$)	$V_{CE(sat)}$	— — — —	–0.30 –0.35 –0.50 –1.0	Vdc
Base – Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -1.0\text{ mAdc}$,) ($I_C = -20\text{ mAdc}$, $I_B = -2.0\text{ mAdc}$,) ($I_C = -30\text{ mAdc}$, $I_B = -3.0\text{ mAdc}$,)	$V_{BE(sat)}$	— — —	–0.75 –0.85 –0.90	Vdc
Base–Emitter On Voltage ($I_C = -100\text{ mAdc}$, $V_{CE} = -10\text{ V}$)	$V_{BE(on)}$	—	–2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current Gain–Bandwidth Product ($V_{CE} = -20\text{ V}$, $I_C = -10\text{ mA}$, $f = 20\text{ MHz}$)	f_T	40	200	MHz
Collector –Base Capacitance ($V_{CB} = -20\text{ V}$, $f = 1.0\text{ MHz}$)	C_{cb}	—	6.0	pF
Emitter –Base Capacitance ($V_{EB} = -0.5\text{ V}$, $f = 1.0\text{ MHz}$)	C_{eb}	—	100	pF

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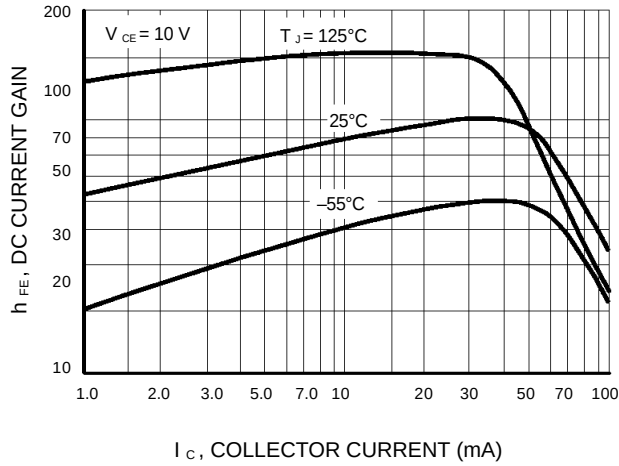


Figure 1. DC Current Gain

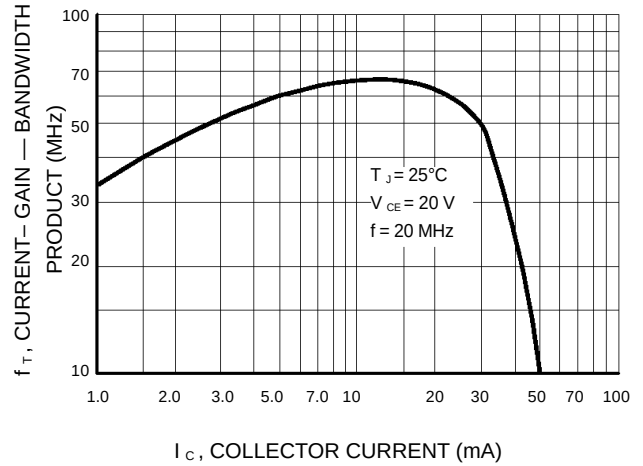


Figure 2. Current-Gain — Bandwidth Product

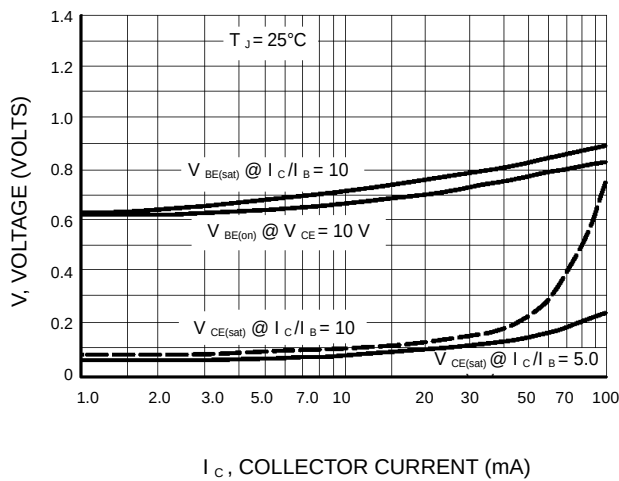


Figure 3. "On" Voltages

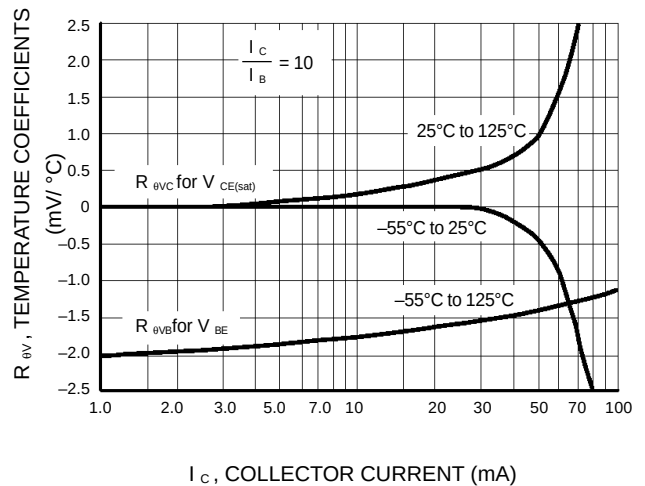


Figure 4. Temperature Coefficients

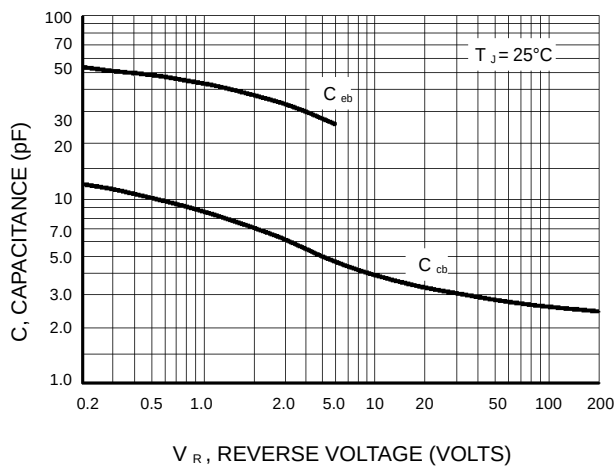


Figure 5. Capacitance

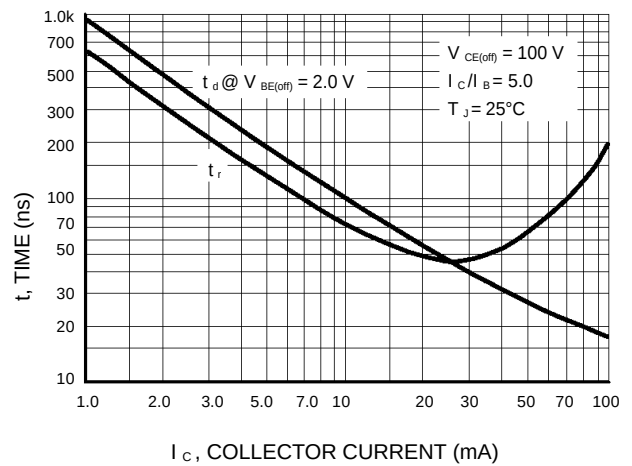
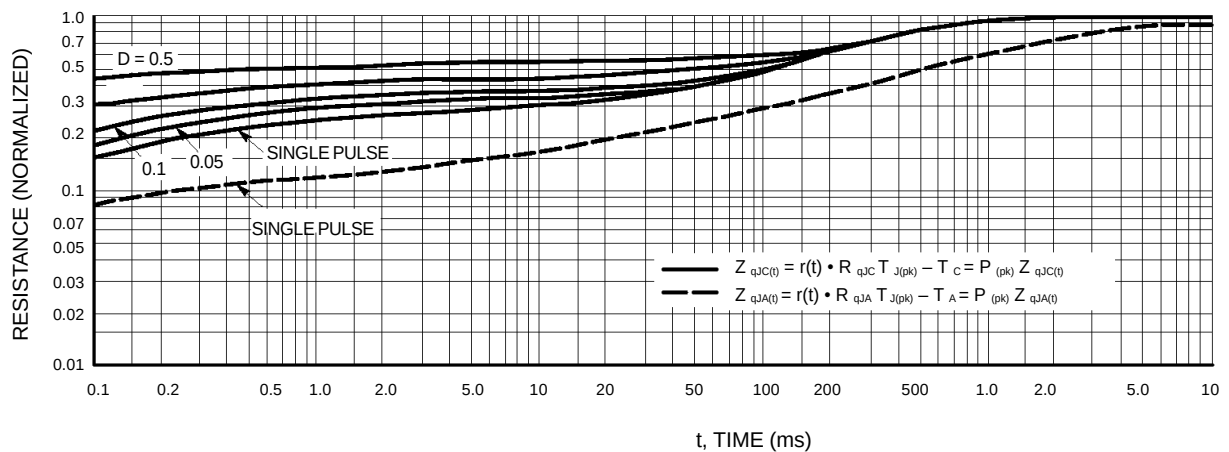
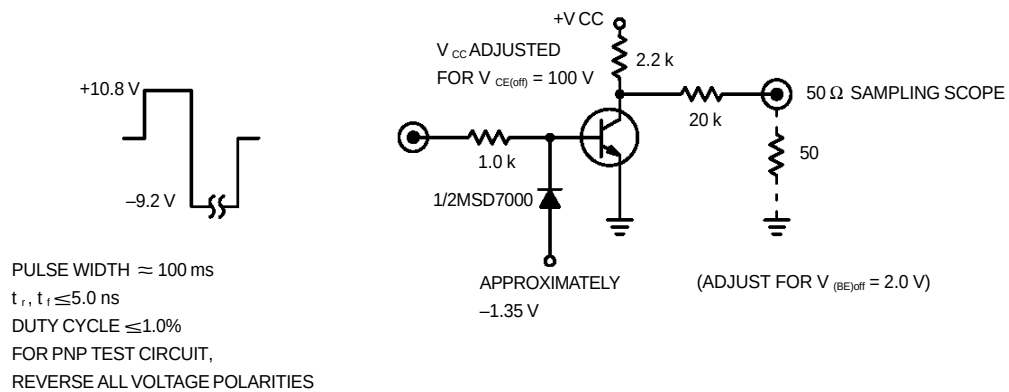
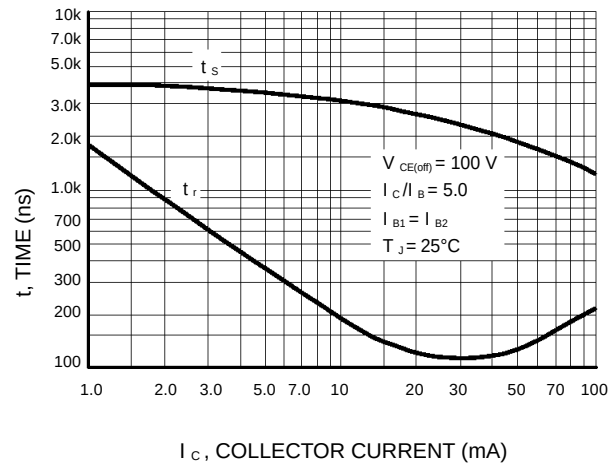
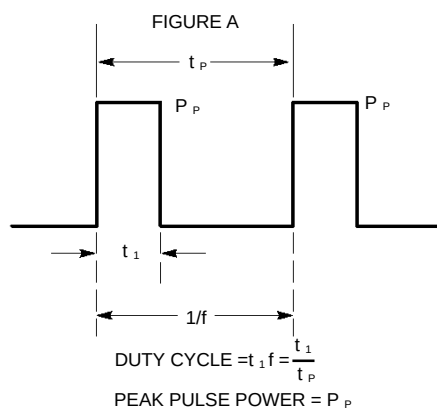


Figure 6. Turn-On Time

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Design Note: Use of Transient Thermal Resistance Data