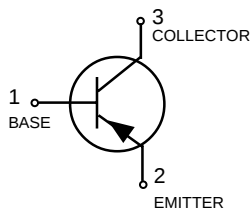


High Voltage Transistor



LMBT6520LT1



SOT-23

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	$^\circ\text{C/W}$
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	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

DEVICE MARKING

LMBT6520LT1 = 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.

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I _C = -1.0 mAdc, V _{CE} = -10 Vdc)	h _{FE}	20	—	—
(I _C = -10mAdc, V _{CE} = -10 Vdc)		30	—	—
(I _C = -30 mAdc, V _{CE} = -10 Vdc)		30	200	—
(I _C = -50 mAdc, V _{CE} = -10 Vdc)		20	200	—
(I _C = -100 mAdc, V _{CE} = -10 Vdc)		15	—	—
Collector-Emitter Saturation Voltage (I _C = -10mAdc, I _B = -1.0mAdc)	V _{CE(sat)}	—	-0.30	Vdc
(I _C = -20 mAdc, I _B = -2.0 mAdc)		—	-0.35	Vdc
(I _C = -30 mAdc, I _B = -3.0mAdc)		—	-0.50	Vdc
(I _C = -50 mAdc, I _B = -5.0 mAdc)		—	-1.0	Vdc
Base - Emitter Saturation Voltage (I _C = -10mAdc, I _B = -1.0mAdc,)	V _{BE(sat)}	—	-0.75	Vdc
(I _C = -20mAdc, I _B = -2.0mAdc,)		—	-0.85	Vdc
(I _C = -30mAdc, I _B = -3.0mAdc,)		—	-0.90	Vdc
Base-Emitter On Voltage (I _C = -100mAdc, V _{CE} = -10V)	V _{BE(on)}	—	-2.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current Gain-Bandwidth Product (V _{CE} = -20 V, I _C = -10mA, f = 20 MHz)	f _T	40	200	MHz
Collector -Base Capacitance (V _{CB} = -20 V, f = 1.0 MHz)	C _{cb}	—	6.0	pF
Emitter -Base Capacitance (V _{EB} = -0.5 V, f = 1.0 MHz)	C _{eb}	—	100	pF

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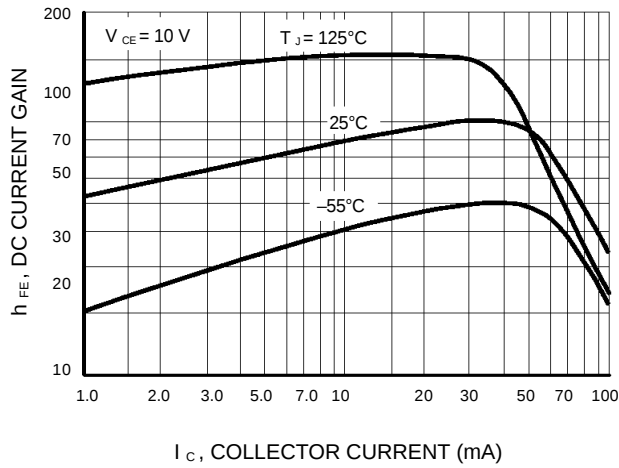


Figure 1. DC Current Gain

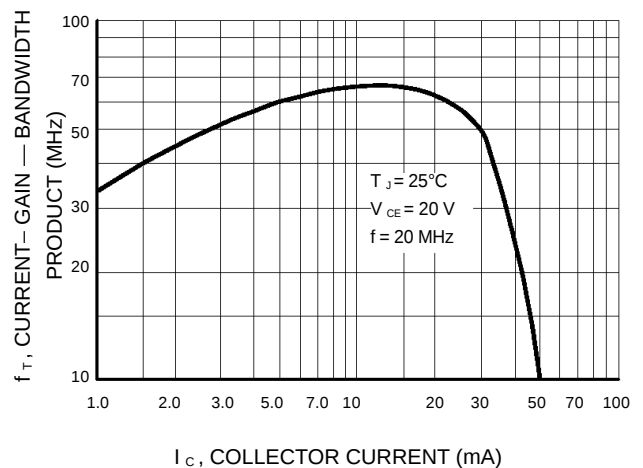


Figure 2. Current-Gain — Bandwidth Product

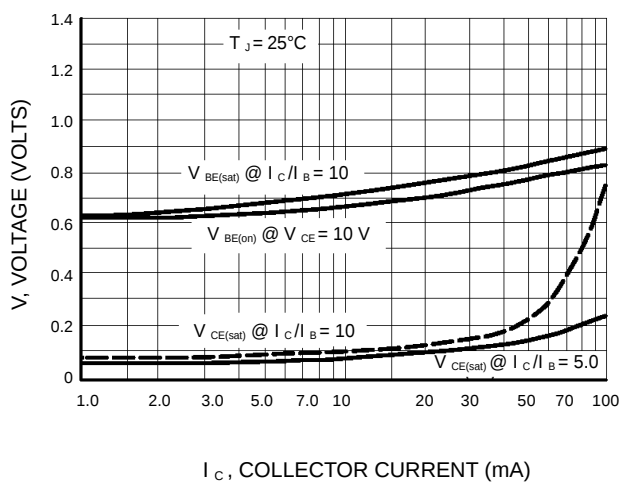


Figure 3. "On" Voltages

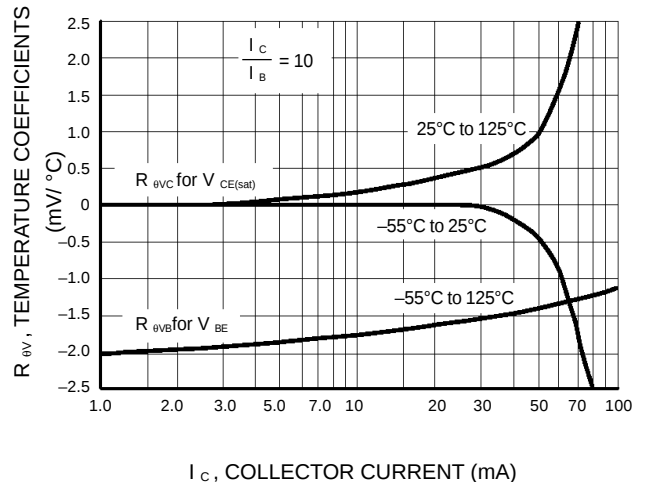


Figure 4. Temperature Coefficients

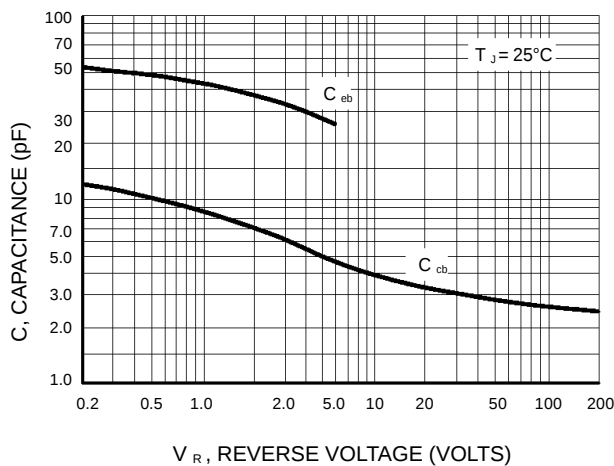


Figure 5. Capacitance

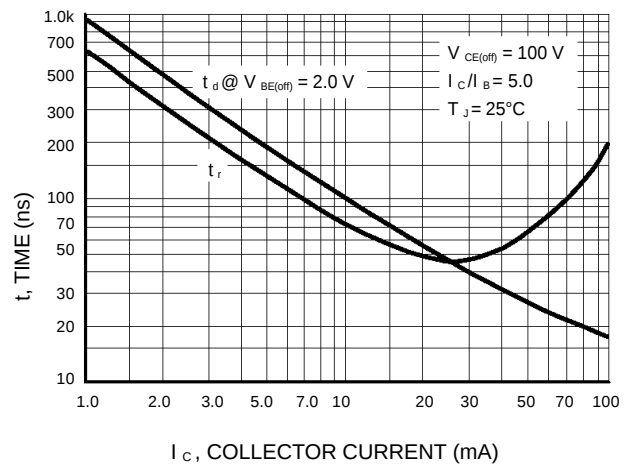


Figure 6. Turn-On Time

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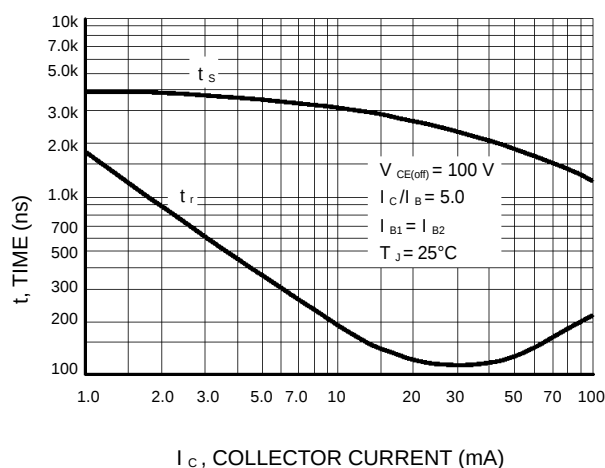


Figure 7. Turn-On Time

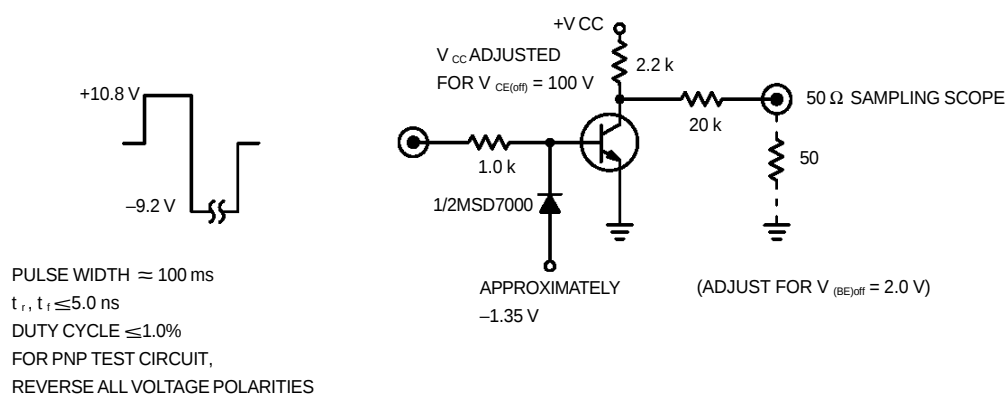


Figure 8. Switching Time Test Circuit

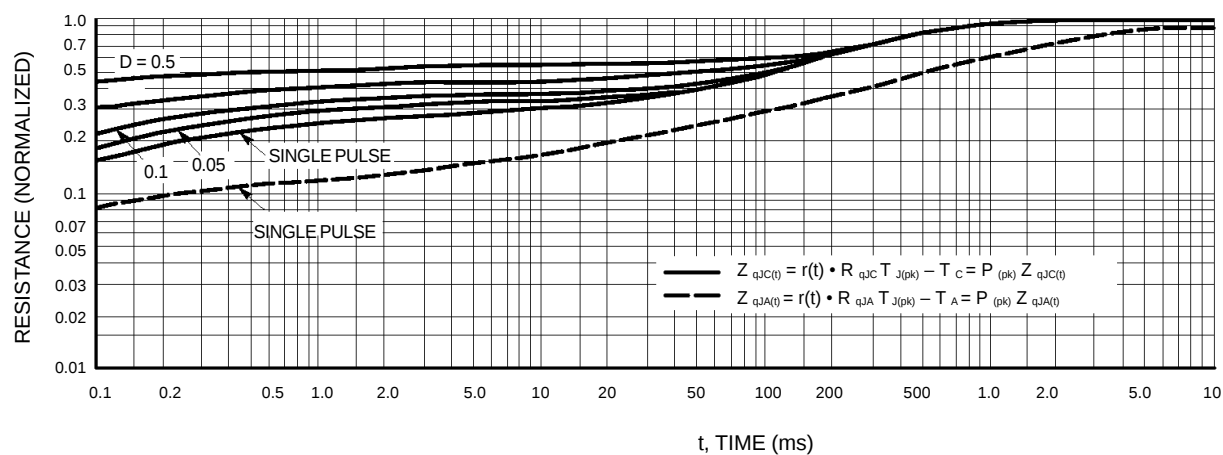
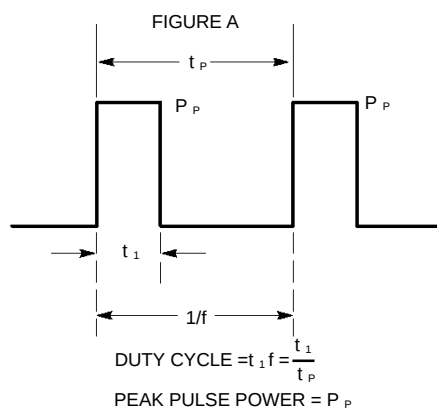


Figure 9. Thermal Response

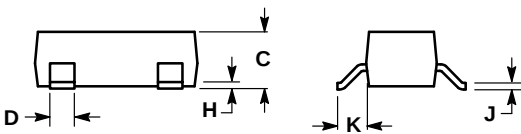
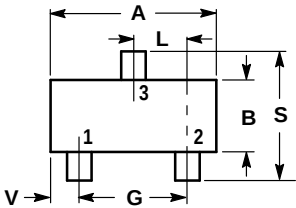
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Design Note: Use of Transient Thermal Resistance Data

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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

