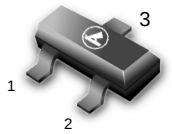
High Voltage Transistors

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

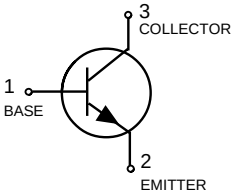
LMBT6517LT1G

Ordering Information

Device	Marking	Shipping
LMBT6 517LT1G	1Z	3000/Tape&Reel
LMBT6517LT3G	1Z	10000/Tape&Reel



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	mAdc
Collector Current — Continuous	I_C	500	mAdc

THERMAL CHARACTERISTICS

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

DEVICE MARKING

LMBT6517LT1 G= 1Z

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (I_C = 1.0 mAdc)	$V_{(BR)CEO}$	350	—	Vdc
Collector–Base Breakdown Voltage (I_C = 100 µAdc)	$V_{(BR)CBO}$	350	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 µAdc)	$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current (V_{CB} = 250Vdc)	I_{CBO}	—	50	nAdc
Emitter Cutoff Current (V_{EB} = 5.0Vdc)	I_{EBO}	—	50	nAdc

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.

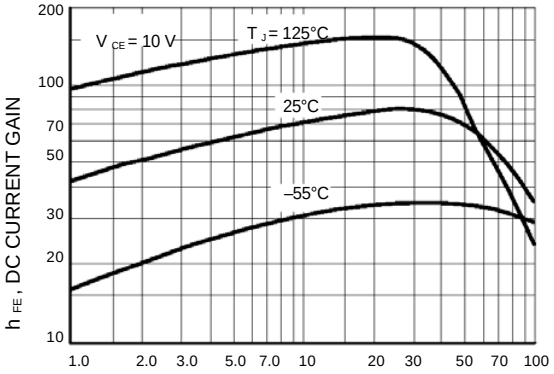
LMBT6517LT1G

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 mAdc, V_{CE} = 10 Vdc)		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(3)	$V_{CE(sat)}$			Vdc
(I_C = 10mAdc, I_B = 1.0mAdc)		—	0.30	
(I_C = 20 mAdc, I_B = 2.0 mAdc)		—	0.35	
(I_C = 30 mAdc, I_B = 3.0mAdc)		—	0.50	
(I_C = 50 mAdc, I_B = 5.0 mAdc)		—	1.0	
Base – Emitter Saturation Voltage	$V_{BE(sat)}$			Vdc
(I_C = 10mAdc, I_B = 1.0mAdc,)		—	0.75	
(I_C = 20mAdc, I_B = 2.0mAdc,)		—	0.85	
(I_C = 30mAdc, I_B = 3.0mAdc,)		—	0.90	
Base–Emitter On Voltage (I_C = 100mAdc, V_{CE} = 10Vdc)	$V_{BE(on)}$	—	2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current Gain–Bandwidth Product (V_{CE} = 20 Vdc, I_C = 10mAdc, f = 20 MHz)	f_T	40	200	MHz
Collector –Base Capacitance (V_{CB} = 20 Vdc, f = 1.0 MHz)	C_{cb}	—	6.0	pF
Emitter –Base Capacitance (V_{EB}=0.5 Vdc, f = 1.0 MHz)	C_{eb}	—	80	pF

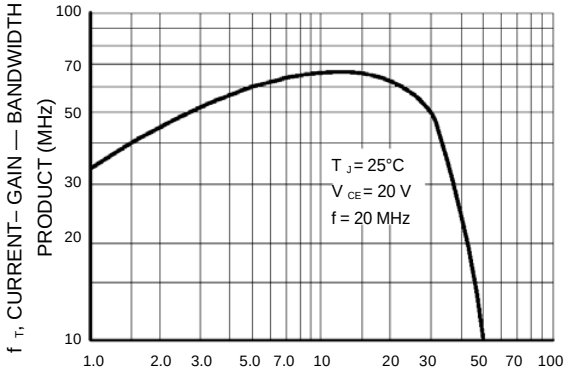
3. Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

LMBT6517LT1G



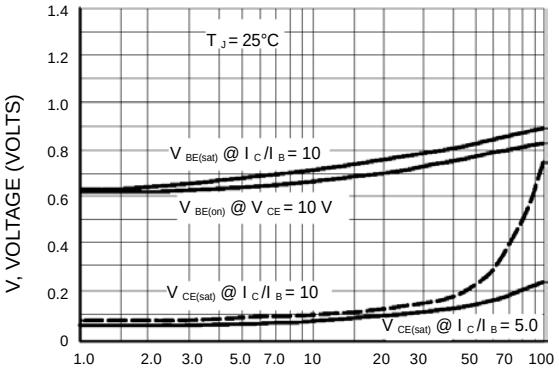
I C, COLLECTOR CURRENT (mA)

Figure 1. DC Current Gain



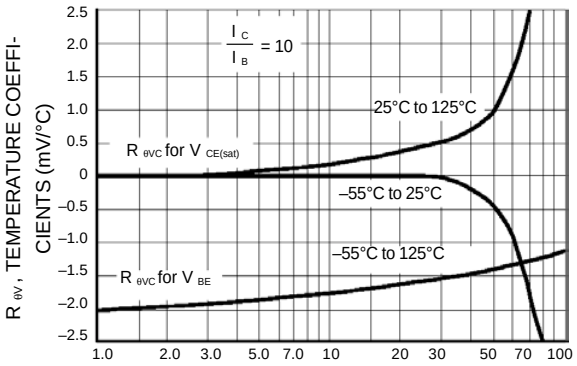
I C, COLLECTOR CURRENT (mA)

Figure 2. Current–Gain — Bandwidth Product



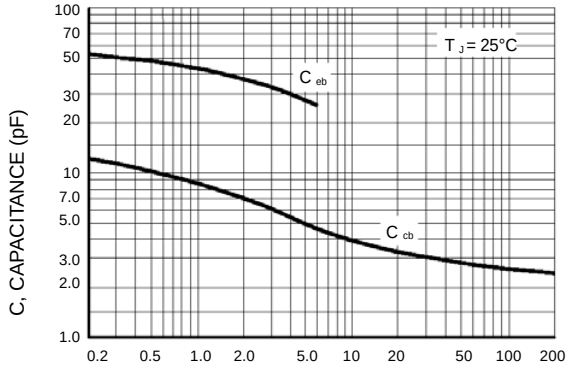
I C, COLLECTOR CURRENT (mA)

Figure 3. “On” Voltages



I C, COLLECTOR CURRENT (mA)

Figure 4. Temperature Coefficients



V R, REVERSE VOLTAGE (VOLTS)

Figure 5. Capacitance

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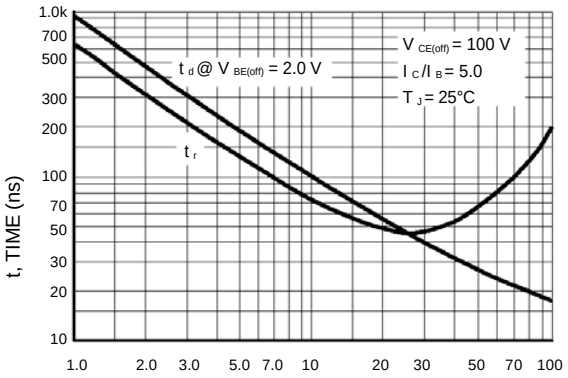
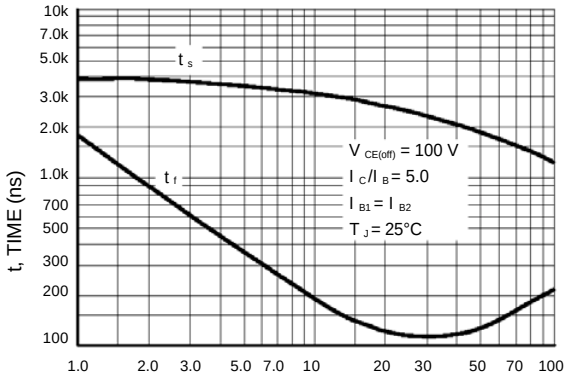


I C , COLLECTOR CURRENT (mA)

Figure 6. Turn–On Time



I C , COLLECTOR CURRENT (mA)

Figure 7. Turn–Off Time

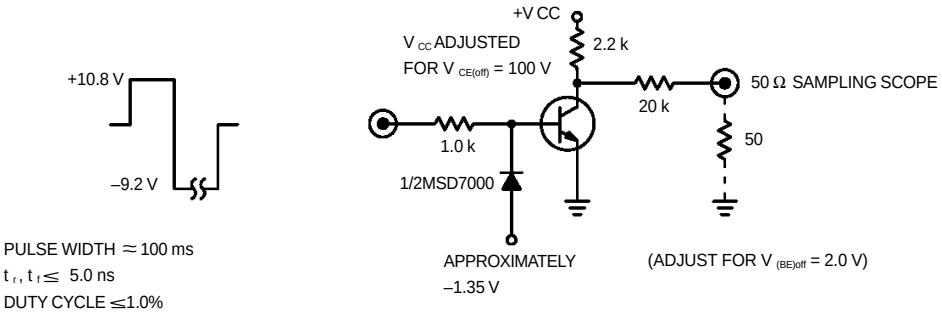
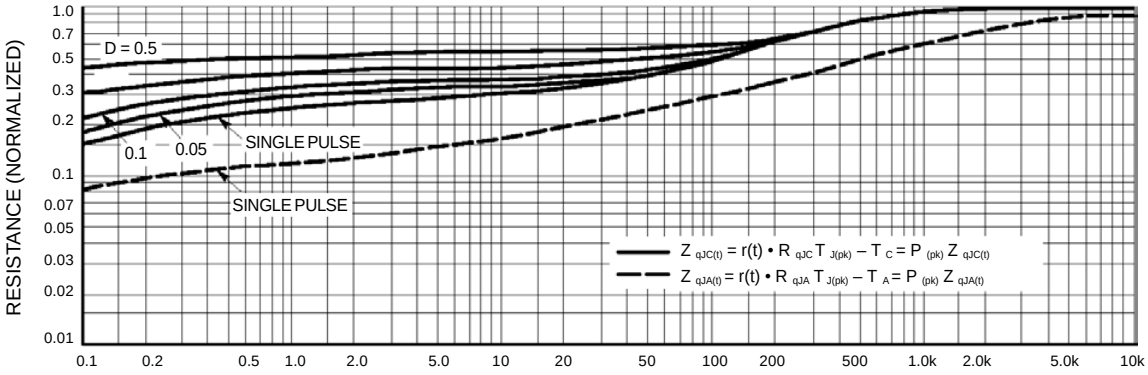


Figure 8. Switching Time Test Circuit



t, TIME (ms)

Figure 9. Thermal Response

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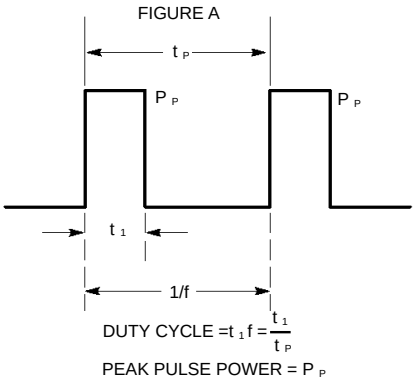
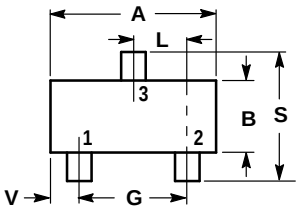
FIGURE A

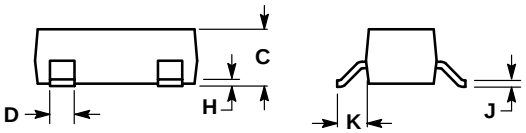


Design Note: Use of Transient Thermal Resistance Data

LMBT6517LT1G

SOT-23





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