

# High Voltage Transistors

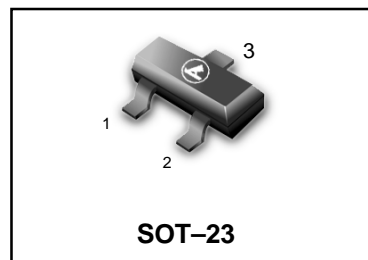
## NPN Silicon

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

### Ordering Information

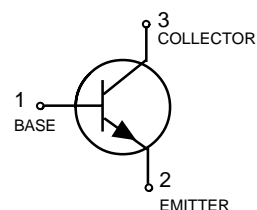
| Device                           | Marking | Shipping        |
|----------------------------------|---------|-----------------|
| LMBT6 517LT1G<br>S-LMBT6 517LT1G | 1Z      | 3000/Tape&Reel  |
| LMBT6517LT3G<br>S-LMBT6517LT3G   | 1Z      | 10000/Tape&Reel |

**LMBT6517LT1G**  
**S-LMBT6517LT1G**



### 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)<br>$T_A = 25^\circ\text{C}$        | $P_D$           | 225         | mW                        |
| Derate above $25^\circ\text{C}$   |                 | 1.8         | mW/ $^\circ\text{C}$      |
| Thermal Resistance, Junction to Ambient                                     | $R_{\theta JA}$ | 556         | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation<br>Alumina Substrate, (2) $T_A = 25^\circ\text{C}$ | $P_D$           | 300         | mW                        |
| Derate above $25^\circ\text{C}$   |                 | 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

(S-)LMBT6517LT1 G= 1Z

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

### OFF CHARACTERISTICS

|   |               |     |    |      |
|---|---------------|-----|----|------|
| Collector-Emitter Breakdown Voltage<br>( $I_C = 1.0 \text{ mAdc}$ ) | $V_{(BR)CEO}$ | 350 | —  | Vdc  |
| Collector-Base Breakdown Voltage<br>( $I_C = 100 \mu\text{Adc}$ )   | $V_{(BR)CBO}$ | 350 | —  | Vdc  |
| Emitter-Base Breakdown Voltage<br>( $I_E = 10 \mu\text{Adc}$ )      | $V_{(BR)EBO}$ | 6.0 | —  | Vdc  |
| Collector Cutoff Current<br>( $V_{CB} = 250\text{Vdc}$ )            | $I_{CBO}$     | —   | 50 | nAdc |
| Emitter Cutoff Current<br>( $V_{EB} = 5.0\text{Vdc}$ )              | $I_{EBO}$     | —   | 50 | nAdc |

1. FR-5 =  $1.0 \times 0.75 \times 0.062 \text{ in.}$

2. Alumina =  $0.4 \times 0.3 \times 0.024 \text{ in.}$  99.5% alumina.

LMBT6517LT1G , S-LMBT6517LT1G

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

**ON CHARACTERISTICS**

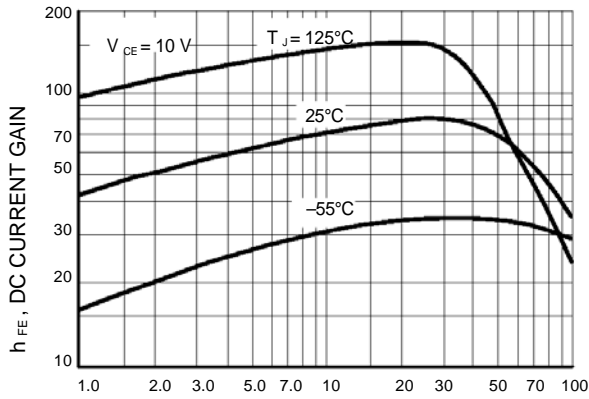
|   |               |                            |                             |     |
|---|---------------|----------------------------|-----------------------------|-----|
| DC Current Gain<br>( $I_C = 1.0\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 10\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 30\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 50\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 100\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ ) | $h_{FE}$      | 20<br>30<br>30<br>20<br>15 | —<br>—<br>200<br>200<br>—   | —   |
| Collector–Emitter Saturation Voltage(3)<br>( $I_C = 10\text{ mAdc}, I_B = 1.0\text{ mAdc}$ )<br>( $I_C = 20\text{ mAdc}, I_B = 2.0\text{ mAdc}$ )<br>( $I_C = 30\text{ mAdc}, I_B = 3.0\text{ mAdc}$ )<br>( $I_C = 50\text{ mAdc}, I_B = 5.0\text{ mAdc}$ )                                     | $V_{CE(sat)}$ | —<br>—<br>—<br>—           | 0.30<br>0.35<br>0.50<br>1.0 | Vdc |
| Base – Emitter Saturation Voltage<br>( $I_C = 10\text{ mAdc}, I_B = 1.0\text{ mAdc},$ )<br>( $I_C = 20\text{ mAdc}, I_B = 2.0\text{ mAdc},$ )<br>( $I_C = 30\text{ mAdc}, I_B = 3.0\text{ mAdc},$ )   | $V_{BE(sat)}$ | —<br>—<br>—                | 0.75<br>0.85<br>0.90        | Vdc |
| Base–Emitter On Voltage<br>( $I_C = 100\text{ mAdc}, V_{CE} = 10\text{ Vdc}$ )  | $V_{BE(on)}$  | —                          | 2.0                         | Vdc |

**SMALL–SIGNAL CHARACTERISTICS**

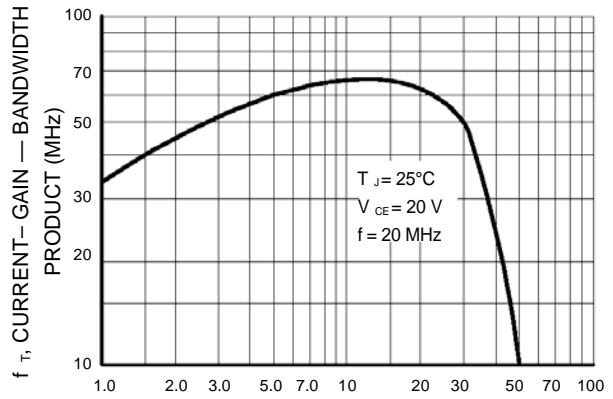
|   |          |    |     |     |
|---|----------|----|-----|-----|
| Current Gain–Bandwidth Product<br>( $V_{CE} = 20\text{ Vdc}, I_C = 10\text{ mAdc}, f = 20\text{ MHz}$ ) | $f_T$    | 40 | 200 | MHz |
| Collector –Base Capacitance<br>( $V_{CB} = 20\text{ Vdc}, f = 1.0\text{ MHz}$ )                         | $C_{cb}$ | —  | 6.0 | pF  |
| Emitter –Base Capacitance<br>( $V_{EB} = 0.5\text{ Vdc}, f = 1.0\text{ MHz}$ )                          | $C_{eb}$ | —  | 80  | pF  |

3. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle = 2.0%.

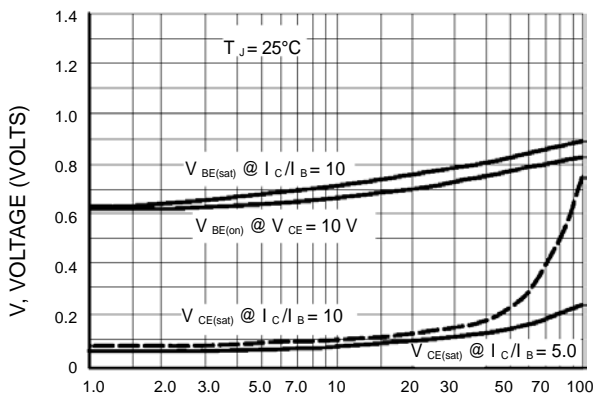
LMBT6517LT1G , S-LMBT6517LT1G



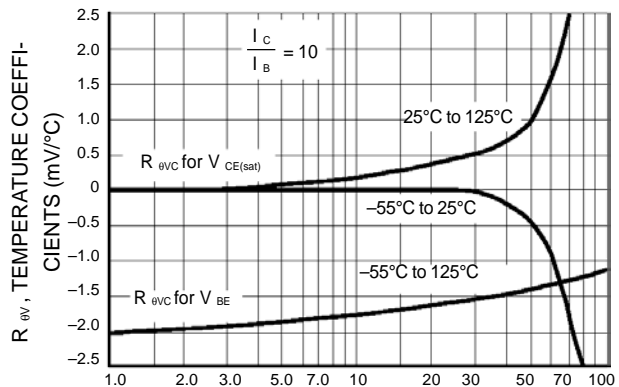
IC, COLLECTOR CURRENT (mA)  
**Figure 1. DC Current Gain**



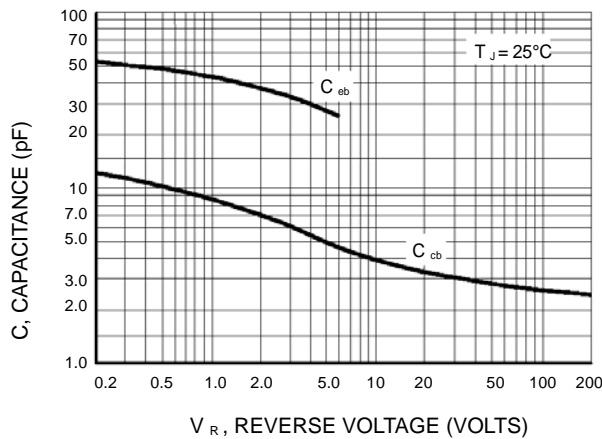
IC, COLLECTOR CURRENT (mA)  
**Figure 2. Current-Gain — Bandwidth Product**



IC, COLLECTOR CURRENT (mA)  
**Figure 3. "On" Voltages**

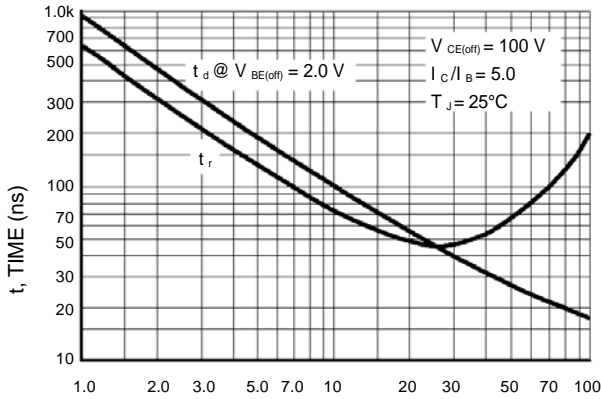


IC, COLLECTOR CURRENT (mA)  
**Figure 4. Temperature Coefficients**

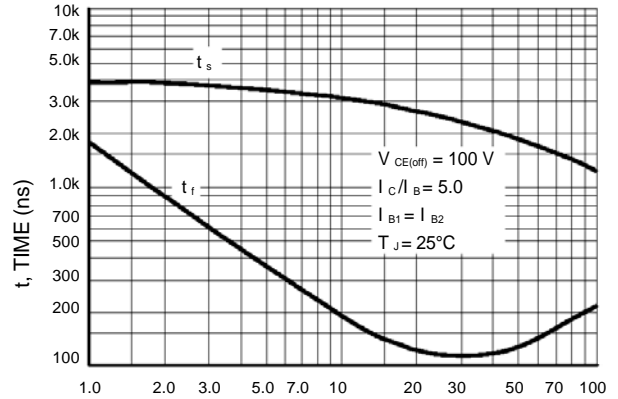


**Figure 5. Capacitance**

LMBT6517LT1G , S-LMBT6517LT1G



$I_c$ , COLLECTOR CURRENT (mA)  
Figure 6. Turn-On Time



$I_c$ , COLLECTOR CURRENT (mA)  
Figure 7. Turn-Off Time

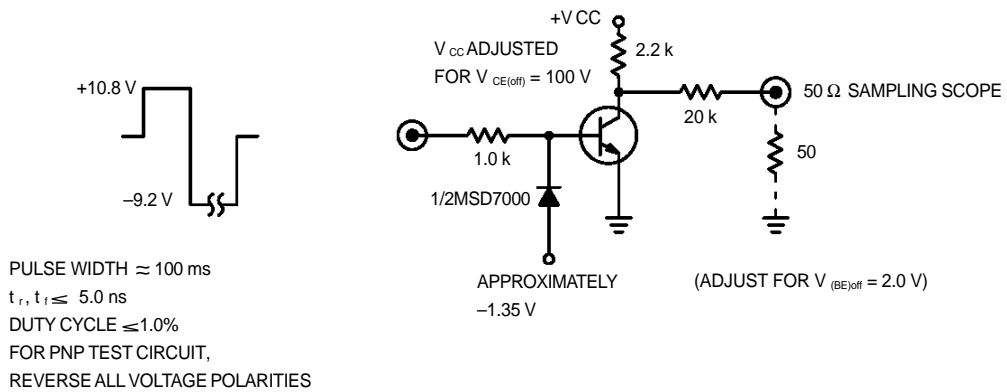


Figure 8. Switching Time Test Circuit

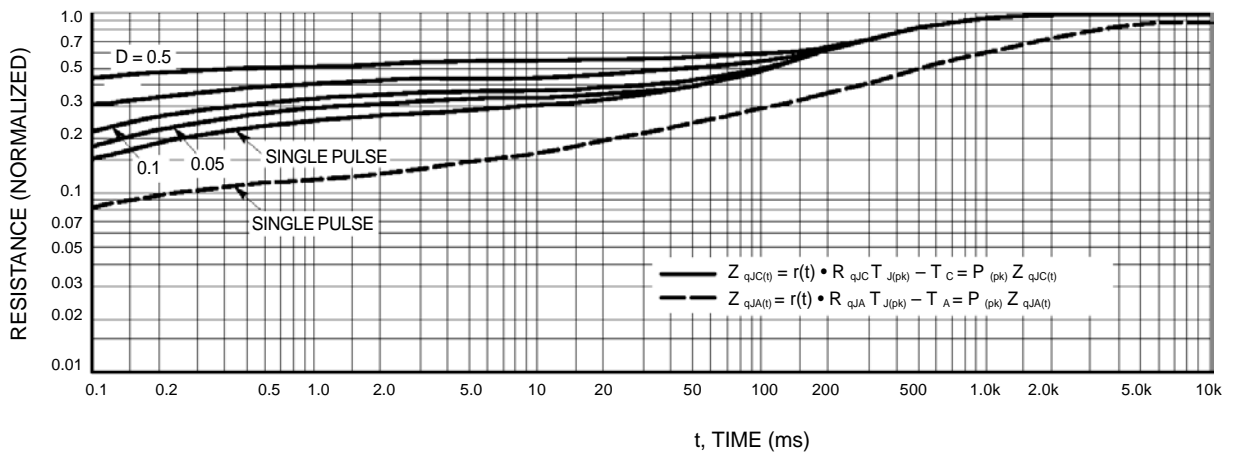
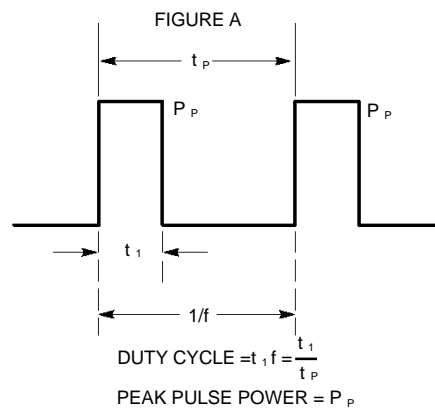


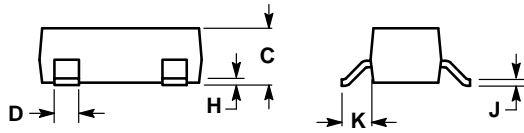
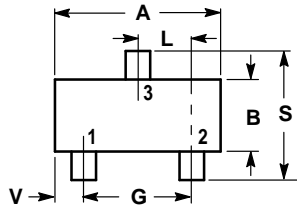
Figure 9. Thermal Response

**LMBT6517LT1G , S-LMBT6517LT1G**

**Design Note: Use of Transient Thermal Resistance Data**

LMBT6517LT1G , S-LMBT6517LT1G

SOT-23

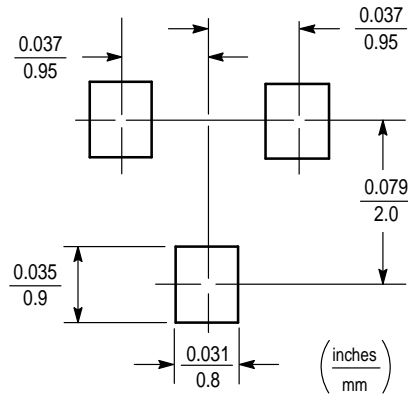


NOTES:

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



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Bipolar Transistors - BJT category](#):*

*Click to view products by [Leshan manufacturer](#):*

Other Similar products are found below :

[BC559C](#) [MCH4017-TL-H](#) [MMBT-2369-TR](#) [BC546/116](#) [NJVMJD148T4G](#) [NTE16](#) [NTE195A](#) [IMX9T110](#) [2N4401-A](#) [2N6728](#) [2SA1419T-TD-H](#) [2SA2126-E](#) [2SB1204S-TL-E](#) [FMC5AT148](#) [2N2369ADCSM](#) [2N2907A](#) [2N3904-NS](#) [2N5769](#) [2SC4618TLN](#) [CPH6501-TL-E](#) [MCH4021-TL-E](#) [US6T6TR](#) [BAX18/A52R](#) [BC556/112](#) [IMZ2AT108](#) [MMST8098T146](#) [UMX21NTR](#) [MCH6102-TL-E](#) [TTA1452B,S4X\(S](#) [2N3879](#) [NTE13](#) [NTE282](#) [NTE323](#) [NTE350](#) [NTE81](#) [JANTX2N2920L](#) [JANTX2N3735](#) [JANSR2N2222AUB](#) [CMLT3946EG TR](#) [SNSS40600CF8T1G](#) [2N6987](#) [CMLT3906EG TR](#) [GRP-DATA-JANS2N2907AUB](#) [GRP-DATA-JANS2N2222AUA](#) [MMDT3946FL3-7](#) [2N4240](#) [JANS2N3019](#) [MSB30KH-13](#) [2N2221AUB](#) [2SD1815T-TL-E](#)