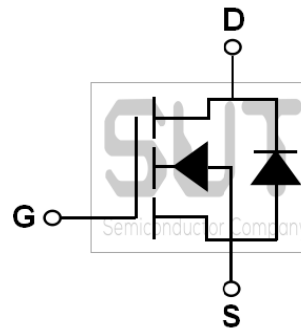
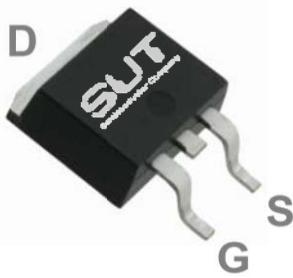


## N-Channel 65-V<sub>(D-S)</sub> SGT MOSFET

| PRODUCT SUMMARY       |                               |                    |
|-----------------------|-------------------------------|--------------------|
| B <sub>VDSS</sub> (V) | R <sub>DS(on)</sub> (mΩ)(MAX) | I <sub>D</sub> (A) |
| 65                    | 16@V <sub>GS</sub> =10V       | 35                 |

### TO252 Pin Configuration



### ABSOLUTE MAXIMUM RATINGS(T<sub>C</sub>=25°C UNLESS OTHERWISE NOTED)

| Parameter  | Symbol           | Rating     | Units |
|--|------------------|------------|-------|
| Drain-Source Voltage                             | V <sub>DS</sub>  | 65         | V     |
| Gate-Source Voltage                              | V <sub>GS</sub>  | +20/-12    | V     |
| Drain Current-Continuous (T <sub>C</sub> =25°C)  | I <sub>D</sub>   | 35         | A     |
| Drain Current-Continuous (T <sub>C</sub> =100°C) |                  | 22         | A     |
| Drain Current-Pulsed <sup>1</sup>                | I <sub>DM</sub>  | 140        | A     |
| Single Pulse Avalanche Energy <sup>2</sup>       | EAS              | 9.1        | mJ    |
| Single Pulse Avalanche Current <sup>2</sup>      | IAS              | 13.5       | A     |
| Power Dissipation (T <sub>C</sub> =25°C)         | P <sub>D</sub>   | 33.8       | W     |
| Power Dissipation-Derate above 25°C              |                  | 0.27       | W/°C  |
| Storage Temperature Range                        | T <sub>STG</sub> | -55 to 150 | °C    |
| Operating Junction Temperature Range             | T <sub>J</sub>   | -55 to 150 | °C    |

### THERMAL CHARACTERISTICS

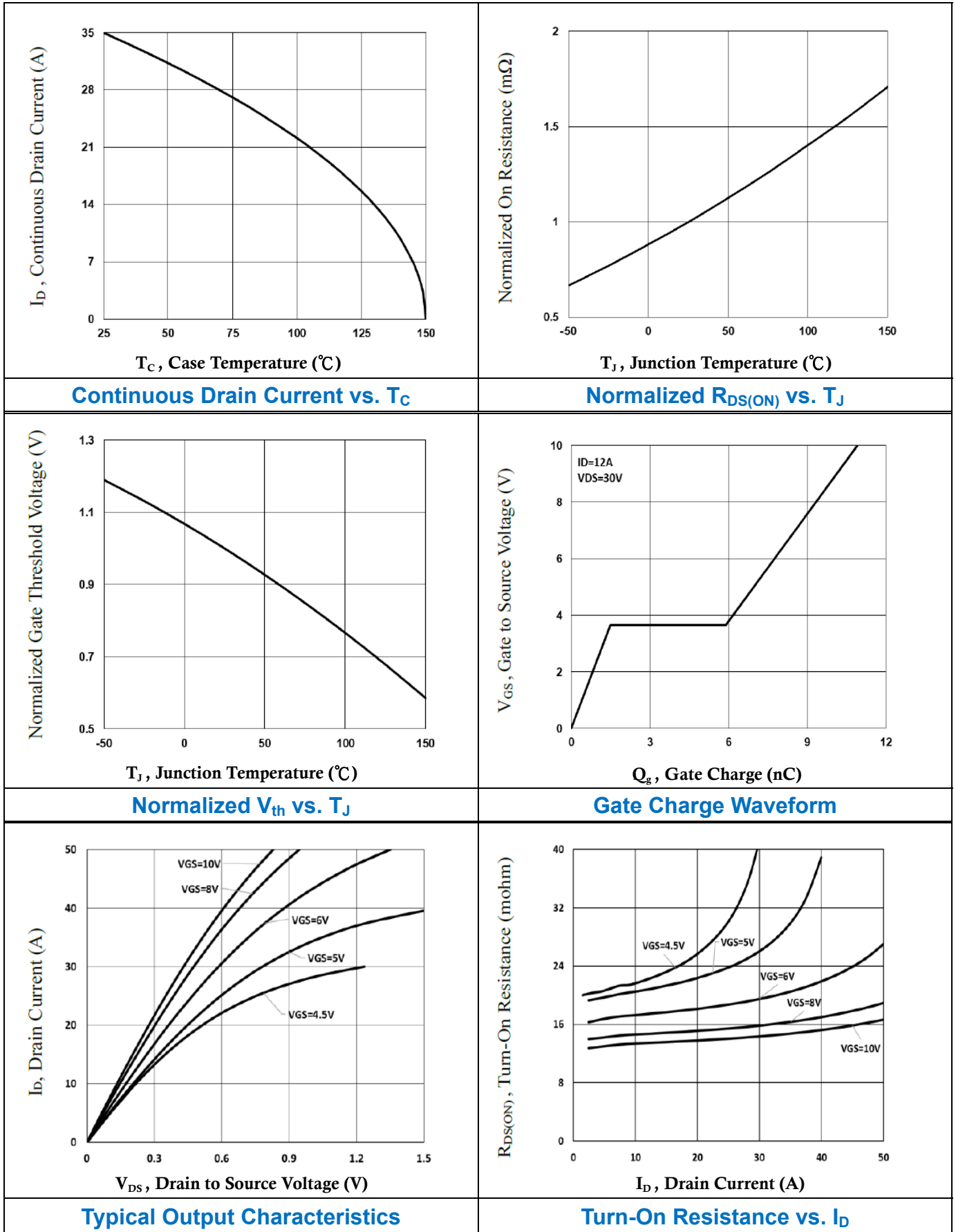
| Parameter                              | Symbol           | Typ. | Max. | Unit |
|--|------------------|------|------|------|
| Thermal Resistance Junction to ambient | R <sub>θJA</sub> | ---  | 62   | °C/W |
| Thermal Resistance Junction to Case    | R <sub>θJC</sub> | ---  | 3.7  | °C/W |

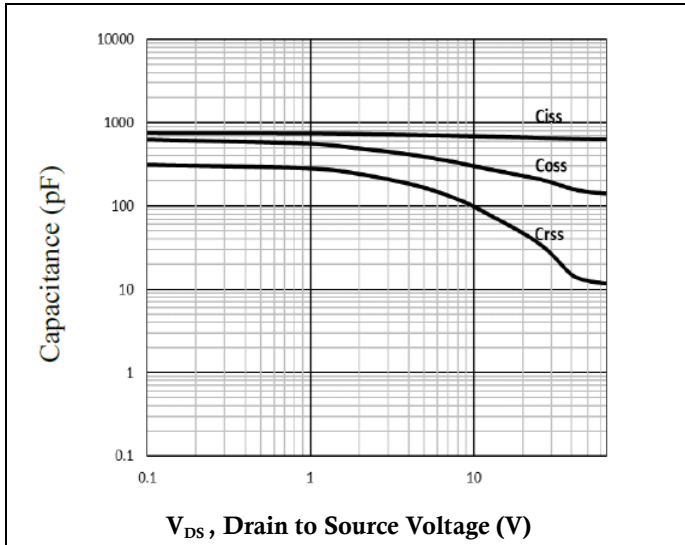
| ELECTRICAL CHARACTERISTICS (T <sub>J</sub> =25°C UNLESS OTHERWISE NOTED) |                                     |  |      |      |      |       |
|--|-------------------------------------|--|------|------|------|-------|
| Parameter  | Symbol                              | Test Condition   | Min. | Typ. | Max. | Unit  |
| <b>Off Characteristics</b>   |                                     |  |      |      |      |       |
| Drain-Source Breakdown Voltage   | BV <sub>DSS</sub>                   | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA   | 65   | ---  | ---  | V     |
| BV <sub>DSS</sub> Temperature Coefficient                                | ΔBV <sub>DSS</sub> /ΔT <sub>J</sub> | Reference to 25°C, I <sub>D</sub> =1mA   | ---  | 0.03 | ---  | V/°C  |
| Drain-Source Leakage Current   | I <sub>DSS</sub>                    | V <sub>GS</sub> =0V, V <sub>DS</sub> =60V, T <sub>J</sub> =25°C                      | ---  | ---  | 1    | uA    |
|  |                                     | V <sub>GS</sub> =0V, V <sub>DS</sub> =48V, T <sub>J</sub> =85°C                      | ---  | ---  | 10   | uA    |
| Gate-Source Leakage Current  | I <sub>GSS</sub>                    | V <sub>GS</sub> =20V, V <sub>DS</sub> =0V  | ---  | ---  | 100  | nA    |
| <b>On Characteristics</b>  |                                     |  |      |      |      |       |
| Static Drain-Source On-Resistance  | R <sub>DS(ON)</sub>                 | V <sub>GS</sub> =10V, I <sub>D</sub> =12A  | ---  | 12.6 | 16   | mΩ    |
|  |                                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A  | ---  | 19   | 24   | mΩ    |
| Gate Threshold Voltage   | V <sub>GS(th)</sub>                 | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA                             | 1.0  | 1.6  | 2.5  | V     |
| V <sub>GS(th)</sub> Temperature Coefficient                              | ΔV <sub>GS(th)</sub>                |  | ---  | -5.1 | ---  | mV/°C |
| Forward Transconductance   | g <sub>fs</sub>                     | V <sub>DS</sub> =10V, I <sub>D</sub> =3A   | ---  | 5.0  | ---  | S     |
| <b>Dynamic and Switching Characteristics</b>                             |                                     |  |      |      |      |       |
| Total Gate Charge <sup>3, 4</sup>  | Q <sub>g</sub>                      | V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =12A                      | ---  | 10.9 | 22   | nC    |
| Gate-Source Charge <sup>3, 4</sup>                                       | Q <sub>gs</sub>                     |  | ---  | 1.5  | 3.0  |       |
| Gate-Drain Charge <sup>3, 4</sup>  | Q <sub>gd</sub>                     |  | ---  | 4.4  | 9.0  |       |
| Turn-On Delay Time <sup>3, 4</sup>                                       | T <sub>d(on)</sub>                  | V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =1A | ---  | 8.0  | 16   | ns    |
| Rise Time <sup>3, 4</sup>  | T <sub>r</sub>                      |  | ---  | 12   | 24   |       |
| Turn-Off Delay Time <sup>3, 4</sup>                                      | T <sub>d(off)</sub>                 |  | ---  | 25   | 50   |       |
| Fall Time <sup>3, 4</sup>  | T <sub>f</sub>                      |  | ---  | 18   | 36   |       |
| Input Capacitance  | C <sub>iss</sub>                    | V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, F=1MHz                                    | ---  | 653  | 1300 | pF    |
| Output Capacitance   | C <sub>oss</sub>                    |  | ---  | 192  | 380  |       |
| Reverse Transfer Capacitance   | C <sub>rss</sub>                    |  | ---  | 27   | 60   |       |
| Gate resistance  | R <sub>g</sub>                      | V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz                                     | ---  | 0.3  | ---  | Ω     |
| <b>Drain-Source Diode Characteristics and Maximum Ratings</b>            |                                     |  |      |      |      |       |
| Continuous Source Current  | I <sub>S</sub>                      | V <sub>G</sub> =V <sub>D</sub> =0V, Force Current                                    | ---  | ---  | 35   | A     |
| Pulsed Source Current  | I <sub>SM</sub>                     |  | ---  | ---  | 70   | A     |
| Diode Forward Voltage  | V <sub>SD</sub>                     | V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C                        | ---  | ---  | 1.0  | V     |

Note :

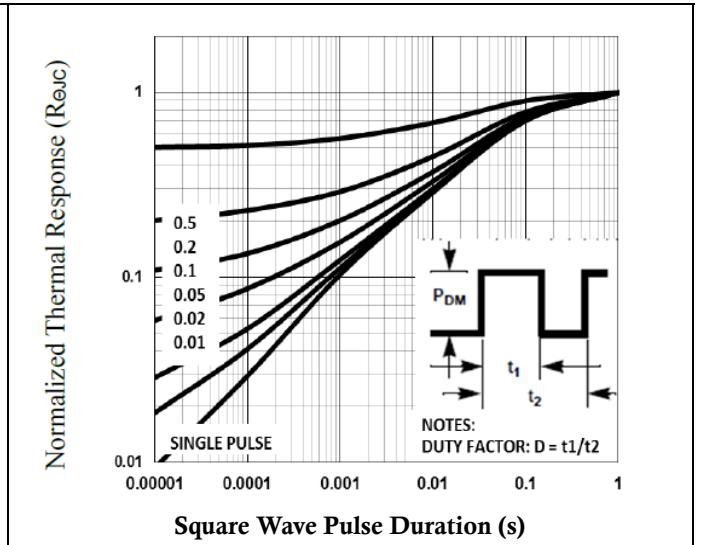
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V<sub>GS</sub>=10V, V<sub>DD</sub>=50V, L=0.1mH, I<sub>AS</sub>=13.5A, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

65V N-Channel MOSFETs

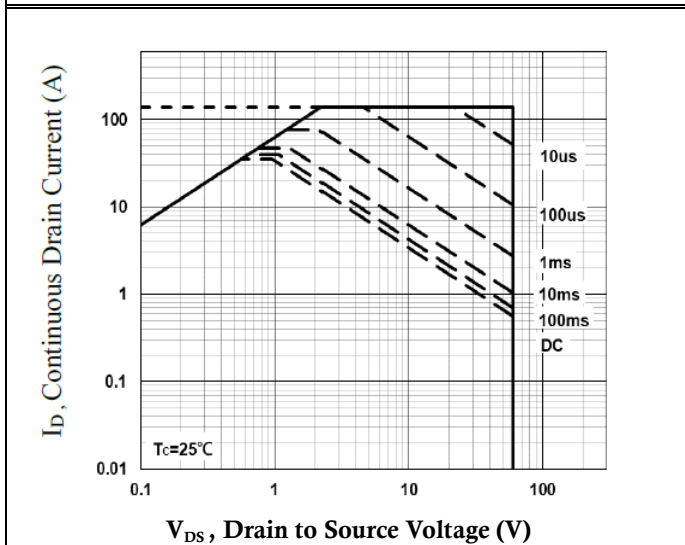




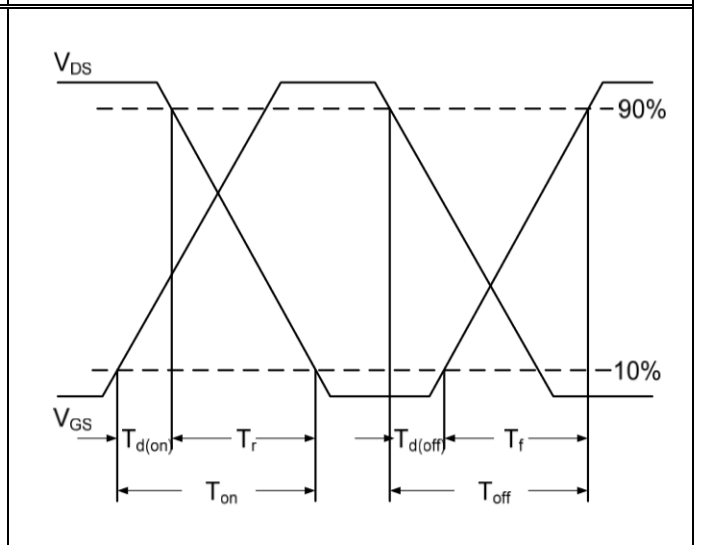
Capacitance Characteristics



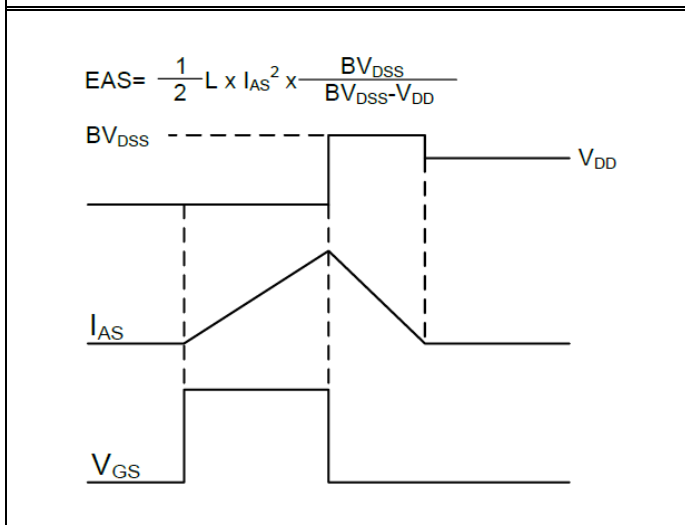
Normalized Transient Response



Maximum Safe Operation Area

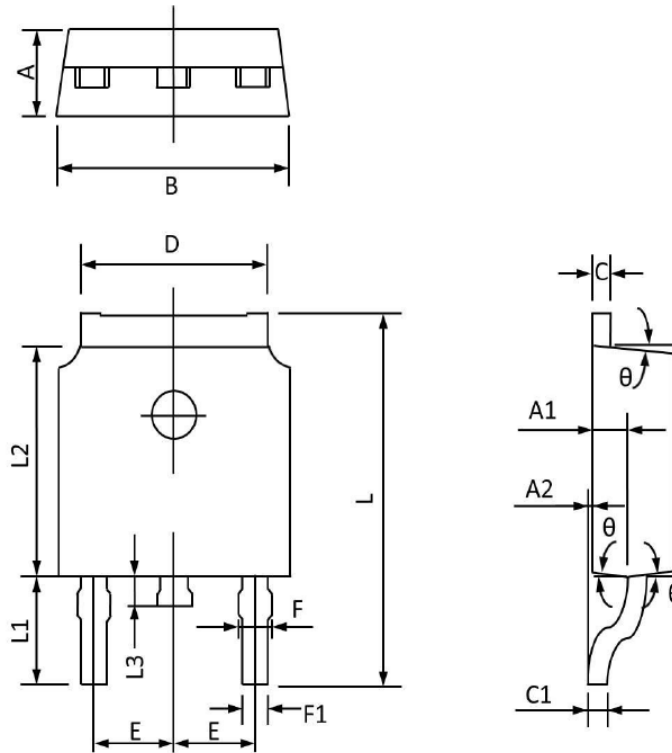


Switching Time Waveform



EAS Waveform

TO252 PACKAGE INFORMATION



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | MAX                       | MIN   | MAX                  | MIN   |
| A        | 2.400                     | 2.200 | 0.094                | 0.087 |
| A1       | 1.110                     | 0.910 | 0.044                | 0.036 |
| A2       | 0.150                     | 0.000 | 0.006                | 0.000 |
| B        | 6.800                     | 6.400 | 0.268                | 0.252 |
| C        | 0.580                     | 0.450 | 0.023                | 0.018 |
| C1       | 0.580                     | 0.460 | 0.023                | 0.018 |
| D        | 5.500                     | 5.100 | 0.217                | 0.201 |
| E        | 2.386                     | 2.186 | 0.094                | 0.086 |
| F        | 0.940                     | 0.600 | 0.037                | 0.024 |
| F1       | 0.860                     | 0.500 | 0.034                | 0.020 |
| L        | 10.400                    | 9.400 | 0.409                | 0.370 |
| L1       | 3.000                     | 2.400 | 0.118                | 0.094 |
| L2       | 6.200                     | 5.400 | 0.244                | 0.213 |
| L3       | 1.200                     | 0.600 | 0.047                | 0.024 |
| $\theta$ | 9°                        | 3°    | 9°                   | 3°    |