

## PRODUCT CHARACTERISTICS

|                                   |               |
|-----------------------------------|---------------|
| $V_{DS}$                          | 150V          |
| $R_{DS(ON)}$ Typ(@ $V_{GS}=10V$ ) | 3.2m $\Omega$ |
| $Q_g$ @typ                        | 65nC          |
| $I_D$                             | 220A          |

## APPLICATIONS

- \* Battery Management
- \* Motor Control and Drive
- \* Switching Applications

## FEATURE

- \* Low Gate Charge
- \* Low Reverse Transfer Capacitance
- \* 100% Avalanche Tested

## ORDER INFORMATION

| Order Codes  |         | Package | Packing          |
|--------------|---------|---------|------------------|
| Halogen-Free | Halogen |         |                  |
| MOT7134T4    | N/A     | TOLT    | 1200 pieces/Reel |

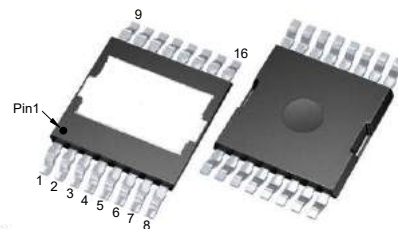
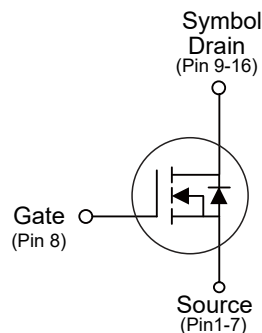
## ABSOLUTE MAXIMUM RATINGS( $T_A=25^{\circ}C$ , unless otherwise specified)

| Parameter                                                   | Symbol    | Ratings   | Unit        |
|-------------------------------------------------------------|-----------|-----------|-------------|
| Drain-Source Voltage                                        | $V_{DS}$  | 150       | V           |
| Gate-Source Voltage                                         | $V_{GS}$  | $\pm 20$  | V           |
| Drain Current Continuous(@ $V_{GS}=10V, T_C=25^{\circ}C$ )  | $I_D$     | 220       | A           |
| Drain Current Continuous(@ $V_{GS}=10V, T_C=100^{\circ}C$ ) | $I_D$     | 140       | A           |
| Drain Current Pulsed                                        | $I_{DM}$  | 880       | A           |
| Avalanche Energy *                                          | $E_{AS}$  | 1922      | mJ          |
| Power Dissipation                                           | $P_D$     | 375       | W           |
| Junction Temperature                                        | $T_J$     | +150      | $^{\circ}C$ |
| Storage Temperature                                         | $T_{STG}$ | -55~ +150 | $^{\circ}C$ |

## THERMAL CHARACTERISTICS

| Parameter           | Symbol     | Typ  | Unit          |
|---------------------|------------|------|---------------|
| Junction to Ambient | $R_{thJA}$ | 42.8 | $^{\circ}C/W$ |
| Junction to Case    | $R_{thJC}$ | 0.33 | $^{\circ}C/W$ |

Note: \* EAS condition:  $T_J=25^{\circ}C, V_{DD}=50V, V_G=10V, L=1mH, R_g=25\Omega$



**■ ELECTRICAL CHARACTERISTICS** ( $T_C=25^{\circ}\text{C}$ , unless otherwise noted)

| Parameter                             | Symbol              | Test Conditions                                                                         | Min           | Typ  | Max  | Unit |
|---------------------------------------|---------------------|-----------------------------------------------------------------------------------------|---------------|------|------|------|
| Off characteristics                   |                     |                                                                                         |               |      |      |      |
| Drain to Source Breakdown Voltage     | V <sub>DSS</sub>    | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                              | 150           | -    | -    | V    |
| Drain to Source Leakage Current       | I <sub>DSS</sub>    | V <sub>DS</sub> =150V, V <sub>GS</sub> =0V                                              | -             | -    | 1    | μA   |
| Gate to Source Forward Leakage        | I <sub>GSS(F)</sub> | V <sub>DS</sub> =0V, V <sub>GS</sub> =+20V                                              | -             | -    | 100  | nA   |
| Gate to Source Reverse Leakage        | I <sub>GSS(R)</sub> | V <sub>DS</sub> =0V, V <sub>GS</sub> =-20V                                              | -             | -    | -100 | nA   |
| On characteristics                    |                     |                                                                                         |               |      |      |      |
| Drain to Source On-Resistance         | R <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =20A                                               | -             | 3.2  | 3.8  | mΩ   |
| Gate Threshold Voltage                | V <sub>GS(TH)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                | 2             | 3    | 4    | V    |
| Dynamic characteristics               |                     |                                                                                         |               |      |      |      |
| Gate Resistance                       | R <sub>g</sub>      | V <sub>GS</sub> =0V, V <sub>DS</sub> =0V ,f=1.0MHz                                      | -             | 1    | -    | Ω    |
| Forward Transconductance              | g <sub>fs</sub>     | V <sub>DS</sub> =10V, I <sub>D</sub> =5A                                                | -             | 27   | -    | S    |
| Input Capacitance                     | C <sub>iss</sub>    | V <sub>DS</sub> =75V, V <sub>GS</sub> =0V<br>f=1.0MHz                                   | -             | 5300 | -    | pF   |
| Output Capacitance                    | C <sub>oss</sub>    |                                                                                         | -             | 1380 | -    | pF   |
| Reverse Transfer Capacitance          | C <sub>rss</sub>    |                                                                                         | -             | 26   | -    | pF   |
| Resistive Switching Characteristics   |                     |                                                                                         |               |      |      |      |
| Turn-on Delay Time                    | t <sub>d(ON)</sub>  | I <sub>D</sub> =20A, V <sub>DS</sub> =75V<br>R <sub>G</sub> =6 Ω , V <sub>GS</sub> =10V | -             | 16   | -    | ns   |
| Rise Time                             | t <sub>r</sub>      |                                                                                         | -             | 62   | -    | ns   |
| Turn-off Delay Time                   | t <sub>d(OFF)</sub> |                                                                                         | -             | 89   | -    | ns   |
| Fall Time                             | t <sub>f</sub>      |                                                                                         | -             | 55   | -    | ns   |
| Total Gate Charge                     | Q <sub>g</sub>      | I <sub>D</sub> =20A, V <sub>DS</sub> =75V<br>V <sub>GS</sub> =10V                       | -             | 65   | -    | nC   |
| Gate to Source Charge                 | Q <sub>gs</sub>     |                                                                                         | -             | 25   | -    | nC   |
| Gate to Drain("Miller") Charge        | Q <sub>gd</sub>     |                                                                                         | -             | 11   | -    | nC   |
| Source-Drain Diode Characteristics    |                     |                                                                                         |               |      |      |      |
| Continuous Source Current(Body Diode) | I <sub>s</sub>      |                                                                                         | -             | -    | 220  | A    |
| Maximum Pulsed Current(Body Diode)    | I <sub>SM</sub>     |                                                                                         | -             | -    | 880  | A    |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>SD</sub> =1 A, V <sub>GS</sub> =0V                                               | -             | 0.66 | 1.2  | V    |
| Reverse Recovery Time                 | t <sub>rr</sub>     | I <sub>SD</sub> =20A, T <sub>J</sub> =25 °C                                             | -             | 125  | -    | ns   |
| Reverse Recovery Charge               | Q <sub>rr</sub>     |                                                                                         | di/dt=100A/μs | -    | 620  | -    |

## ■ TYPICAL CHARACTERISTICS

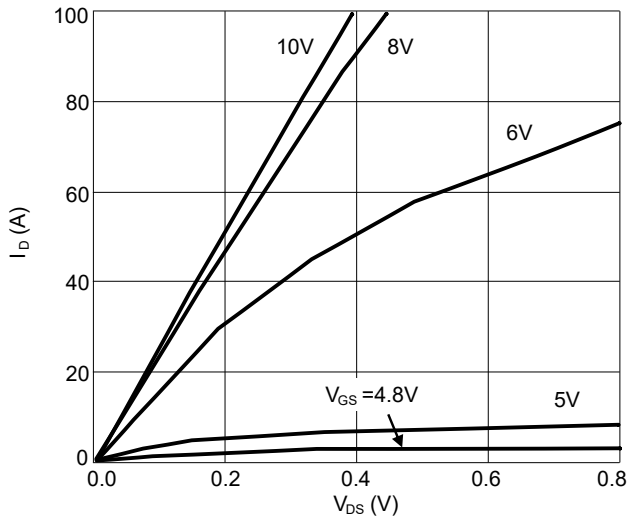


Figure 1: Output Characteristics

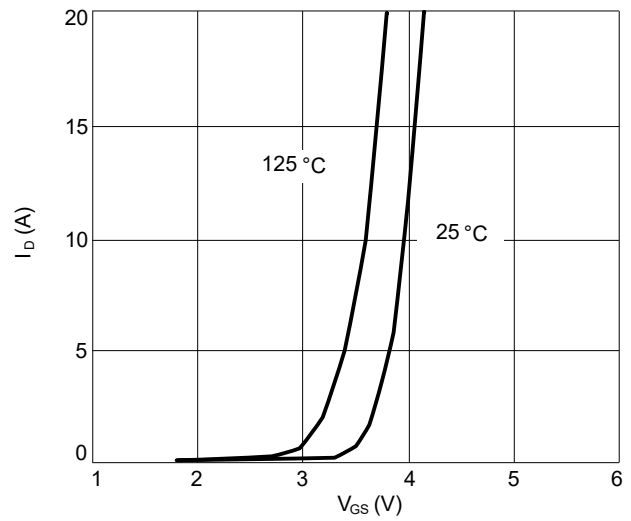


Figure 2: Transfer Characteristics

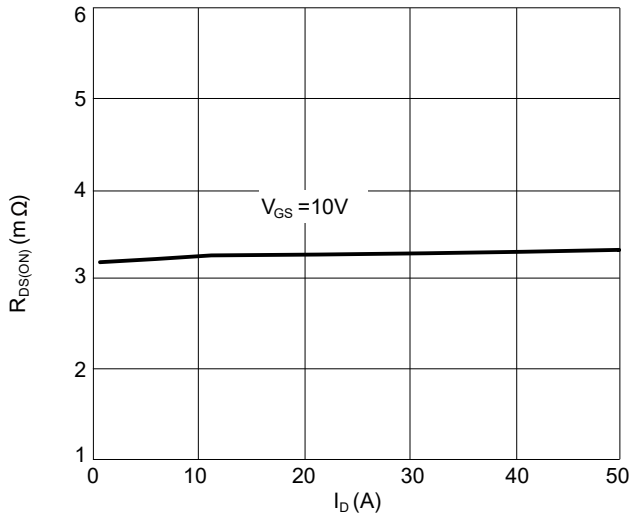


Figure 3: RDS(ON) vs. Drain Current

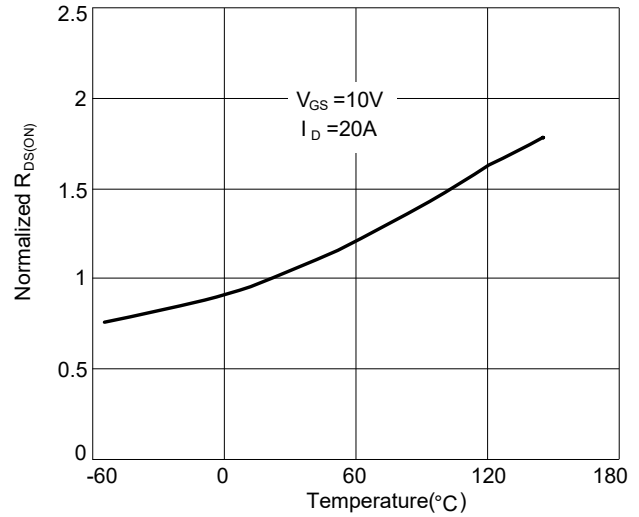


Figure 4: RDS(ON) vs. Junction Temperature

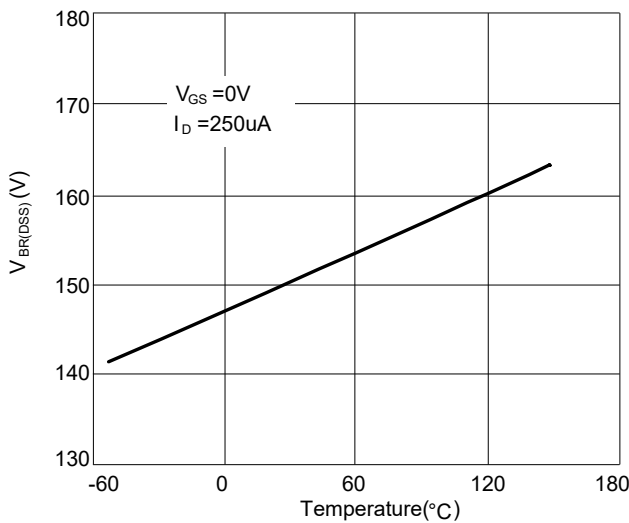


Figure 5: VBR(DSS) vs. Junction Temperature

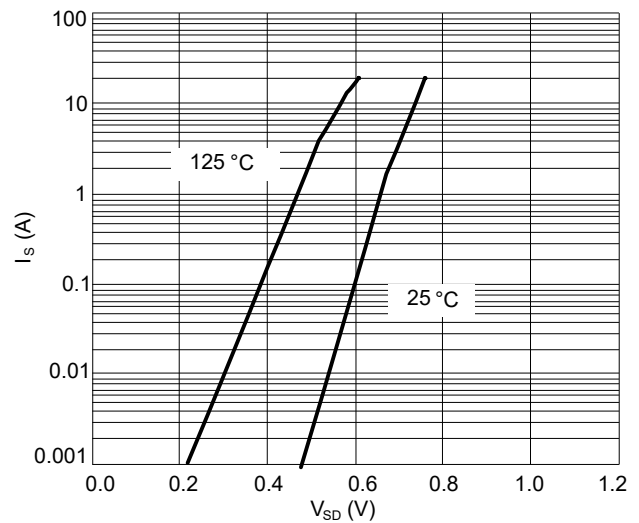


Figure 6: Body-Diode Characteris

■ TYPICAL CHARACTERISTICS(Cont.)

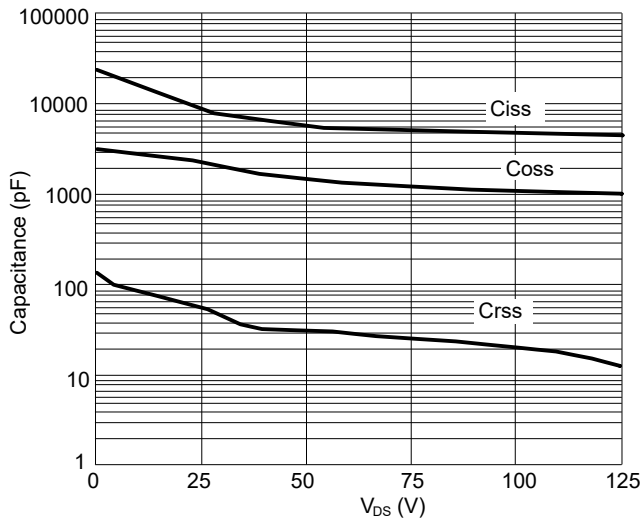


Figure 7: Capacitance Characteristics

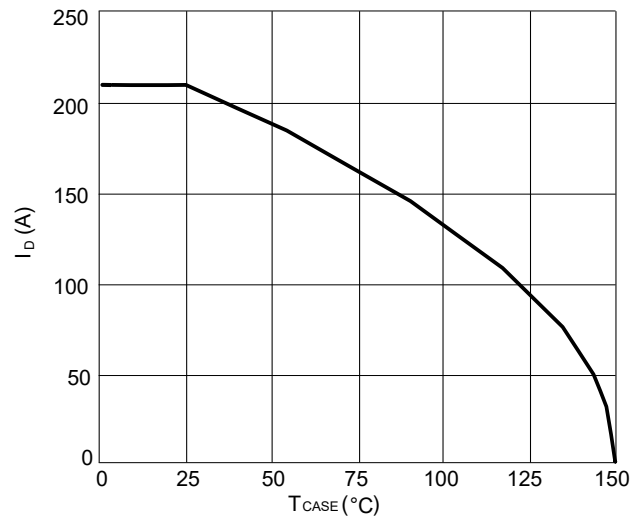


Figure 8: Current De-rating

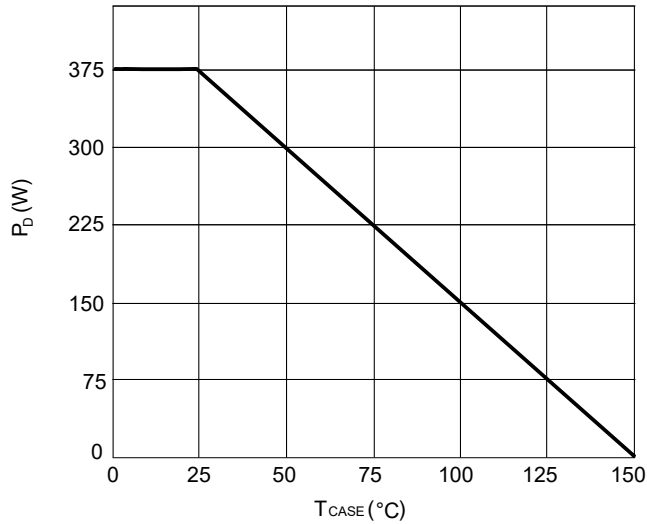


Figure 9: Power De-rating

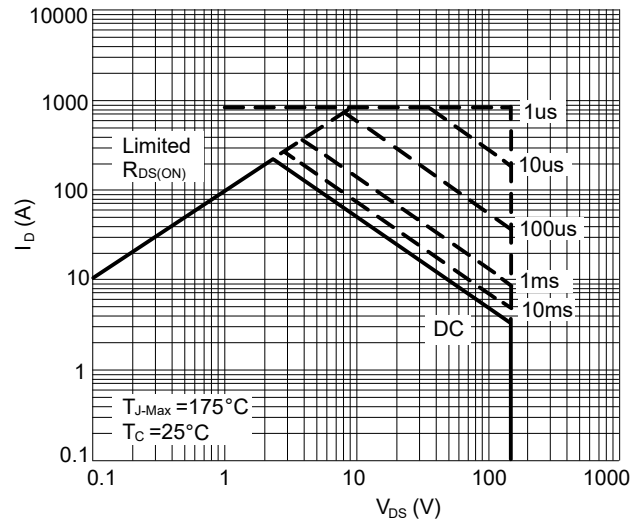


Figure 10: Safe Operation Area

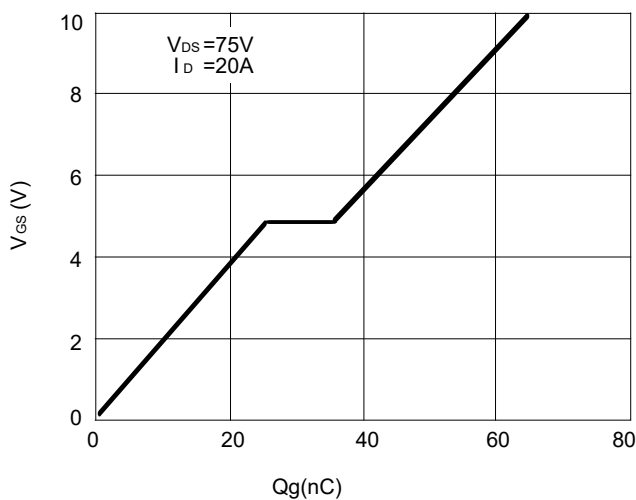


Figure 11: Gate Charge Characteristics

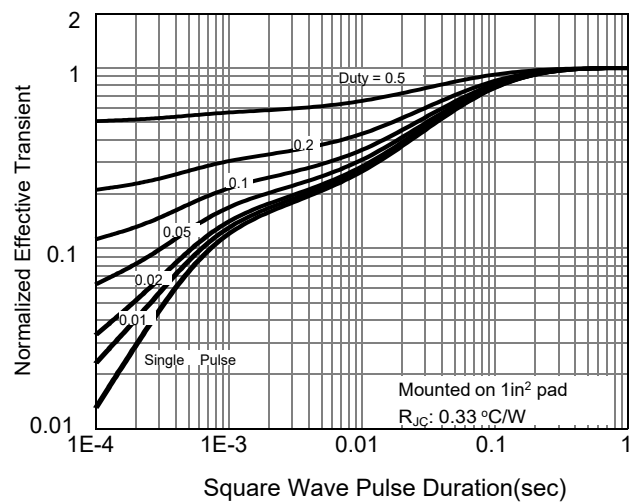
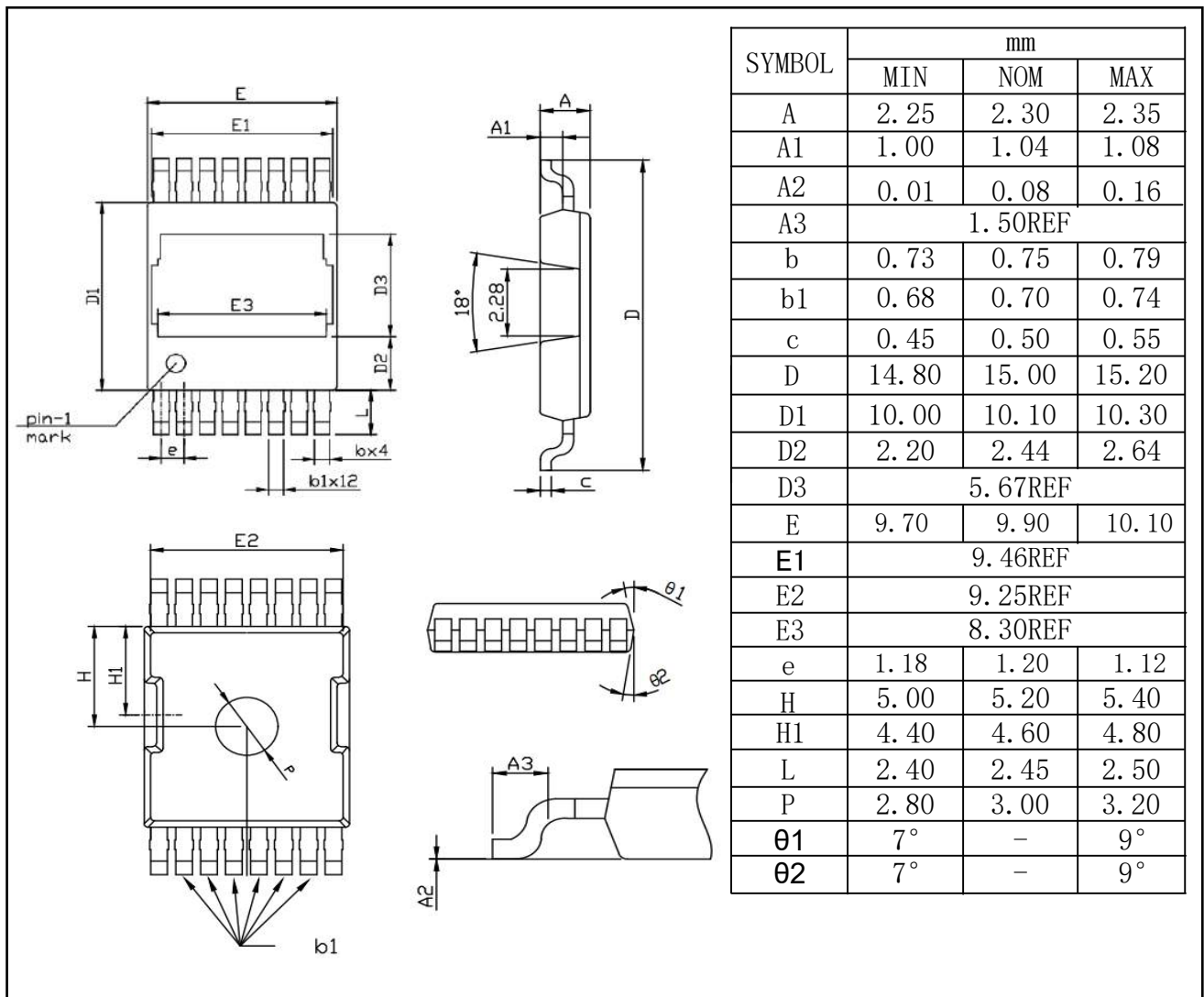


Figure 12: Transient Thermal Impedance

■ TOLT PACKAGE OUTLINE DIMENSIONS



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