# N-Channel Enhancement Mode Power MOSFET

## Description

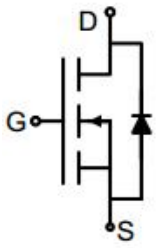
The GT10N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

## General Features

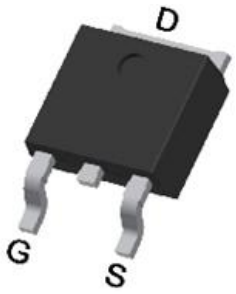
- $V_{DS}$ 100V
- $I_D$ (at $V_{GS}$ = 10V) 9A
- $R_{DS(ON)}$ (at $V_{GS}$ = 10V) < 80mΩ
- $R_{DS(ON)}$ (at $V_{GS}$ = 4.5V) < 90mΩ
- 100% Avalanche Tested
- RoHS Compliant

## Application

- Power switch
- DC/DC converters




Schematic diagram




TO-252

## Ordering Information

| Device | Package | Marking | Packaging |
|---|---|---|---|
| GT10N10 | TO-252 | GT10N10 | 2500pcs/Reel |

## Absolute Maximum Ratings $T_C$ = 25ºC, unless otherwise noted

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Continuous Drain Current | $I_D$ | 9 | A |
| Pulsed Drain Current (note1) | $I_{DM}$ | 36 | A |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Power Dissipation | $P_D$ | 23 | W |
| Single pulse avalanche energy （note2） | $E_{AS}$ | 5 | mJ |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{stg}$ | -55 To 150 | ºC |

## Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance, Junction-to-Ambient | $R_{thJA}$ | 50 | ºC/W |
| Maximum Junction-to-Case | $R_{thJC}$ | 5.4 | ºC/W |

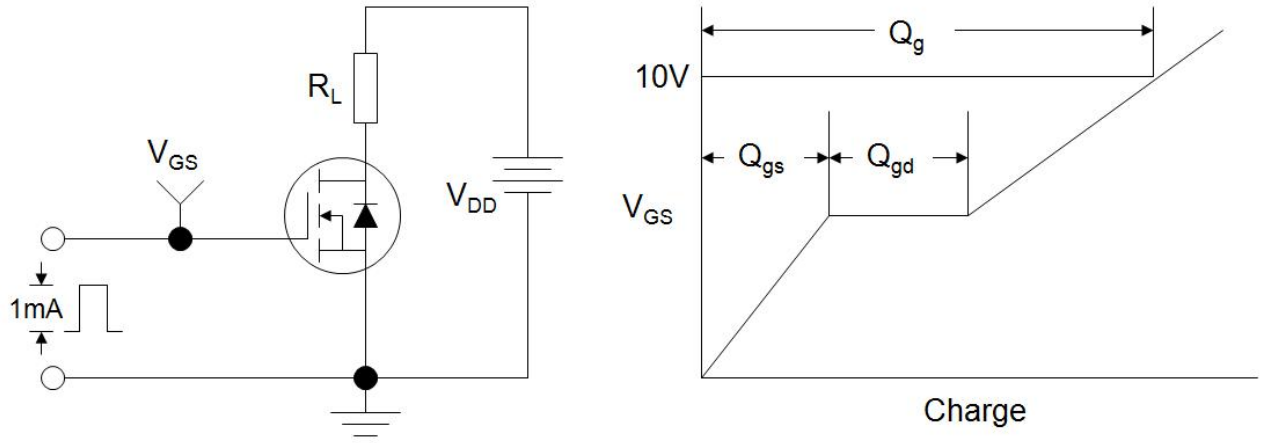
**Specifications** $T_J$ = 25ºC, unless otherwise noted

| Parameter | Symbol | Test Conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| **Static Parameters** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 100 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 100V, $V_{GS}$ = 0V | -- | -- | 1 | μA |
| Gate-Source Leakage | $I_{GSS}$ | $V_{GS}$ = ±20V | -- | -- | ±100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1.0 | 1.7 | 2.5 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 3A | -- | 62 | 80 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 3A | -- | 77 | 90 | |
| Forward Transconductance | $g_{FS}$ | $V_{GS}$ = 5V, $I_D$ = 3A | -- | 3 | -- | S |
| **Dynamic Parameters** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 50V, f = 1.0MHz | -- | 205 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 67 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 3 | -- | |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = 50V, $I_D$ = 3A, $V_{GS}$ = 10V | -- | 5 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 2 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 1 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 50V, $I_D$ = 3A, $R_G$ = 2Ω | -- | 15 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 4 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 21 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 3 | -- | |
| **Drain-Source Body Diode Characteristics** | | | | | | |
| Continuous Body Diode Current | $I_S$ | $T_C$ = 25ºC | -- | -- | 9 | A |
| Body Diode Voltage | $V_{SD}$ | $T_J$ = 25ºC, $I_{SD}$ = 3A, $V_{GS}$ = 0V | -- | -- | 1.2 | V |
| Reverse Recovery Charge | Qrr | $I_F$ = 3A, $V_{GS}$ = 0V di/dt=100A/us | -- | 40 | -- | nC |
| Reverse Recovery Time | Trr | | -- | 33 | -- | ns |

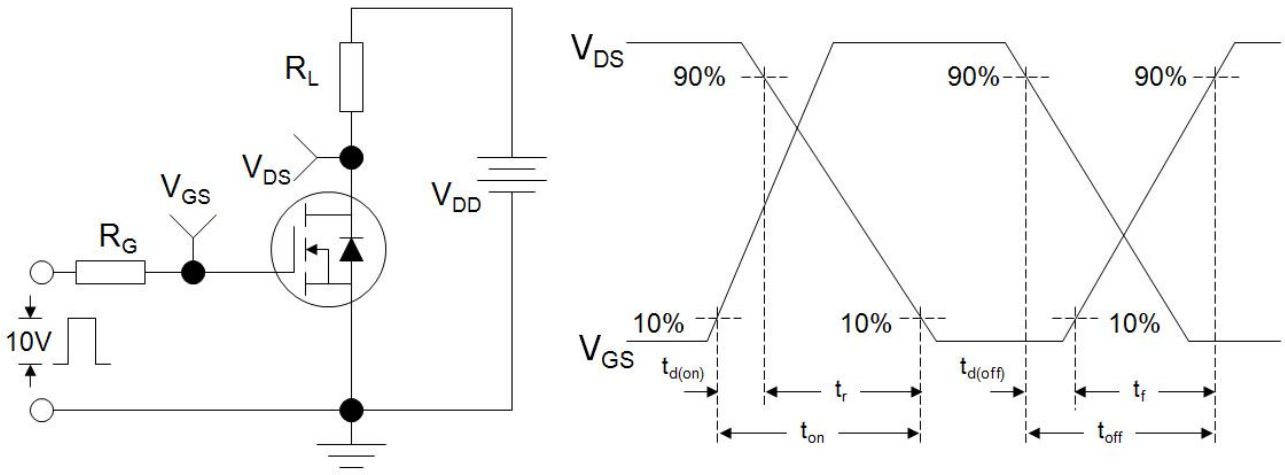
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition : Tj=25℃ ,VDD=50V,VGS=10V,L=0.5mH,Rg=25Ω
   The table shows the minimum avalanche energy, which is 14mJ when the device is tested until failure
3. Identical low side and high side switch with identical $R_G$

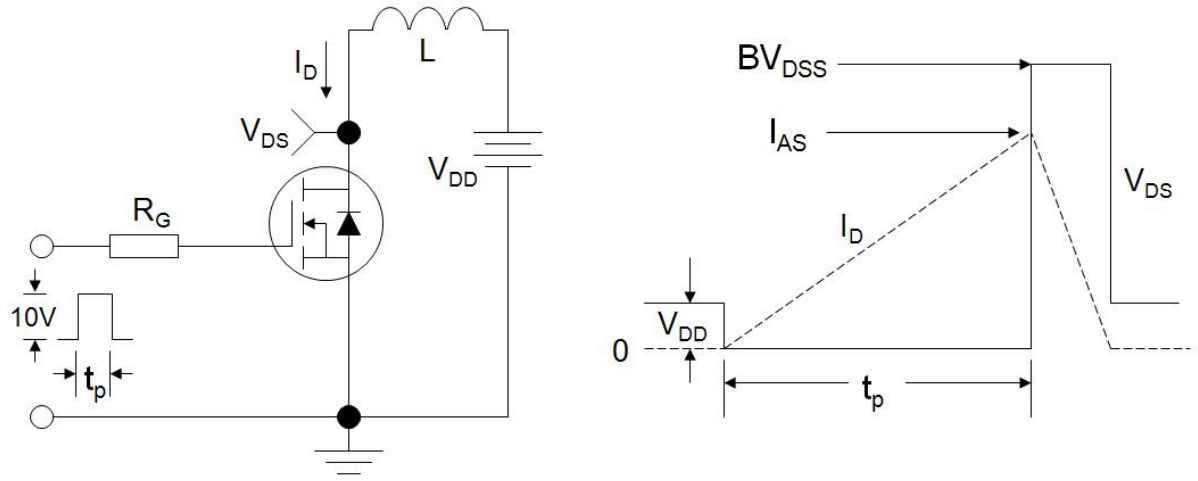
**Gate Charge Test Circuit**




**Switch Time Test Circuit**




**EAS Test Circuit**



## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

**Figure 1. Output Characteristics**

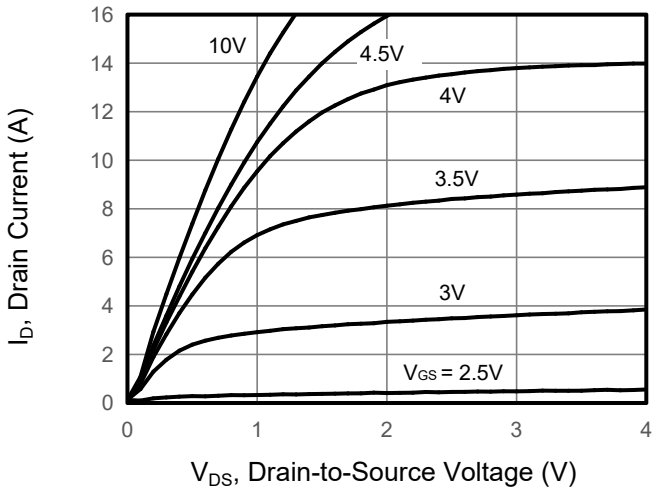



**Figure 2. Transfer Characteristics**

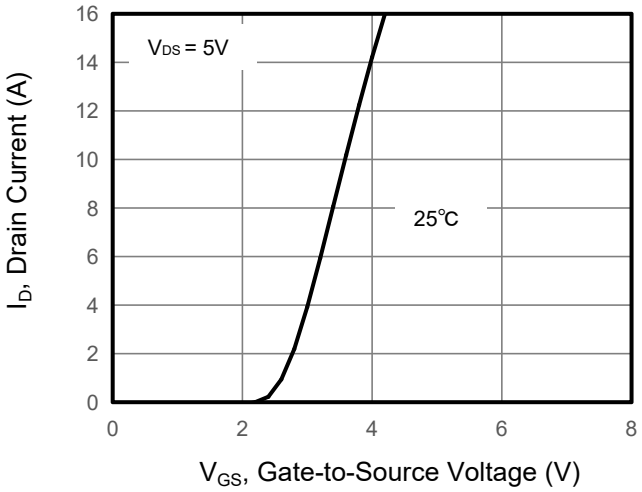



**Figure 3. Drain Source On Resistance**

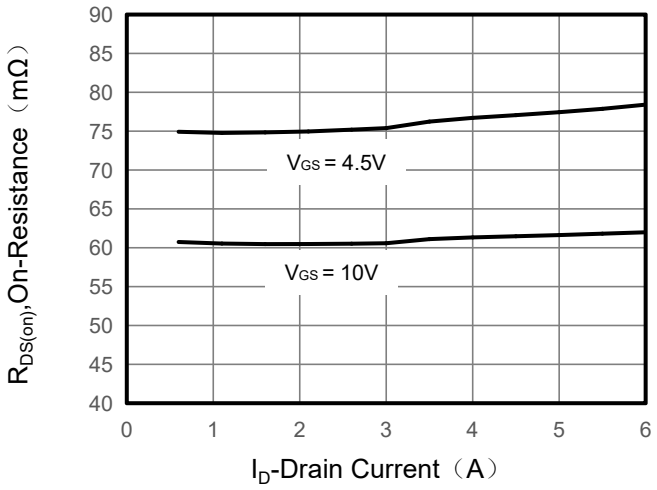



**Figure 4. Gate Charge**

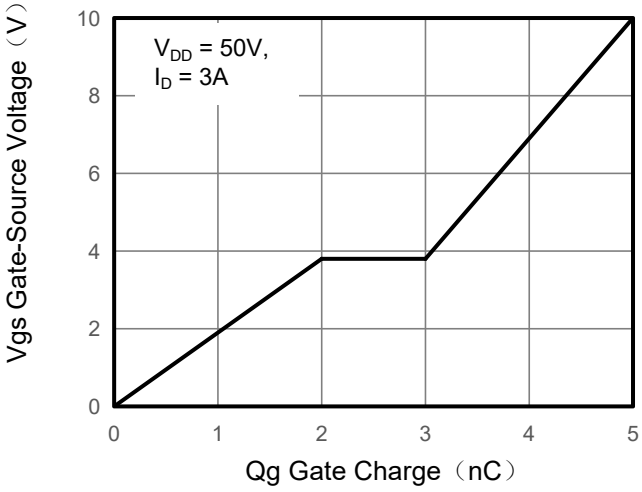



**Figure 5. Capacitance**

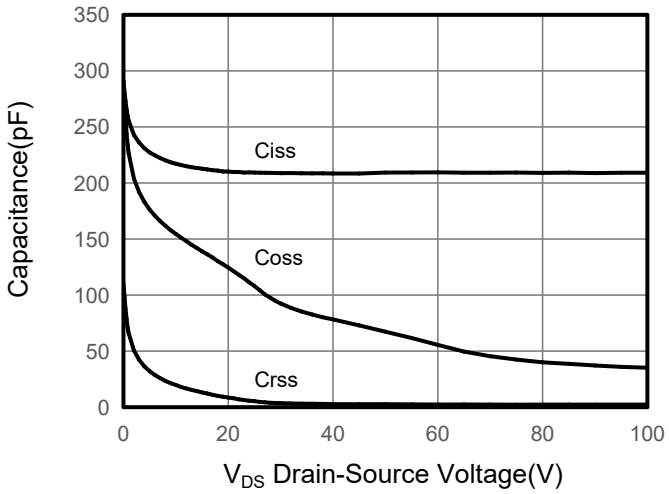
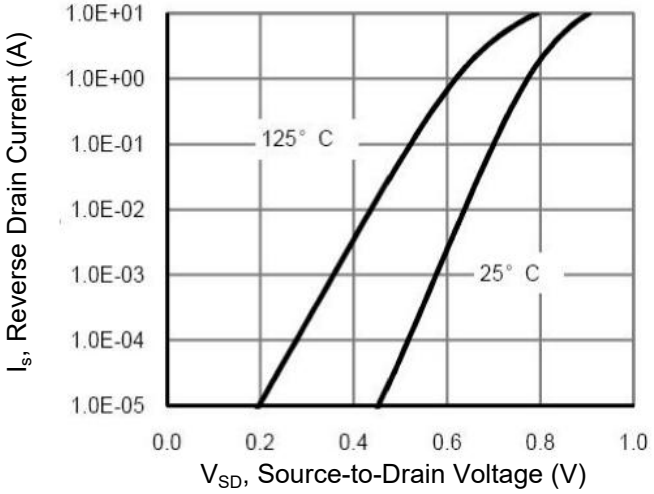



**Figure 6. Source-Drain Diode Forward**



**Typical Characteristics** $T_J$ = 25ºC, unless otherwise noted

**Figure 7. Drain-Source On-Resistance**

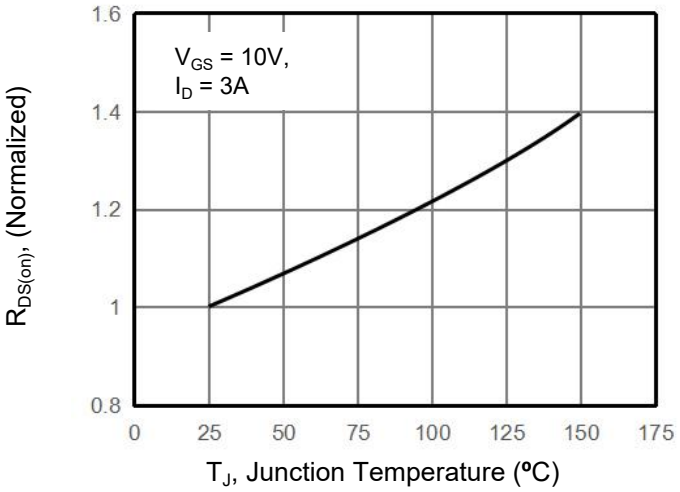



**Figure 8. Safe Operation Area**

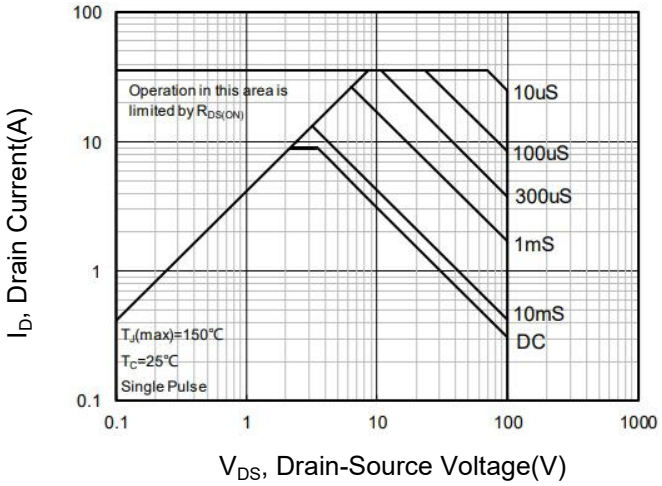
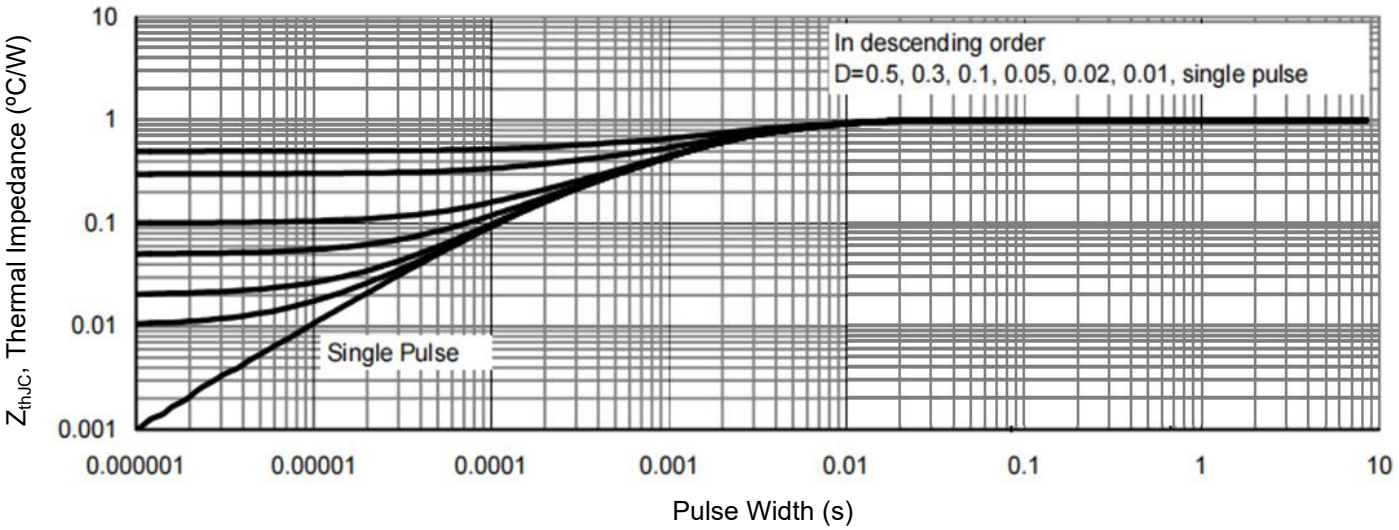
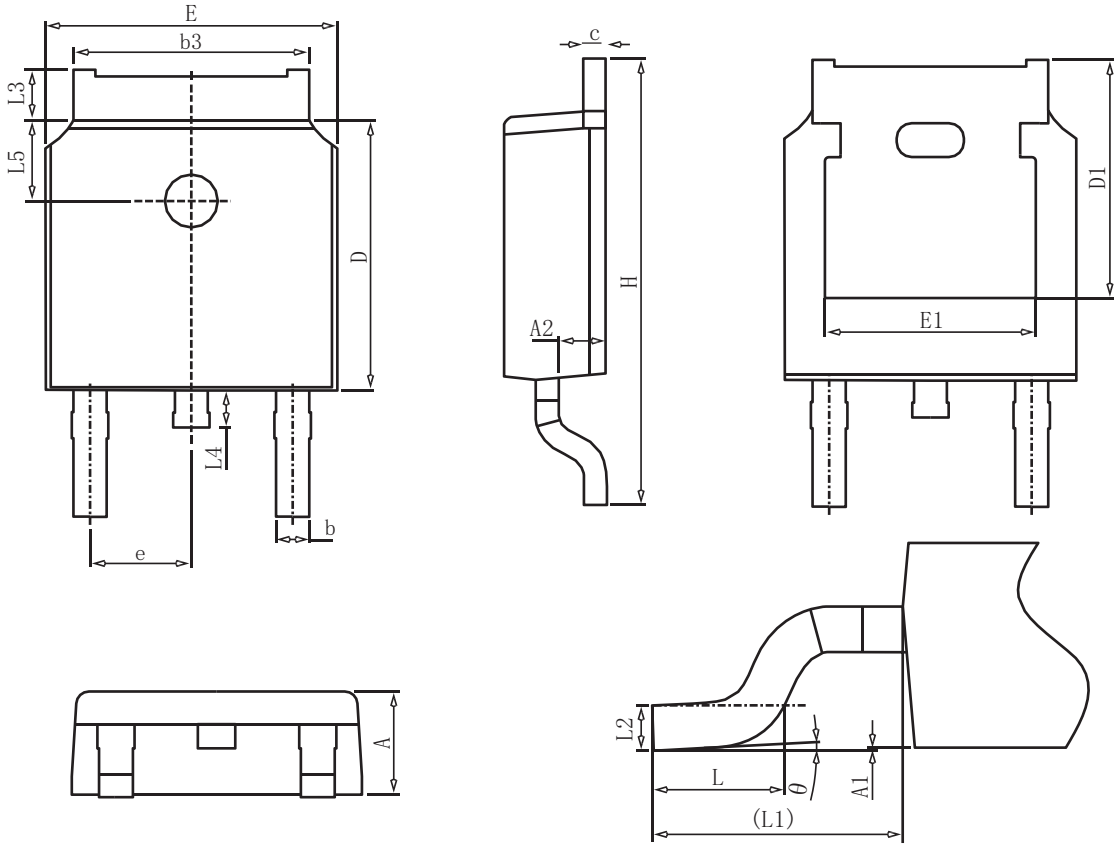



**Figure 9. Normalized Maximum Transient Thermal Impedance**



## TO-252 Package Information




### COMMON DIMENSIONS

| SYMBOL | mm | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 2.20 | 2.30 | 2.40 |
| A1 | 0.00 | - | 0.20 |
| A2 | 0.97 | 1.07 | 1.17 |
| b | 0.68 | 0.78 | 0.90 |
| b3 | 5.20 | 5.33 | 5.50 |
| c | 0.43 | 0.53 | 0.63 |
| D | 5.98 | 6.10 | 6.22 |
| D1 | | 5.30REF | |
| E | 6.40 | 6.60 | 6.80 |
| E1 | 4.63 | - | - |
| e | | 2.286BSC | |
| H | 9.40 | 10.10 | 10.50 |
| L | 1.38 | 1.50 | 1.75 |
| L1 | | 2.90REF | |
| L2 | | 0.51BSC | |
| L3 | 0.88 | - | 1.28 |
| L4 | 0.50 | - | 1.00 |
| L5 | 1.65 | 1.80 | 1.95 |
| θ | 0° | - | 8° |

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

# Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

### Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

**www.entegreci.com**

### Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

**Kategorilere göz atın**

### Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

**Üreticileri görün**

### Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

**Teklif isteyin**

**www.entegreci.com** | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.