

### Description

#### Features

- Trench LV MOSFET technology
- Fast switching
- Improved dv/dt capability

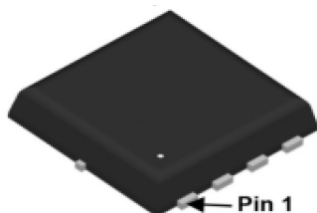
#### Application

- Load Switch
- UPS
- Battery Management

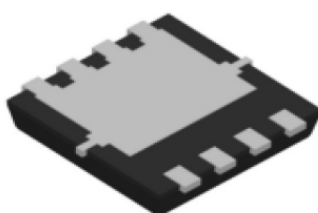
|                              |     |            |
|------------------------------|-----|------------|
| $V_{DS}$                     | 30  | V          |
| $R_{ds(on),typ}@V_{gs}=10V$  | 3.8 | m $\Omega$ |
| $R_{ds(on),typ}@V_{gs}=4.5V$ | 5.8 | m $\Omega$ |
| $I_D$                        | 95  | A          |



Top View

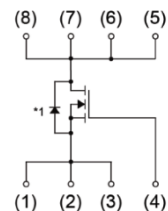


Bottom View



Pin Configuration

- (1) Source
- (2) Source
- (3) Source
- (4) Gate
- (5) Drain
- (6) Drain
- (7) Drain
- (8) Drain
- \*1 Body Diode



### Package Marking and Ordering Information

| Part     | Marking | Package  | Packing | Reel Size | Tape Width | Qty     |
|----------|---------|----------|---------|-----------|------------|---------|
| CMT3095M | T3095M  | PDFN 5*6 | Reel    | NA        | NA         | 5000pcs |

### Key Performance Parameters

| Symbol                | Parameter                                  | Rating     | Units      |
|-----------------------|--------------------------------------------|------------|------------|
| $V_{DS}$              | Drain-Source Voltage                       | 30         | V          |
| $V_{GS}$              | Gate-Source Voltage                        | $\pm 20$   | V          |
| $I_D@T_c=25^\circ C$  | Continuous Drain Current, $V_{GS}=10V$     | 95         | A          |
| $I_D@T_c=100^\circ C$ | Continuous Drain Current, $V_{GS}=10V$     | 53         | A          |
| IDM                   | Pulsed Drain Current <sup>1</sup>          | 300        | A          |
| EAS                   | Single Pulse Avalanche Energy <sup>4</sup> | 90         | mJ         |
| $PD@T_c=25^\circ C$   | Total Power Dissipation                    | 62         | W          |
| $T_{STG}$             | Storage Temperature Range                  | -55 to 150 | $^\circ C$ |
| $T_j$                 | Operating Junction Temperature Range       | -55 to 150 | $^\circ C$ |

## Thermal Data

| Symbol           | Parameter                           | Typ | Max  | Units |
|------------------|-------------------------------------|-----|------|-------|
| R <sub>θJA</sub> | Thermal Resistance Junction-Ambient | 56  | 62   | °C/W  |
| R <sub>θJC</sub> | Thermal Resistance Junction-Case    | 1.8 | 2.01 | °C/W  |

## Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)

| Symbol  | Parameter                              | Values |      |      | Unit | Note / Test Condition                                                                   |
|---------|----------------------------------------|--------|------|------|------|-----------------------------------------------------------------------------------------|
|         |                                        | Min.   | Typ. | Max. |      |                                                                                         |
| BVDSS   | Drain-Source Breakdown Voltage         | 30     | --   | --   | V    | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA                                              |
| RDS(ON) | Static Drain-Source On-Resistance      | --     | 3.8  | 4.5  | mΩ   | V <sub>GS</sub> =10V, I <sub>D</sub> =10A                                               |
|         |                                        | --     | 5.8  | 7    |      | V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A                                               |
| VGS(th) | Gate Threshold Voltage                 | 1.2    | 1.9  | 2.5  | V    | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA                                |
| IDSS    | Drain-Source Leakage Current           | --     | --   | 1    | uA   | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C                         |
|         |                                        | --     | --   | 10   | uA   | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C                        |
| IGSS    | Gate-Source Leakage Current            | --     | --   | ±100 | nA   | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                              |
| gfs     | Forward Transconductance               | --     | 18   | --   | S    | V <sub>DS</sub> =10V, I <sub>D</sub> =1A                                                |
| Rg      | Gate Resistance                        | --     | 1.5  | --   | Ω    | V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz                                        |
| Qg      | Total Gate Charge (10V) <sup>2,3</sup> | --     | 40   | --   | nC   | V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =30A                         |
| Qgs     | Gate-Source Charge <sup>2,3</sup>      | --     | 5.6  | --   |      |                                                                                         |
| Qgd     | Gate-Drain Charge <sup>2,3</sup>       | --     | 9.8  | --   |      |                                                                                         |
| Td(on)  | Turn-On Delay Time <sup>2,3</sup>      | --     | 11.5 | --   | ns   | V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, R <sub>G</sub> =1.8Ω<br>I <sub>D</sub> =60A |
| Tr      | Rise Time <sup>2,3</sup>               | --     | 120  | --   |      |                                                                                         |
| Td(off) | Turn-Off Delay Time <sup>2,3</sup>     | --     | 12.8 | --   |      |                                                                                         |
| Tf      | Fall Time <sup>2,3</sup>               | --     | 75   | --   | pF   | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz                                       |
| Ciss    | Input Capacitance                      | --     | 2165 | --   |      |                                                                                         |
| Coss    | Output Capacitance                     | --     | 283  | --   |      |                                                                                         |
| Crss    | Reverse Transfer Capacitance           | --     | 218  | --   |      |                                                                                         |

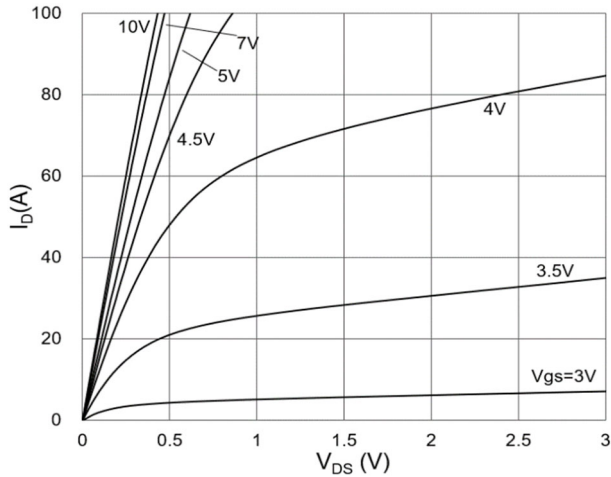
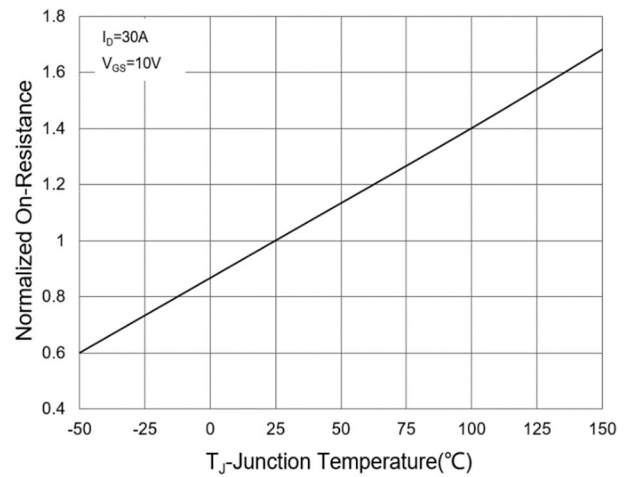
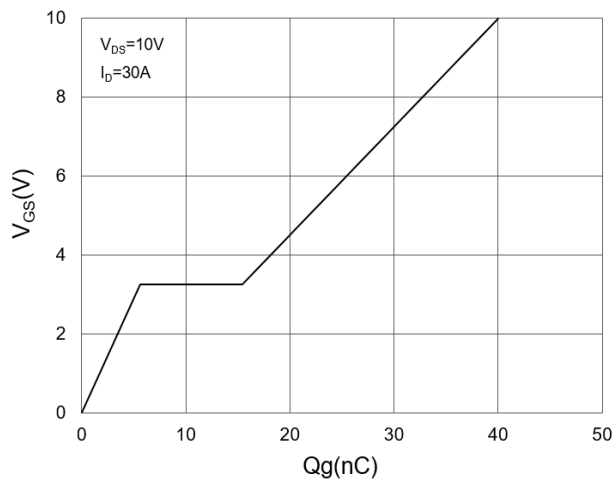
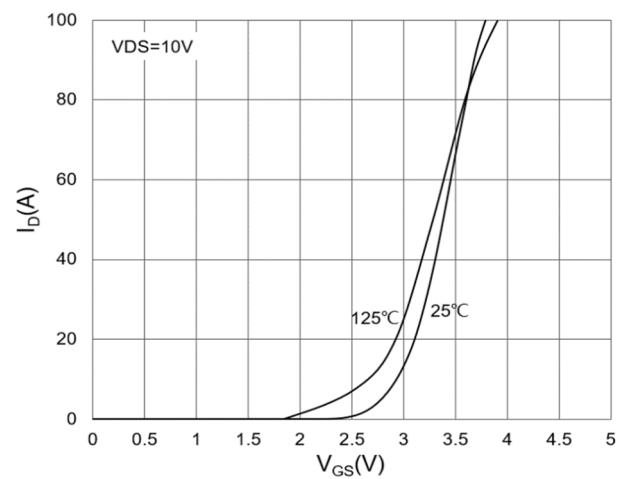
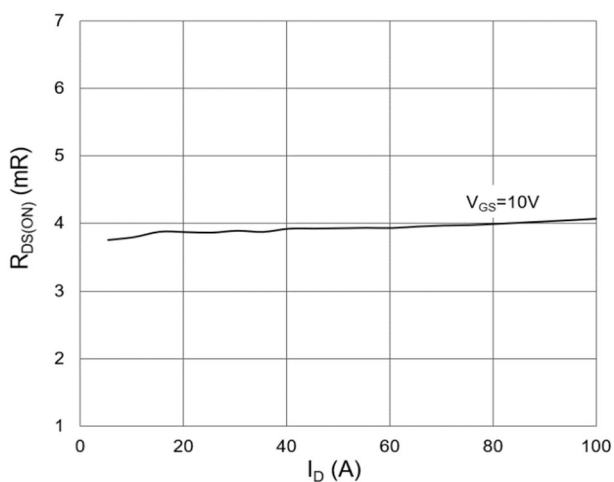
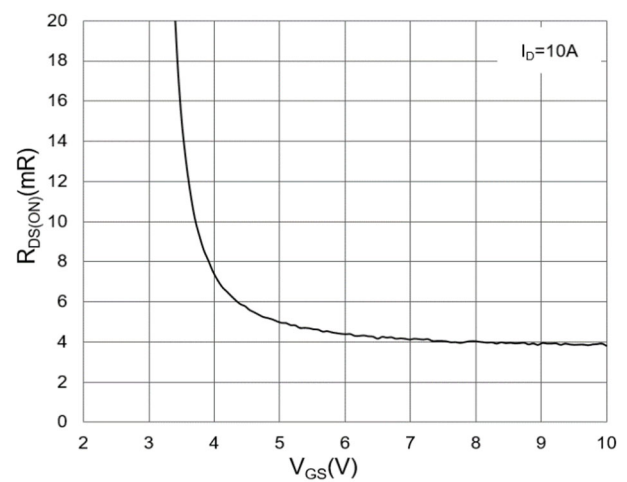
## Diode Characteristics

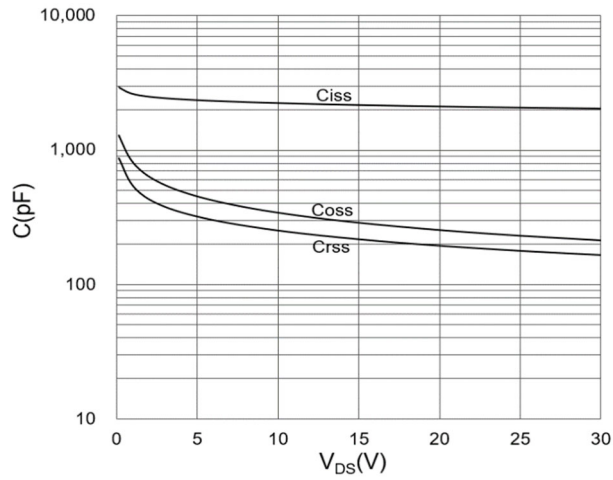
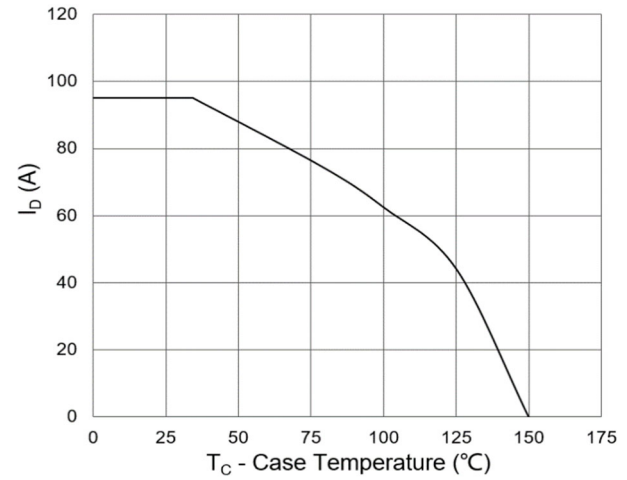
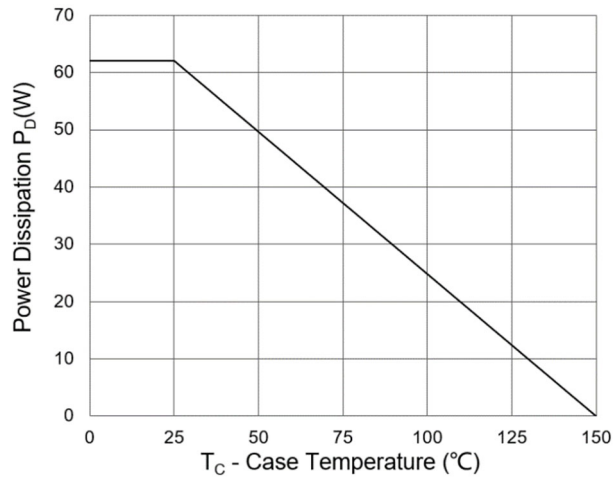
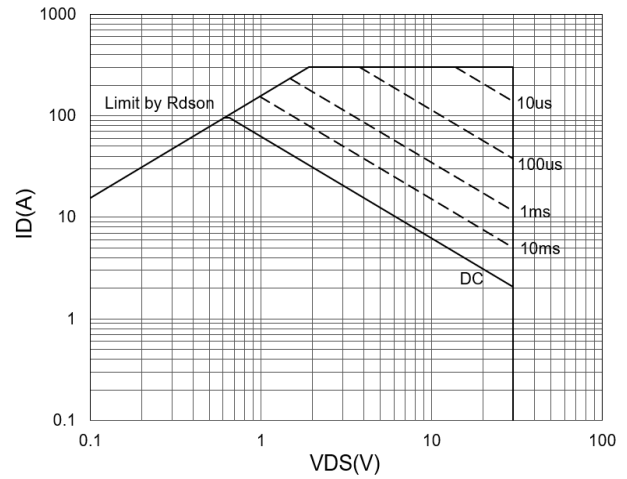
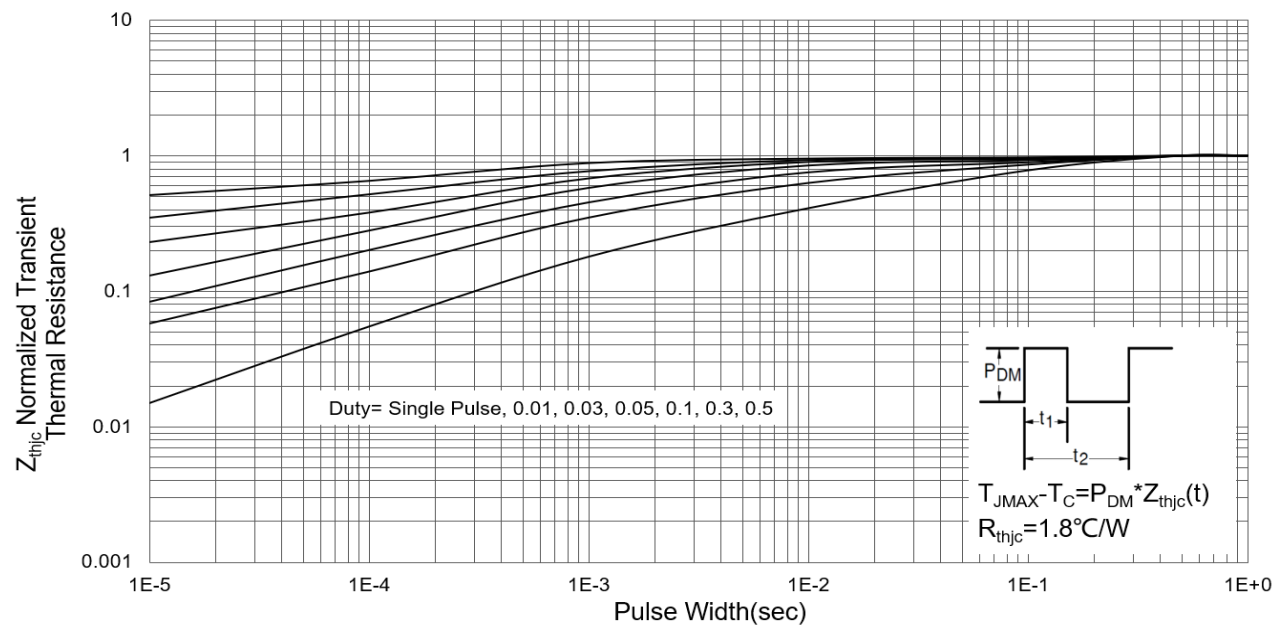
| Symbol          | Parameter                 | Conditions                                                    | Typ | Max | Units |
|-----------------|---------------------------|---------------------------------------------------------------|-----|-----|-------|
| I <sub>S</sub>  | Continuous Source Current | V <sub>G</sub> =V <sub>D</sub> =0V, Force Current             | --  | 95  | A     |
| I <sub>sm</sub> | Pulsed Source Current     |                                                               | --  | 300 | A     |
| V <sub>SD</sub> | Diode Forward Voltage     | V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C | --  | 1.1 | V     |

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.
4. The EAS data shows Max. rating. The test condition is V<sub>DD</sub>=20V, V<sub>GS</sub>=10V, L=0.1mH.

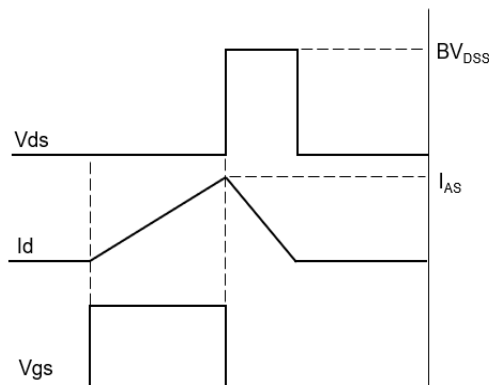
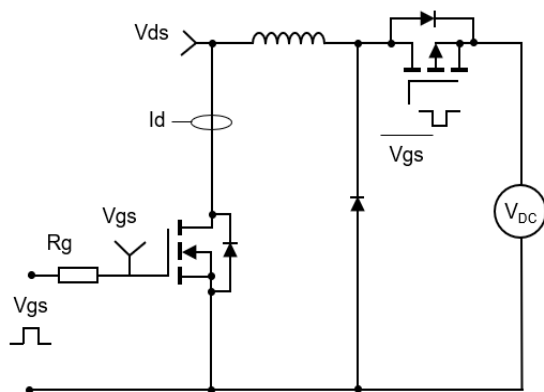
## Typical Performance Characteristics

**Fig1 Output Characteristics**

**Fig2 Normalized  $R_{DS(on)}$  vs  $T_J$** 

**Fig3 Gate Charge Waveform**

**Fig4 Transfer Characteristics**

**Fig5  $R_{DS(on)}$  vs. Drain Current and Gate Voltage**

**Fig6  $R_{DS(on)}$  vs. Gate Voltage**


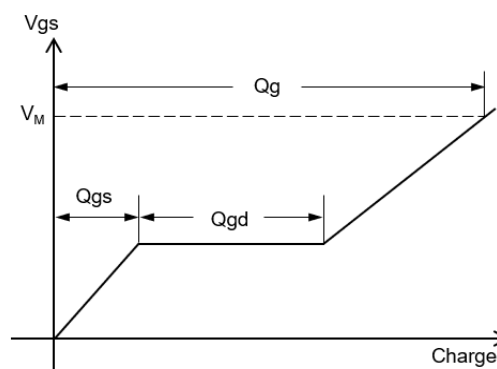
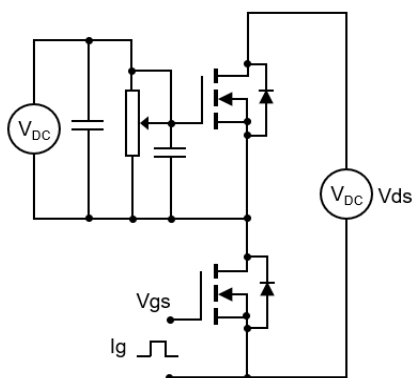
**Fig7 Capacitance Characteristics**

**Fig8 Drain Current Derating**

**Fig9 Power Dissipation**

**Fig10 Maximum Safe Operation Area**

**Fig11 Normalized Transient Impedance**


## Test Circuit & Waveform

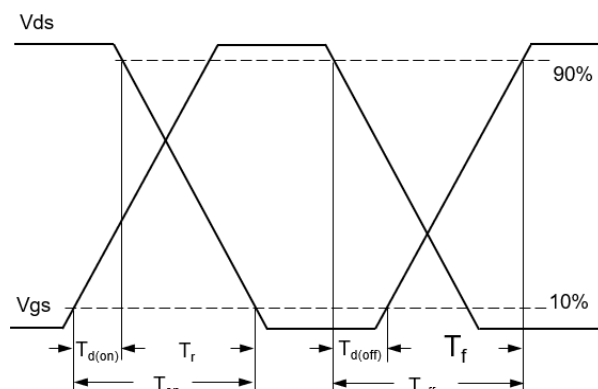
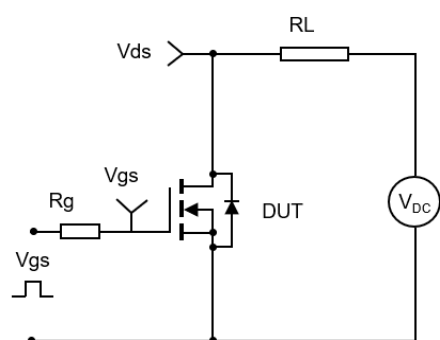
### 1. Unclamped Inductive Switching Test Circuit & Waveforms



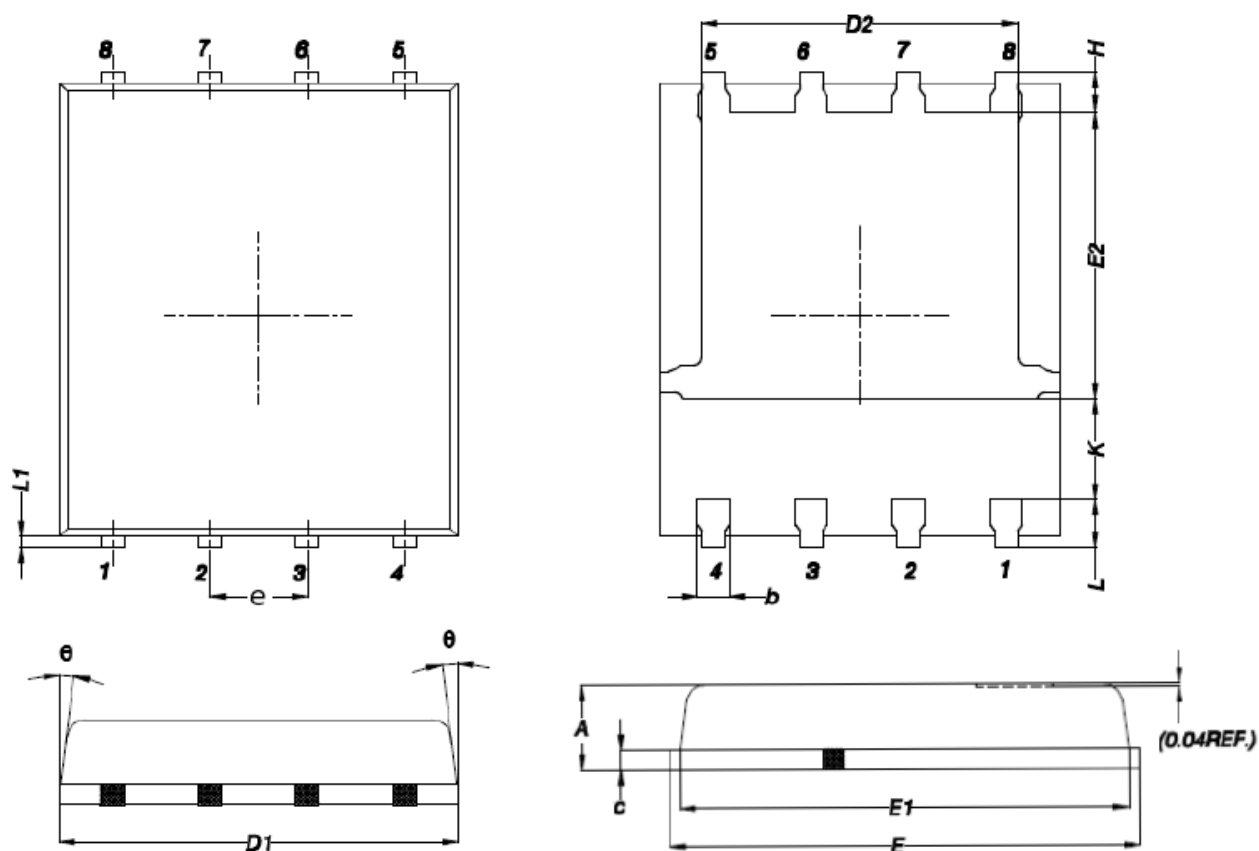
### 2. Gate Charge Test Circuit & Waveform



### 3. Resistive Switching Time Circuit & Waveform



## PDFN5\*6 Package Information



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | MAX                       | MIN   | MAX                  | MIN   |
| A        | 1.200                     | 0.850 | 0.047                | 0.031 |
| b        | 0.510                     | 0.330 | 0.020                | 0.013 |
| C        | 0.300                     | 0.200 | 0.012                | 0.008 |
| D1       | 5.400                     | 4.800 | 0.212                | 0.189 |
| D2       | 4.310                     | 3.610 | 0.170                | 0.142 |
| E        | 6.300                     | 5.850 | 0.248                | 0.230 |
| E1       | 5.960                     | 5.450 | 0.235                | 0.215 |
| E2       | 3.920                     | 3.300 | 0.154                | 0.130 |
| e        | 1.27BSC                   |       | 0.05BSC              |       |
| H        | 0.650                     | 0.380 | 0.026                | 0.015 |
| K        | ---                       | 1.100 | ---                  | 0.043 |
| L        | 0.710                     | 0.380 | 0.028                | 0.015 |
| L1       | 0.250                     | 0.050 | 0.009                | 0.002 |
| $\theta$ | 12°                       | 0°    | 12°                  | 0°    |