

### Description

#### Features

- Trench LV MOSFET technology
- Fast switching
- Low gate charge

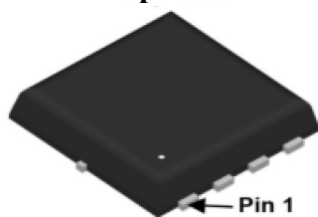
#### Application

- Load Switch
- PWM Application
- Power Management

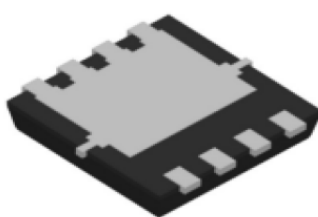
|                              |      |    |
|------------------------------|------|----|
| $V_{DS}$                     | 30   | V  |
| $R_{ds(on),typ}@V_{gs}=10V$  | 9.2  | mΩ |
| $R_{ds(on),typ}@V_{gs}=4.5V$ | 12.5 | mΩ |
| $I_D$                        | 25   | A  |



Top View

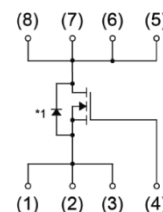


Bottom View



PDFN3.3\*3.3 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     |
|----------|---------|-------------|---------|-----------|------------|---------|
| CMT3025K | T3025K  | PDFN3.3*3.3 | Reel    | NA        | NA         | 5000pcs |

### Key Performance Parameters

| Symbol                 | Parameter                                  | Rating     | Units |
|------------------------|--------------------------------------------|------------|-------|
| $V_{DS}$               | Drain-Source Voltage                       | 30         | V     |
| $V_{GS}$               | Gate-Source Voltage                        | ±20        | V     |
| $I_D@T_c=25^{\circ}C$  | Continuous Drain Current, $V_{GS}=10V$     | 25         | A     |
| $I_D@T_c=100^{\circ}C$ | Continuous Drain Current, $V_{GS}=10V$     | 15         | A     |
| IDM                    | Pulsed Drain Current <sup>1</sup>          | 78         | A     |
| EAS                    | Single Pulse Avalanche Energy <sup>4</sup> | 22         | mJ    |
| $PD@T_c=25^{\circ}C$   | Total Power Dissipation                    | 18         | W     |
| $T_{STG}$              | Storage Temperature Range                  | -55 to 150 | °C    |
| $T_j$                  | Operating Junction Temperature Range       | -55 to 150 | °C    |

## Thermal Data

| Symbol           | Parameter                           | Typ  | Max | Units |
|------------------|-------------------------------------|------|-----|-------|
| R <sub>θJA</sub> | Thermal Resistance Junction-Ambient | 44.2 | 50  | °C/W  |
| R <sub>θJC</sub> | Thermal Resistance Junction-Case    | 6.3  | 7   | °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    | VGS=0V, ID=250uA                  |
| RDS(ON) | Static Drain-Source On-Resistance      | --     | 9.2  | 13   | mΩ   | VGS=10V, ID=10A                   |
|         |                                        | --     | 12.5 | 15   |      | VGS=4.5V, ID=6A                   |
| VGS(th) | Gate Threshold Voltage                 | 1      | 1.6  | 2.2  | V    | VGS=VDS, ID=250uA                 |
| IDSS    | Drain-Source Leakage Current           | --     | --   | 1    | uA   | VDS=30V, VGS=0V, TJ=25°C          |
|         |                                        | --     | --   | 10   | uA   | VDS=20V, VGS=0V, TJ=125°C         |
| IGSS    | Gate-Source Leakage Current            | --     | --   | ±100 | nA   | VGS=±20V, VDS=0V                  |
| Rg      | Gate Resistance                        | --     | 1.32 | --   | Ω    | VDS=0V, VGS=0V, f=1MHz            |
| Qg      | Total Gate Charge (10V) <sup>2,3</sup> | --     | 16   | --   | nC   | VDS=15V, VGS=10V, ID=10A          |
| Qgs     | Gate-Source Charge <sup>2,3</sup>      | --     | 3.5  | --   |      |                                   |
| Qgd     | Gate-Drain Charge <sup>2,3</sup>       | --     | 3.4  | --   |      |                                   |
| Td(on)  | Turn-On Delay Time <sup>2,3</sup>      | --     | 6    | --   | ns   | VDD=15V, VGS=10V, RG=3Ω<br>ID=15A |
| Tr      | Rise Time <sup>2,3</sup>               | --     | 15   | --   |      |                                   |
| Td(off) | Turn-Off Delay Time <sup>2,3</sup>     | --     | 17   | --   |      |                                   |
| Tf      | Fall Time <sup>2,3</sup>               | --     | 5    | --   |      |                                   |
| Ciss    | Input Capacitance                      | --     | 850  | --   | pF   | VDS=15V, VGS=0V, f=1MHz           |
| Coss    | Output Capacitance                     | --     | 105  | --   |      |                                   |
| Crss    | Reverse Transfer Capacitance           | --     | 80   | --   |      |                                   |

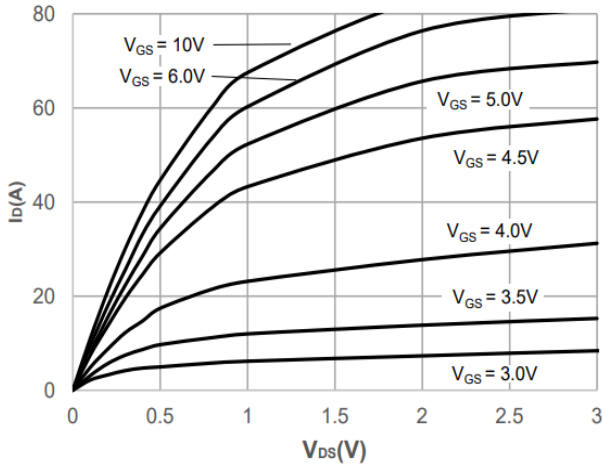
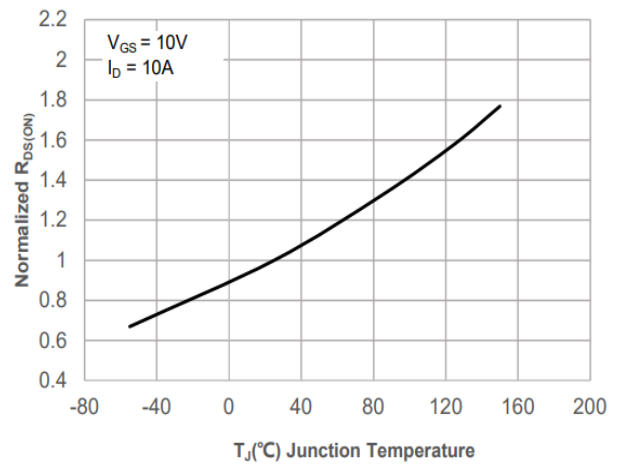
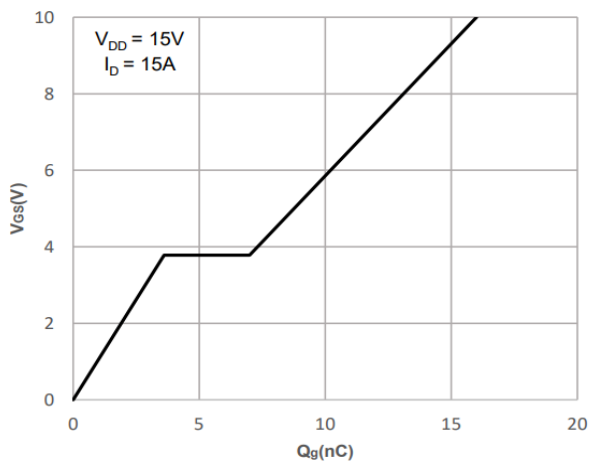
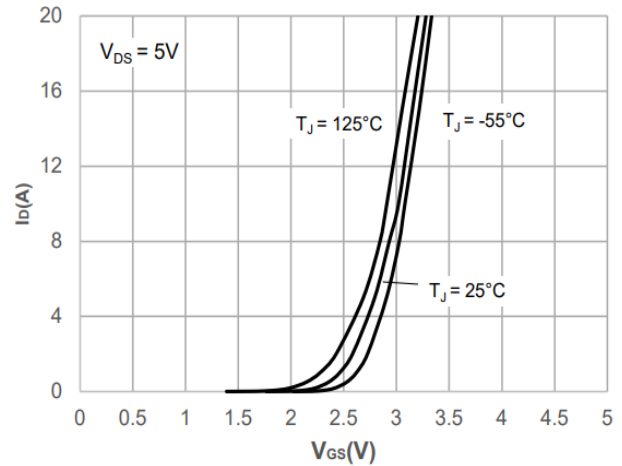
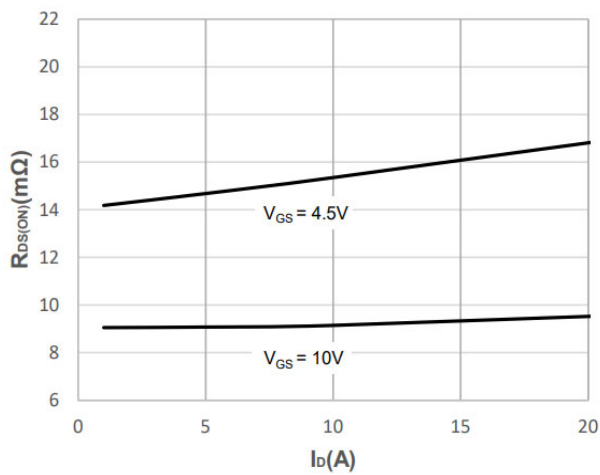
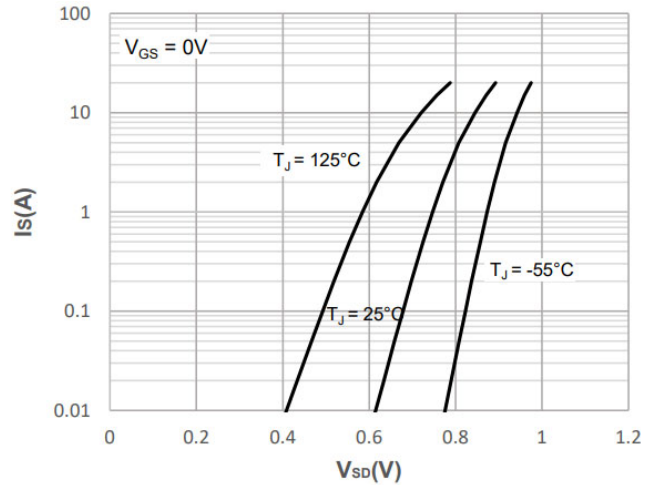
## Diode Characteristics

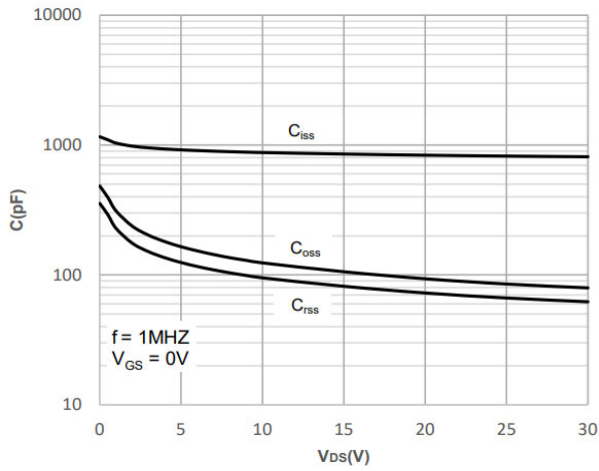
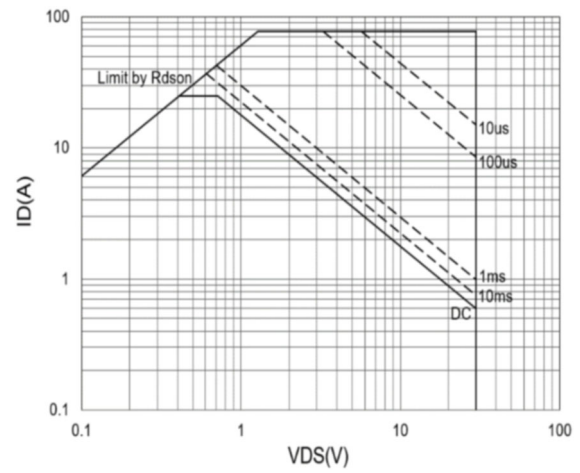
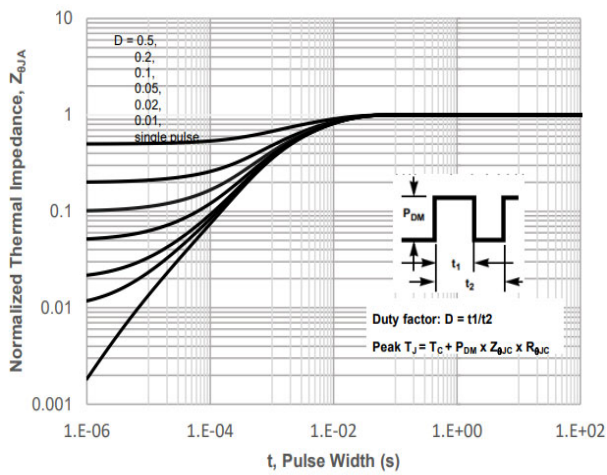
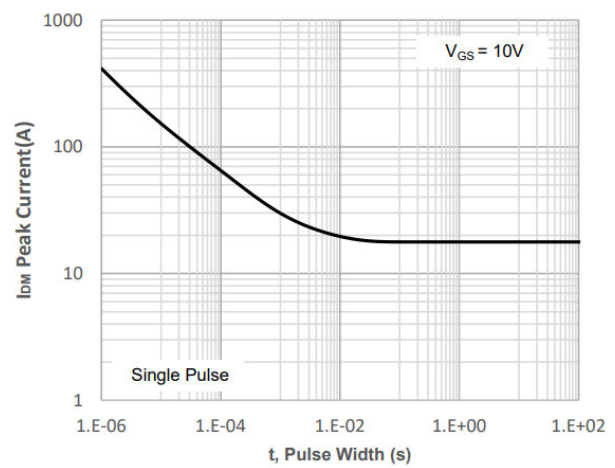
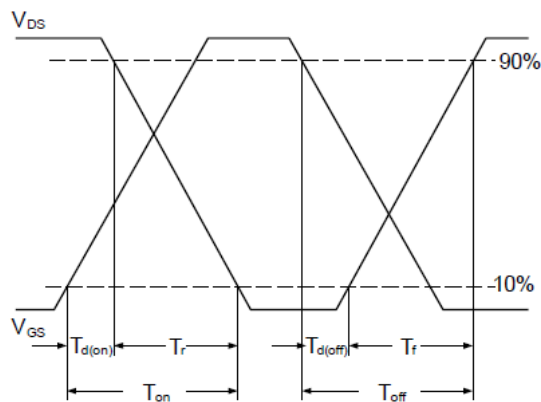
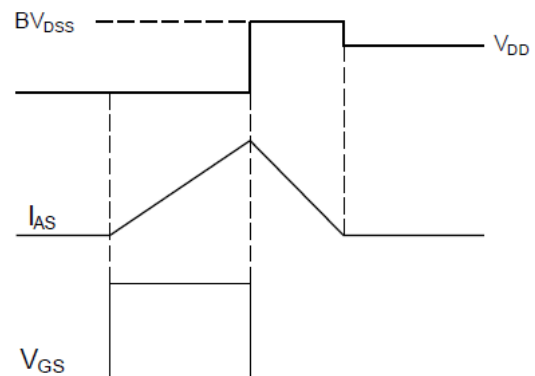
| Symbol | Parameter                 | Conditions              | Typ | Max | Units |
|--------|---------------------------|-------------------------|-----|-----|-------|
| Is     | Continuous Source Current | VG=VD=0V, Force Current | --  | 20  | A     |
| Ism    | Pulsed Source Current     |                         | --  | 78  | A     |
| VSD    | Diode Forward Voltage     | VGS=0V, Is=1A, TJ=25°C  | --  | 1.1 | V     |

Note:

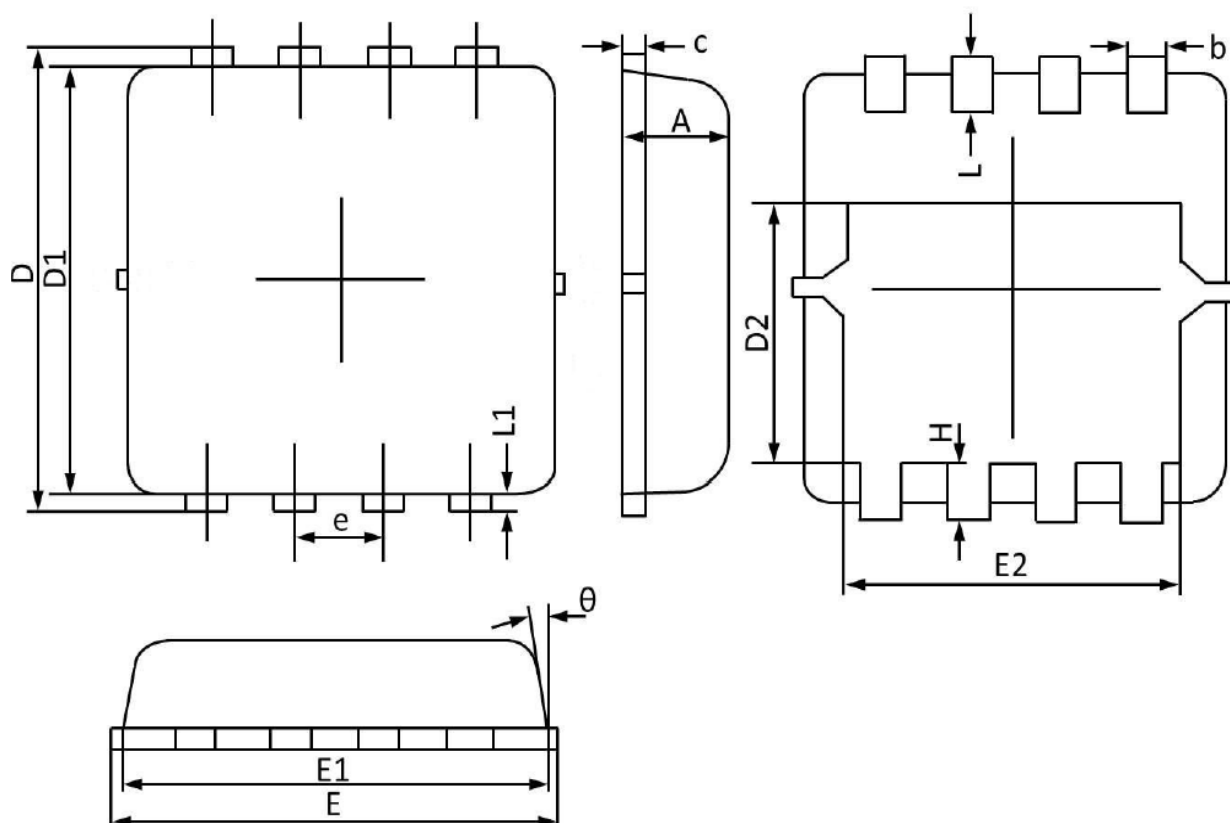
1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.
4. The EAS data shows Max. rating. The test condition is VDD=15V, VGS=10V, L=0.1mH.

## 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 Body Diode Characteristics**


**Fig7 Capacitance Characteristics**

**Fig8 Maximum Safe Operation Area**

**Fig9 Normalized Transient Impedance**

**Fig10 Peak Current Capacity**

**Fig11 Switching Time Waveform**

**Fig12 EAS Waveform**


## PDFN3.3\*3.3 Package Information



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | MAX                       | MIN   | MAX                  | MIN   |
| A        | 0.900                     | 0.700 | 0.035                | 0.028 |
| b        | 0.350                     | 0.240 | 0.014                | 0.009 |
| c        | 0.250                     | 0.100 | 0.010                | 0.004 |
| D        | 3.450                     | 3.050 | 0.136                | 0.120 |
| D1       | 3.200                     | 2.900 | 0.126                | 0.114 |
| D2       | 1.850                     | 1.350 | 0.073                | 0.053 |
| E        | 3.400                     | 3.000 | 0.134                | 0.118 |
| E1       | 3.250                     | 2.900 | 0.128                | 0.114 |
| E2       | 2.600                     | 2.350 | 0.102                | 0.093 |
| e        | 0.65BSC                   |       | 0.026BSC             |       |
| H        | 0.500                     | 0.300 | 0.020                | 0.012 |
| L        | 0.500                     | 0.300 | 0.020                | 0.012 |
| L1       | 0.200                     | 0.070 | 0.008                | 0.003 |
| $\theta$ | 12°                       | 0°    | 12°                  | 0°    |