

## Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Low  $R_{DS(on)}$  & FOM
- Excellent Stability and Uniformity
- Extremely Low Switching Loss
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Moisture Sensitivity Level 1

## Maximum Ratings

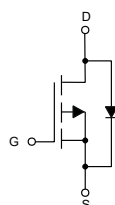
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient
- Thermal Resistance: 1.7°C/W Junction to Case

| Parameter                           |                       | Symbol          | Rating | Unit |
|-------------------------------------|-----------------------|-----------------|--------|------|
| Drain-Source Voltage                |                       | V <sub>DS</sub> | -100   | V    |
| Gate-Source Voltage                 |                       | V <sub>GS</sub> | ±20    | V    |
| Continuous Drain Current            | T <sub>C</sub> =25°C  | I <sub>D</sub>  | -18    | A    |
|                                     | T <sub>C</sub> =100°C |                 | -12    | A    |
| Pulsed Drain Current <sup>(1)</sup> |                       | I <sub>DM</sub> | -72    | A    |
| Avalanche Energy <sup>(2)</sup>     |                       | E <sub>AS</sub> | 36     | mJ   |
| Total Power Dissipation             |                       | P <sub>D</sub>  | 72     | W    |

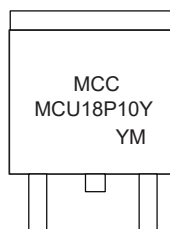
Note:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2.  $T_J=25^\circ\text{C}$ ,  $V_{DD}=-50\text{V}$ ,  $V_G=-10\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_g=25\Omega$ .

## Internal Structure and Marking Code



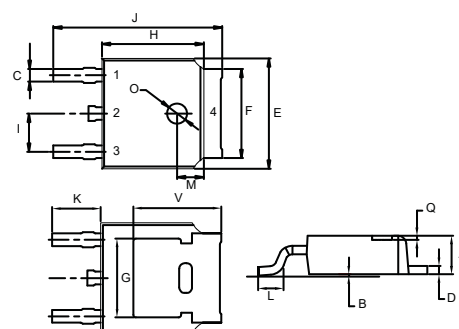
- 1.GATE
- 2.DRAIN
- 3.SOURCE
- 4.DRAIN



Y is the year  
M is the month

## P-CHANNEL MOSFET

## DPAK



| DIM | INCHES |       | MM   |       | NOTE |
|-----|--------|-------|------|-------|------|
|     | MIN    | MAX   | MIN  | MAX   |      |
| A   | 0.087  | 0.094 | 2.20 | 2.40  |      |
| B   | 0.000  | 0.005 | 0.00 | 0.13  |      |
| C   | 0.026  | 0.034 | 0.66 | 0.86  |      |
| D   | 0.018  | 0.023 | 0.46 | 0.58  |      |
| E   | 0.256  | 0.264 | 6.50 | 6.70  |      |
| F   | 0.201  | 0.215 | 5.10 | 5.46  |      |
| G   | 0.190  |       | 4.83 |       | TYP. |
| H   | 0.236  | 0.244 | 6.00 | 6.20  |      |
| I   | 0.086  | 0.094 | 2.18 | 2.39  |      |
| J   | 0.386  | 0.409 | 9.80 | 10.40 |      |
| K   | 0.114  |       | 2.90 |       | TYP. |
| L   | 0.055  | 0.067 | 1.40 | 1.70  |      |
| M   | 0.063  |       | 1.60 |       | TYP. |
| O   | 0.043  | 0.051 | 1.10 | 1.30  |      |
| Q   | 0.000  | 0.012 | 0.00 | 0.30  |      |
| V   | 0.211  |       | 5.35 |       | TYP. |

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

| Parameter                       | Symbol               | Test Conditions                                                                          | Min  | Typ  | Max  | Unit |
|---------------------------------|----------------------|------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics          |                      |                                                                                          |      |      |      |      |
| Drain-Source Breakdown Voltage  | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA                                              | -100 |      |      | V    |
| Gate-Source Leakage Current     | I <sub>GSS</sub>     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V                                               |      |      | ±100 | nA   |
| Zero Gate Voltage Drain Current | I <sub>DSS</sub>     | V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V                                              |      |      | -1   | μA   |
|                                 |                      | V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V, T <sub>J</sub> =150°C                       |      |      | -100 | μA   |
| Gate-Threshold Voltage          | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                | -1   | -1.8 | -2.5 | V    |
| Drain-Source On-Resistance      | R <sub>DS(on)</sub>  | V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A                                              |      | 83   | 110  | mΩ   |
|                                 |                      | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A                                              |      | 93   | 120  | mΩ   |
| Diode Characteristics           |                      |                                                                                          |      |      |      |      |
| Continuous Body Diode Current   | I <sub>S</sub>       |                                                                                          |      |      | -18  | A    |
| Diode Forward Voltage           | V <sub>SD</sub>      | V <sub>GS</sub> =0V, I <sub>S</sub> =-10A                                                |      |      | -1.3 | V    |
| Reverse Recovery Time           | t <sub>rr</sub>      | I <sub>S</sub> =-5A,di/dt=100A/μs                                                        |      | 70   |      | ns   |
| Reverse Recovery Charge         | Q <sub>rr</sub>      |                                                                                          |      | 140  |      | nC   |
| Dynamic Characteristics         |                      |                                                                                          |      |      |      |      |
| Input Capacitance               | C <sub>iss</sub>     | V <sub>DS</sub> =-50V,V <sub>GS</sub> =0V,f=1MHz                                         |      | 1051 |      | pF   |
| Output Capacitance              | C <sub>oss</sub>     |                                                                                          |      | 119  |      |      |
| Reverse Transfer Capacitance    | C <sub>rss</sub>     |                                                                                          |      | 25   |      |      |
| Total Gate Charge               | Q <sub>g</sub>       | V <sub>DS</sub> =-50V,V <sub>GS</sub> =-10V,I <sub>D</sub> =-5A                          |      | 20.1 |      | nC   |
| Gate-Source Charge              | Q <sub>gs</sub>      |                                                                                          |      | 3.9  |      |      |
| Gate-Drain Charge               | Q <sub>gd</sub>      |                                                                                          |      | 4.3  |      |      |
| Turn-On Delay Time              | t <sub>d(on)</sub>   | V <sub>GS</sub> =-10V,V <sub>DD</sub> =-50V,R <sub>L</sub> =2.5Ω<br>R <sub>GEN</sub> =6Ω |      | 10   |      | ns   |
| Turn-On Rise Time               | t <sub>r</sub>       |                                                                                          |      | 30   |      |      |
| Turn-Off Delay Time             | t <sub>d(off)</sub>  |                                                                                          |      | 77   |      |      |
| Turn-Off Fall Time              | t <sub>f</sub>       |                                                                                          |      | 81   |      |      |

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

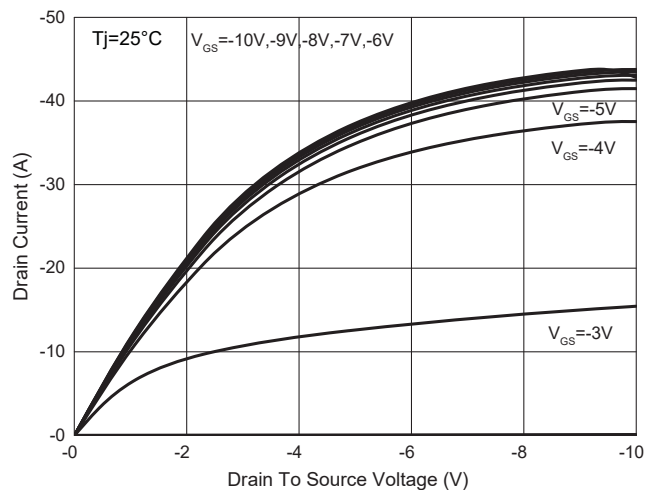


Fig. 2 - Transfer Characteristics

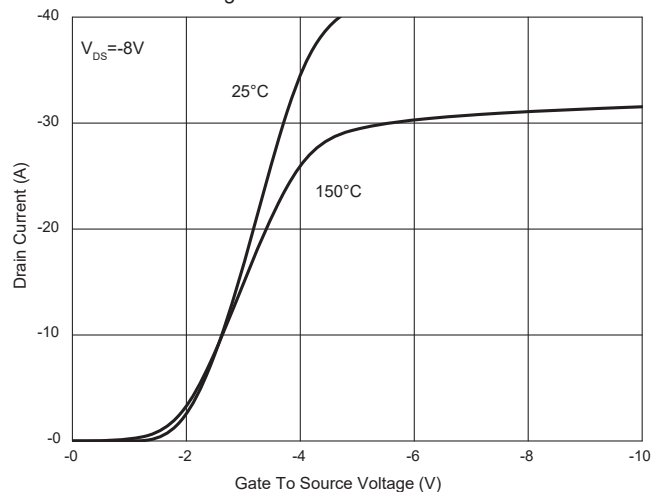


Fig. 3 -  $R_{DS(ON)}-V_{GS}$

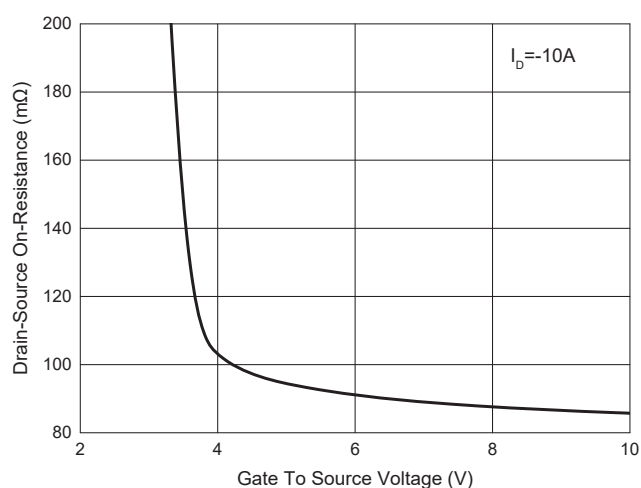


Fig. 4 - Normalized On Resistance Characteristics

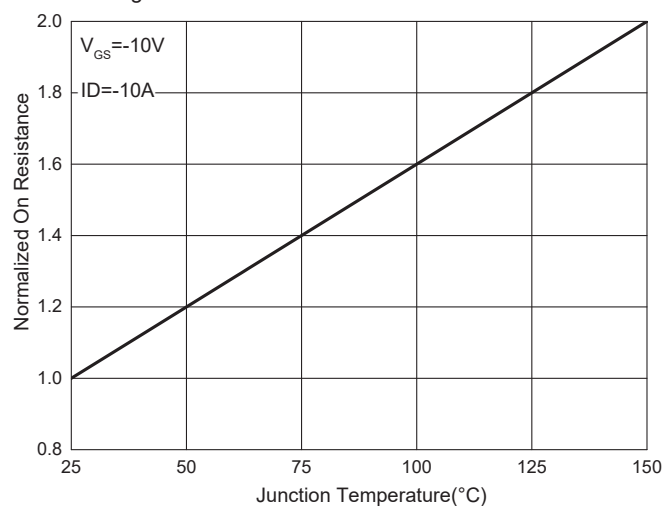


Fig. 5 - Capacitance Characteristics

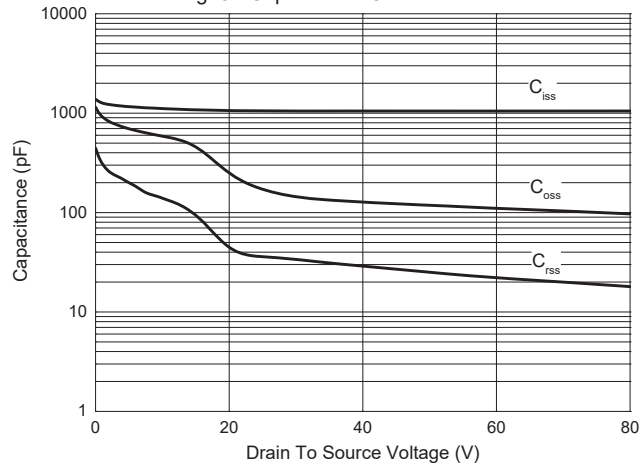
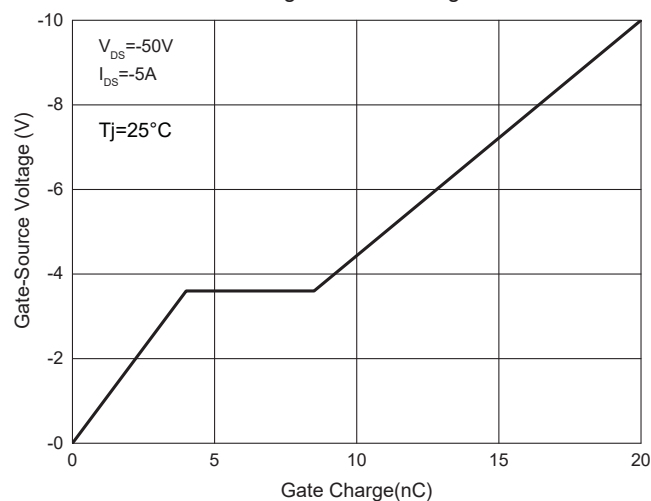


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 -  $I_S - V_{SD}$

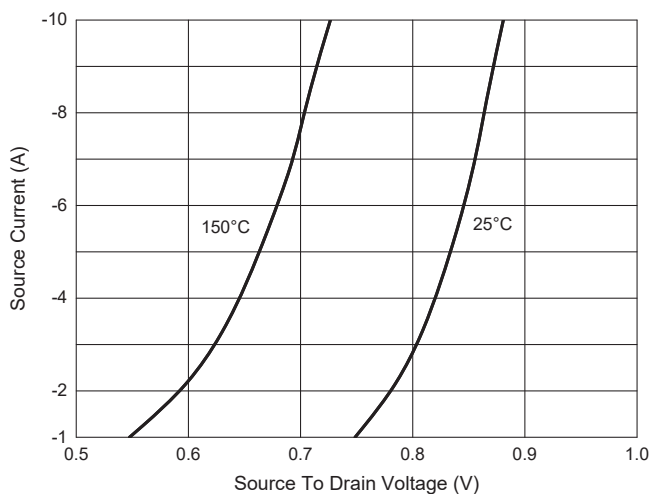


Fig. 8 -  $R_{DS(ON)} - I_D$

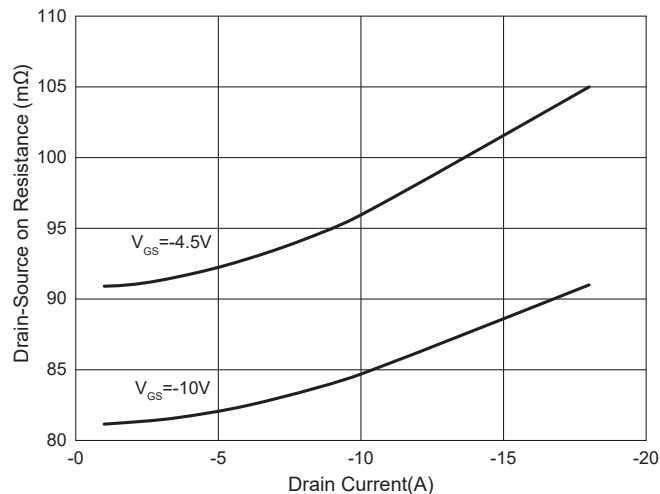


Fig. 9 - Safe Operation Area

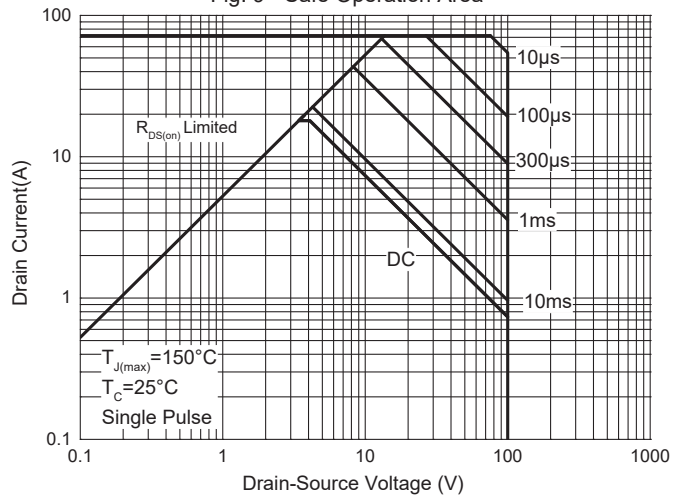
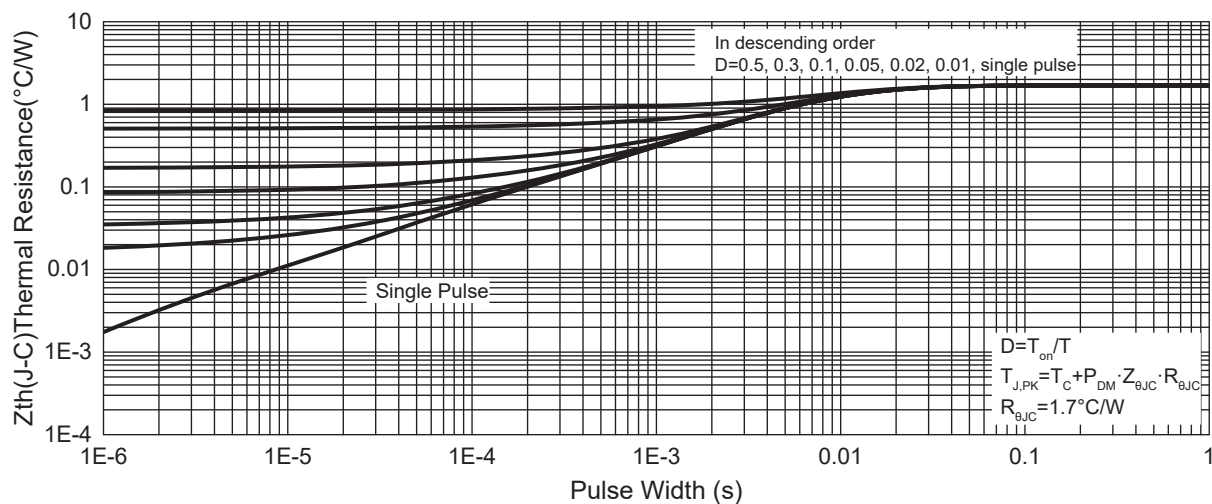


Fig. 10 - Maximum Transient Thermal Impedance



## Ordering Information

| Device         | Packing                 |
|----------------|-------------------------|
| Part Number-TP | Tape&Reel: 2.5Kpcs/Reel |

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