

### Features

- Trench Power MV MOSFET Technology
- Voltage Controlled Small Signal Switch
- Low Input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage
- ESD Protected up to 2KV (HBM)
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

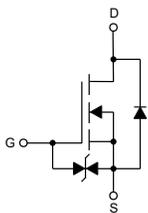
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 357°C/W Junction to Ambient<sup>(2)</sup>

| Parameter                           | Symbol   | Rating | Unit |
|-------------------------------------|----------|--------|------|
| Drain-Source Voltage                | $V_{DS}$ | 60     | V    |
| Gate-Source Voltage                 | $V_{GS}$ | ±20    | V    |
| Continuous Drain Current            | $I_D$    | 340    | mA   |
| Pulsed Drain Current <sup>(3)</sup> | $I_{DM}$ | 1.5    | A    |
| Total Power Dissipation             | $P_D$    | 350    | mW   |

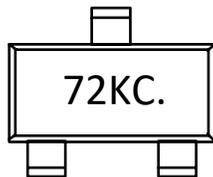
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
3. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

### Internal Structure and Marking Code

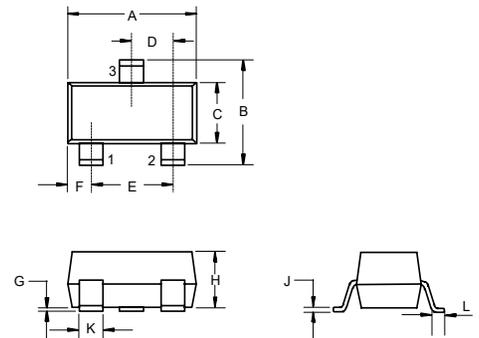


1. GATE
2. SOURCE
3. DRAIN



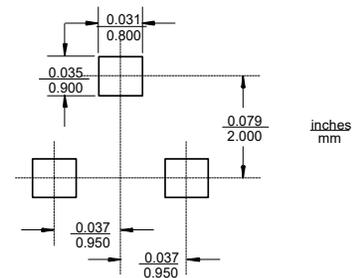
## N-CHANNEL MOSFET

### SOT-23



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.110  | 0.120 | 2.80 | 3.04 |      |
| B   | 0.083  | 0.104 | 2.10 | 2.64 |      |
| C   | 0.047  | 0.055 | 1.20 | 1.40 |      |
| D   | 0.034  | 0.041 | 0.85 | 1.05 |      |
| E   | 0.067  | 0.083 | 1.70 | 2.10 |      |
| F   | 0.018  | 0.024 | 0.45 | 0.60 |      |
| G   | 0.0004 | 0.006 | 0.01 | 0.15 |      |
| H   | 0.035  | 0.043 | 0.90 | 1.10 |      |
| J   | 0.003  | 0.007 | 0.08 | 0.18 |      |
| K   | 0.012  | 0.020 | 0.30 | 0.51 |      |
| L   | 0.007  | 0.020 | 0.20 | 0.50 |      |

### Suggested Solder Pad Layout



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

| Parameter                       | Symbol        | Test Conditions                                       | Min | Typ  | Max      | Unit     |
|---------------------------------|---------------|---|-----|------|----------|----------|
| <b>Static Characteristics</b>   |               |   |     |      |          |          |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$                             | 60  |      |          | V        |
| Gate-Source Leakage Current     | $I_{GSS}$     | $V_{DS}=0V, V_{GS}=\pm 20V$                           |     |      | $\pm 10$ | $\mu A$  |
| Zero Gate Voltage Drain Current | $I_{DSS}$     | $V_{DS}=60V, V_{GS}=0V$                               |     |      | 1        | $\mu A$  |
| Gate-Threshold Voltage          | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$                         | 1   | 1.5  | 2.5      | V        |
| Drain-Source On-Resistance      | $R_{DS(on)}$  | $V_{GS}=10V, I_D=300mA$                               |     | 1.7  | 2.2      | $\Omega$ |
|                                 |               | $V_{GS}=4.5V, I_D=200mA$                              |     | 2    | 3        | $\Omega$ |
| <b>Diode Characteristics</b>    |               |   |     |      |          |          |
| Continuous Body Diode Current   | $I_S$         |   |     |      | 340      | mA       |
| Diode Forward Voltage           | $V_{SD}$      | $V_{GS}=0V, I_S=300mA$                                |     |      | 1.2      | V        |
| Reverse Recovery Time           | $t_{rr}$      | $I_S=0.3A, di/dt=100A/\mu s$                          |     | 11.5 |          | ns       |
| <b>Dynamic Characteristics</b>  |               |   |     |      |          |          |
| Input Capacitance               | $C_{iss}$     | $V_{DS}=30V, V_{GS}=0V, f=1MHz$                       |     | 27   |          | pF       |
| Output Capacitance              | $C_{oss}$     |   |     | 3    |          |          |
| Reverse Transfer Capacitance    | $C_{rss}$     |   |     | 2    |          |          |
| Total Gate Charge               | $Q_g$         | $V_{DS}=30V, V_{GS}=10V, I_D=0.3A$                    |     | 1.7  |          | nC       |
| Gate-Source Charge              | $Q_{gs}$      |   |     | 0.4  |          |          |
| Gate-Drain Charge               | $Q_{gd}$      |   |     | 0.45 |          |          |
| Turn-On Delay Time              | $t_{d(on)}$   | $V_{DS}=50V, V_{GS}=10V,$<br>$R_G=50\Omega, I_D=0.2A$ |     | 6.4  |          | ns       |
| Turn-On Rise Time               | $t_r$         |   |     | 19.2 |          |          |
| Turn-Off Delay Time             | $t_{d(off)}$  |   |     | 19.4 |          |          |
| Turn-Off Fall Time              | $t_f$         |   |     | 84   |          |          |

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

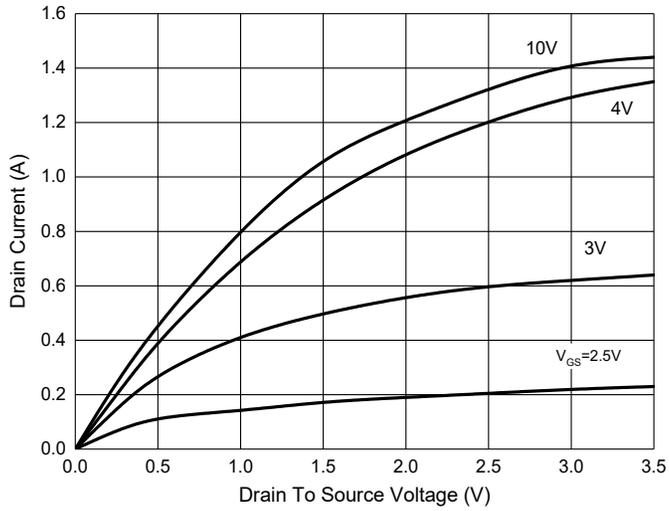


Fig. 2 - Transfer Characteristics

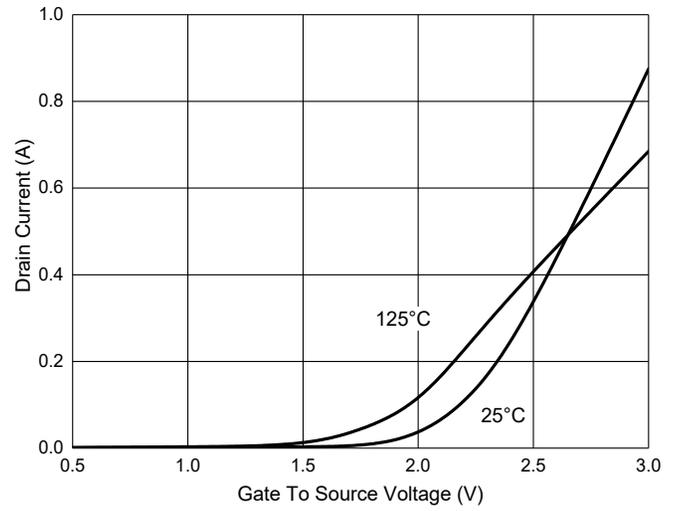


Fig. 3 -  $R_{DS(ON)} - I_D$

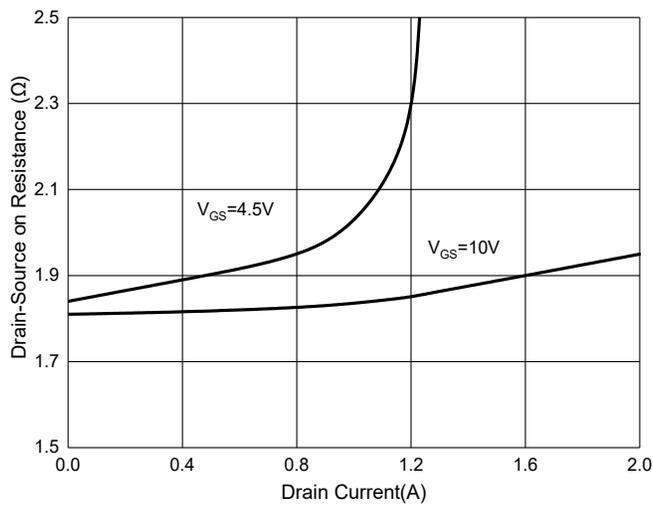


Fig. 4 - Normalized On Resistance Characteristics

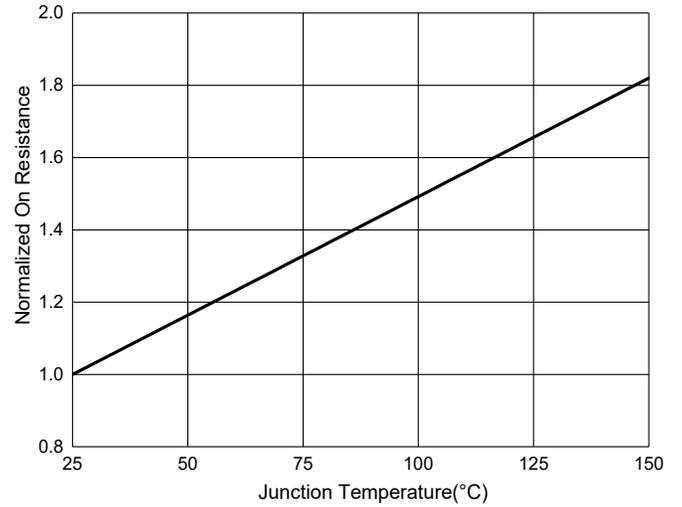


Fig. 5 - Capacitance Characteristics

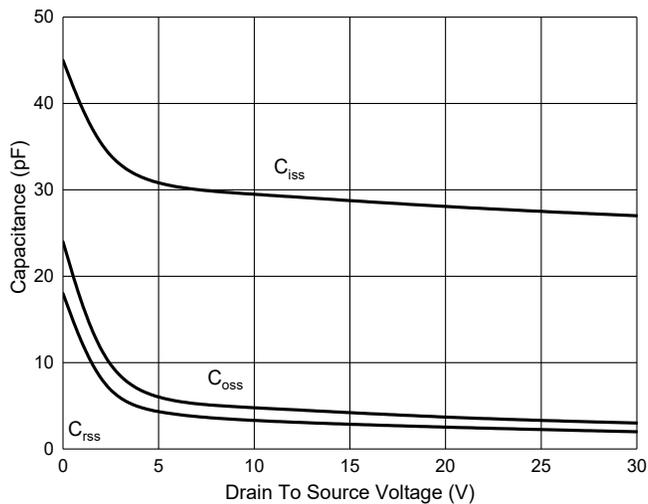
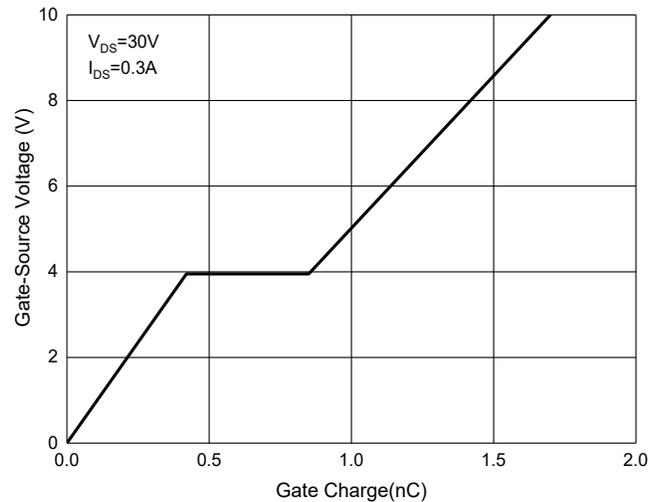
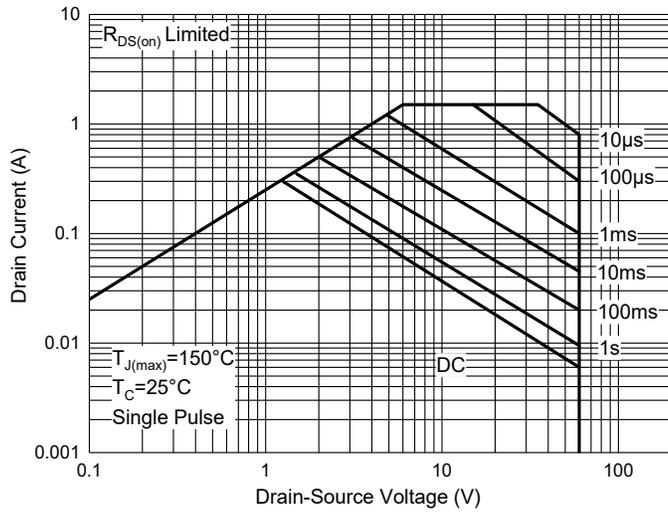


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

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