

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 3
- Halogen Free. "Green" Device (Note 1)
- 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: 62.5°C/W Junction to Ambient
- Thermal Resistance: 1.5°C/W Junction to Case

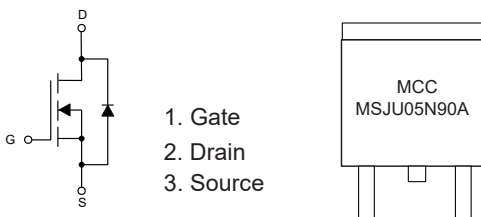
| Parameter | Symbol | Rating | Unit | |
|--|------------------------|----------|------|---|
| Drain-Source Voltage | V_{DS} | 900 | V | |
| Gate-Source Voltage | V_{GS} | ± 30 | V | |
| Continuous Drain Current | I_D | 5 | A | |
| Pulsed Drain Current (Note 2) | I_{DM} | 15 | A | |
| Single Pulse Avalanche Energy (Note 3) | E_{AS} | 68 | mJ | |
| Total Power Dissipation | $T_C=25^\circ\text{C}$ | P_D | 83 | W |

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. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

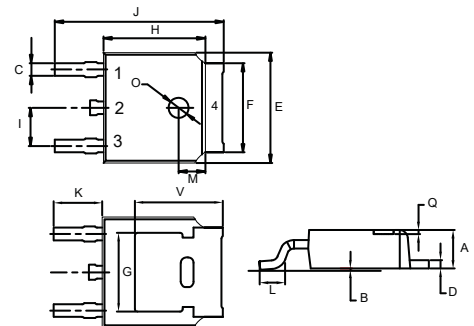
3. $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

DPAK(TO-252)



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|------|-------|------|
| | INCHES | | MM | | |
| | 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 | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 900 | | | V |
| Gate-Source Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 30V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=900V, V_{GS}=0V$ | | | 1 | μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 2 | 3 | 3.5 | V |
| Drain-Source On-Resistance ^(Note 4) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=2.5A$ | | 1.26 | 1.49 | Ω |
| Dynamic Characteristics^(Note 5) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ | | 474 | | pF |
| Output Capacitance | C_{oss} | | | 438 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 14 | | |
| Total Gate Charge | Q_g | $V_{DD}=720V, V_{GS}=10V, I_D=5A$ | | 13.6 | | nC |
| Gate-Source Charge | Q_{gs} | | | 3.4 | | |
| Gate-Drain Charge | Q_{gd} | | | 5.8 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=450V, I_D=5A, R_G=25\Omega$ | | 14 | | ns |
| Turn-On Rise Time | t_r | | | 23 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 44 | | |
| Turn-Off Fall Time | t_f | | | 21 | | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | $T_C=25^\circ C$ | | | 5 | A |
| Body Diode Voltage | V_{SD} | $I_{SD}=5A, V_{GS}=0V$ | | | 1.4 | V |
| Reverse Recovery Time | t_{rr} | $V_{DD}=100V, I_S=5, di_f/dt=100A/\mu s$ | | 486 | | ns |
| Reverse Recovery Charge | Q_{rr} | | | | 2.5 | μC |
| Peak Reverse Recovery Current | I_{rm} | | | | 10.2 | A |

Note 4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$.

5. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

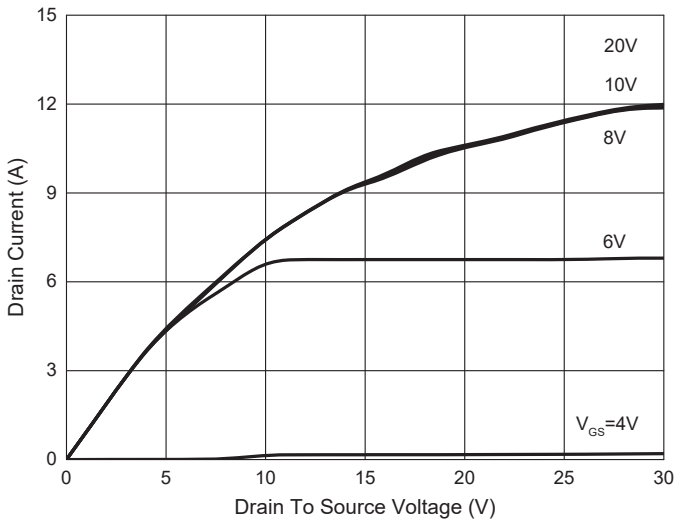


Fig. 2 - Transfer Characteristics

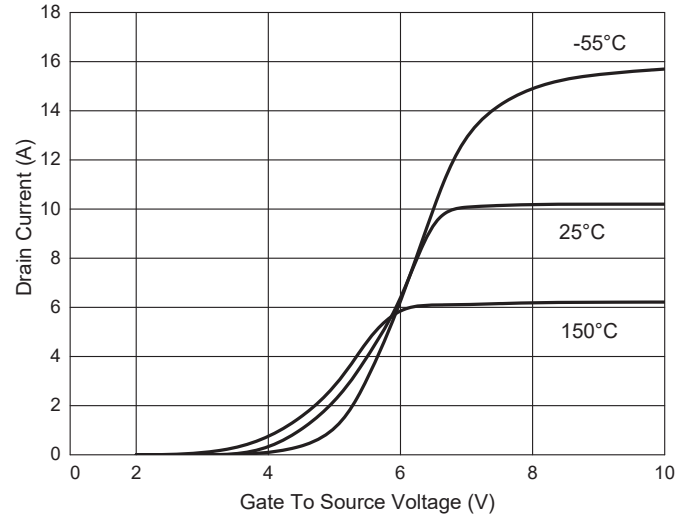


Fig. 3 - $R_{DS(ON)} - I_D$

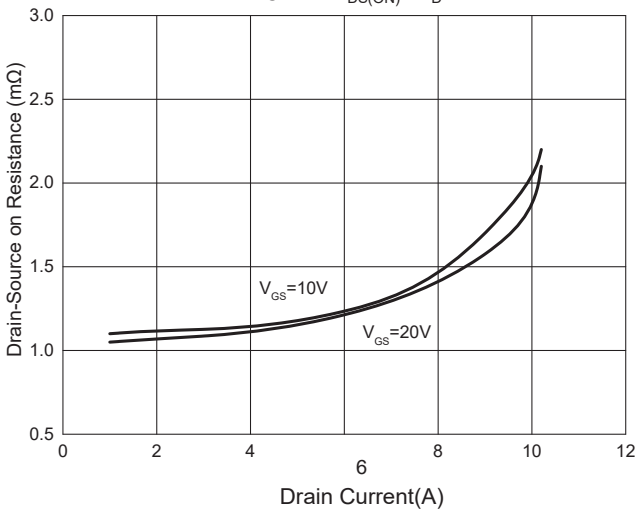


Fig. 4 - $R_{DS(ON)} - I_D$

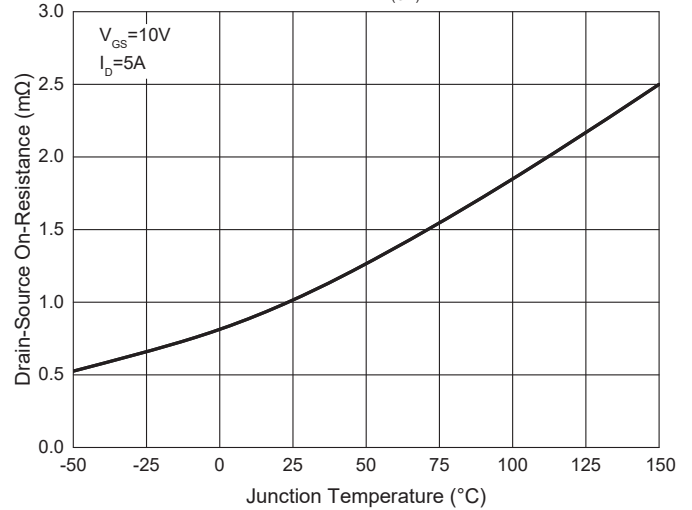


Fig. 5 - $I_S - V_{SD}$

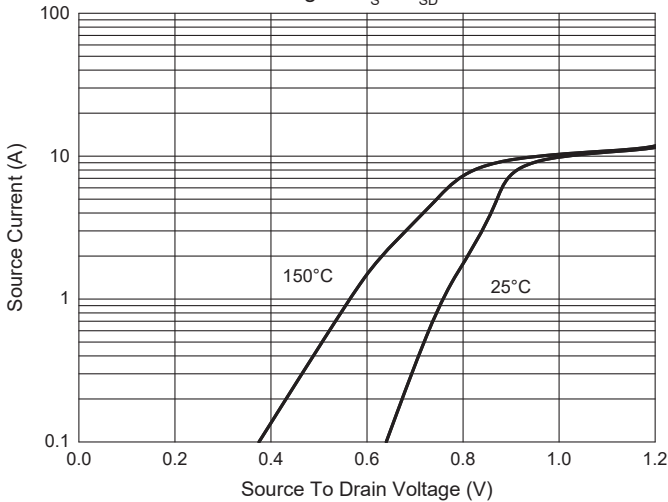
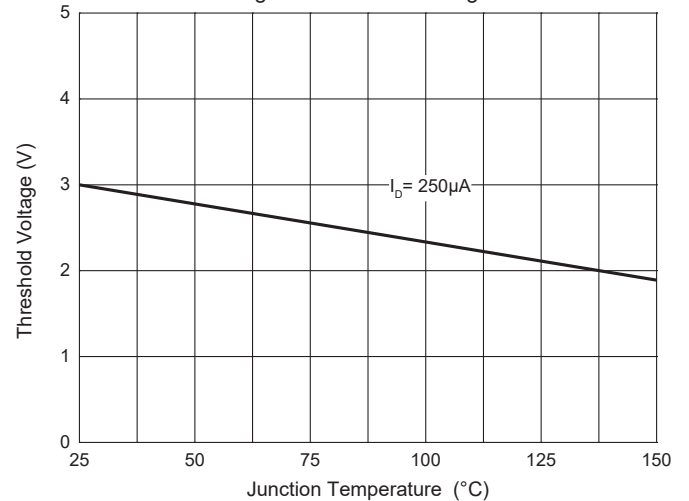


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Gate Charge

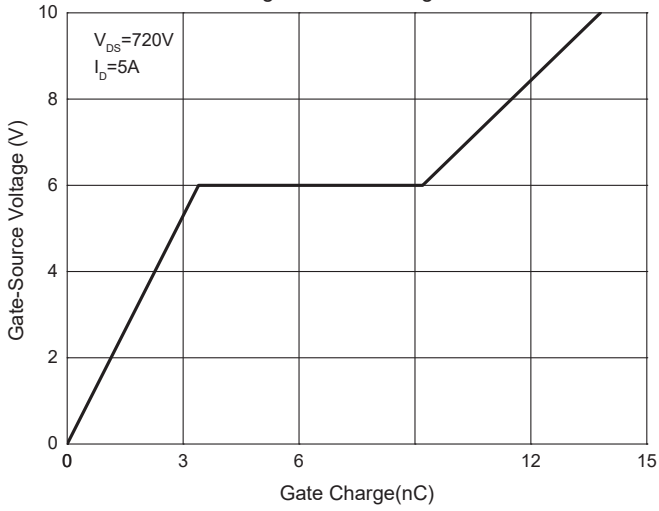


Fig. 8 - Drain-Source Breakdown Voltage

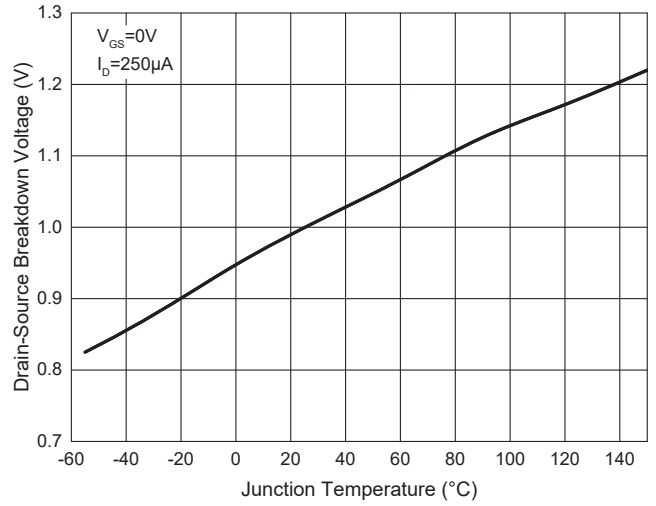
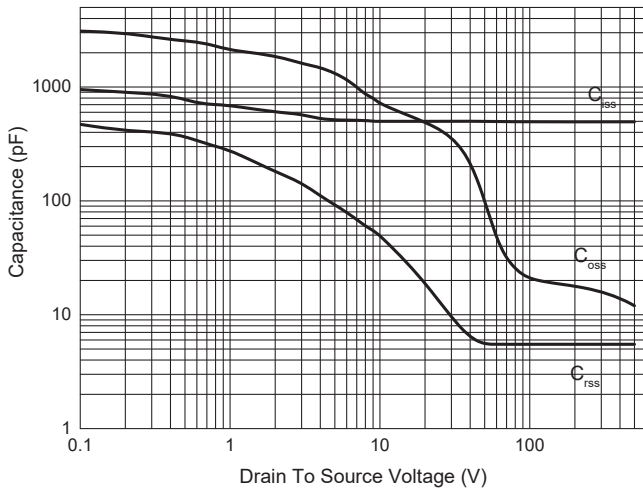


Fig. 9 - Capacitance Characteristics



Ordering Information

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

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