

Features

- Trench LV MOSFET Technology
- 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

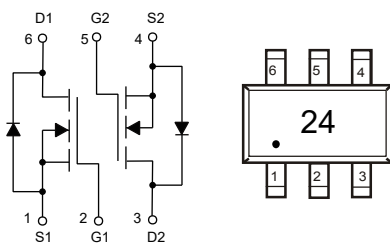
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 290°C/W Junction to Ambient^(Note2)

| Parameter | Symbol | Rating | Unit |
|--|----------|-------------------------|------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ±10 | V |
| Continuous Drain Current | I_D | $T_A=25^\circ\text{C}$ | 1.5 |
| | | $T_A=100^\circ\text{C}$ | 0.95 |
| Pulsed Drain Current ^(Note3) | I_{DM} | 6 | A |
| Total Power Dissipation ^(Note4) | P_D | 0.43 | W |

Note:

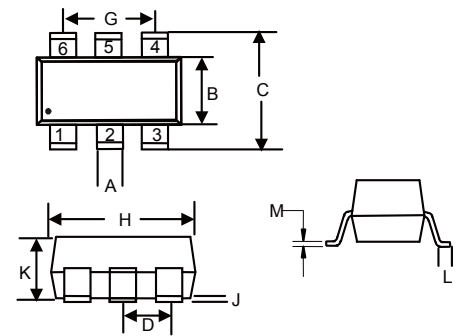
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2 oz copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code



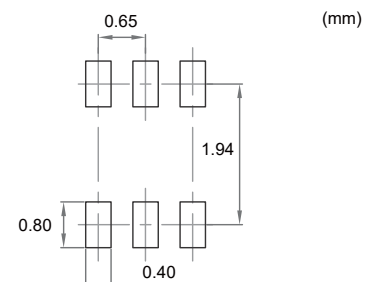
Dual N-Channel MOSFET

SOT-363



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|-------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.006 | 0.014 | 0.15 | 0.35 | |
| B | 0.045 | 0.053 | 1.15 | 1.35 | |
| C | 0.079 | 0.096 | 2.00 | 2.45 | |
| D | 0.026 | | 0.65 | | TYP. |
| G | 0.047 | 0.055 | 1.20 | 1.40 | |
| H | 0.071 | 0.087 | 1.80 | 2.20 | |
| J | ----- | 0.004 | ----- | 0.10 | |
| K | 0.031 | 0.043 | 0.80 | 1.10 | |
| L | 0.010 | 0.018 | 0.26 | 0.46 | |
| M | 0.003 | 0.006 | 0.08 | 0.15 | |

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---------------------------------|---------------|--|------|------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 20 | | | V |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.55 | 0.75 | 1.1 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 10V, V_{DS}=0V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=20V, V_{GS}=0V$ | | | 1 | μA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=1A$ | | 75 | 90 | m Ω |
| | | $V_{GS}=2.5V, I_D=0.6A$ | | 86 | 105 | |
| | | $V_{GS}=1.8V, I_D=0.3A$ | | 110 | 135 | |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=1.5A$ | | 7.5 | | S |
| Gate Resistance | R_g | f=1 MHz, Open drain | | 1.8 | | Ω |
| Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | | | | 1.5 | A |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=1A$ | | | 1.2 | V |
| Reverse Recovery Time | t_{rr} | $I_F=1.5A, dI_F/dt=100A/\mu s$ | | 9 | | ns |
| Reverse Recovery Charge | Q_{rr} | | | 2 | | nC |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, V_{GS}=0V, f=1MHz$ | | 188 | | pF |
| Output Capacitance | C_{oss} | | | 35 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 29 | | |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=4.5V, I_D=1.5A$ | | 2.7 | | nC |
| Gate-Source Charge | Q_{gs} | | | 0.3 | | |
| Gate-Drain Charge | Q_{gd} | | | 0.5 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=10V, V_{GS}=4.5V, R_G=3\Omega, I_D=1.5A$ | | 4 | | ns |
| Turn-On Rise Time | t_r | | | 5 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 10 | | |
| Turn-Off Fall Time | t_f | | | 2 | | |

Curve Characteristics

Fig.1 - Typical Output Characteristics

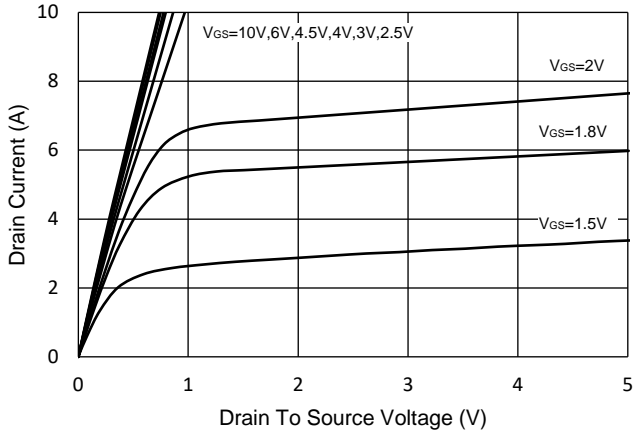


Fig.2 - Transfer Characteristic

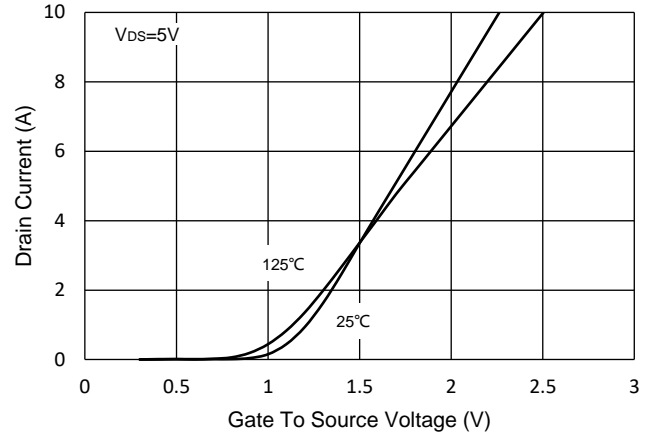


Fig.3 - $R_{DS(ON)}$ - V_{GS}

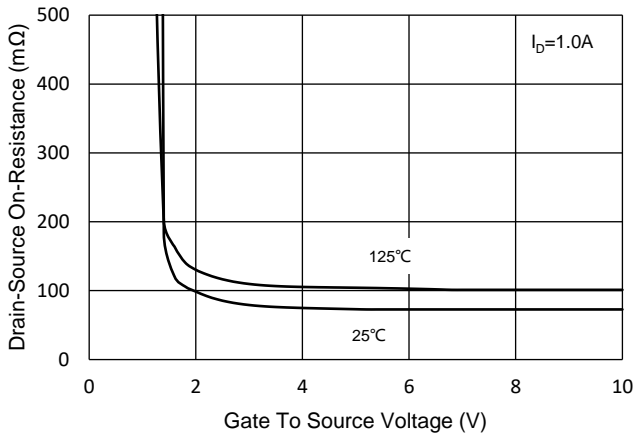


Fig.4 - $R_{DS(ON)}$ - I_D

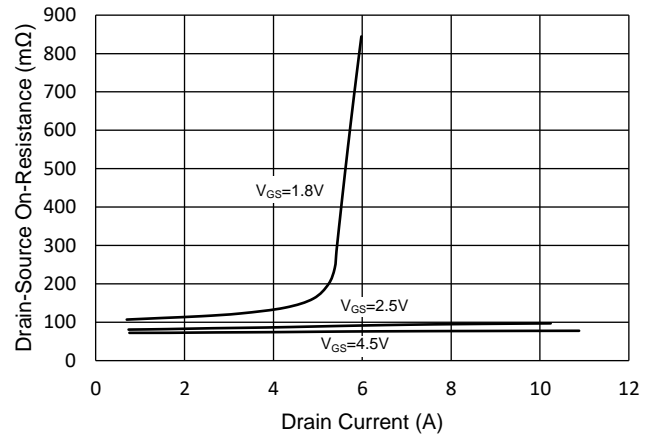


Fig.5 - Capacitance Characteristics

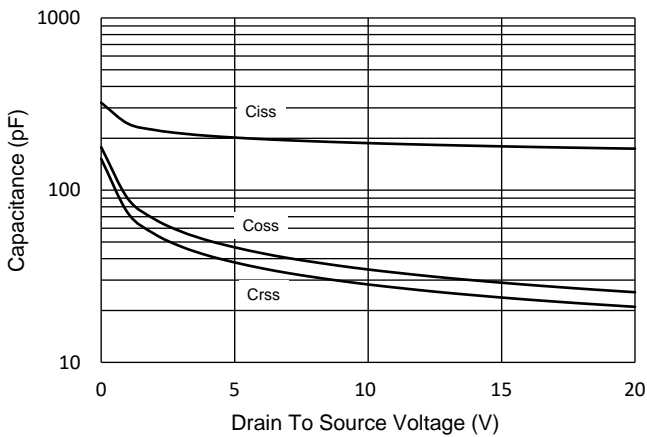
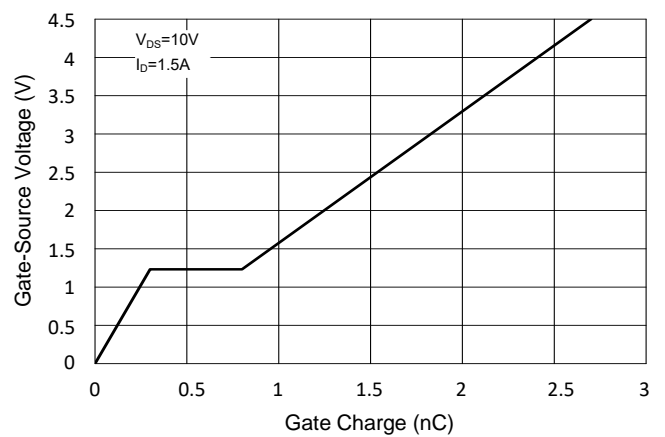


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

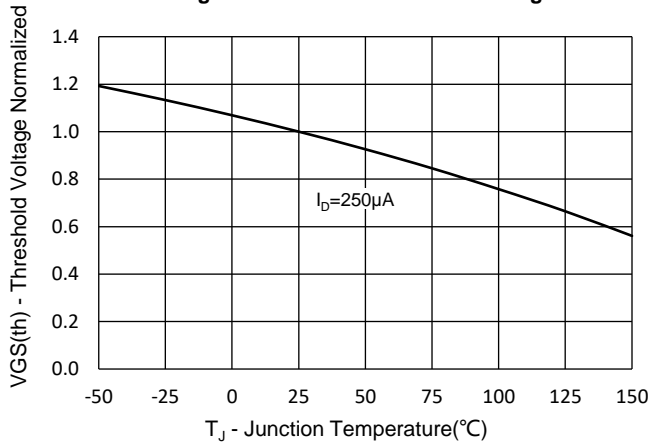


Fig.8 - Normalized On Resistance Characteristics

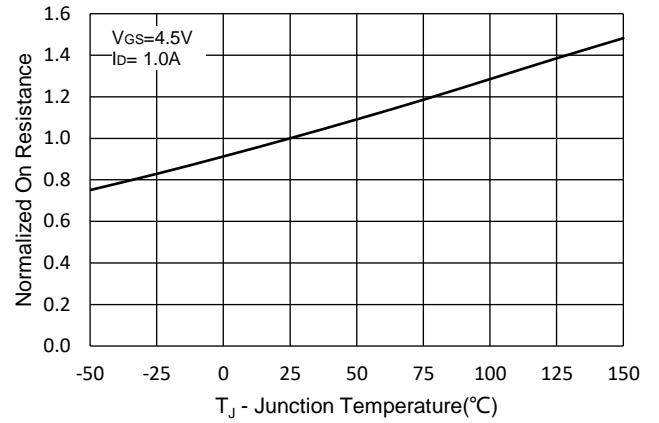


Fig.9 - I_S - V_{SD}

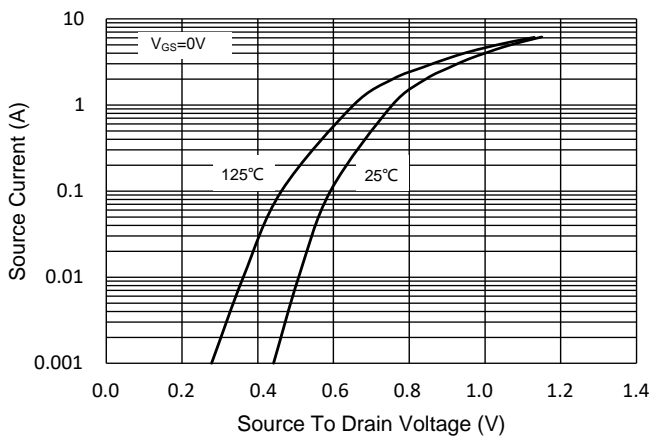


Fig.10 - Drain Current

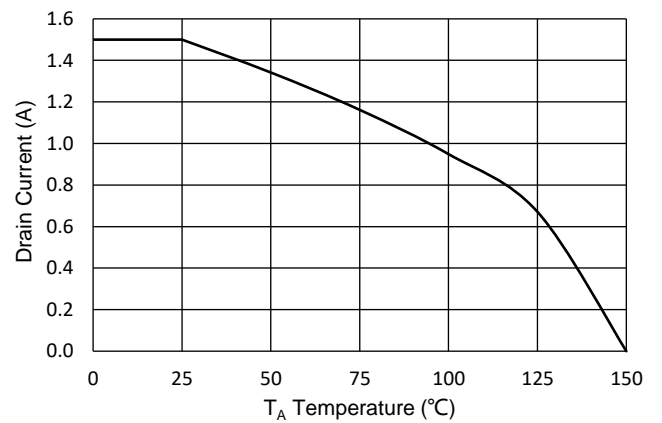
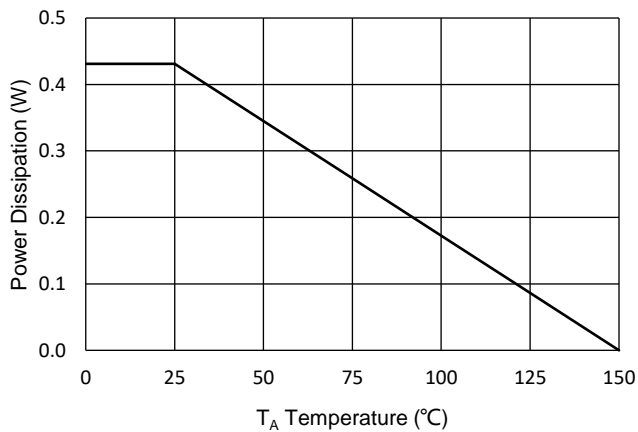


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

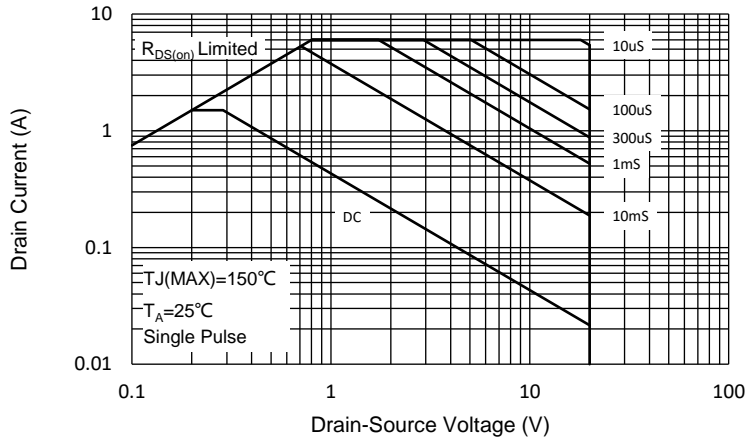
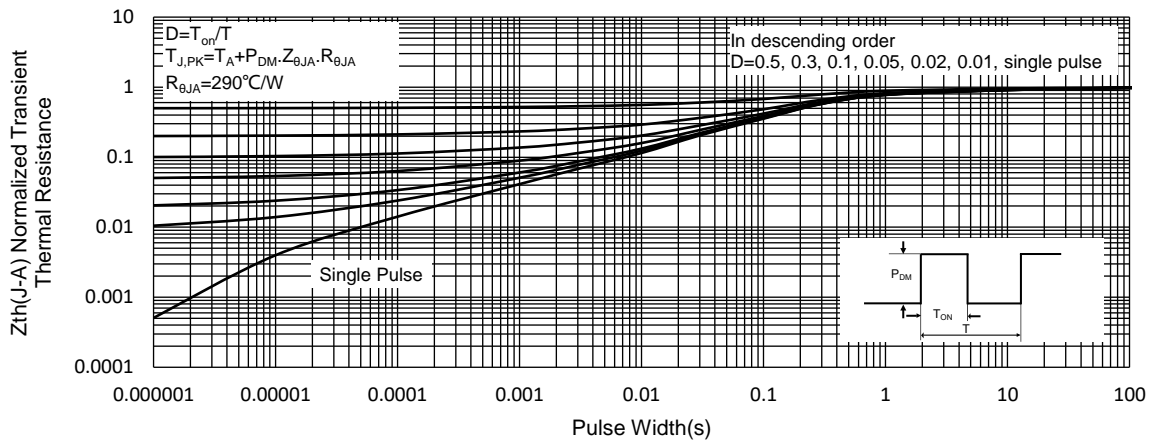


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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