

Features

- Advanced Trench MOSFET Process Technology
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

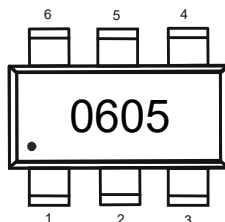
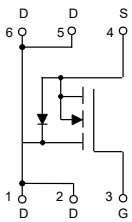
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient (Note2)

| Parameter | Symbol | Rating | Unit |
|------------------------------|----------|----------|------|
| Drain -Source Voltage | V_{DS} | 60 | V |
| Gate -Source Voltage | V_{GS} | ± 20 | V |
| Drain Current-Continuous | I_D | 5 | A |
| Pulsed Drain Current (Note3) | I_{DM} | 20 | A |
| Power Dissipation | P_D | 1.25 | W |

Note:

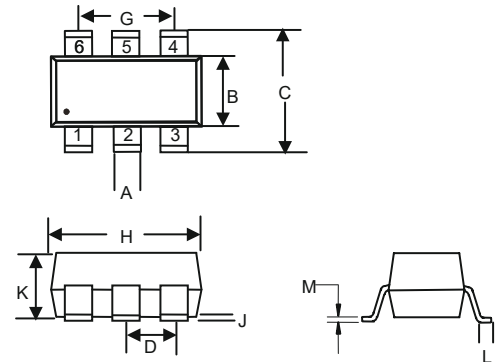
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Width Limited by Maximum Junction Temperature.

Internal Structure and Marking Code



N-Channel Power MOSFET

SOT23-6L



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|------|------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.012 | 0.020 | 0.30 | 0.50 | |
| B | 0.051 | 0.070 | 1.30 | 1.80 | |
| C | 0.087 | 0.126 | 2.20 | 3.20 | |
| D | 0.037 | | 0.95 | | TYP. |
| G | 0.074 | | 1.90 | | TYP. |
| H | 0.106 | 0.122 | 2.70 | 3.10 | |
| J | 0.002 | 0.006 | 0.05 | 0.15 | |
| K | 0.030 | 0.051 | 0.75 | 1.30 | |
| L | 0.012 | 0.024 | 0.30 | 0.60 | |
| M | 0.003 | 0.008 | 0.08 | 0.22 | |

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

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---------------|--|-----|------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 60 | | | V |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 2.5 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 60V, V_{GS} = 0V$ | | | 1 | μA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=5A$ | | 34 | 43 | m Ω |
| | | $V_{GS}= 4.5V, I_D=4A$ | | 36 | 47 | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=30V, V_{GS}=0V, f=1MHz$ | | 1018 | | pF |
| Output Capacitance | C_{oss} | | | 70 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 62 | | |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=30V, V_{GS}=10V, I_D=10A$ | | 26.4 | | nC |
| Gate-Source Charge | Q_{gs} | | | 5.4 | | |
| Gate-Drain Charge | Q_{gd} | | | 6.5 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=30V, V_{GS}=10V, I_D=2A, R_{GEN} = 3\Omega, R_L = 1\Omega$ | | 10 | | ns |
| Turn-on Rise Time | t_r | | | 20 | | |
| Turn-off Delay Time | $t_{d(off)}$ | | | 29 | | |
| Turn-off Fall Time | t_f | | | 21 | | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_s=5A$ | | | 1.2 | V |
| Diode Forward Current | I_s | | | | 5 | A |
| Reverse Recovery Time | t_{rr} | $I_F=20A, di/dt=500A/us$ | | 23 | | nS |
| Reverse Recovery Charge | Q_{rr} | | | | 11.7 | |

Curve Characteristics

Fig. 1 - Typical Output Characteristics

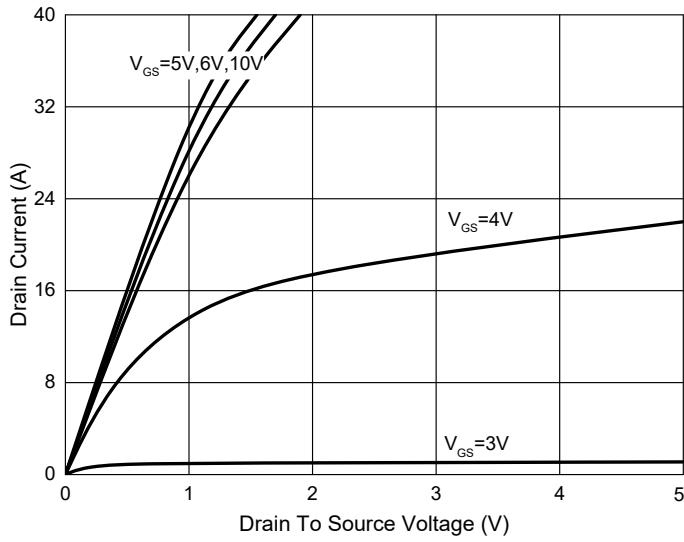


Fig. 2 - Transfer Characteristics

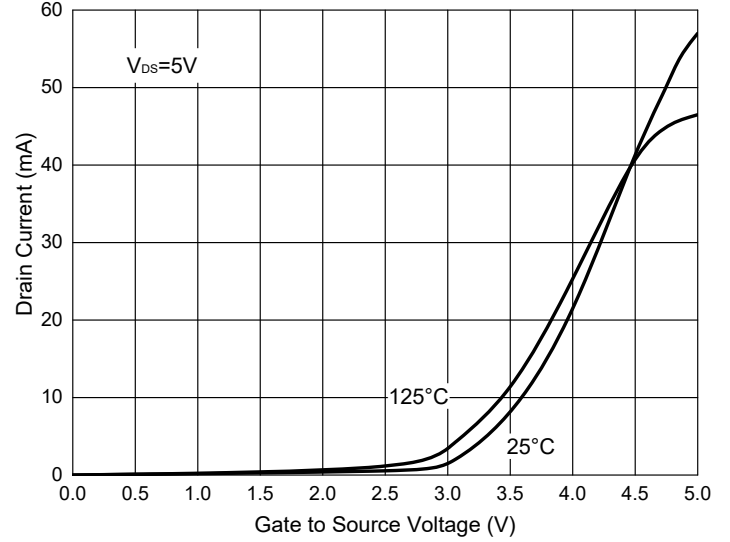


Fig. 3 - $R_{DS(ON)} - I_D$

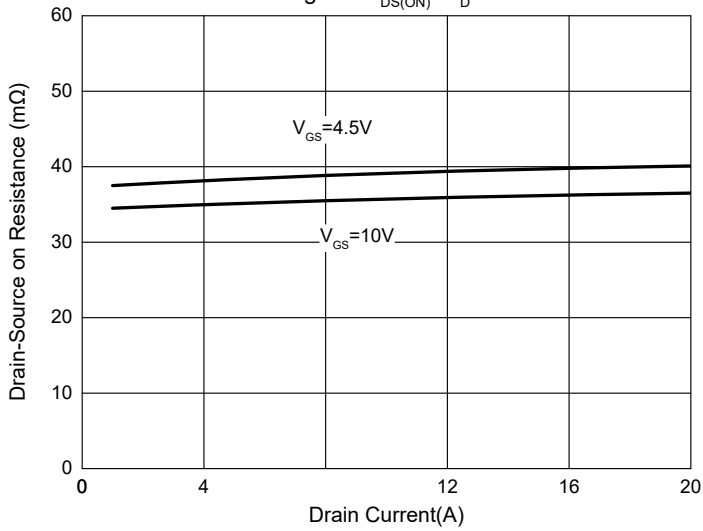


Fig. 4 - Normalized On Resistance Characteristics

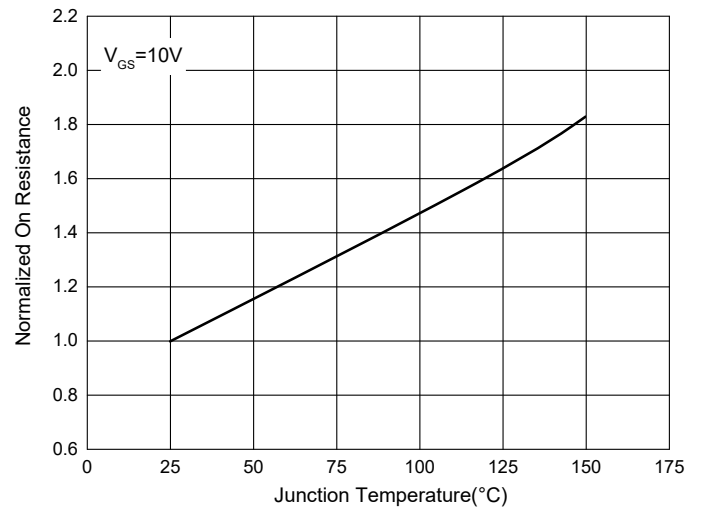


Fig. 5 - Capacitance Characteristics

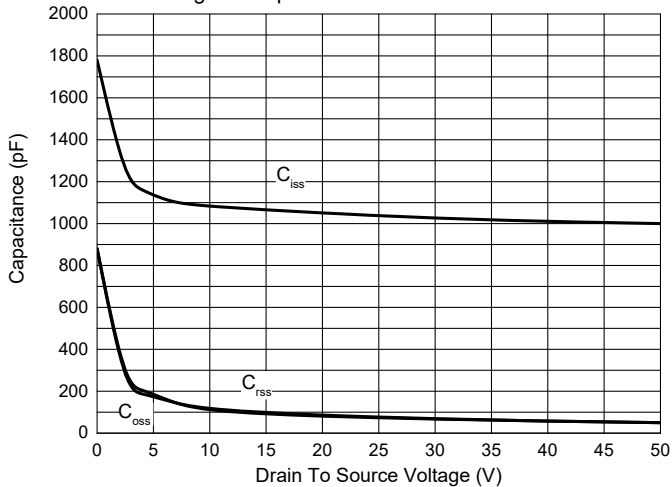
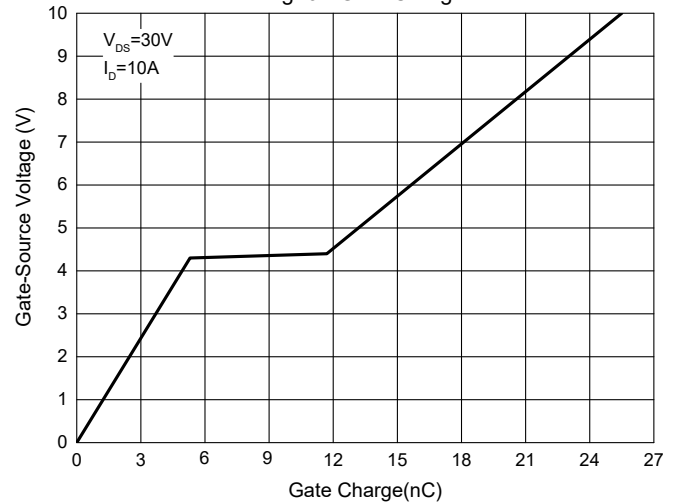


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Safe Operation Area

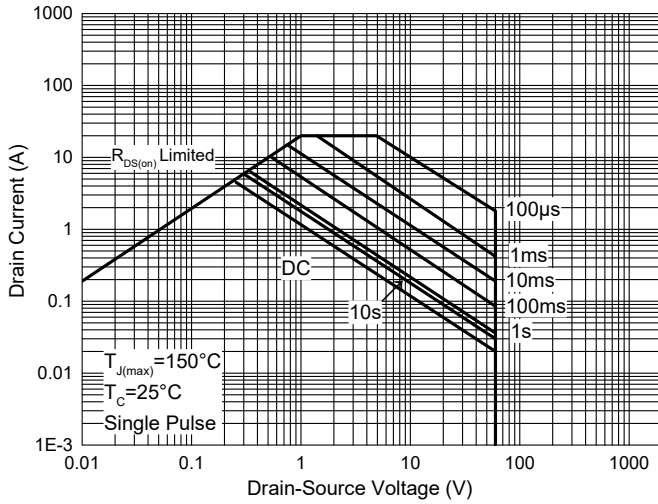
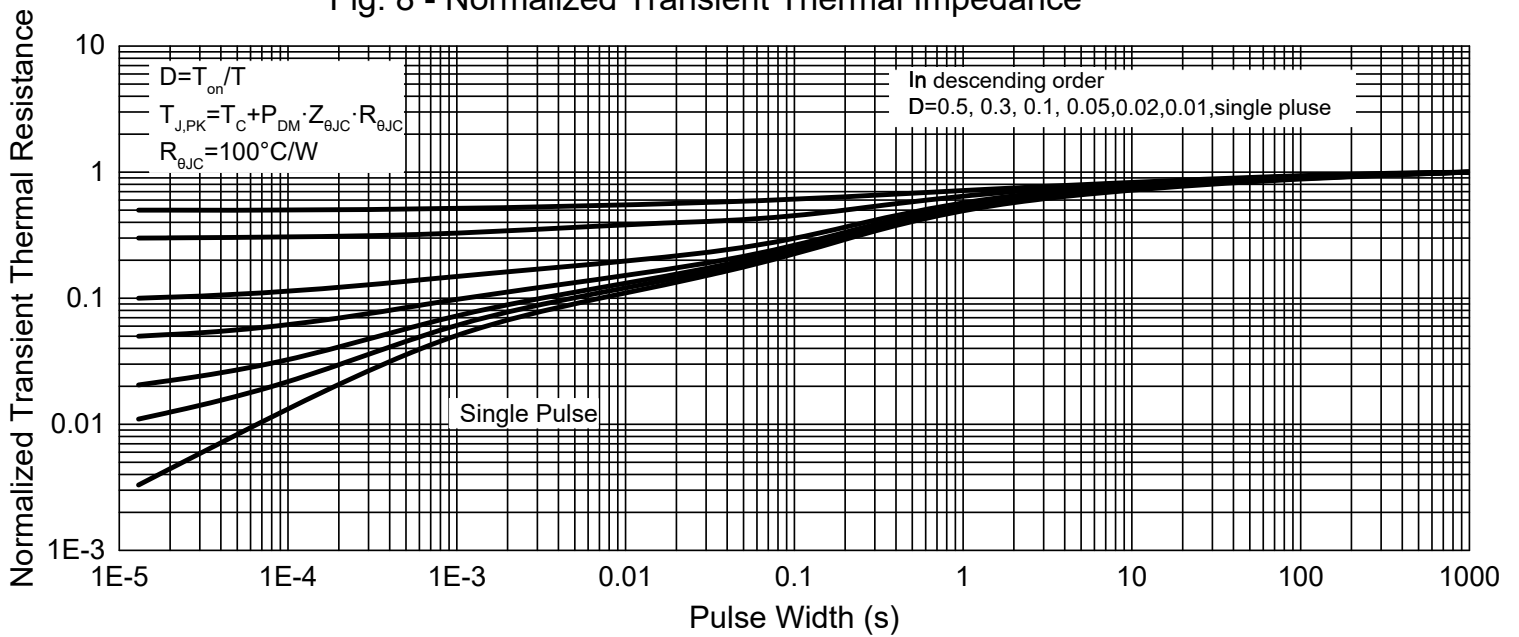


Fig. 8 - Normalized Transient Thermal Impedance



Ordering Information

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

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