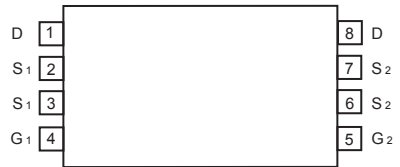
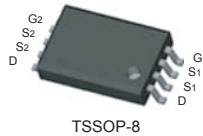
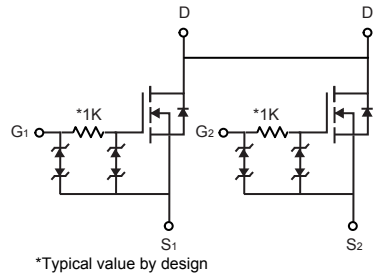


Dual N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- 20V, 6.5A, $R_{DS(ON)} = 22m\Omega @ V_{GS} = 4.5V$.
 $R_{DS(ON)} = 32m\Omega @ V_{GS} = 2.5V$.
- Super High dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handling capability.
- Lead free product is acquired.
- TSSOP-8 for Surface Mount Package.
- ESD Protected: HBM 2000 V



ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ C$ unless otherwise noted

| Parameter | Symbol | Limit | Units |
|---------------------------------------|----------------|------------|------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Drain Current-Continuous | I_D | 6.5 | A |
| Drain Current-Pulsed ^a | I_{DM} | 25 | A |
| Maximum Power Dissipation | P_D | 1.5 | W |
| Operating and Store Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ C$ |

Thermal Characteristics

| Parameter | Symbol | Limit | Units |
|--|-----------------|-------|--------------|
| Thermal Resistance, Junction-to-Ambient ^b | $R_{\theta JA}$ | 83 | $^\circ C/W$ |

Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|--|--------------|--|-----|------|-----|-----------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS} = 0V, I_D = 250\mu A$ | 20 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 20V, V_{GS} = 0V$ | | | 1 | μA |
| Gate Body Leakage Current, Forward | I_{GSSF} | $V_{GS} = 12V, V_{DS} = 0V$ | | | 10 | μA |
| Gate Body Leakage Current, Reverse | I_{GSSR} | $V_{GS} = -12V, V_{DS} = 0V$ | | | -10 | μA |
| On Characteristics | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS} = V_{DS}, I_D = 250\mu A$ | 0.5 | | 1.2 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 4.5V, I_D = 5A$ | | 18 | 22 | $m\Omega$ |
| | | $V_{GS} = 2.5V, I_D = 4A$ | | 24 | 32 | $m\Omega$ |
| Dynamic Characteristics ^c | | | | | | |
| Forward Transconductance | g_{FS} | $V_{DS} = 10V, I_D = 5A$ | | 17 | | S |
| Input Capacitance | C_{iss} | $V_{DS} = 25V, V_{GS} = 0V, f = 1.0\text{ MHz}$ | | 40 | | pF |
| Output Capacitance | C_{oss} | | | 115 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 15 | | pF |
| Switching Characteristics ^c | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 10V, I_D = 1A, V_{GS} = 4.5V, R_{GEN} = 6\Omega$ | | 0.35 | 0.7 | μs |
| Turn-On Rise Time | t_r | | | 0.87 | 1.8 | μs |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 3.60 | 7.5 | μs |
| Turn-Off Fall Time | t_f | | | 2.01 | 4.3 | μs |
| Total Gate Charge | Q_g | $V_{DS} = 10V, I_D = 5A, V_{GS} = 4.5V$ | | 4.3 | 7.5 | nC |
| Gate-Source Charge | Q_{gs} | | | 1.1 | | nC |
| Gate-Drain Charge | Q_{gd} | | | 2.5 | | nC |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Drain-Source Diode Forward Current | I_S | | | | 1.5 | A |
| Drain-Source Diode Forward Voltage ^b | V_{SD} | $V_{GS} = 0V, I_S = 1.5A$ | | | 1.2 | V |
| Notes : □ a.Repetitive Rating : Pulse width limited by maximum junction temperature. b.Surface Mounted on FR4 board, $t \leq 10\text{sec}$. □ b.Pulse Test : Pulse Width < 300 μs , Duty Cycle < 2%. □ c.Guaranteed by design, not subject to production testing. □ | | | | | | |

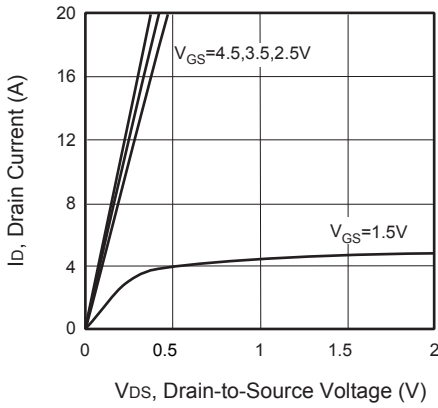


Figure 1. Output Characteristics

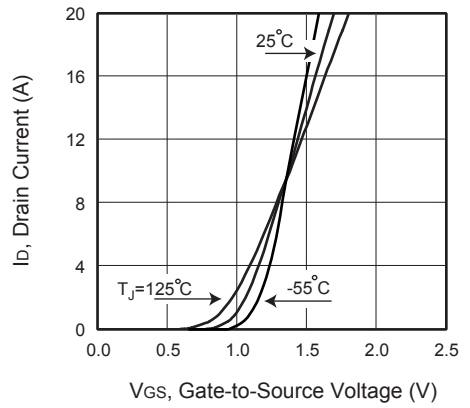


Figure 2. Transfer Characteristics

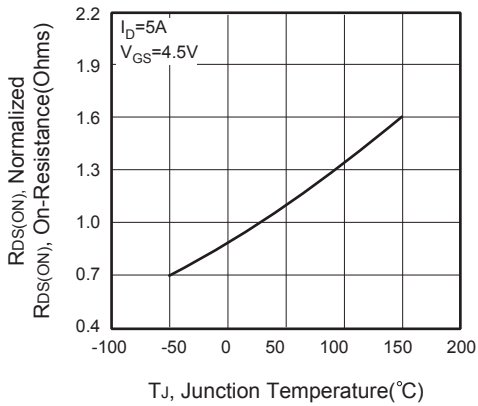


Figure 3. On-Resistance Variation with Temperature

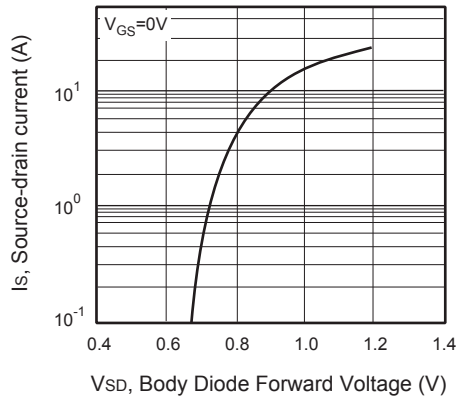


Figure 4. Body Diode Forward Voltage Variation with Source Current

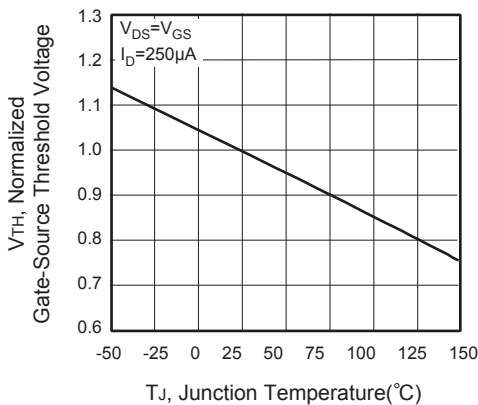


Figure 5. Gate Threshold Variation with Temperature

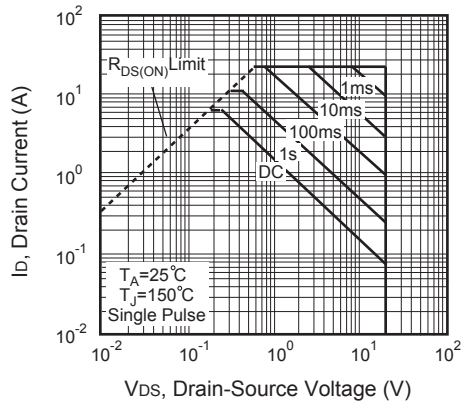


Figure 6. Maximum Safe Operating Area

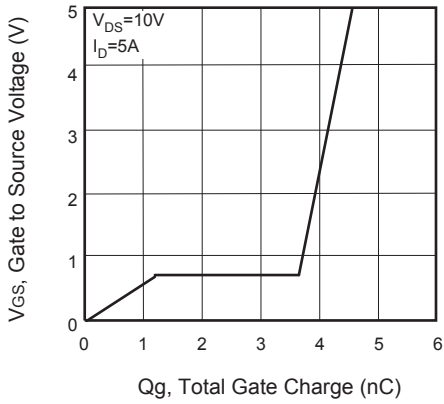


Figure 7. Gate Charge

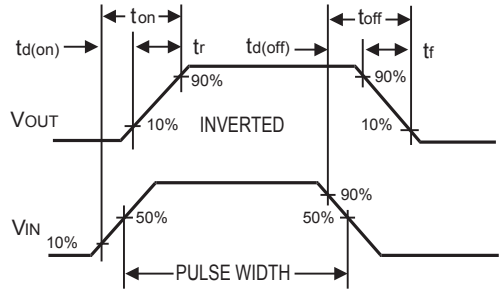


Figure 8. Switching Waveforms



Figure 9. Switching Test Circuit

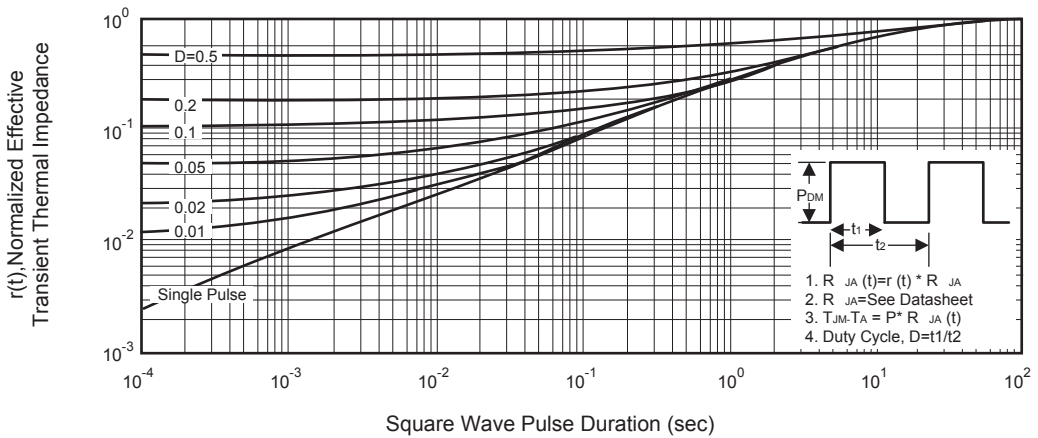


Figure 10. Normalized Thermal Transient Impedance Curve