

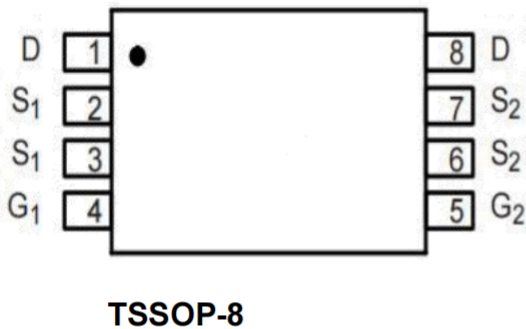
Product Summary

- V_{DS} 20 V
- I_{DS} 7 A
- $R_{DS(ON)}$ (@ $V_{GS}= 4.5V$) $\leq 14m\Omega$
- $R_{DS(ON)}$ (@ $V_{GS}= 2.5V$) $\leq 17m\Omega$

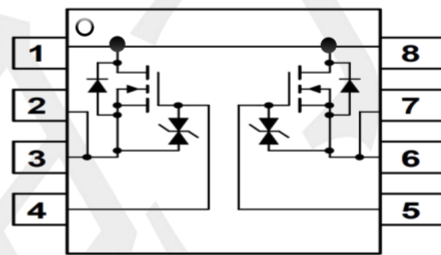
Application

- Battery protection
- Battery Powered Systems
- Power management
- Motor Control
- Portable Power Adaptors

Package and Pin Configuration



Circuit diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNIT |
|--------------------------------------|-----------|-------------|------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 10 | V |
| Continuous Drain Current | I_D | 7 | A |
| Pulsed Drain Current | I_{DM} | 23 | A |
| Maximum Power Dissipation | P_D | 1.25 | W |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |
| Storage Temperature Range | T_{stg} | -55 to +150 | °C |

Thermal Characteristic

| PARAMETER | Symbol | Value | Unit |
|--|-----------------|-------|------|
| Junction-to-Ambient Thermal Resistance | $R_{\theta JA}$ | 111 | °C/W |
| PCB Mount (Note) | | | |

Note : The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | MIN | TYP | MAX | UNIT |
|--|--|---------------------|-----|------|------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | BV _{DSS} | 20 | -- | -- | V |
| Gate-Source Threshold Voltage | V _{DS} =V _{GS} , I _D = 250μA | V _{GS(th)} | 0.5 | 0.7 | 1.2 | V |
| Gate-Source Leakage | V _{DS} =0V, V _{GS} = ±20V | I _{GSS} | -- | -- | ±100 | nA |
| Zero Gate Voltage Drain Current | V _{DS} = 16V, V _{GS} =0V | I _{DSS} | -- | 0.1 | 1.0 | μA |
| | V _{DS} =16V, T _J =55°C | | -- | 1.0 | 5.0 | μA |
| Drain-Source On-State Resistance (Note 1) | V _{GS} = 4.5V, I _D = 4.5A | R _{DS(on)} | -- | 12 | 14 | mΩ |
| | V _{GS} = 2.5V, I _D = 3.5A | | -- | 15 | 17 | |
| Dynamic (Note 2) | | | | | | |
| Total Gate Charge (Note 3) | V _{DS} = 10V, I _D = 7A, V _{GS} = 4.5V | Q _g | -- | 11.4 | -- | nC |
| Gate-Source Charge (Note 3) | | Q _{gs} | -- | 1.9 | -- | |
| Gate-Drain Charge (Note 3) | | Q _{gd} | -- | 3.6 | -- | |
| Input Capacitance | V _{DS} = 8V, V _{GS} = 0V, F = 1.0MHz | C _{iss} | -- | 956 | -- | pF |
| Output Capacitance | | C _{oss} | -- | 200 | -- | |
| Reverse Transfer Capacitance | | C _{rss} | -- | 150 | -- | |
| Switching | | | | | | |
| Turn-On Delay Time (Note 3) | V _{DD} = 10V, I _D =3.5A, V _{GS} = 4.5V, R _G = 6Ω | t _{d(on)} | -- | 8.1 | -- | nS |
| Rise Time (Note 3) | | t _r | -- | 17 | -- | |
| Turn-Off Delay Time (Note 3) | | t _{d(off)} | -- | 27 | -- | |
| Fall Time (Note 3) | | t _f | -- | 8.8 | -- | |
| Source-Drain Diode Ratings and Characteristics (Note 2) | | | | | | |
| Forward Voltage | V _{GS} = 0V, I _F = 1.7A | V _{SD} | -- | 0.7 | 1.2 | V |
| Continuous Source Current | Integral reverse diode in the MOSFET | I _S | -- | -- | 7 | A |
| Pulsed Current (Note 1) | | I _{SM} | -- | -- | 23 | A |

Notes:

1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

Typical Performance Characteristics

Figure 1: Output Characteristics

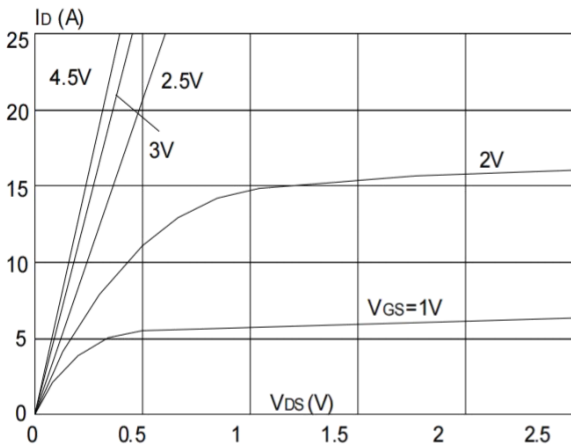


Figure 2: Typical Transfer Characteristics

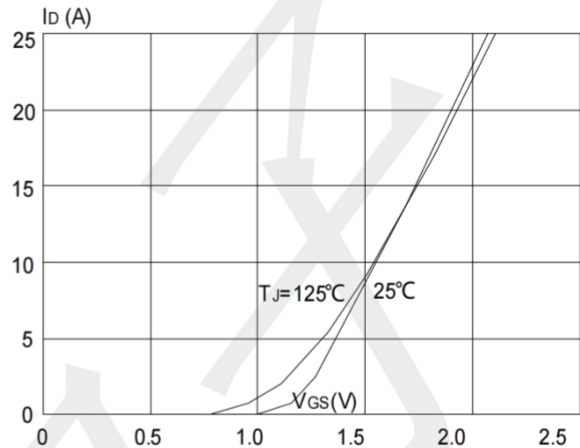


Figure 3: On-resistance vs. Drain Current

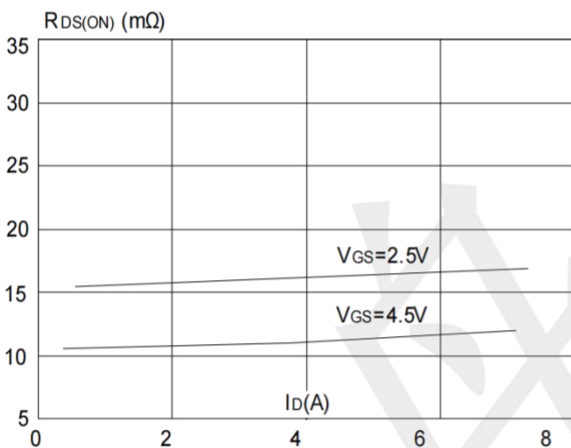


Figure 4: Body Diode Characteristics

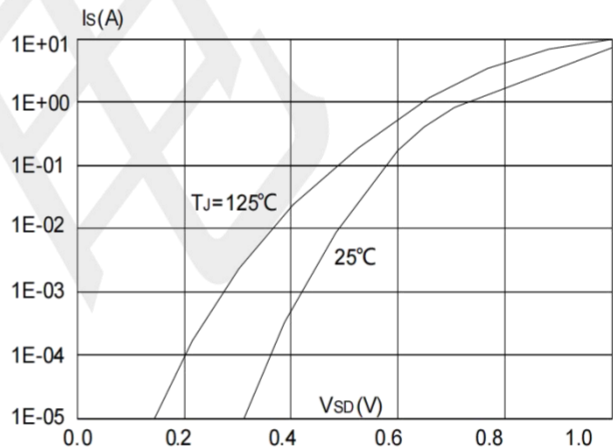


Figure 5: Gate Charge Characteristics

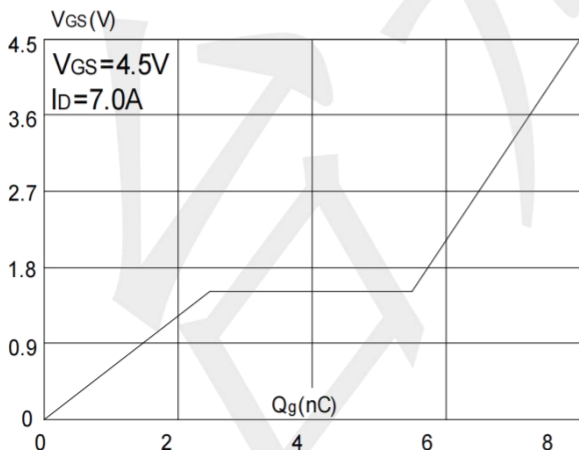
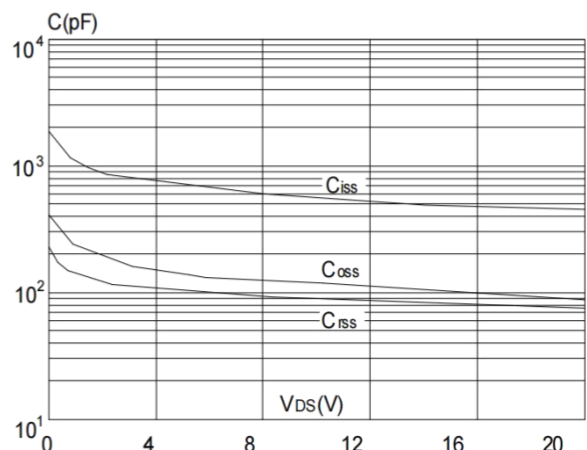


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

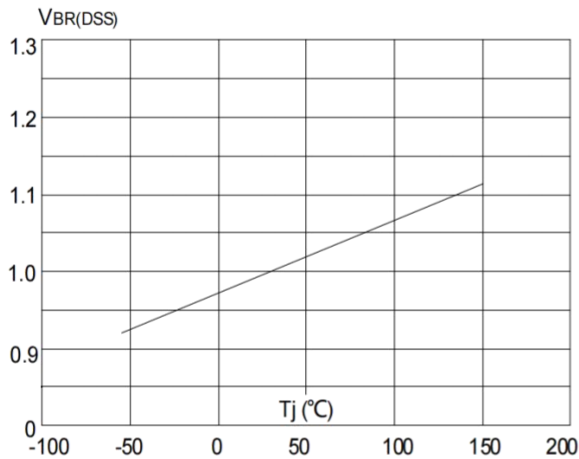


Figure 8: Normalized on Resistance vs. Junction Temperature

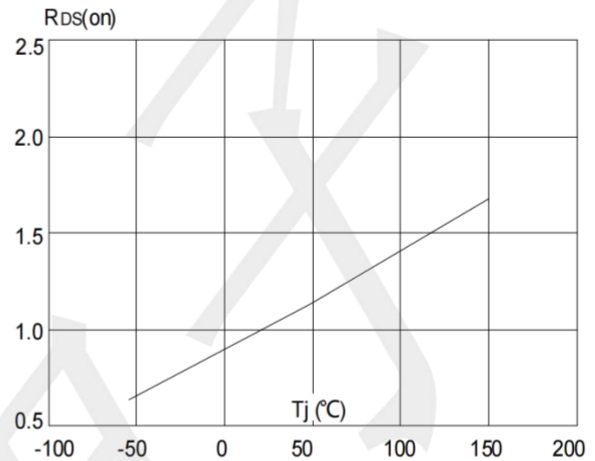


Figure 9: Maximum Safe Operating Area

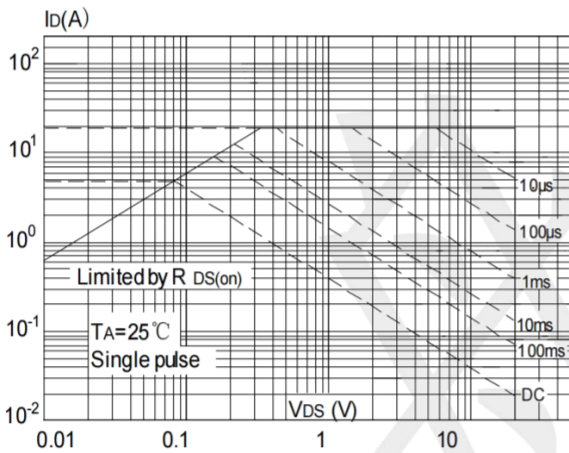


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

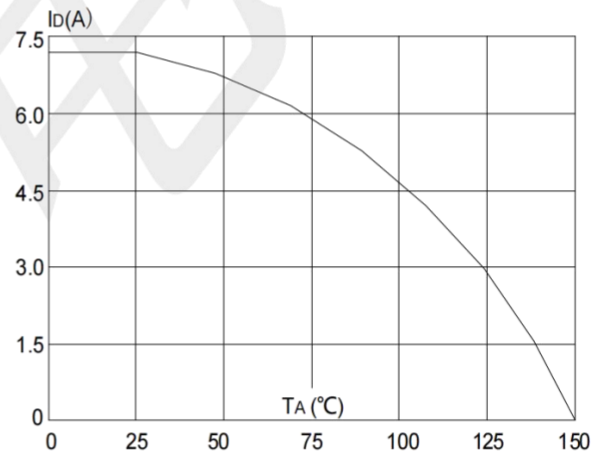
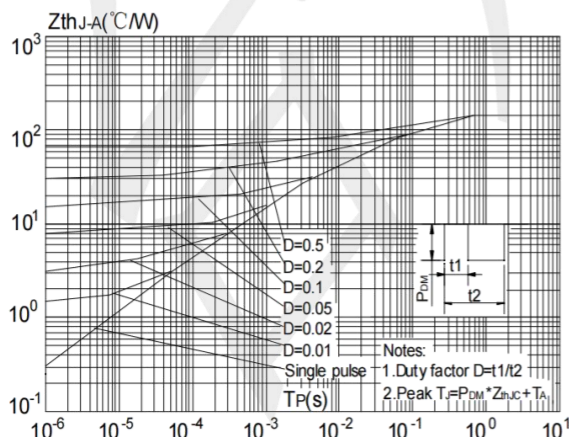
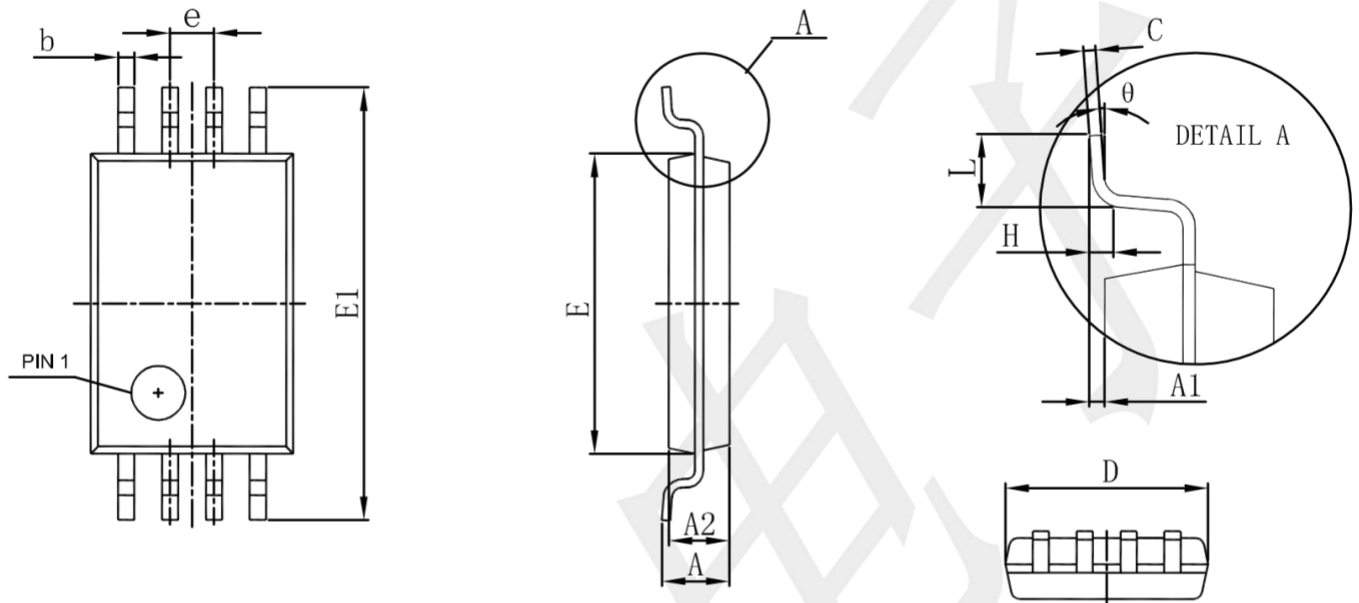


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Information

TSSOP-8



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| D | 2.900 | 3.100 | 0.114 | 0.122 |
| E | 4.300 | 4.500 | 0.169 | 0.177 |
| b | 0.190 | 0.300 | 0.007 | 0.012 |
| c | 0.090 | 0.200 | 0.004 | 0.008 |
| E1 | 6.250 | 6.550 | 0.246 | 0.258 |
| A | | 1.200 | | 0.047 |
| A2 | 0.800 | 1.000 | 0.031 | 0.039 |
| A1 | 0.050 | 0.150 | 0.002 | 0.006 |
| e | 0.65 (BSC) | | 0.026 (BSC) | |
| L | 0.500 | 0.700 | 0.020 | 0.028 |
| H | 0.25(TYP) | | 0.01(TYP) | |
| θ | 1° | 7° | 1° | 7° |