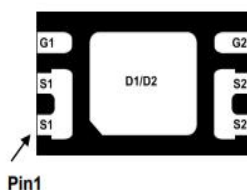
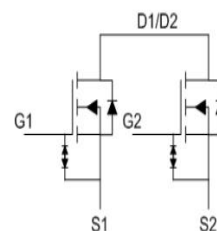


Main Product Characteristics:

| | |
|--------------|----------------------|
| V_{DSS} | 20V |
| $R_{DS(on)}$ | 6.6m Ω (typ.) |
| I_D | 11A |


DFN2*3-6L

Marking and Pin Assignments

Schematic Diagram
Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature


Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute Max Rating:

| Symbol | Parameter | Max. | Units |
|-------------------------|--|-------------|------------|
| $I_D @ TC = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ ① | 11 | A |
| I_{DM} | Pulsed Drain Current ② | 70 | |
| $P_D @ TC = 25^\circ C$ | Power Dissipation ③ | 1.56 | |
| V_{DS} | Drain-Source Voltage | 20 | V |
| V_{GS} | Gate-to-Source Voltage | 12 | V |
| T_J T_{STG} | Operating Junction and Storage Temperature Range | -55 to +150 | $^\circ C$ |

Thermal Resistance

| Symbol | Characterizes | Typ. | Max. | Units |
|------------------|---------------------------------|------|------|-------|
| R _{θJA} | Junction-to-ambient (t ≤ 10s) ④ | — | 80 | °C/W |

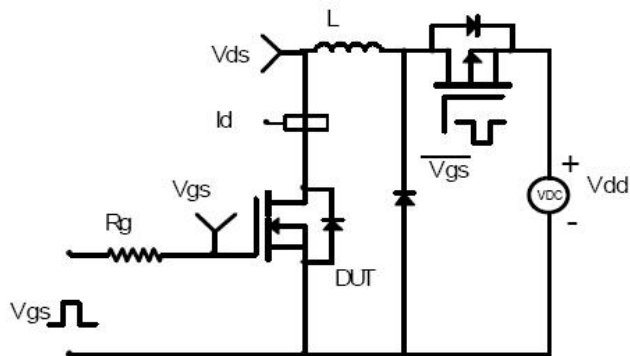
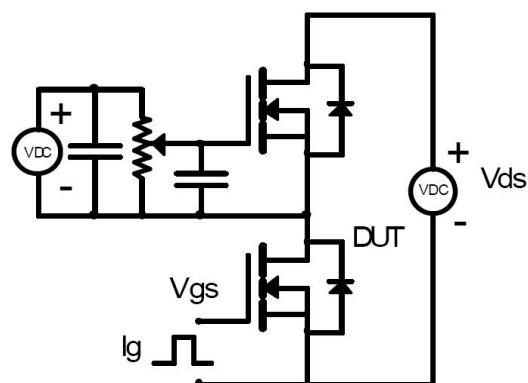
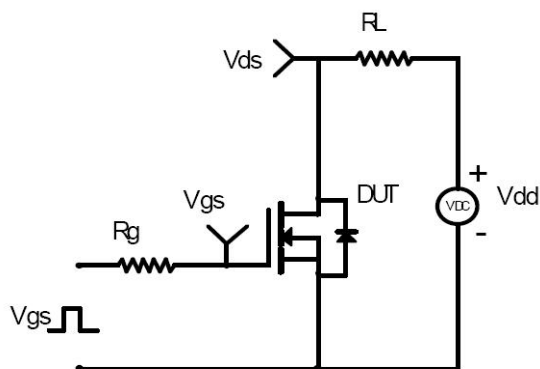
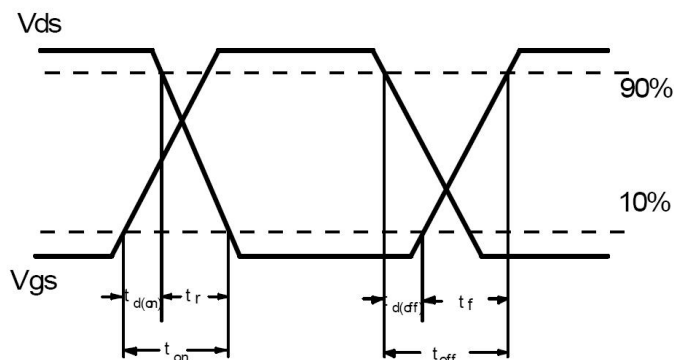
Electrical Characterizes @T_A=25°C unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|----------------------|--------------------------------------|------|------|------|-------|---|
| V _{(BR)DSS} | Drain-to-Source breakdown voltage | 20 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| R _{DS(on)} | Static Drain-to-Source on-resistance | — | 6.6 | 7.2 | mΩ | V _{GS} =4.5V, I _D =5.5A |
| | | — | 7 | 7.5 | | V _{GS} =4V, I _D =5.5A |
| | | — | 7.1 | 8.2 | | V _{GS} =3.7V, I _D =5.5A |
| | | — | 7.6 | 9 | | V _{GS} =3.1V, I _D =5.5A |
| | | — | 8.7 | 10.2 | | V _{GS} =2.5V, I _D =5.5A |
| V _{GS(th)} | Gate threshold voltage | 0.5 | — | 1.5 | V | V _{DS} = V _{GS} , I _D =250μA |
| I _{DSS} | Drain-to-Source leakage current | — | — | 1 | μA | V _{DS} =18V, V _{GS} = 0V |
| I _{GSS} | Gate-to-Source forward leakage | — | — | 10 | μA | V _{GS} =8V |
| | | — | — | -10 | | V _{GS} = -8V |
| Q _g | Total gate charge | — | 23 | — | nC | I _D = 11A, V _{DS} =16V, V _{GS} = 4.5V |
| Q _{gs} | Gate-to-Source charge | — | 4 | — | | |
| Q _{gd} | Gate-to-Drain("Miller") charge | — | 8 | — | | |
| t _{d(on)} | Turn-on delay time | — | 10 | — | ns | V _{GS} =4.5V, V _{DS} =16V, R _{GEN} =6Ω I _D = 5.5A |
| t _r | Rise time | — | 41 | — | | |
| t _{d(off)} | Turn-Off delay time | — | 65 | — | | |
| t _f | Fall time | — | 30 | — | | |
| C _{iss} | Input capacitance | — | 1765 | — | pF | V _{GS} = 0V V _{DS} = 10V f = 1MHz |
| C _{oss} | Output capacitance | — | 182 | — | | |
| C _{rss} | Reverse transfer capacitance | — | 155 | — | | |

Source-Drain Ratings and Characteristics

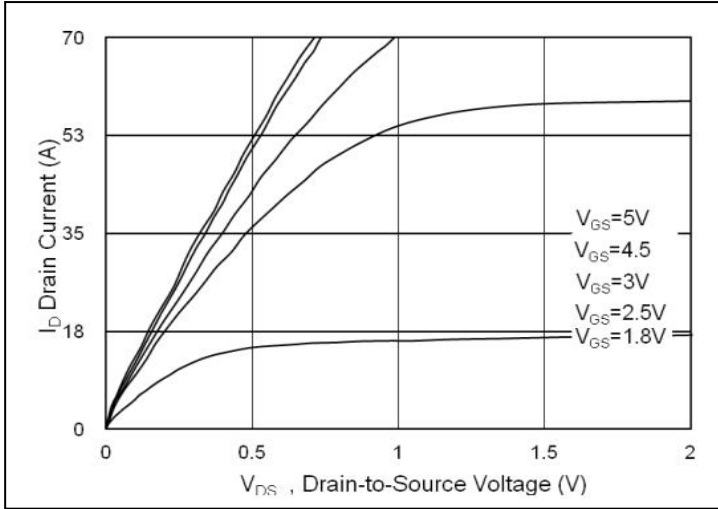
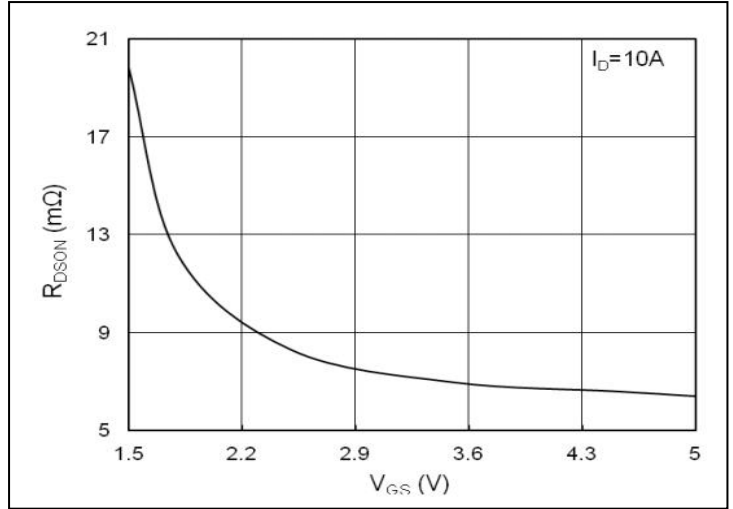
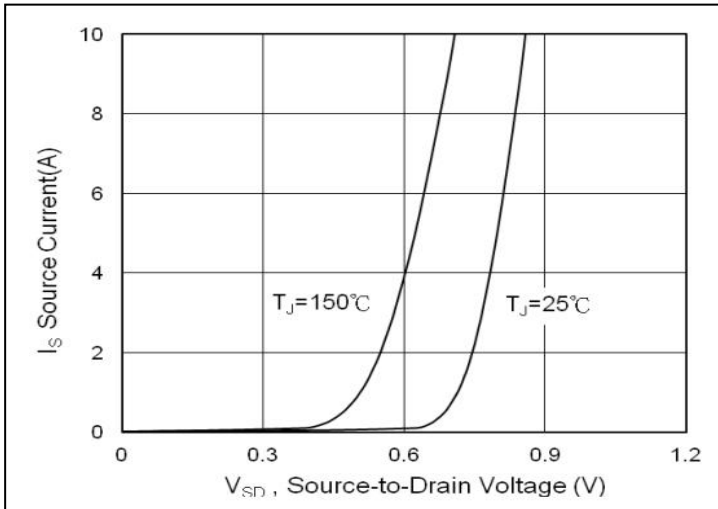
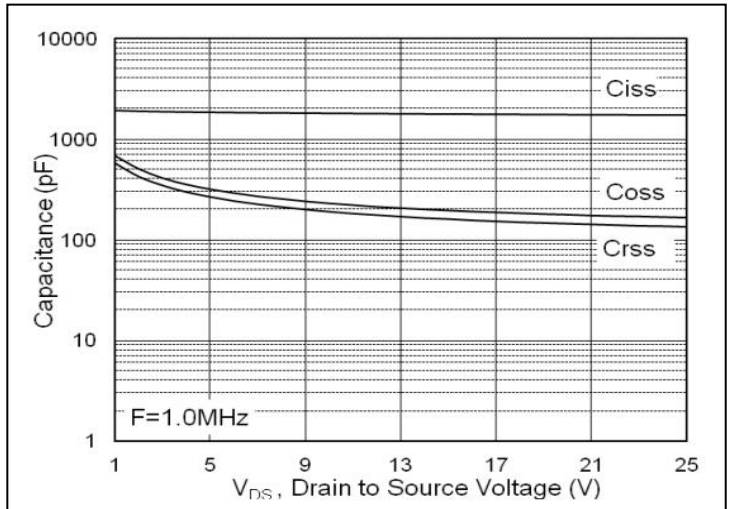
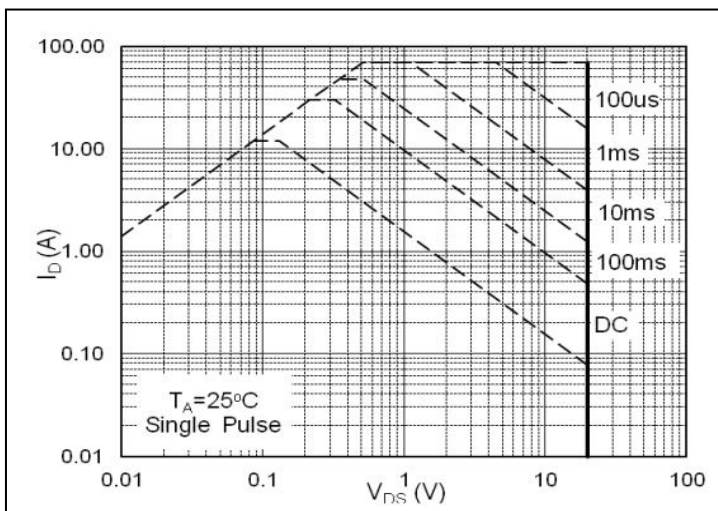
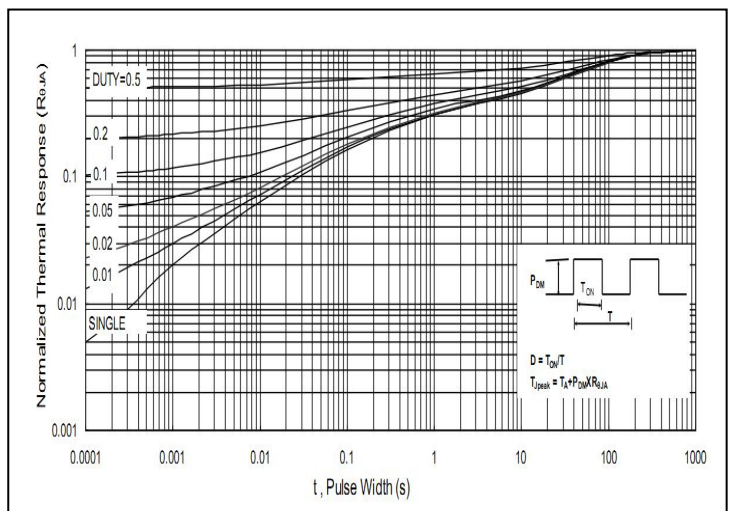
| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|---|------|------|------|-------|--|
| I _S | Continuous Source Current (Body Diode) | — | — | 11 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| I _{SM} | Pulsed Source Current (Body Diode) | — | — | 70 | A | |
| V _{SD} | Diode Forward Voltage | — | — | 1 | V | |

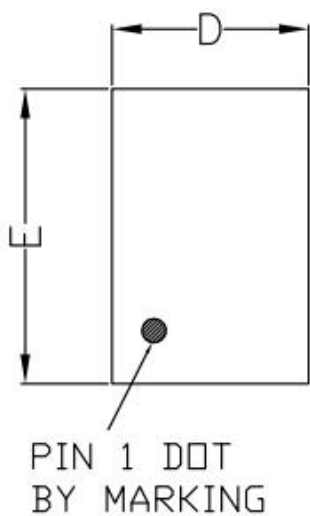
Test Circuits and Waveforms

EAS Test Circuit:

Gate Charge Test Circuit:

Switching Time Test Circuit:

Switching Waveforms:


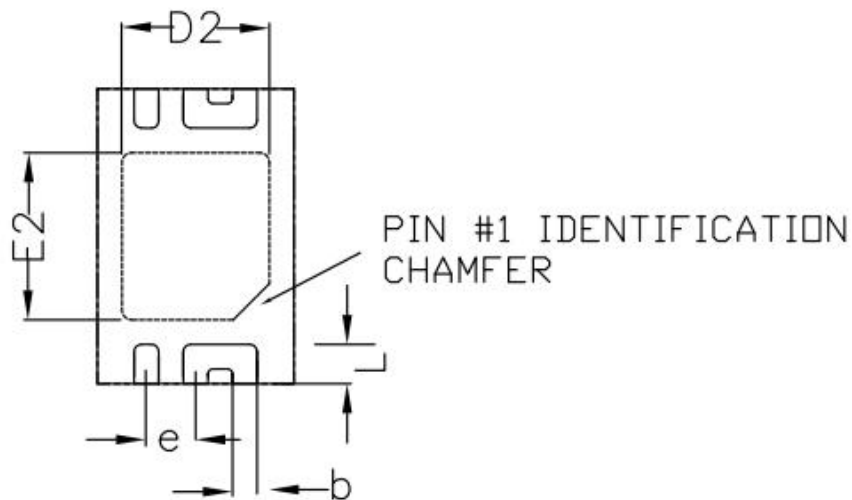
Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

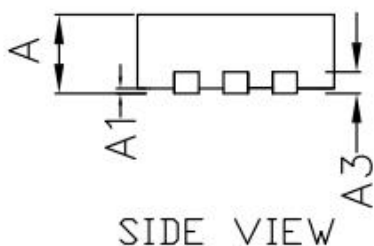
Typical Electrical and Thermal Characteristics

Figure1. Typical Output Characteristics

Figure2. R_{DS(on)} vs. Gate-Source Voltage

Figure3. Forward Characteristics of Reverse

Figure4. R_{DS(on)} vs. Drain Current

Figure5. Safe Operating Area

Figure6. Transient Thermal Impedance

Mechanical Data:


TOP VIEW



BOTTOM VIEW



SIDE VIEW

| COMMON DIMENSIONS(MM) | | | |
|-----------------------|------------------|-------|-------|
| PKG. REF. | W:VERY VERY THIN | | |
| | MIN. | NOM. | MAX |
| A | 0.70 | 0.75 | 0.80 |
| A1 | 0.00 | - | 0.05 |
| A3 | 0.195 | 0.203 | 0.211 |
| D | 1.95 | 2.00 | 2.05 |
| E | 2.95 | 3.00 | 3.05 |
| b | 0.20 | 0.25 | 0.30 |
| L | 0.35 | 0.40 | 0.45 |
| D2 | 1.45 | 1.50 | 1.55 |
| E2 | 1.65 | 1.70 | 1.75 |
| e | 0.50 BSC | | |

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