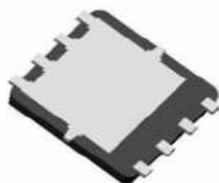
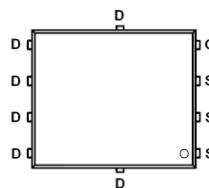
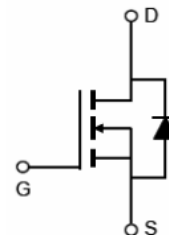


Main Product Characteristics:

| | |
|--------------|----------------------|
| V_{DSS} | 40V |
| $R_{DS(on)}$ | 5.3m Ω (typ.) |
| I_D | 80A |


PQFN 5x6

Marking and pin Assignment

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
- 175°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°C | Continuous Drain Current, V_{GS} @ 10V ① | 80 | A |
| I_{DM} | Pulsed Drain Current ② | 350 | |
| P_D @TC = 25°C | Power Dissipation ③ | 90 | W |
| V_{DS} | Drain-Source Voltage | 40 | V |
| V_{GS} | Gate-to-Source Voltage | ± 20 | V |
| E_{AS} | Single Pulse Avalanche Energy @ L=0.5mH | 390 | mJ |
| T_J T_{STG} | Operating Junction and Storage Temperature Range | -55 to +175 | °C |

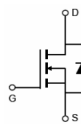
Thermal Resistance

| Symbol | Characterizes | Typ. | Max. | Units |
|-----------------|--------------------|------|------|-----------------------------|
| $R_{\theta JC}$ | Junction-to-case ③ | — | 1.67 | $^{\circ}\text{C}/\text{W}$ |

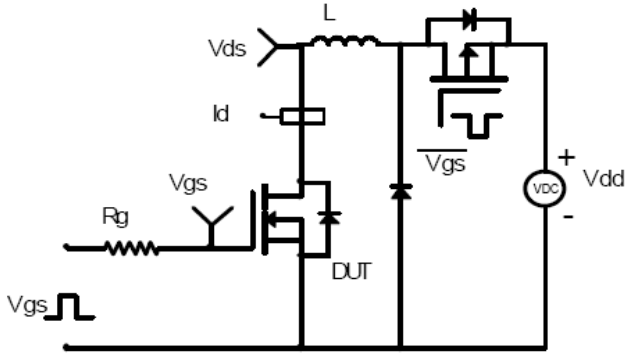
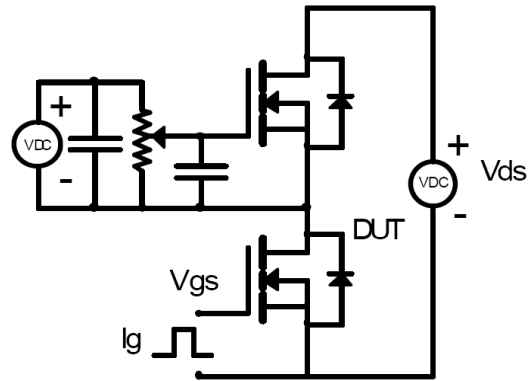
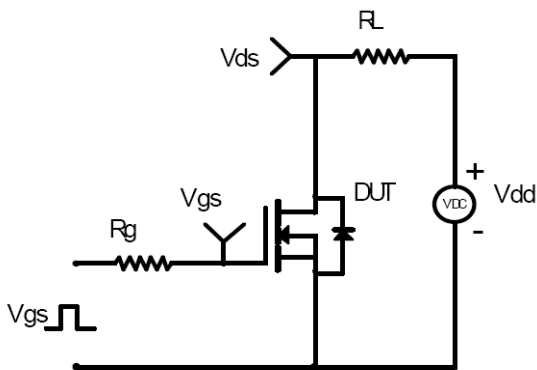
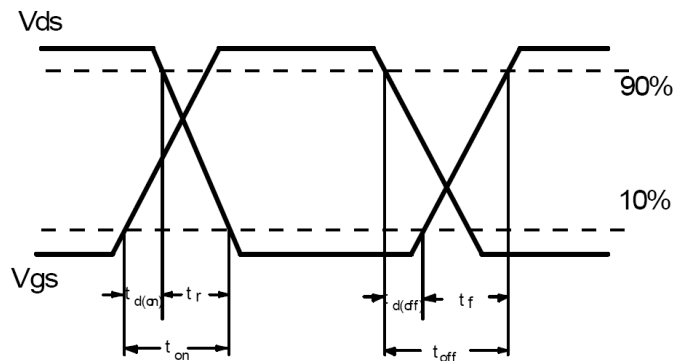
Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---------------|--------------------------------------|------|------|------|---------------|---|
| $V_{(BR)DSS}$ | Drain-to-Source breakdown voltage | 40 | — | — | V | $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$ |
| $R_{DS(on)}$ | Static Drain-to-Source on-resistance | — | 5.3 | 6.5 | m Ω | $V_{GS}=10\text{V}, I_D=20\text{A}$ |
| $V_{GS(th)}$ | Gate threshold voltage | 1.2 | — | 2.5 | V | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ |
| I_{DSS} | Drain-to-Source leakage current | — | — | 1 | μA | $V_{DS} = 40\text{V}, V_{GS} = 0\text{V}$ |
| I_{GSS} | Gate-to-Source forward leakage | — | — | 100 | nA | $V_{GS} = 20\text{V}$ |
| | | — | — | -100 | | $V_{GS} = -20\text{V}$ |
| Q_g | Total gate charge | — | 55 | — | nC | $I_D = 20\text{A},$ $V_{DS}=20\text{V},$ $V_{GS} = 10\text{V}$ |
| Q_{gs} | Gate-to-Source charge | — | 18 | — | | |
| Q_{gd} | Gate-to-Drain("Miller") charge | — | 20 | — | | |
| $t_{d(on)}$ | Turn-on delay time | — | 15 | — | ns | $V_{GS}=10\text{V}, V_{DS}=20\text{V},$ $R_{GEN}=3\Omega$ $R_L=1\Omega$ |
| t_r | Rise time | — | 12 | — | | |
| $t_{d(off)}$ | Turn-Off delay time | — | 40 | — | | |
| t_f | Fall time | — | 15 | — | | |
| C_{iss} | Input capacitance | — | 3800 | — | pF | $V_{GS} = 0\text{V}$ |
| C_{oss} | Output capacitance | — | 700 | — | | $V_{DS} = 20\text{V}$ |
| C_{rss} | Reverse transfer capacitance | — | 350 | — | | $f = 1\text{MHz}$ |

Source-Drain Ratings and Characteristics

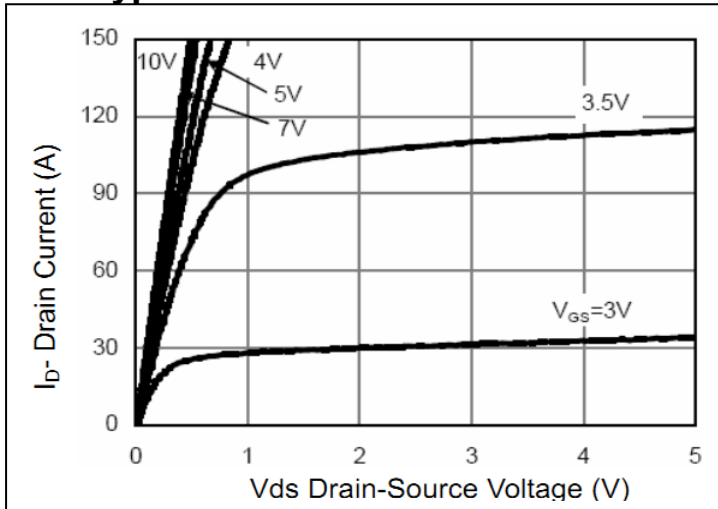
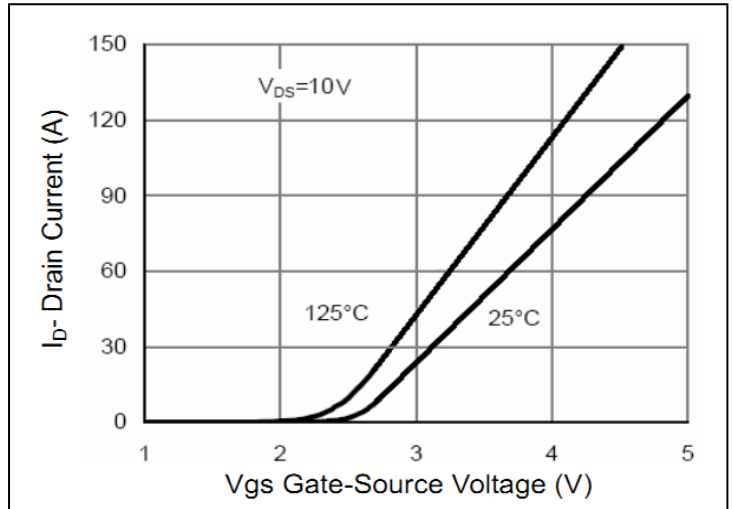
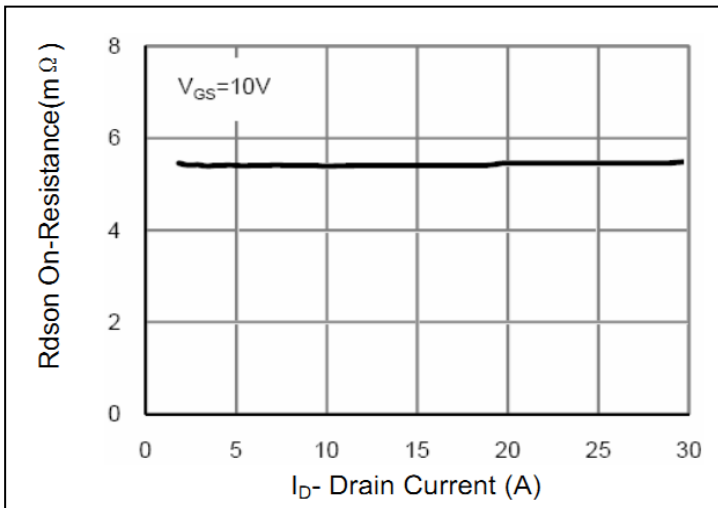
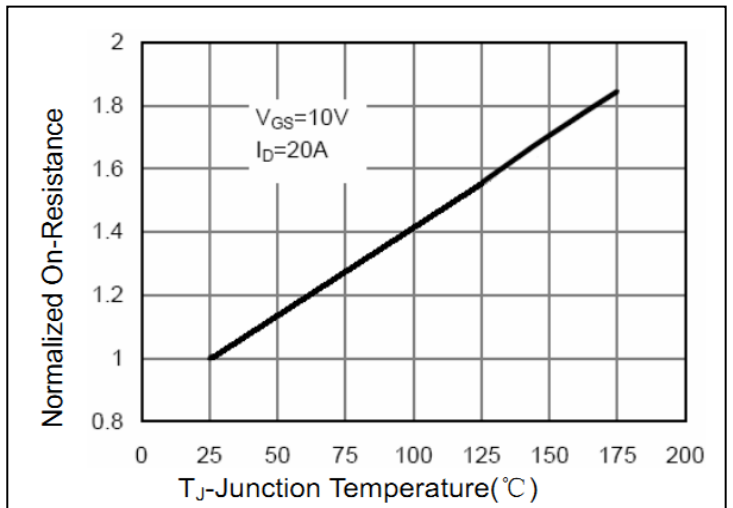
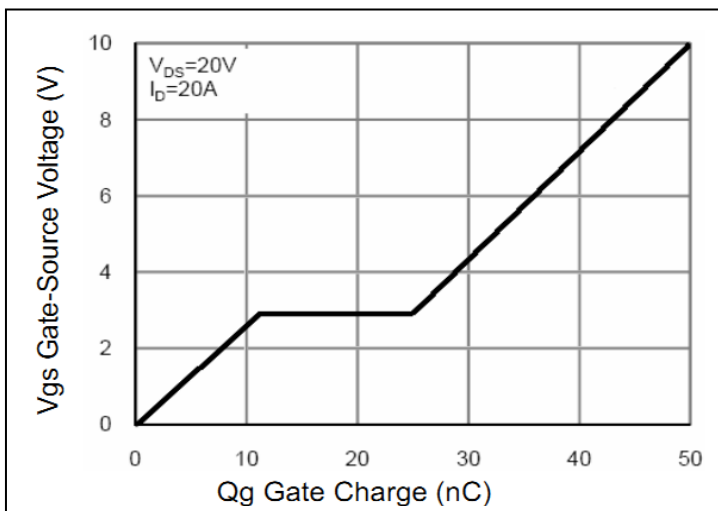
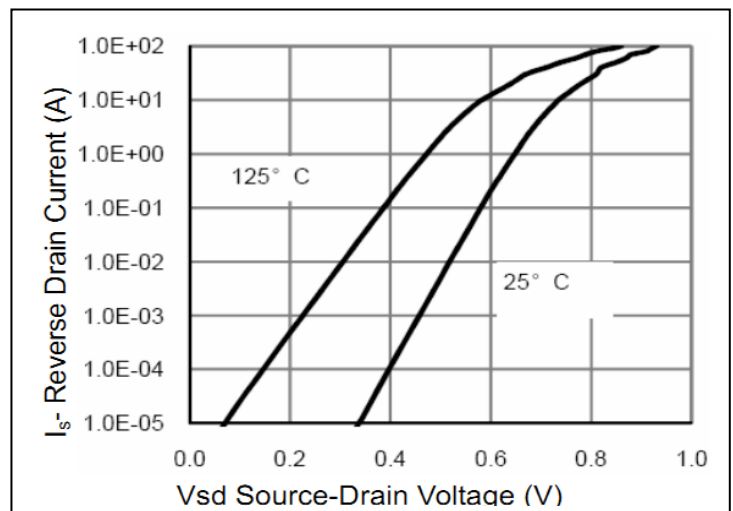
| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|----------|---|------|------|------|-------|--|
| I_S | Continuous Source Current (Body Diode) | — | — | 80 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| V_{SD} | Diode Forward Voltage | — | — | 1.2 | V | $I_S=10\text{A}, V_{GS}=0\text{V}$ |
| t_{rr} | Reverse Recovery Time | — | 35 | — | ns | $I_S=20\text{A}, di/dt=100\text{A}/\mu\text{s}$ |
| Q_{rr} | Reverse Recovery Charge | — | 37 | — | nC | |

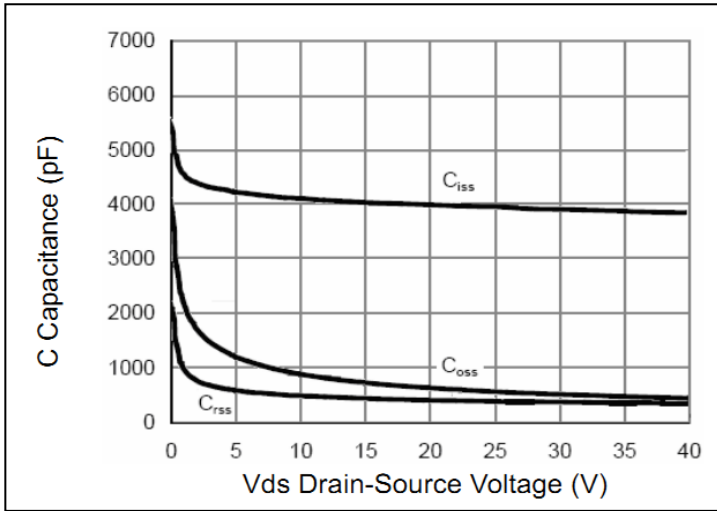
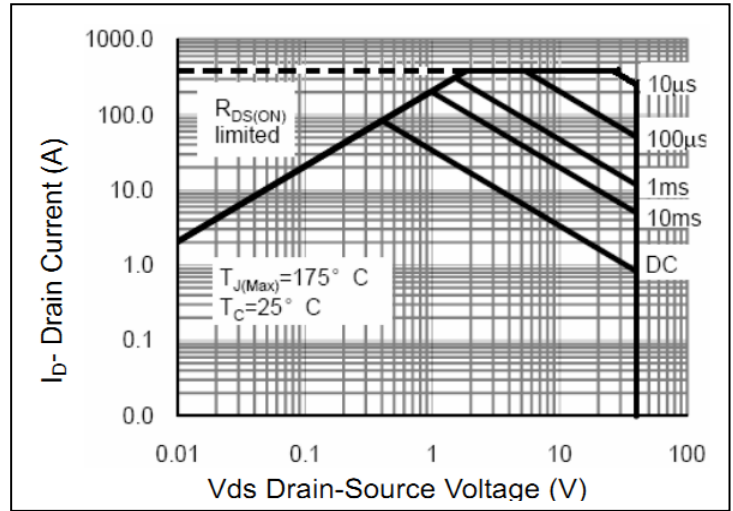
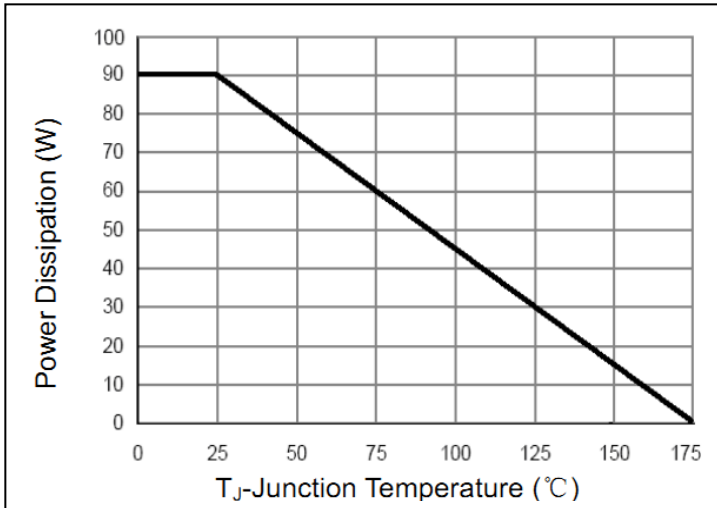
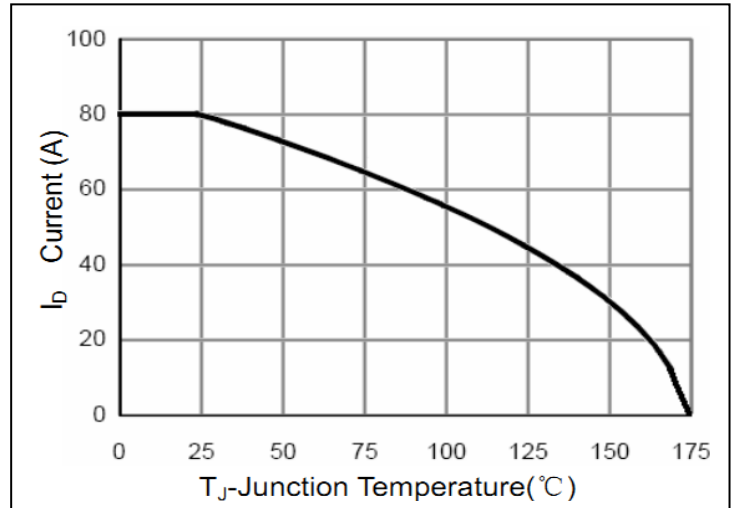
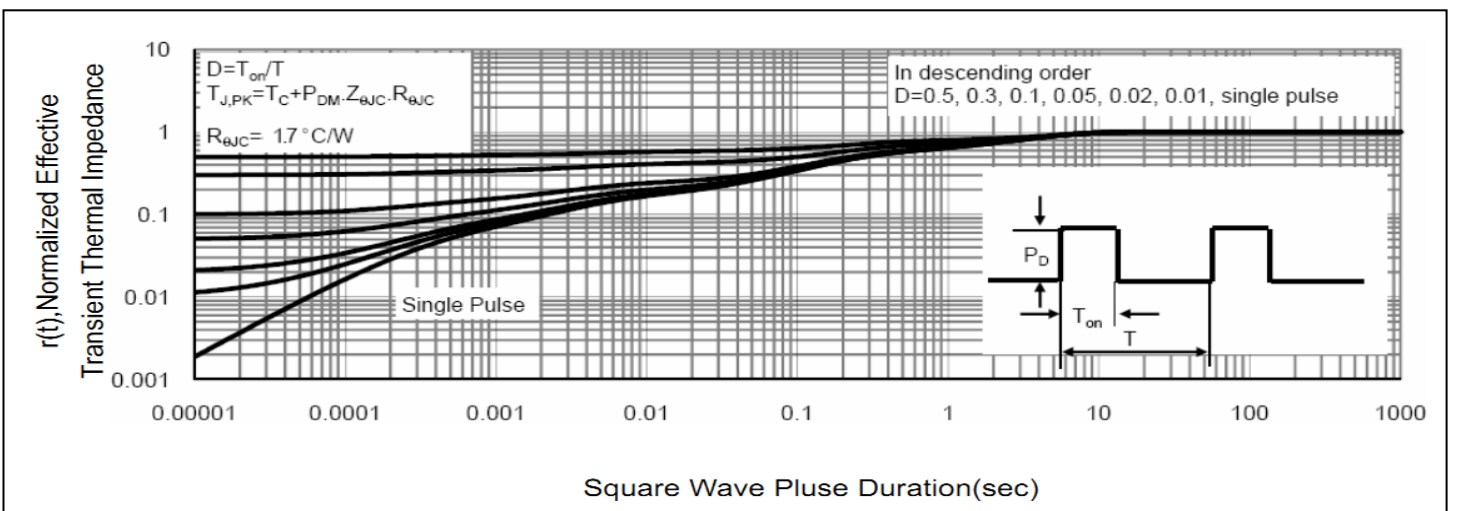
Test circuits and Waveforms

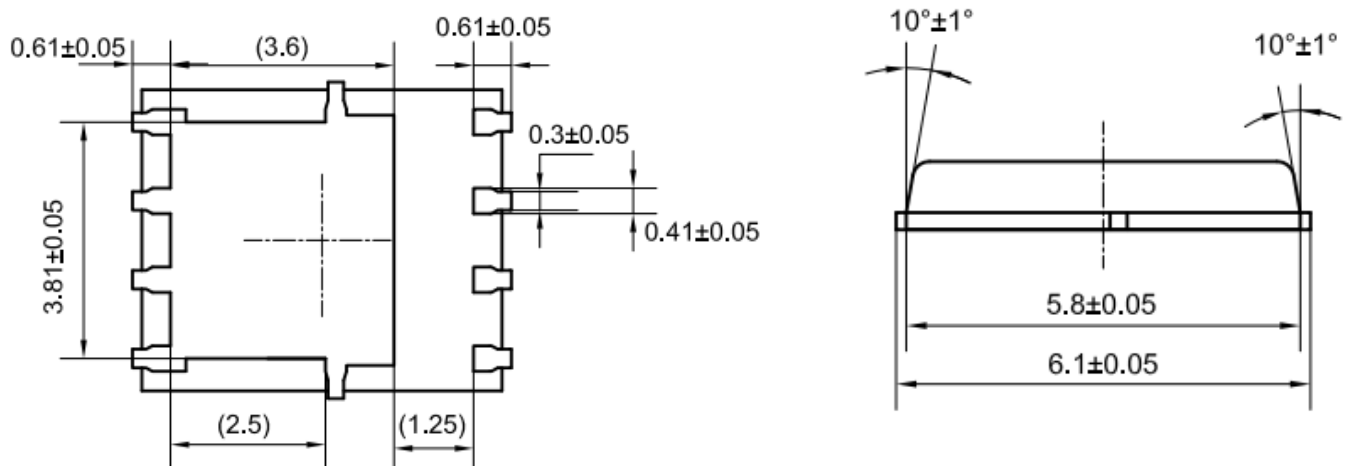
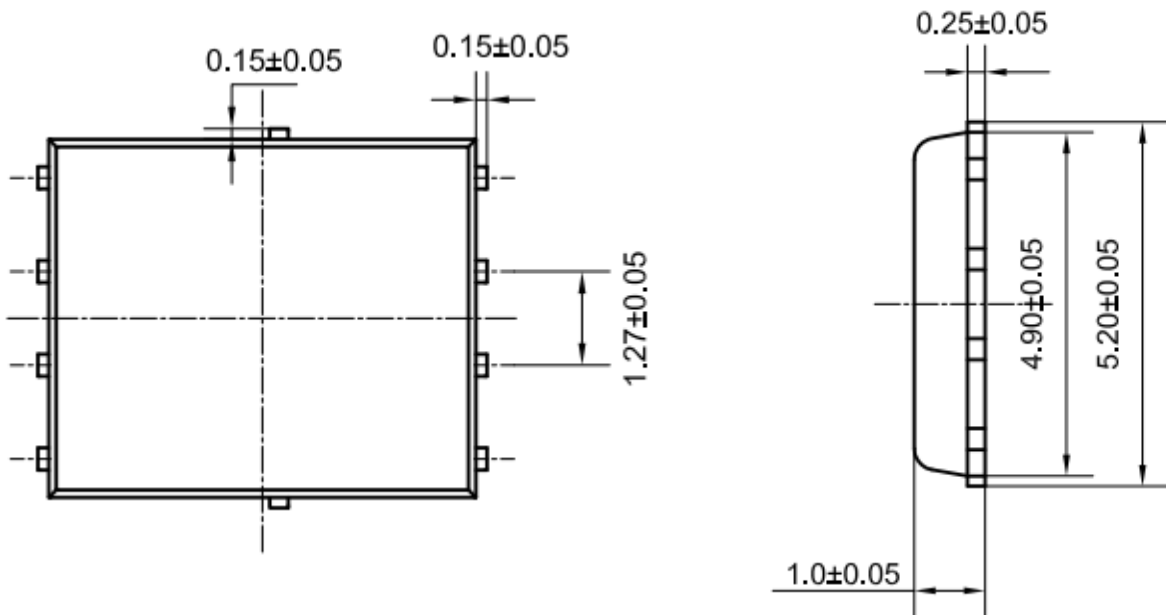
EAS Test Circuit:

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.

Typical electrical and thermal characteristics

Figure 1: Typical Output Characteristics

Figure 2: Transfer Characteristics

Figure 3: Rdson-Drain Current

Figure 4: Rdson-Junction Temperature

Figure 5: Gate Charge

Figure 6: Source-Drain Diode Forward

Typical electrical and thermal characteristics

Figure 7: Capacitance vs Vds

Figure 8: Safe Operation Area

Figure 9: Power De-rating

Figure 10: ID Current-Junction Temperature

Figure 11: Normalized Maximum Transient Thermal Impedance

Mechanical Data:


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