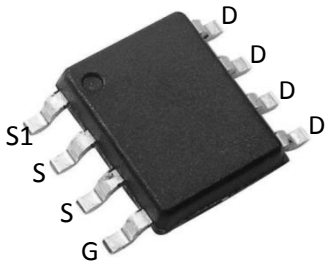
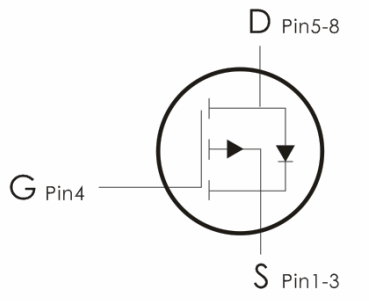
## Description：

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.




## Features：

1) $V_{DS}$=-30V,$I_D$=-12A,$R_{DS(ON)}$<16m Ω @$V_{GS}$=-10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

## Absolute Maximum Ratings：($T_C$=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | -30 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current-TC=25℃ | -12 | A |
| | Continuous Drain Current-TC=100℃ | --- | |
| | Pulsed Drain Current[1] | -48 | |
| $E_{AS}$ | Single Pulse Avalanche Energy | --- | mJ |
| $P_D$ | Power Dissipation | 3 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +150 | ℃ |

## Thermal Characteristics：

| Symbol | Parameter | Max | Units |
|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance,Junction to Ambient[2] | 41.67 | ℃/W |



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## Electrical Characteristics: ($T_C$=25℃ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Sourtce Breakdown Voltage | $V_{GS}$=0V,$I_D$=250μA | -30 | -33 | --- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=-30V | --- | --- | -1 | μA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0A | --- | --- | ±100 | nA |
| **On Characteristics**[3] | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=-250μA | -1 | -1.5 | -3 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance[2] | $V_{GS}$=-10V,$I_D$=-10A | --- | 11.5 | 15 | mΩ |
| | | $V_{GS}$=-4.5V,$I_D$=-7A | --- | 18 | 25 | |
| $G_{FS}$ | Forward Transconductance | $V_{DS}$= -10V, $I_D$=-10A | 20 | --- | --- | S |
| **Dynamic Characteristics**[4] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=-15V, $V_{GS}$=0V, f=1MHz | --- | 1750 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 215 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 180 | --- | |
| **Switching Characteristics**[4] | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=-15V, $I_D$=-10A, $V_{GS}$=-10V,$R_{GEN}$=1Ω | --- | 9 | --- | ns |
| $t_r$ | Rise Time | | --- | 8 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 28 | --- | ns |
| $t_f$ | Fall Time | | --- | 10 | --- | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=-10V, $V_{DS}$=-15V, $I_D$=-10A | --- | 24 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 3.5 | --- | nC |
| $Q_{gd}$ | Gate-Drain “Miller” Charge | | --- | 6 | --- | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Source-Drain Diode Forward Voltage[3] | $V_{GS}$=0V,$I_S$=-2A | --- | --- | -1.2 | V |



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## Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

## Typical Characteristics: ($T_C$=25℃ unless otherwise noted)

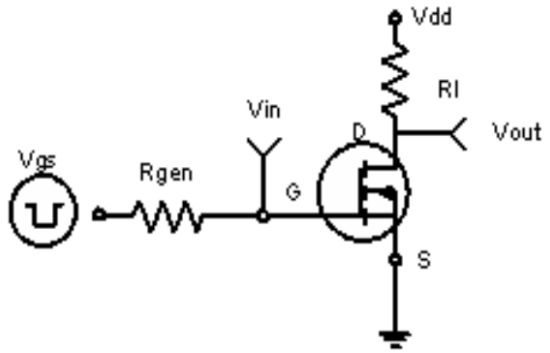



**Figure 1:Switching Test Circuit**

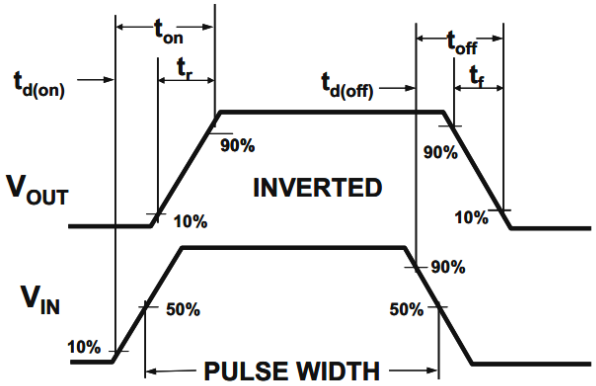



**Figure 2:Switching Waveforms**

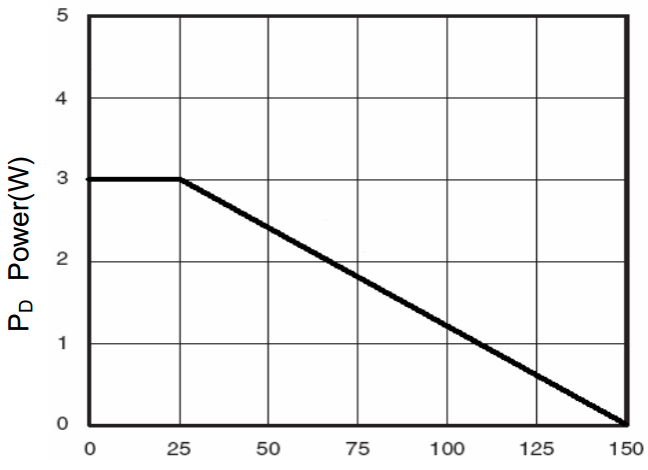



**Figure 3 Power Dissipation**

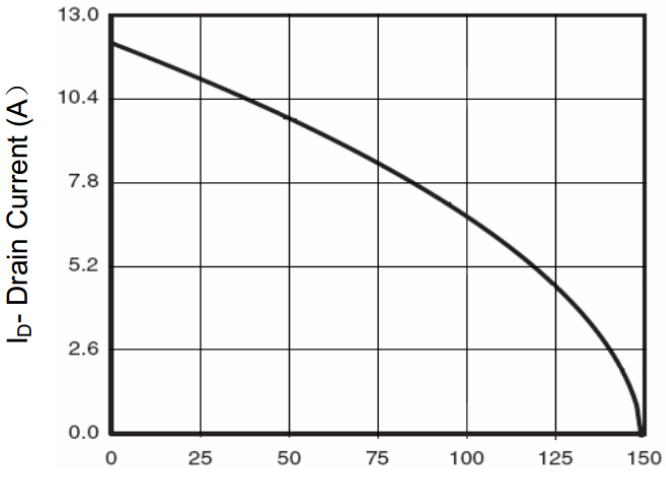



**Figure 4 Drain Current**



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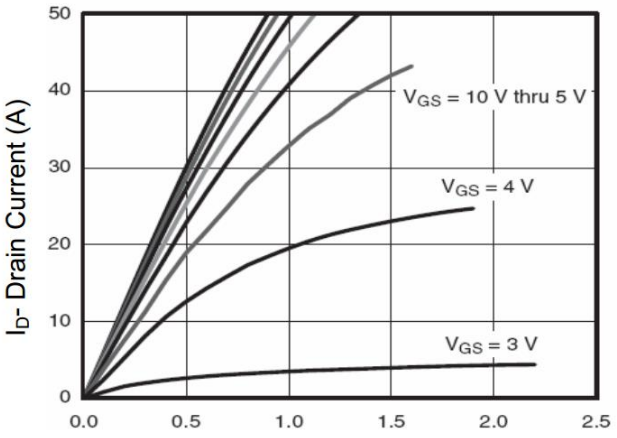



**Figure 5 Output Characteristics**

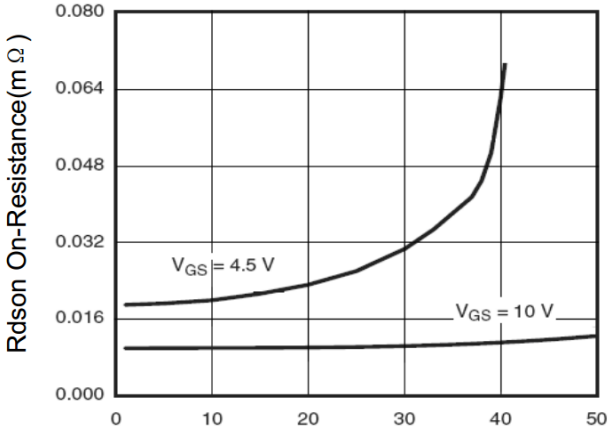



**Figure 6 Drain-Source On-Resistance**

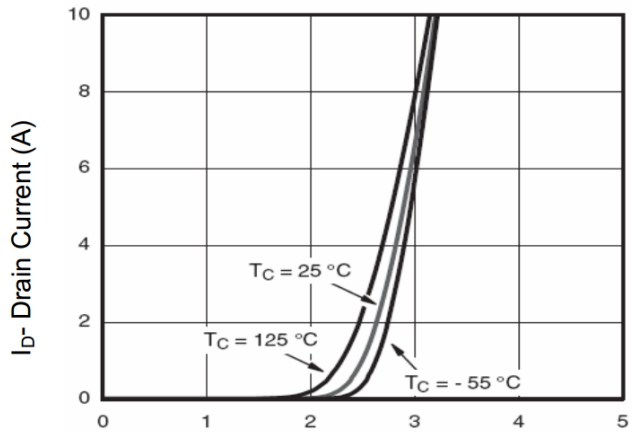



**Figure 7 Transfer Characteristics**

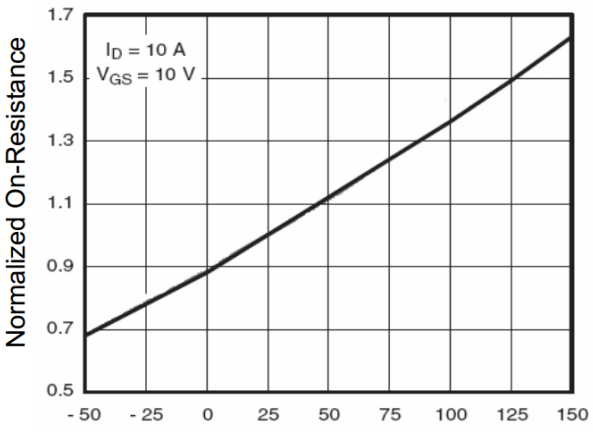



**Figure 8 Drain-Source On-Resistance**

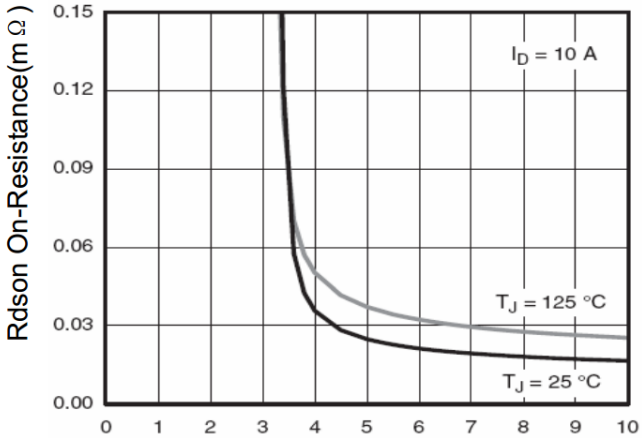



**Figure 9 Rdson vs Vgs**

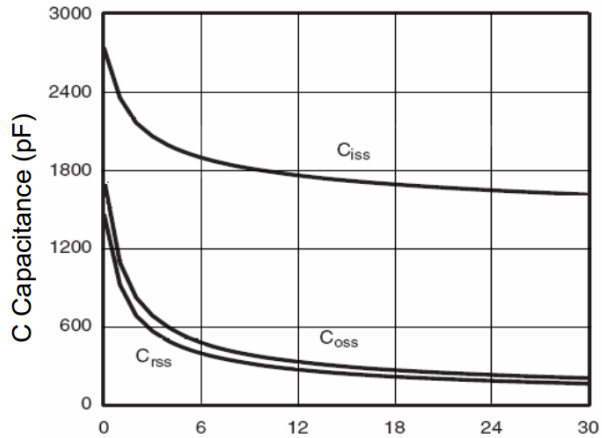



**Figure 10 Capacitance vs Vds**



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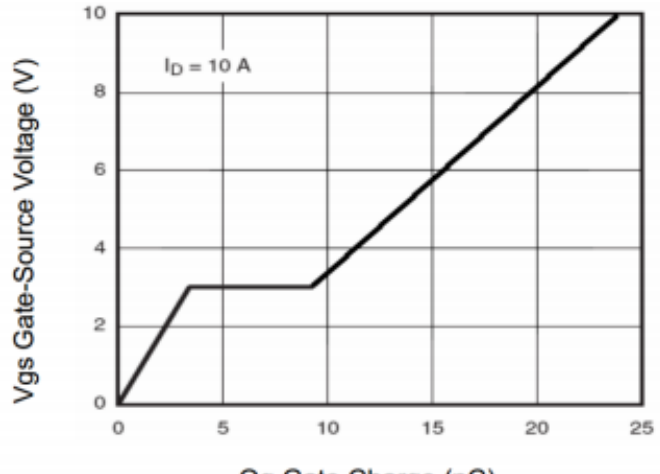



**Figure 11 Gate Charge**

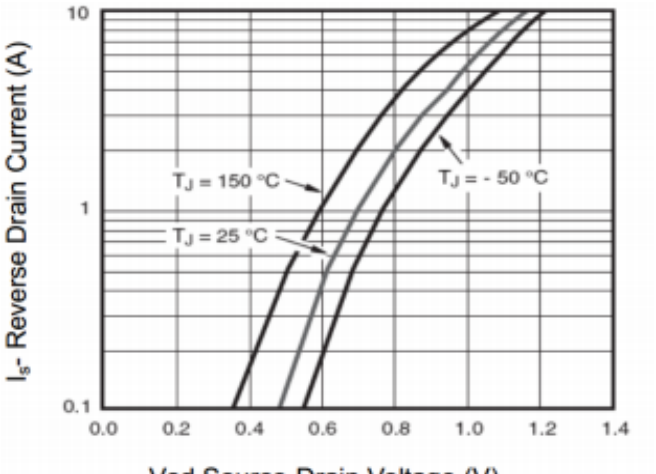



**Figure 12 Source- Drain Diode Forward**

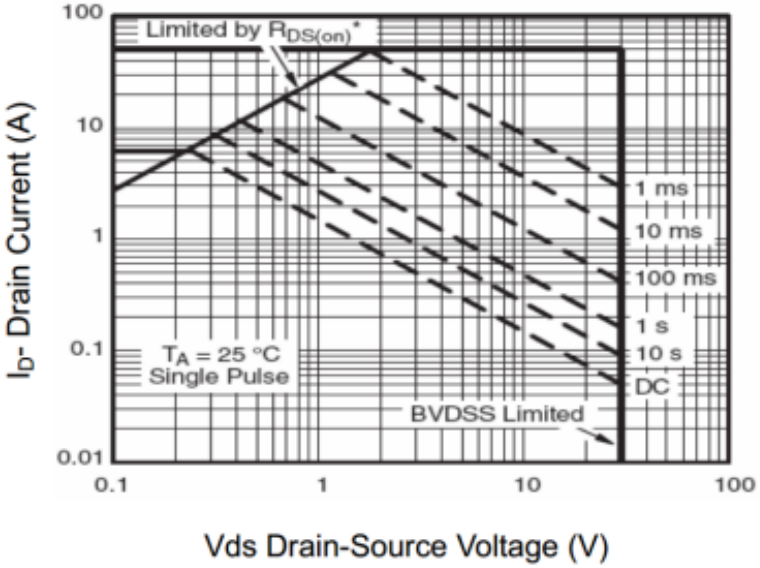



**Figure 13 Safe Operation Area**

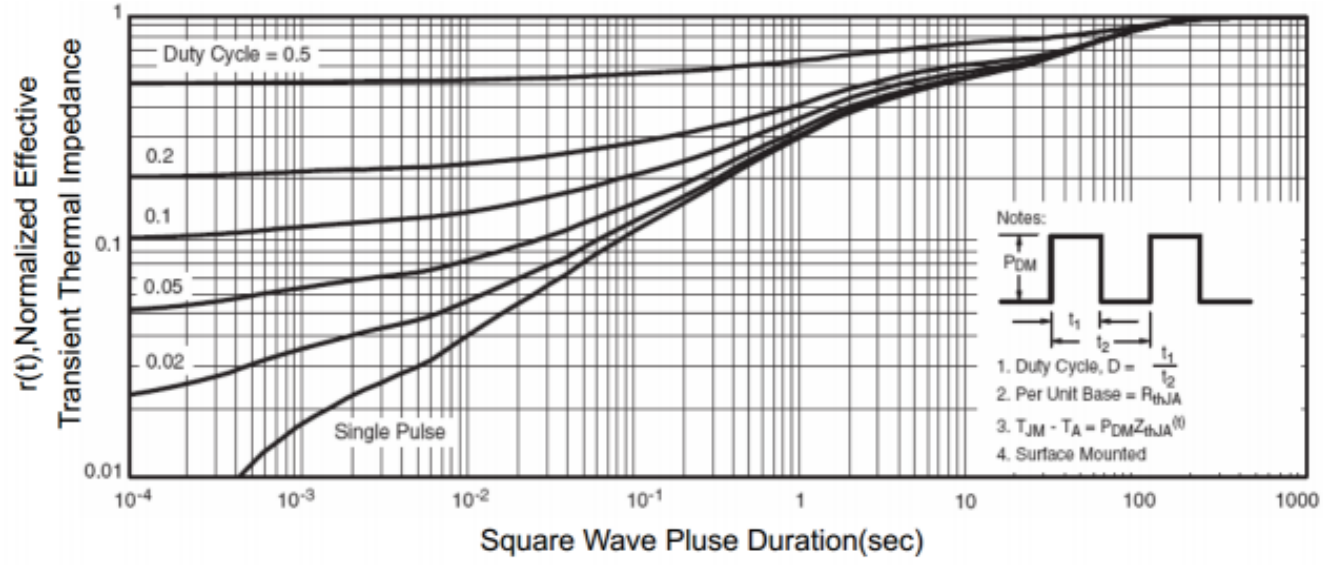



**Figure 14 Normalized Maximum Transient Thermal Impedance**


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