# P-channel Enhancement Mode Power MOSFET

## Features

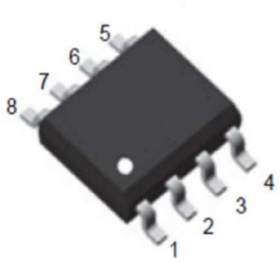
- $V_{DS}$= -30V, $I_D$= -9A
  $R_{DS(ON)}$ < 16 mΩ @ $V_{GS}$ = -10V
  $R_{DS(ON)}$ < 23 mΩ @ $V_{GS}$ = -4.5V

## General Features

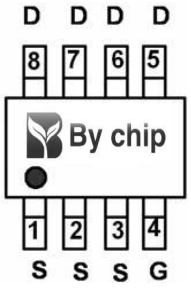
- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

*100% UIS TESTED!*
*100% ΔVds TESTED!*

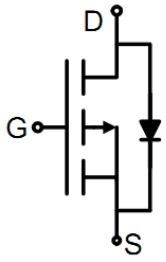
RoHS




SOP-8




pin assignment




Schematic diagram

| **Absolute Maximum Ratings** $T_C$ = 25ºC, unless otherwise noted | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Value** | **Unit** |
| Drain-Source Voltage | $V_{DS}$ | -30 | V |
| Continuous Drain Current | $I_D$ | -9 | A |
| Pulsed Drain Current (note1) | $I_{DM}$ | -36 | A |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Power Dissipation | $P_D$ | 2.7 | W |
| Single Pulse Avalanche Energy (note3) | EAS | 231 | mJ |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{stg}$ | -55 To 150 | ºC |

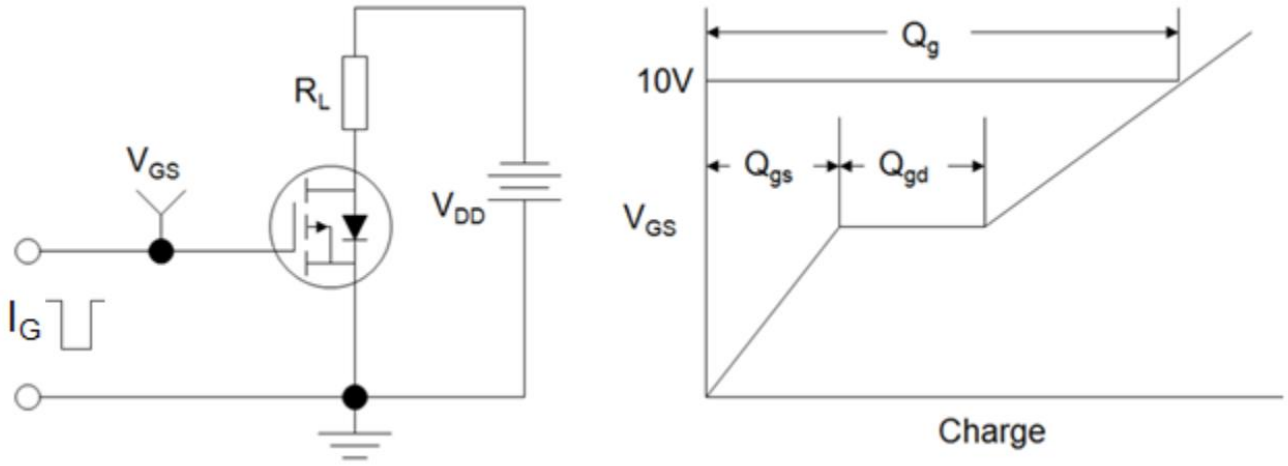
| **Thermal Resistance** | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Value** | **Unit** |
| Thermal Resistance, Junction-to-Ambient | $R_{thJA}$ | 47 | ºC/W |

| **Specifications** $T_J$ = 25ºC, unless otherwise noted | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **Value** | | | **Unit** |
| | | | **Min.** | **Typ.** | **Max.** | |
| **Static Parameters** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -250μA | -30 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = -30V, $V_{GS}$ = 0V | -- | -- | -1 | uA |
| Gate-Source Leakage | $I_{GSS}$ | $V_{GS}$ = ±20V | -- | -- | ±100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = -250μA | -1 | | -3 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = -10V, $I_D$ = -3A | -- | | 16 | mΩ |
| | | $V_{GS}$ = -4.5V, $I_D$ = -2A | -- | | 23 | |
| **Dynamic Parameters** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = -15V, f = 1.0MHz | -- | 1253 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 181 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 158 | -- | |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = -15V, $I_D$ = -3A, $V_{GS}$ = -10V | -- | 24.5 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 3 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 6 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = -15V, $I_D$ = -3A, $R_G$ = 1Ω | -- | 8 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 9 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 26 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 8 | -- | |
| **Drain-Source Body Diode Characteristics** | | | | | | |
| Continuous Body Diode Current | $I_S$ | $T_C$ = 25ºC | -- | -- | -9 | A |
| Body Diode Voltage | $V_{SD}$ | $T_J$ = 25ºC, $I_{SD}$ = -3A, $V_{GS}$ = 0V | -- | -- | -1.2 | V |

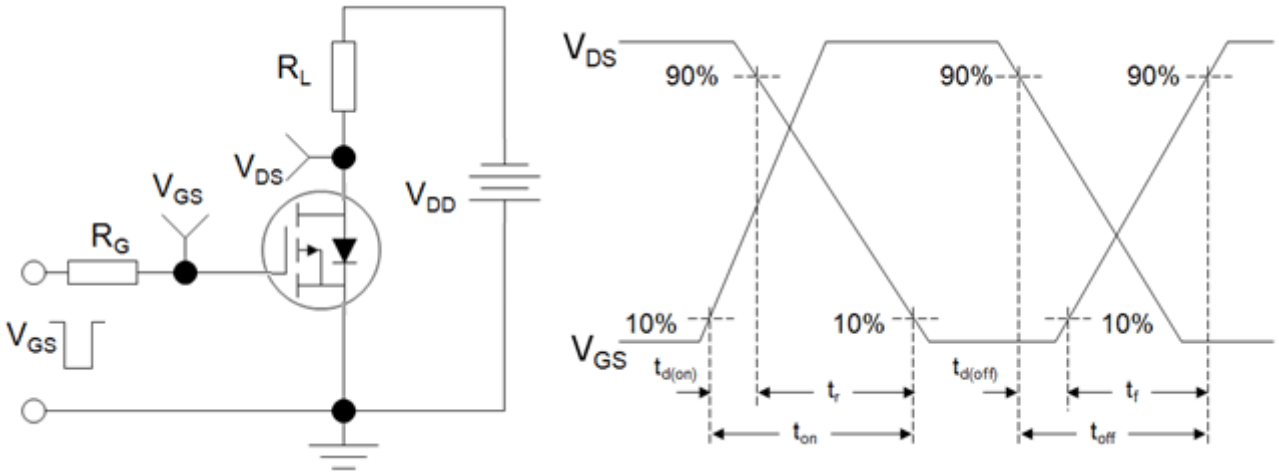
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical $R_G$
3. $V_{DD}$ = -30V, $R_G$ = 25Ω, L=0.5 mH, Starting $T_J$ = 25°C 。

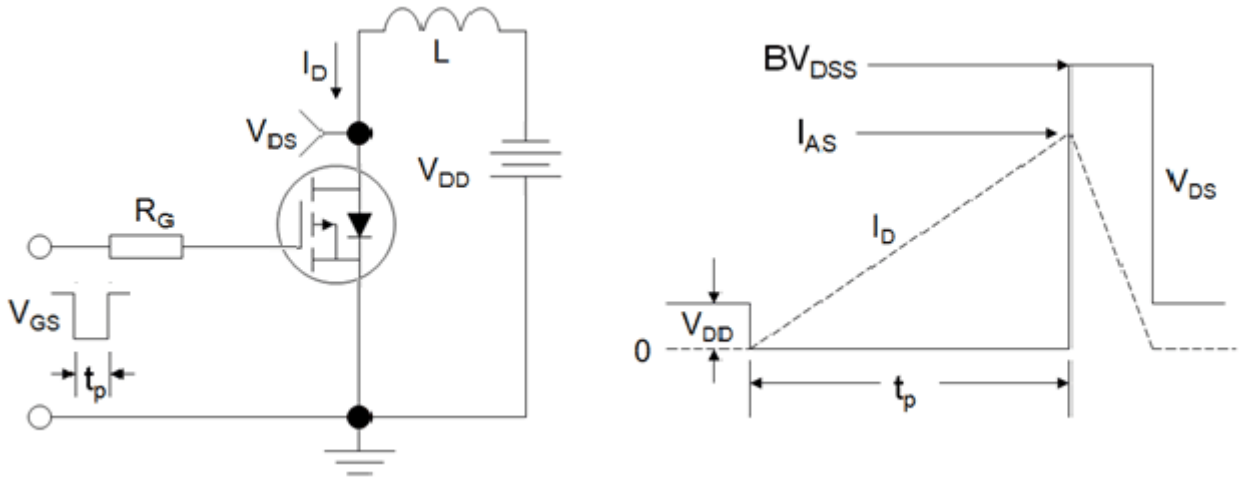
**Gate Charge Test Circuit**




**Switch Time Test Circuit**




**EAS Test Circuit**



**Typical Characteristics** $T_J$ = 25ºC, unless otherwise noted

**Figure 1. Output Characteristics**

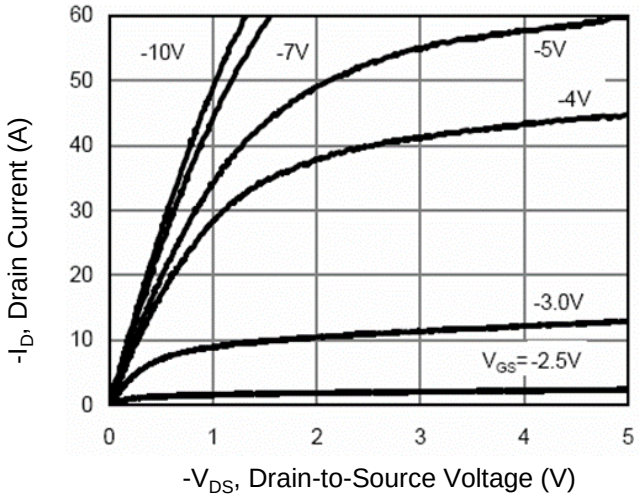



**Figure 2. Transfer Characteristics**

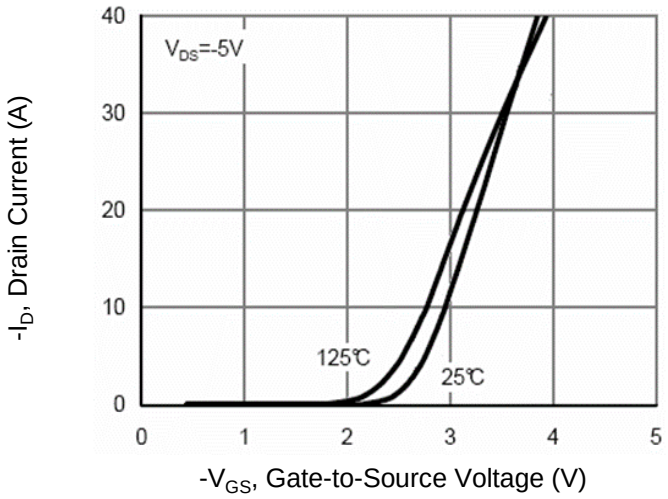



**Figure 3.Rdson vs Vgs**

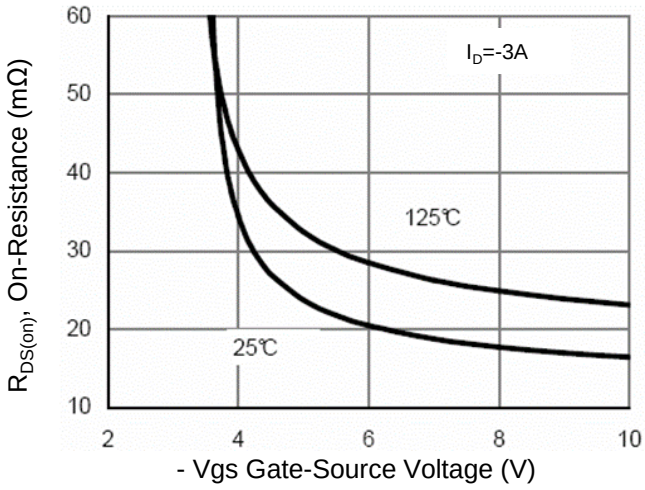



**Figure 4. Gate Charge**

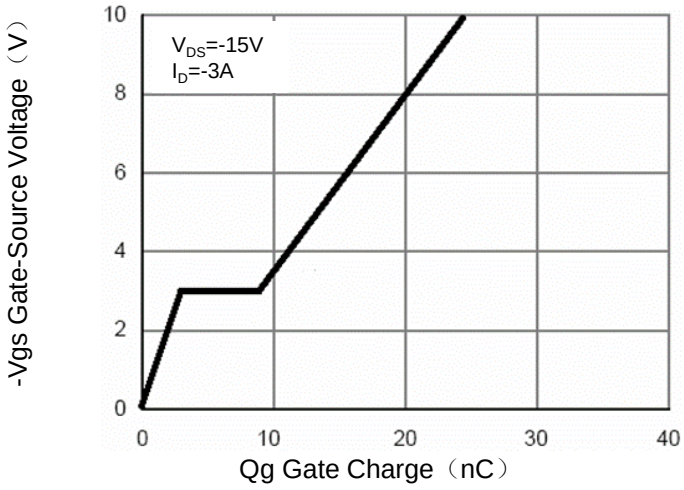



**Figure 5. Capacitance vs Vds**

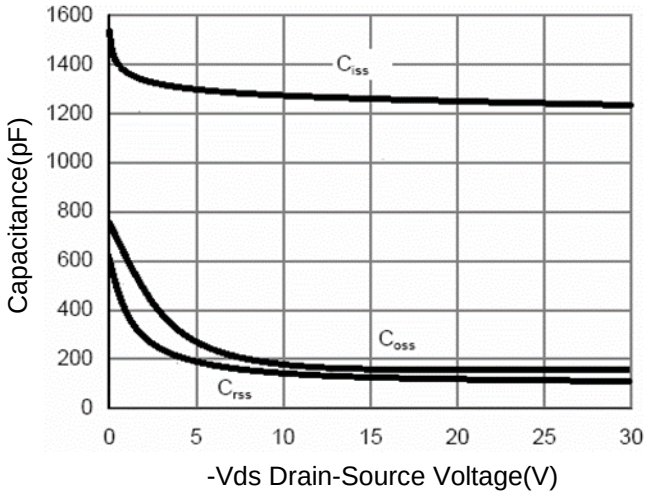
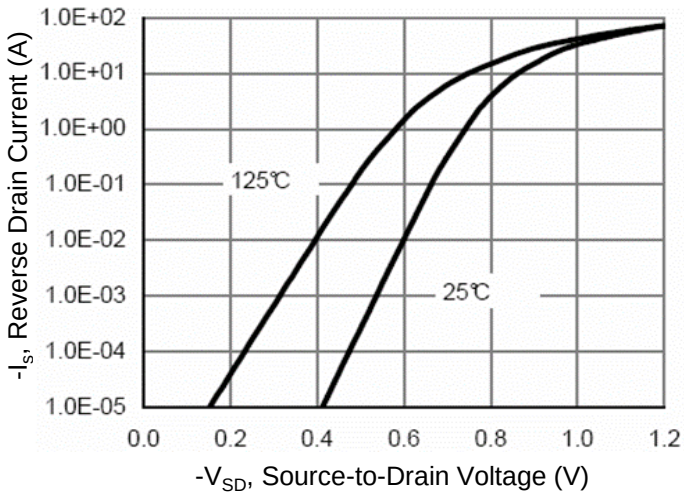



**Figure 6. Source-Drain Diode Forward**



## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

**Figure 7. Drain-Source On-Resistance**

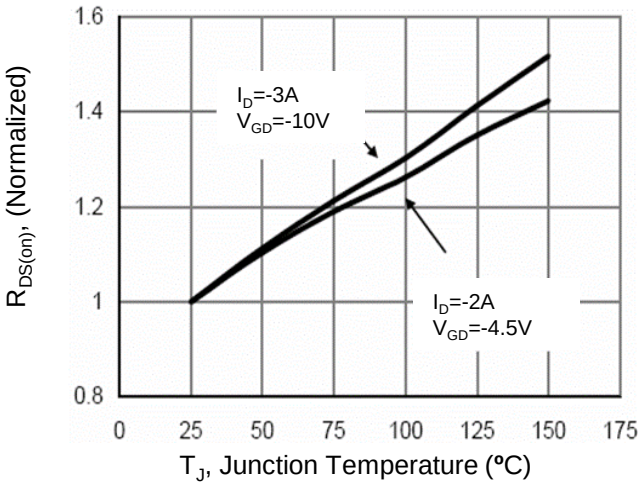



**Figure 10. Safe Operation Area**

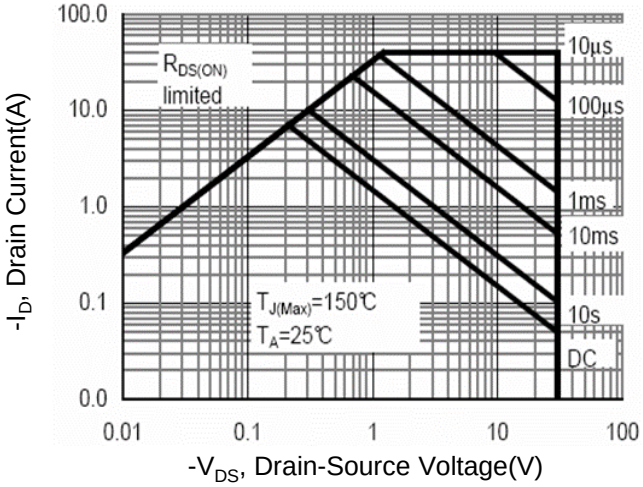



**Figure 9. Normalized Maximum Transient Thermal Impedance**

