# N-Channel Enhancement Mode Power MOSFET

## Features

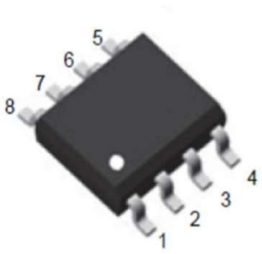
- $V_{DS}$= 30V, $I_D$= 18 A
  $R_{DS(ON)}$ < 4 mΩ @ $V_{GS}$ = 10V
  $R_{DS(ON)}$ < 7 mΩ @ $V_{GS}$ = 4.5V

## General Features

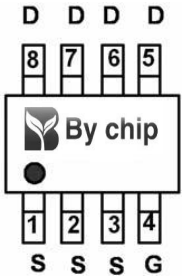
- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

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

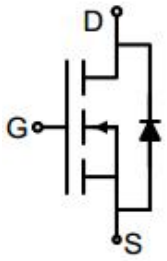
RoHS




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 | $I_D$ | 18 | A |
| Pulsed Drain Current (note1) | $I_{DM}$ | 72 | A |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Power Dissipation | $P_D$ | 2.1 | W |
| Single pulse avalanche energy （note2） | $E_{AS}$ | 64 | 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 | $R_{thJA}$ | 59 | ºC/W |

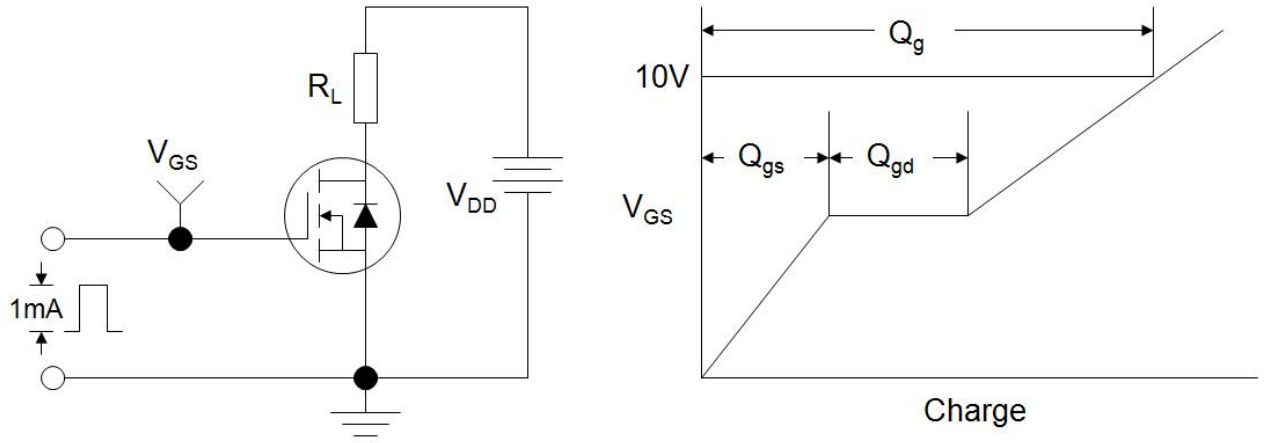
**Specifications** $T_J$ = 25ºC, unless otherwise noted

| 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 | μA |
| Gate-Source Leakage | $I_{GSS}$ | $V_{GS}$ = ±20V | -- | -- | ±100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1.0 | | 3.0 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 10A | -- | | 4 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 10A | -- | | 7 | |
| Forward Transconductance | $g_{FS}$ | $V_{GS}$ = 5V, $I_D$ =10A | -- | 30 | -- | S |
| **Dynamic Parameters** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 15V, f = 1.0MHz | -- | 1714 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 339 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 326 | -- | |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = 15V, $I_D$ = 10A, $V_{GS}$ = 10V | -- | 37 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 4.8 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 11 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 15V, $I_D$ = 10A, $R_G$ = 3Ω | -- | 8.6 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 8.1 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 29 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 8 | -- | |
| **Drain-Source Body Diode Characteristics** | | | | | | |
| Continuous Body Diode Current | $I_S$ | $T_C$ = 25ºC | -- | -- | 18 | A |
| Body Diode Voltage | $V_{SD}$ | $T_J$ = 25ºC, $I_{SD}$ = 10A, $V_{GS}$ = 0V | -- | -- | 1.2 | V |
| Reverse Recovery Charge | Qrr | $I_F$ = 10A, $V_{GS}$ = 0V di/dt=500A/us | -- | 40 | -- | nC |
| Reverse Recovery Time | Trr | | -- | 14 | -- | ns |

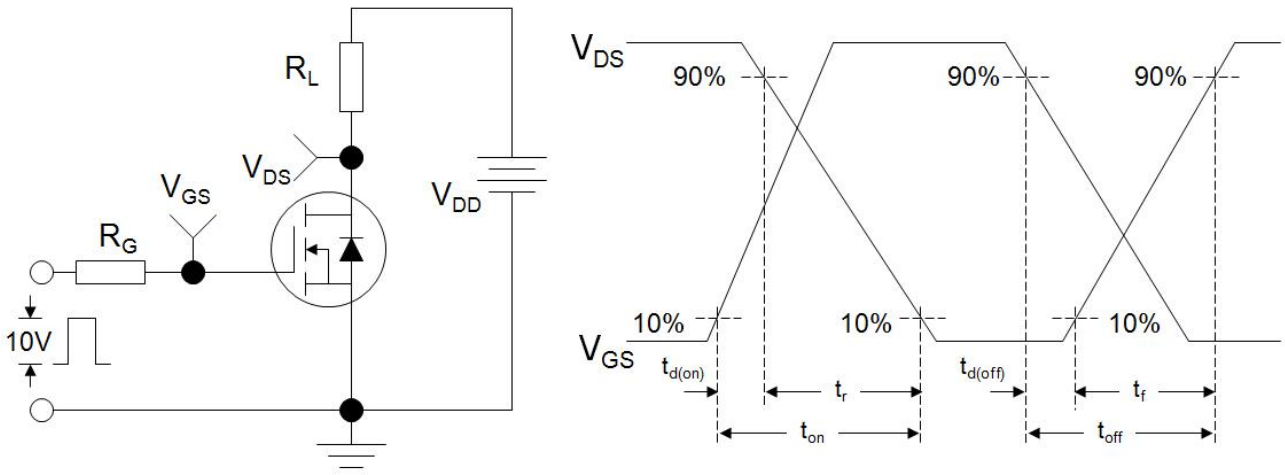
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition : Tj=25℃ ,VDD=30V,VGS=10V,L=0.5mH,Rg=25Ω
3. Identical low side and high side switch with identical $R_G$

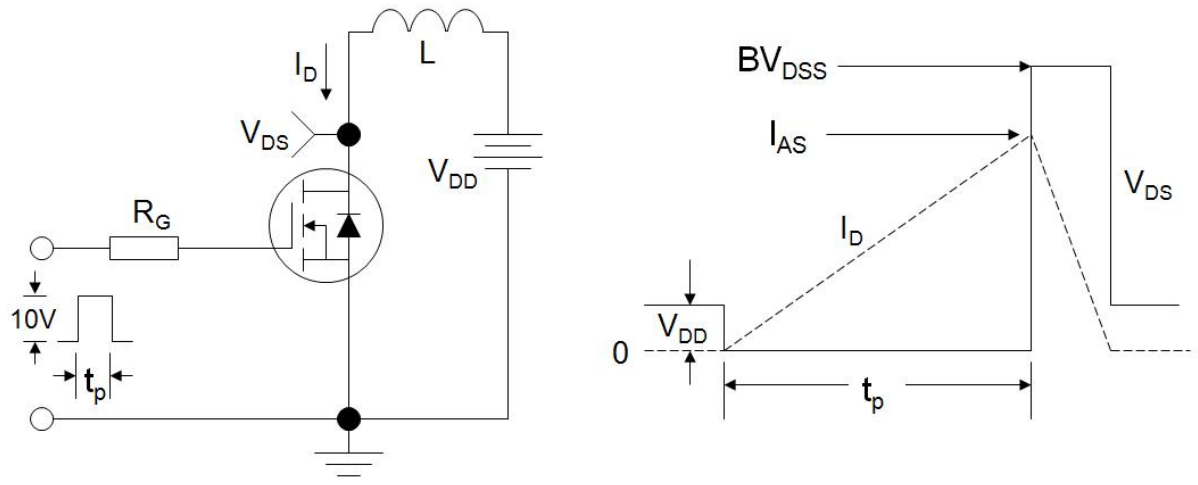
**Gate Charge Test Circuit**




**Switch Time Test Circuit**




**EAS Test Circuit**



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

**Figure 1. Output Characteristics**

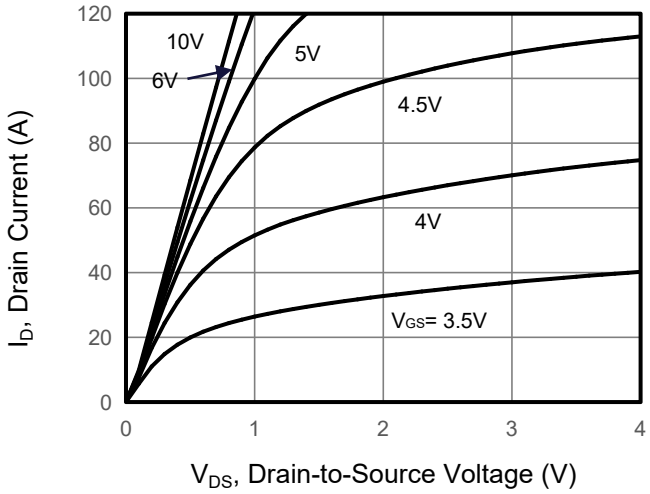



**Figure 2. Transfer Characteristics**

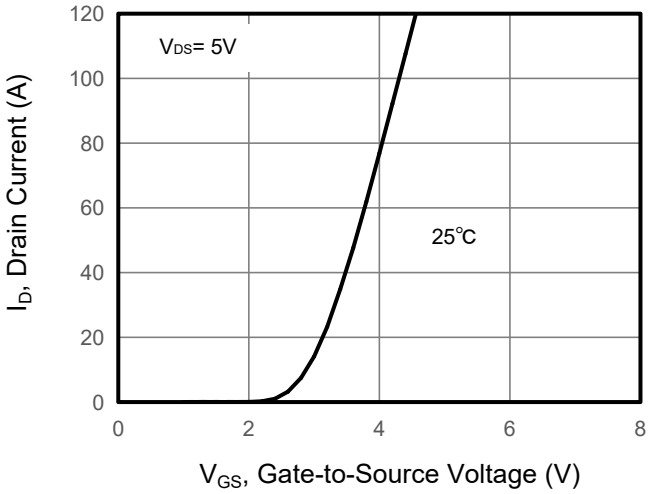



**Figure 3. Drain Source On Resistance**

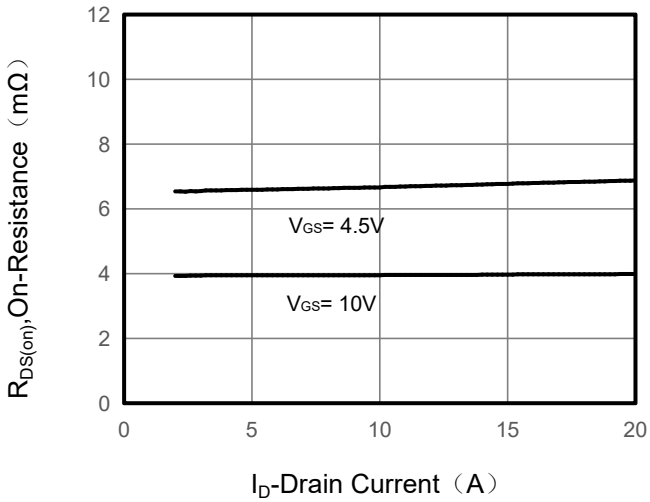



**Figure 4. Gate Charge**

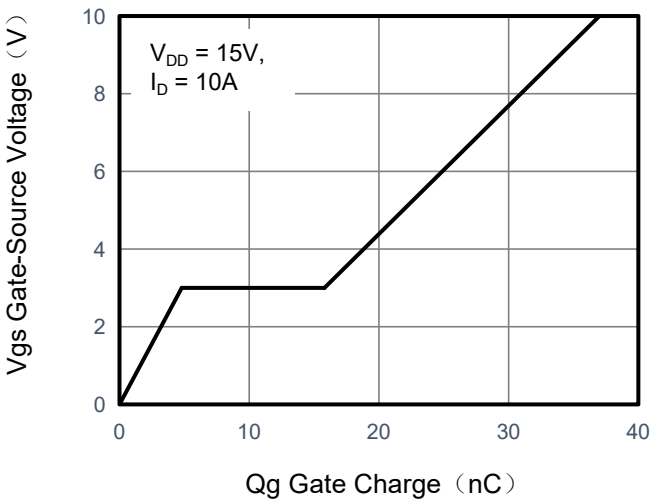



**Figure 5. Capacitance**

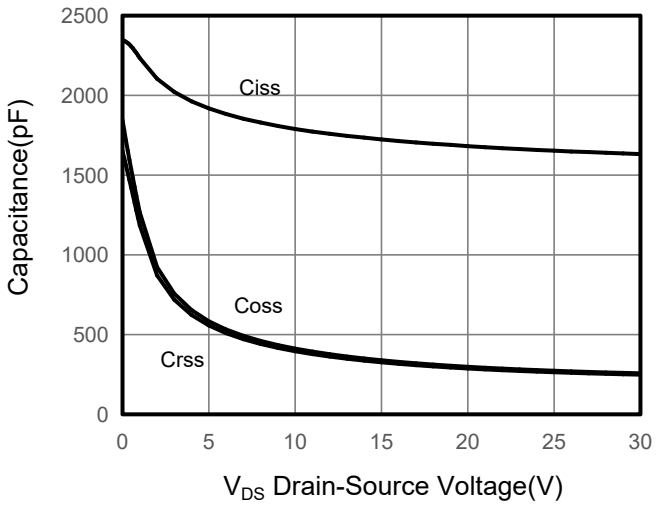
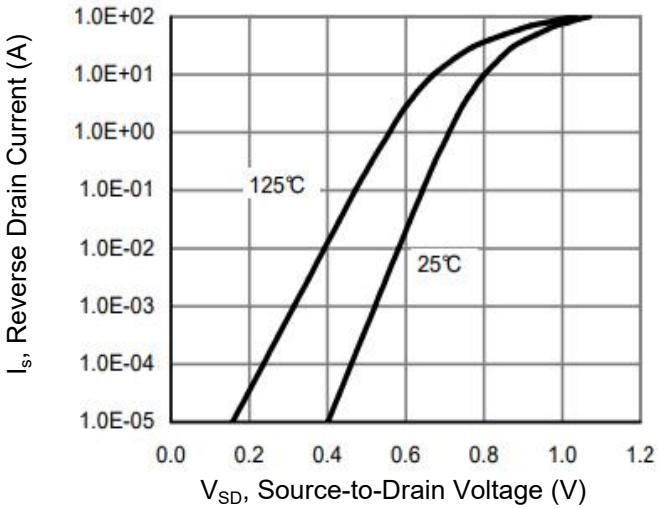



**Figure 6. Source-Drain Diode Forward**



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

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

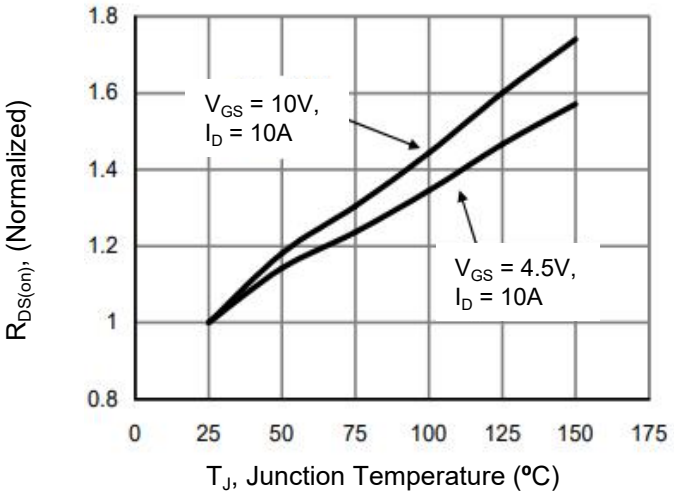



**Figure 8. Safe Operation Area**

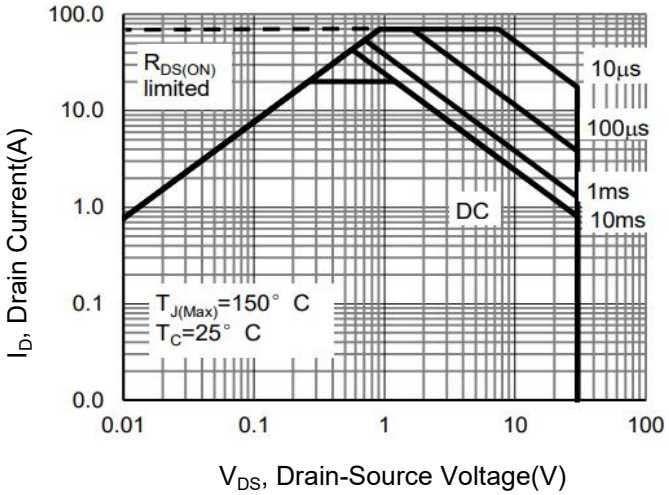



**Figure 9. Normalized Maximum Transient Thermal Impedance**

