

## N-Channel Enhancement Mode Power MOSFET

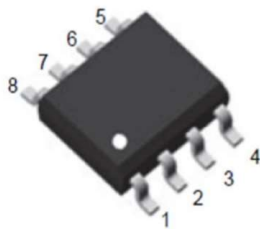
### Features

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

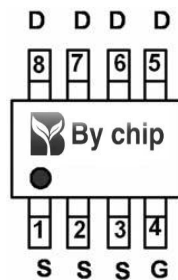
### General Features

- Advanced Trench Technology
- Provide Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead Free and Green Available

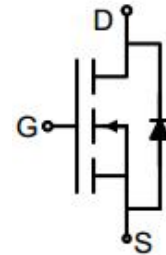
100% UIS TESTED!  
 100%  $\Delta V_{ds}$  TESTED!



SOP-8



pin assignment



Schematic diagram

### Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ , 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	$V_{GS}$	$\pm 20$	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	$^\circ\text{C}$

### Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	59	$^\circ\text{C/W}$

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$	--	--	1	$\mu A$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$	--		4	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$	--		7	
Forward Transconductance	$g_{FS}$	$V_{GS} = 5V, I_D = 10A$	--	30	--	S
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 15V,$ $f = 1.0\text{MHz}$	--	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	$t_{d(on)}$	$V_{DD} = 15V,$ $I_D = 10A,$ $R_G = 3\Omega$	--	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	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	18	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 10A, V_{GS} = 0V$	--	--	1.2	V
Reverse Recovery Charge	$Q_{rr}$	$I_F = 10A, V_{GS} = 0V$ $di/dt = 500A/\mu s$	--	40	--	nC
Reverse Recovery Time	$T_{rr}$		--	14	--	ns

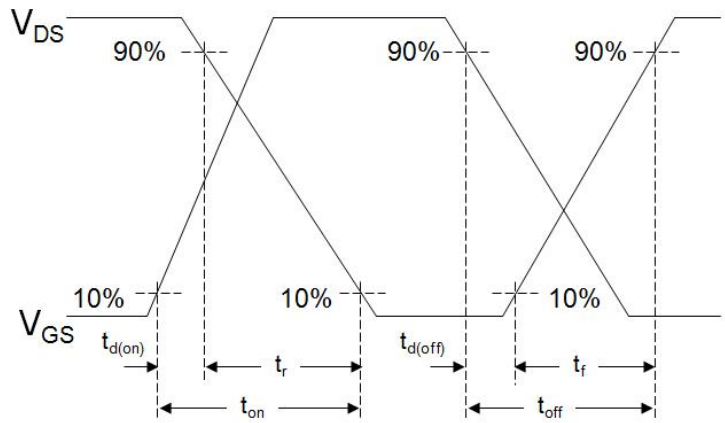
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition :  $T_J = 25^\circ\text{C}, V_{DD} = 30V, V_{GS} = 10V, L = 0.5\text{mH}, R_G = 25\Omega$
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  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 1. Output Characteristics

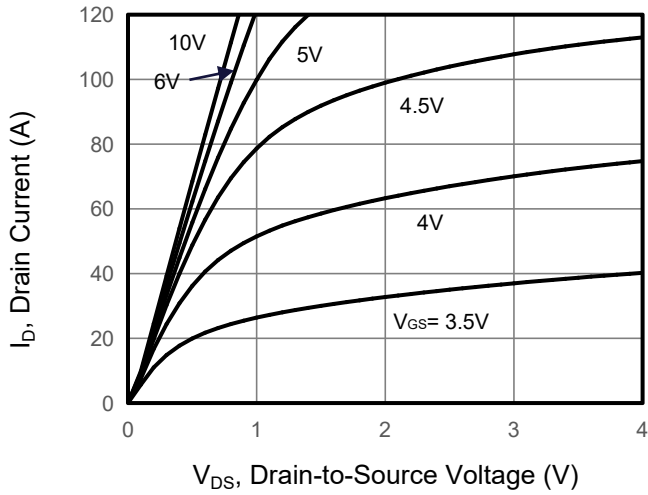


Figure 2. Transfer Characteristics

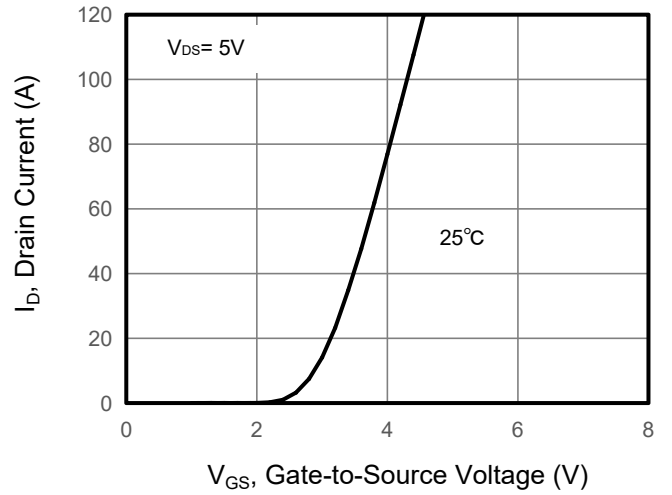


Figure 3. Drain Source On Resistance

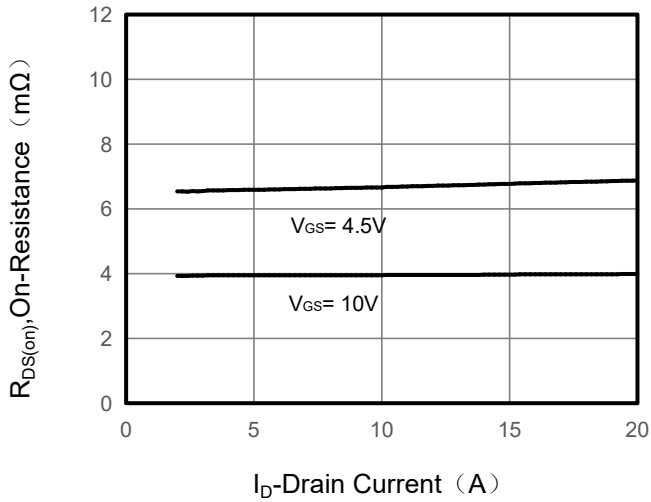


Figure 4. Gate Charge

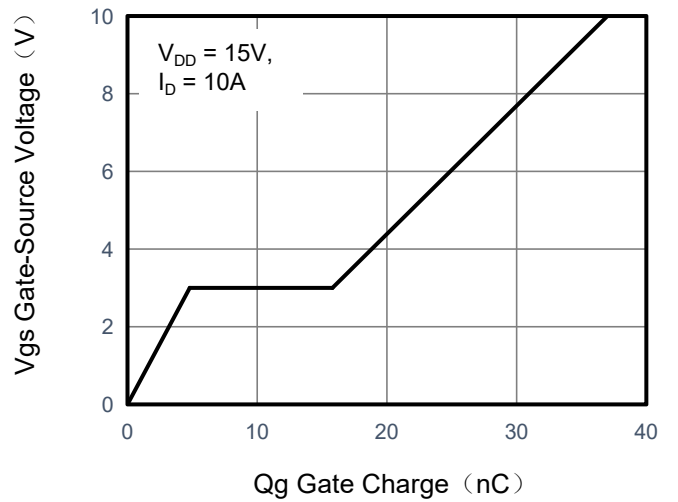


Figure 5. Capacitance

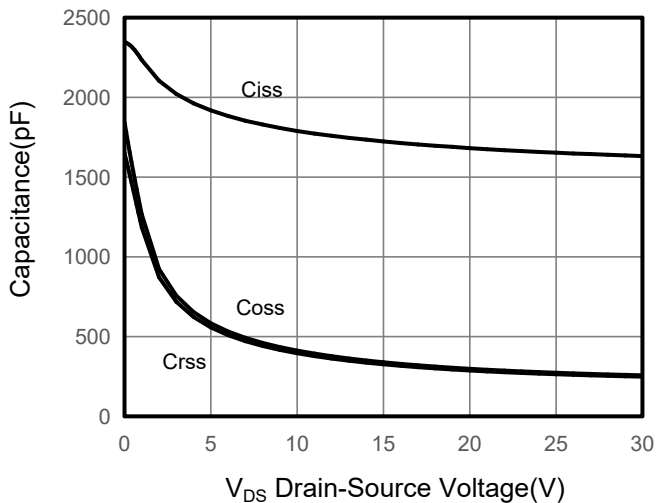
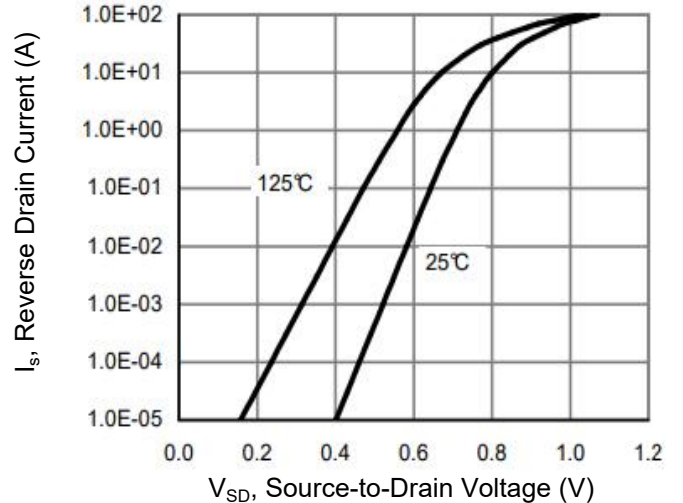


Figure 6. Source-Drain Diode Forward



Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 7. Drain-Source On-Resistance

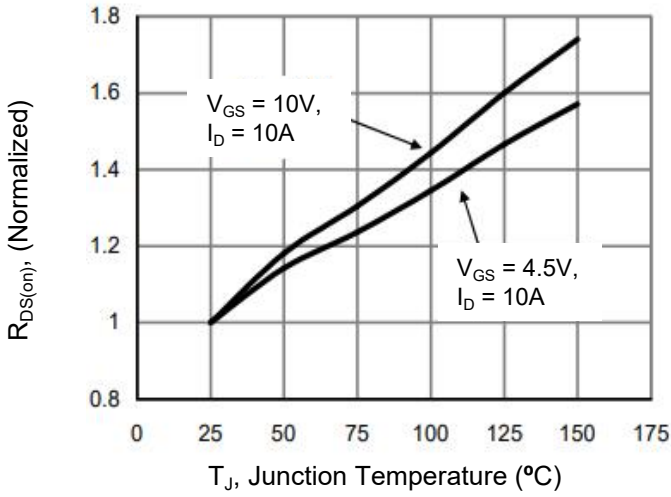


Figure 8. Safe Operation Area

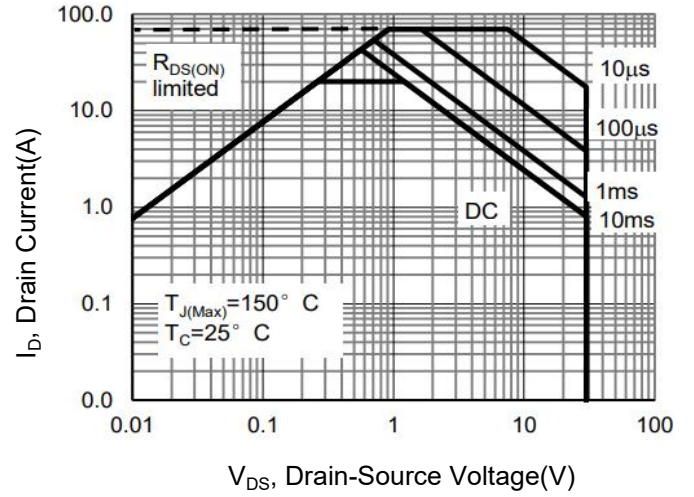


Figure 9. Normalized Maximum Transient Thermal Impedance

