

N-Channel Enhancement Mode Power MOSFET

Features

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

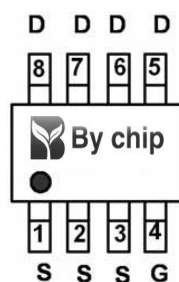
General Features

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

100% UIS TESTED!
100% ΔV_{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}	± 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.	
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 = 25°C	--	--	18	A
Body Diode Voltage	V _{SD}	T _J = 25°C, I _{SD} = 10A, V _{GS} = 0V	--	--	1.2	V
Reverse Recovery Charge	Q _{rr}	I _F = 10A, V _{GS} = 0V di/dt=500A/us	--	40	--	nC
Reverse Recovery Time	T _{rr}		--	14	--	ns

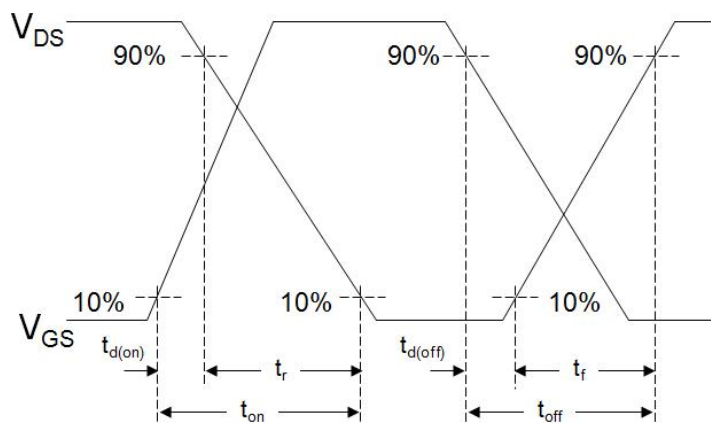
Notes

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

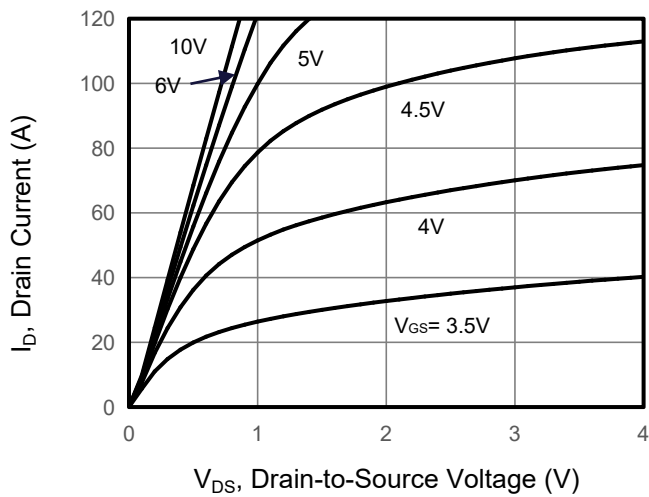


Figure 2. Transfer Characteristics

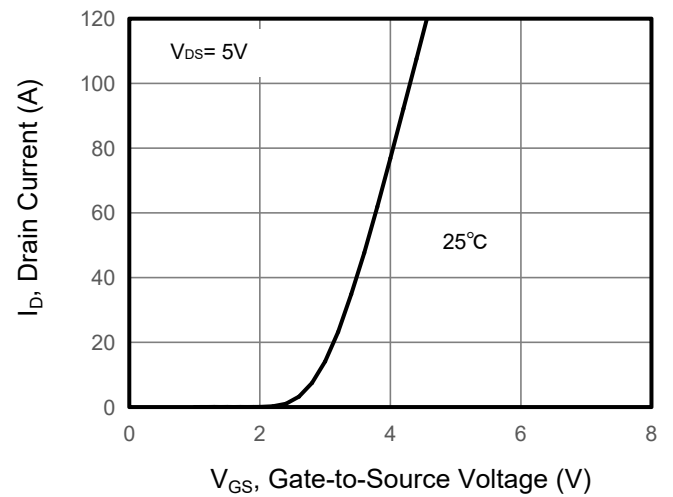


Figure 3. Drain Source On Resistance

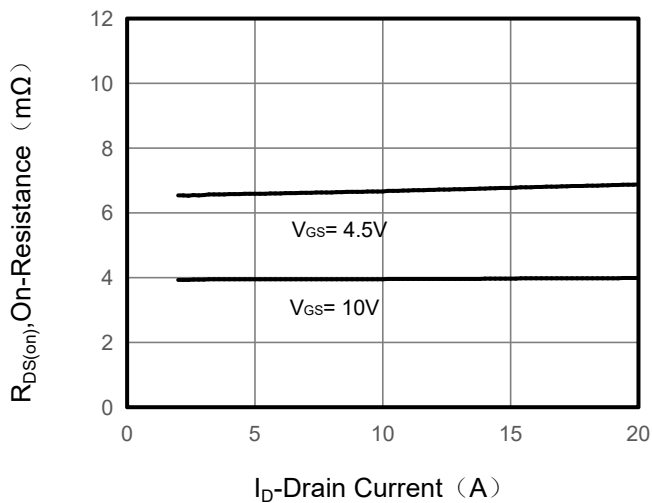


Figure 4. Gate Charge

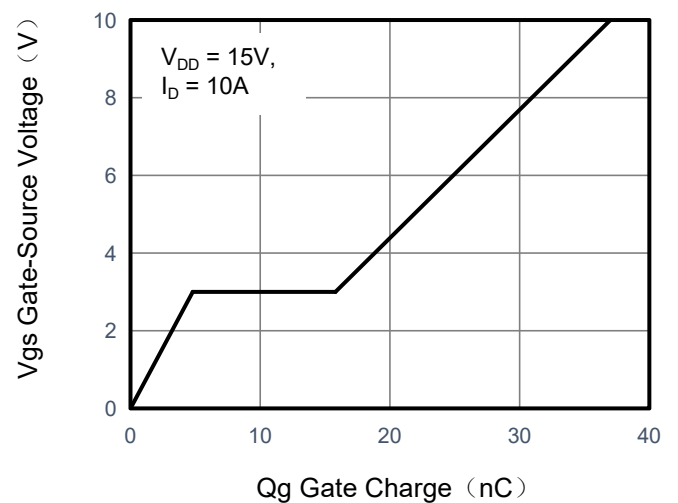


Figure 5. Capacitance

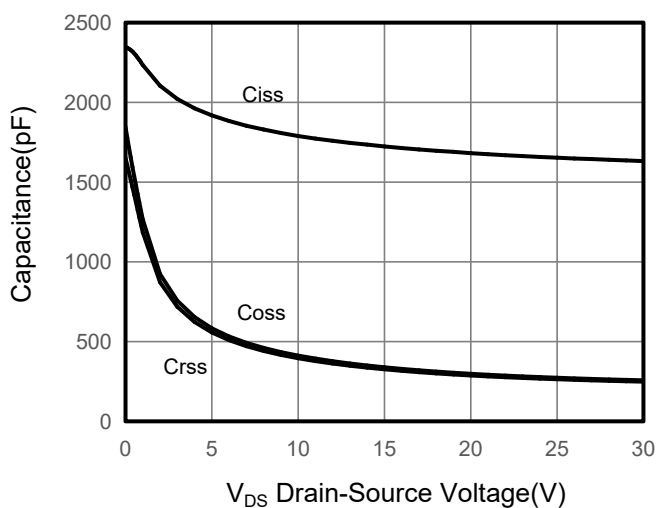
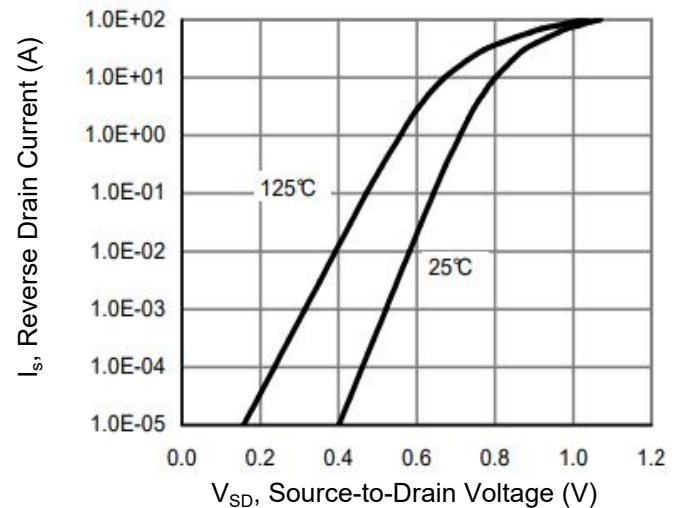


Figure 6. Source-Drain Diode Forward



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

