General Description

This MOSFET uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as -4.5V. This device is suitable for use as a wide variety of applications.

Features

- Low gate charge
- 100% UIS tested, 100% DVDS tested
- High power and current handing capability
- Lead free product is acquired

RoHS compliant

Applications

- Load switch
- PWM application
- Power management

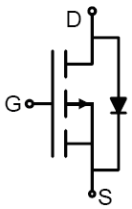
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(ON),\ max}$ @ V_{GS}=-10V	8	mΩ

Marking Information

Product Name	Package	Marking
OSH03P08GF	PDFN5X6-8L	OSH03P08G

Package & Pin information



Absolute Maximum Ratings at T_j=25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-71	A
Pulsed Drain Current [1)]	$I_{D,pulse}$	-268	A
Power Dissipation	P_D	66	W
Single pulsed avalanche energy [2)]	E_{AS}	231	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	1.9	°C/W

Electrical Characteristics at T_j=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	-30			V	V_{GS}=0 V, I_D=-250 μA
Gate threshold voltage	$V_{GS(th)}$	-1.0	-1.5	-2.5	V	V_{DS}=V_{GS}, I_D=-250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		6.6	8	mΩ	V_{GS}=-10 V, I_D=-20 A
Drain-source on-state resistance	$R_{DS(ON)}$		11	13.2	mΩ	V_{GS}=-4.5 V, I_D=-15 A
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=20 V , V_{DS}=0 V
				-100		V_{GS}=-20 V, V_{DS}=0 V
Drain-source leakage current	I_{DSS}			-1	μA	V_{DS}=-30 V, V_{GS}=0 V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		3240		pF	V_{GS}=0 V, V_{DS}=-15 V, f=1.0 MHz
Output capacitance	C_{oss}		380		pF	
Reverse transfer capacitance	C_{rss}		231		pF	
Gate resistance	R_g				Ω	VGS=0 V, VDS=0 V, f=1.0 MHz
Turn-on Delay Time	$t_{d(on)}$		21		ns	VGS=-10 V, VDS=-15 V, R_L=0.75 Ω, R_{GEN}=3 Ω
Turn-on Rise Time	t_r		18		ns	
Turn-Off Delay Time	$t_{d(off)}$		26		ns	
Turn-Off Fall Time	t_f		8		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total Gate Charge	Q_g		61		nC	V_{GS}=-10 V, V_{DS}=-15 V, I_D=-20 A
Gate-Source Charge	Q_{gs}		7.5		nC	
Gate-Drain Charge	Q_{gd}		15.5		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Source drain current (Body Diode)	I_{SD}			-71	A	T_A=25°C
Diode forward voltage [3]	V_{SD}			-1.2	V	I_S=-20 A, V_{GS}=0 V
Reverse Recovery Time	trr		15		ns	I_F=-10 A, di/dt=100 A/us
Reverse Recovery Charge	Qrr		20		nC	

Note: 1) Pulse width limited by maximum allowable junction temperature.

2) E_{AS} condition: T_J=25℃,V_{DD}=-30V,V_G=-10V, Rg=25Ω, L=0.5mH.

3) Repetitive Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristics Diagrams

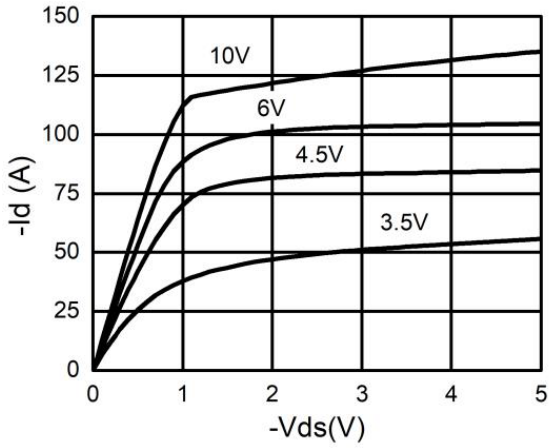


Figure 1. Typ. output characteristics

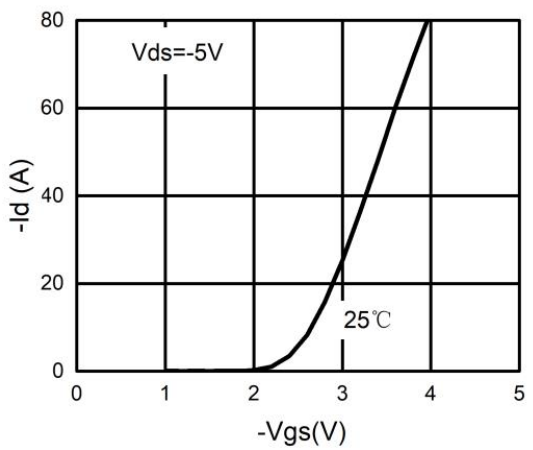


Figure 2. Typ. transfer characteristics

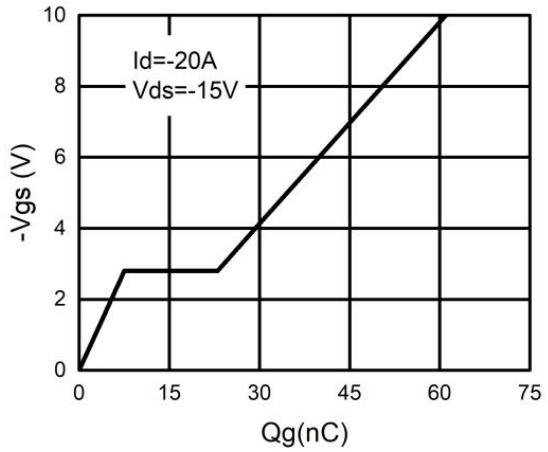


Figure 3. Gate charge waveforms

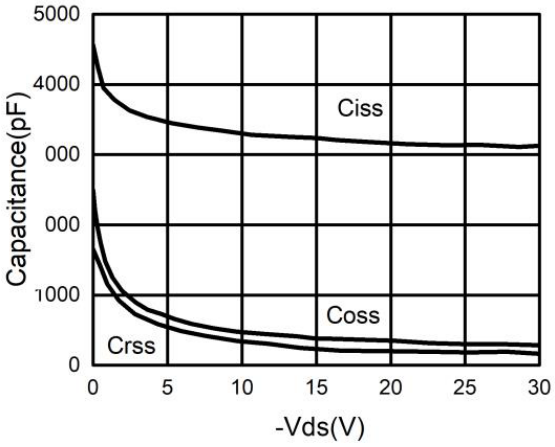


Figure 4. Capacitance

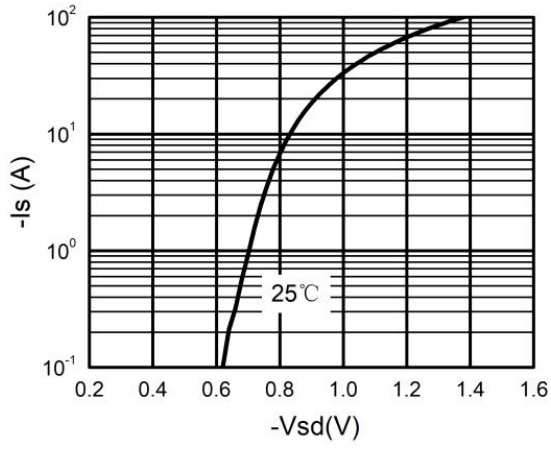


Figure 5. Body-diode characteristics

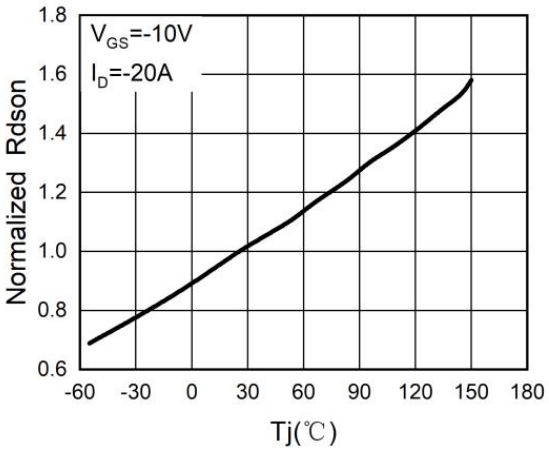
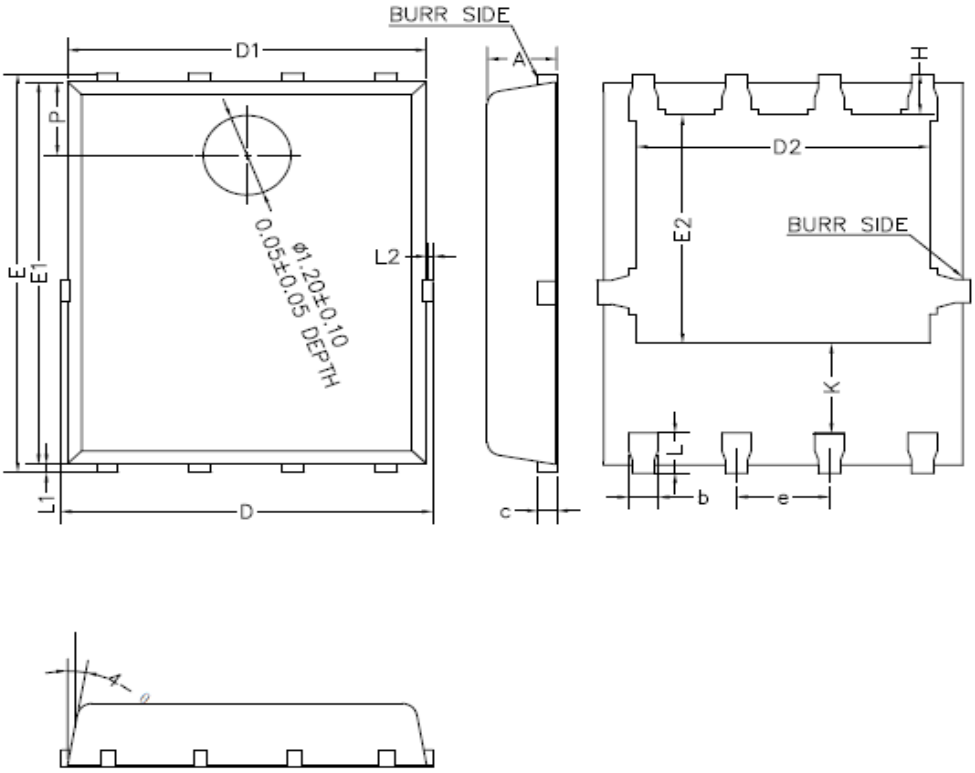


Figure 6. $R_{DS(ON)}$ vs junction temperature

Package Information



Symbol	mm		
	Min.	Typ.	Max.
A	1.000	1.100	1.200
b	0.35	0.40	0.45
c	0.21	0.25	0.34
D	-	-	5.100
D1	4.900	4.950	5.000
D2	3.910	4.010	4.110
e	1.17	1.27	1.37
E	5.900	6.000	6.100
E1	5.700	5.750	5.800
E2	3.340	3.440	3.540
H	0.510	0.610	0.710
K	1.100	-	-
L	0.510	0.610	0.710
L1	0.060	0.130	0.200
L2	-	-	0.150
P	1.00	1.10	1.20
θ	8°	10°	12°

Version1: PDFN5X6-G package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
PDFN5X6-G	5000	2	10000	6	60000

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Oriental Semiconductor hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

For further information on technology, delivery terms and conditions and prices, please contact the Oriental Semiconductor sales representatives (www.orientalsemi.com).

ORIENTAL SEMICONDUCTOR

A Power Semiconductor Innovator