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
- High power and current handing capability
- Lead free product is acquired

RoHS compliant

Applications

- Load switch
- PWM application
- Power management

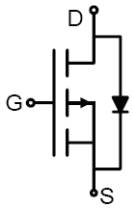
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(ON),\ max}$ @ V_{GS}=-10V	8.4	mΩ

Marking Information

Product Name	Package	Marking
OSH03P08NF	PDFN3.3×3.3	0308

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	-59	A
Pulsed Drain Current [1)]	$I_{D,pulse}$	-235	A
Power Dissipation	P_D	46	W
Single pulsed avalanche energy [2)]	E_{AS}	289	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	2.72	°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	$R_{DS(ON)}$		7	8.4	mΩ	V_{GS}=-10 V, I_D=-20 A
Drain-source on-state resistance	$R_{DS(ON)}$		12	14.4	mΩ	V_{GS}=-4.5 V, I_D=-20 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	
Turn-on Delay Time	$t_{d(on)}$		21		ns	V_{GS}=-10 V, V_{DS}=-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}			-60	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, R_g=25Ω, L=0.5mH.

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

Electrical Characteristics Diagrams

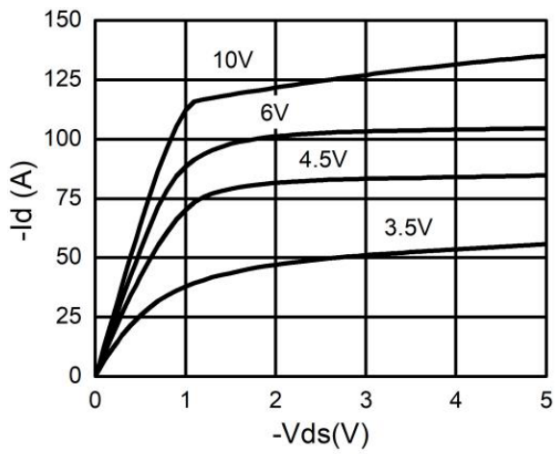


Figure 1. Typ. output characteristics

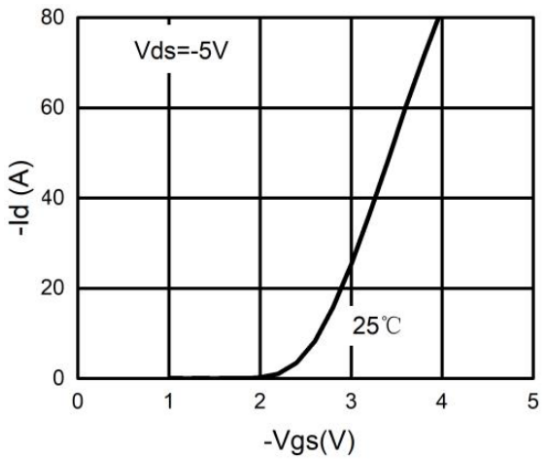


Figure 2. Typ. transfer characteristics

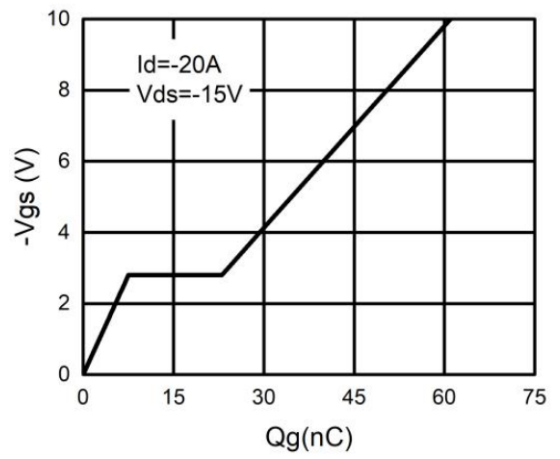


Figure 3. Gate charge waveforms

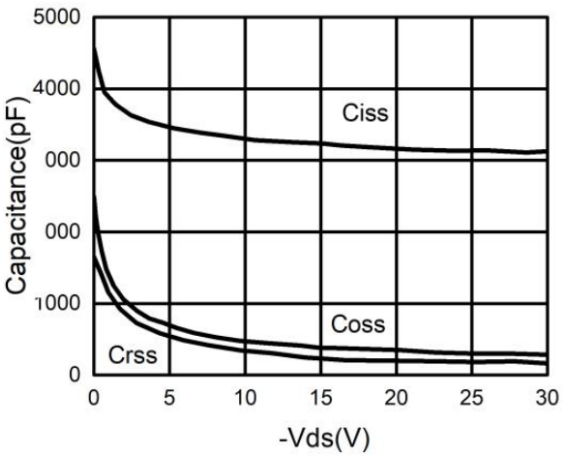


Figure 4. Capacitance

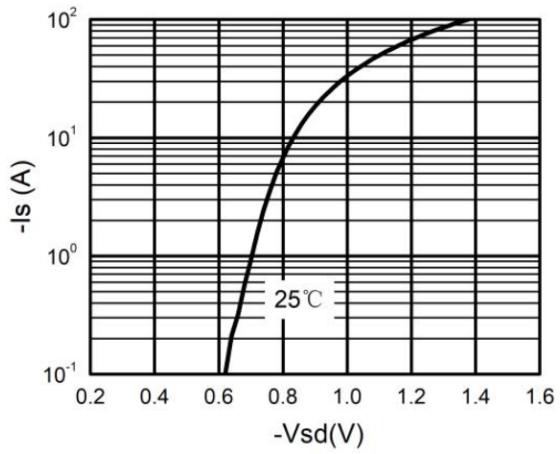


Figure 5. Body-diode characteristics

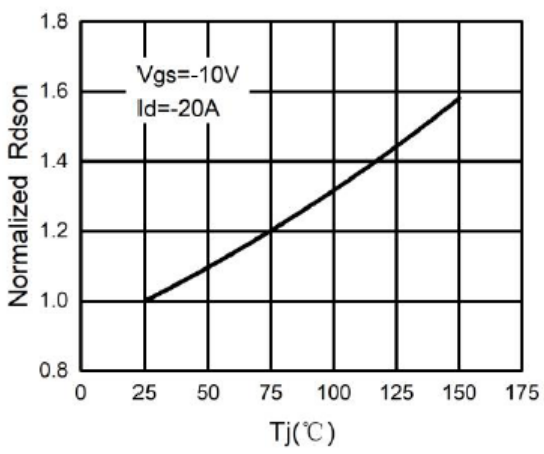
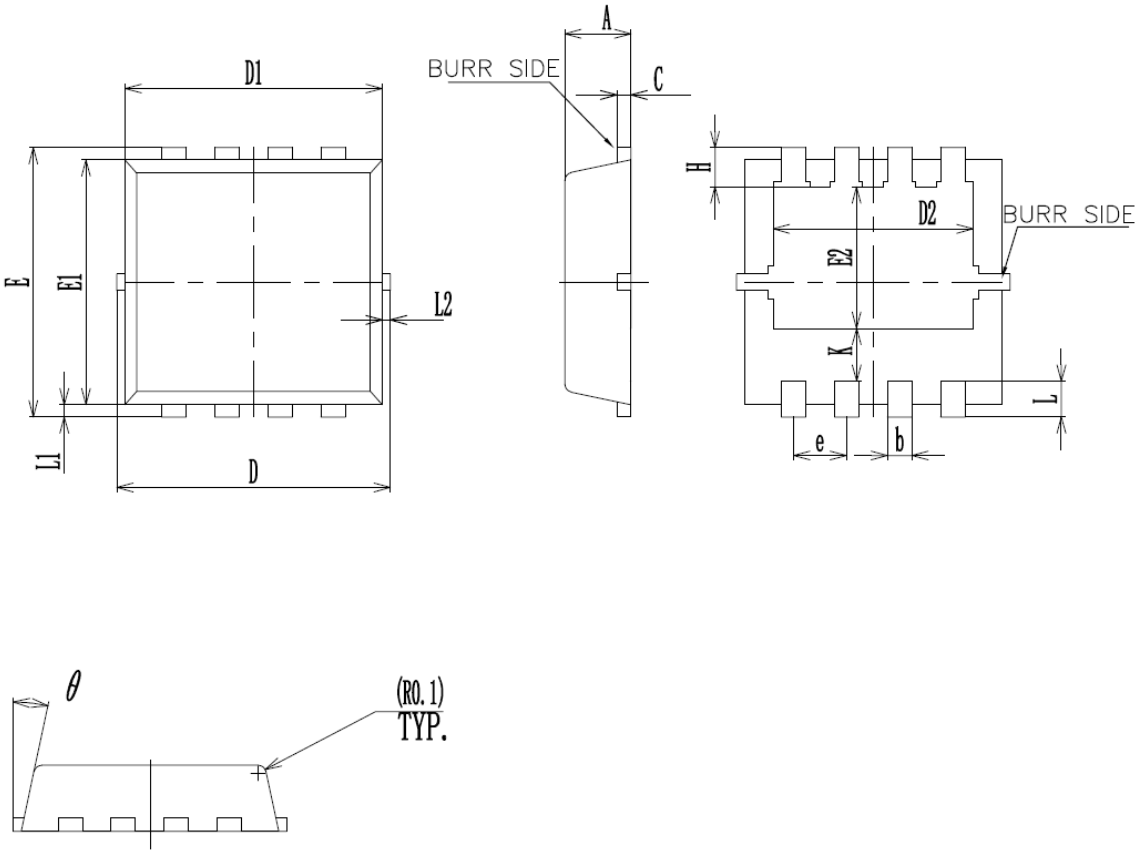


Figure 6. $R_{DS(ON)}$ vs junction temperature

Package Information



Symbol	mm		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
c	0.14	0.152	0.20
D	3.15	3.30	3.45
D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
e	0.65BSC		
E	3.20	3.30	3.40
E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.38	0.48	0.58
K	0.59	0.69	0.79
L	0.25	0.40	0.55
L1	0.10	0.15	0.20
L2	-	-	0.15
θ	8°	10°	12°

Version1: PDFN3.3×3.3-G package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
PDFN3.3×3.3-G	5000	2	10000	6	60000

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