

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

- Surface mount package
- High power and current handling capability
- Lead free product is acquired

Applications

- Load switch
- Power Management



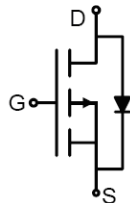
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	-40	V
$R_{DS(ON), max} @ V_{GS} = -10V$	18	m Ω

Marking Information

Product Name	Package	Marking
OSH04P18GF	PDFN5*6	OSH04P18G

Package & Pin information



Absolute Maximum Ratings at $T_j=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-40	V
Gate-source voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-39	A
Pulsed Drain Current ¹⁾	$I_{D,pulse}$	-156	A
Power Dissipation	P_D	46	W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	2.7	$^{\circ}\text{C/W}$

Electrical Characteristics at $T_j=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	-40			V	$V_{GS}=0\text{ V}, I_D=-250\ \mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	-1.0		-2.5	V	$V_{DS}=V_{GS}, I_D=-250\ \mu\text{A}$
Drain-source on-state resistance	$R_{DS(ON)}$		15	18	$\text{m}\Omega$	$V_{GS}=-10\text{ V}, I_D=-20\text{ A}$
Drain-source on-state resistance	$R_{DS(ON)}$		19	25	$\text{m}\Omega$	$V_{GS}=-4.5\text{ V}, I_D=-15\text{ A}$
Gate-source leakage current	I_{GSS}			100	nA	$V_{GS}=20\text{ V}, V_{DS}=0\text{ V}$
				-100		$V_{GS}=-20\text{ V}, V_{DS}=0\text{ V}$
Drain-source leakage current	I_{DSS}			-1	μA	$V_{DS}=-40\text{ V}, V_{GS}=0\text{ V}$

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		2320		pF	$V_{GS}=0\text{ V}$, $V_{DS}=-20\text{ V}$, $f=1.0\text{ MHz}$
Output capacitance	C_{oss}		174		pF	
Reverse transfer capacitance	C_{rss}		147		pF	
Turn-on Delay Time	$t_{d(on)}$		10		ns	$V_{GS}=-10\text{ V}$, $V_{DS}=-20\text{ V}$, $R_L=1\ \Omega$, $R_{GEN}=3\ \Omega$
Turn-on Rise Time	t_r		15		ns	
Turn-Off Delay Time	$t_{d(off)}$		38		ns	
Turn-Off Fall Time	t_f		16.4		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total Gate Charge	Q_g		60		nC	$V_{GS}=-10\text{ V}$, $V_{DS}=-20\text{ V}$, $I_D=-20\text{ A}$
Gate-Source Charge	Q_{gs}		8.5		nC	
Gate-Drain Charge	Q_{gd}		13		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage ²⁾	V_{SD}			-1.2	V	$I_S=-20\text{ A}$, $V_{GS}=0\text{ V}$

- Note:** 1) Pulse width limited by maximum allowable junction temperature.
 2) Repetitive Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristics Diagrams

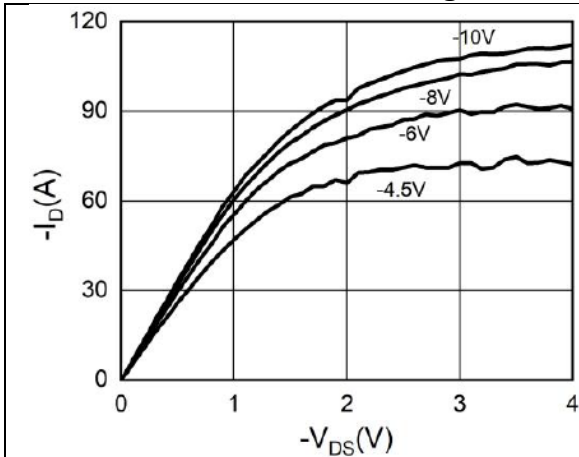


Figure 1. Typ. output characteristics

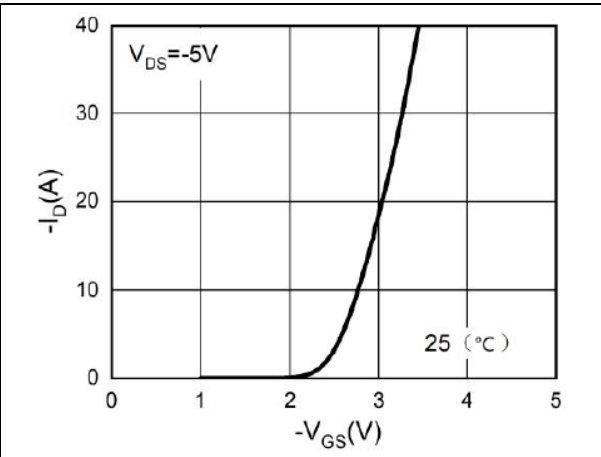


Figure 2. Typ. transfer characteristics

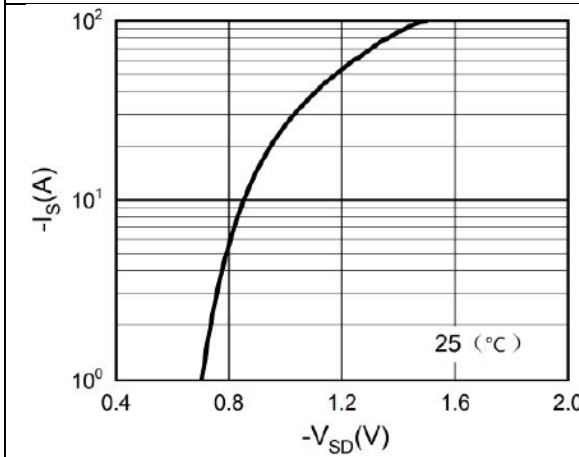


Figure 3. Body-diode characteristics

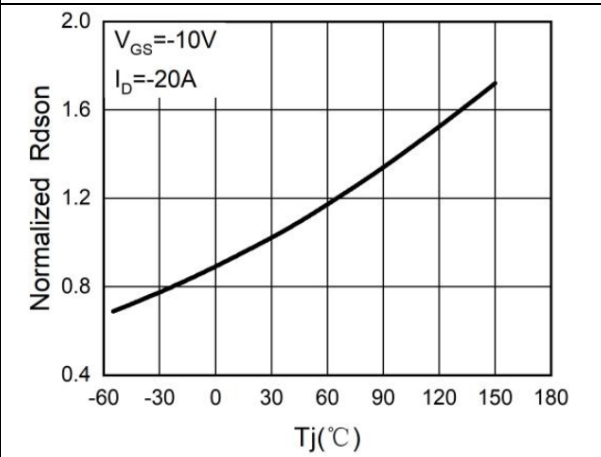


Figure 4. R_DS(ON) vs junction temperature

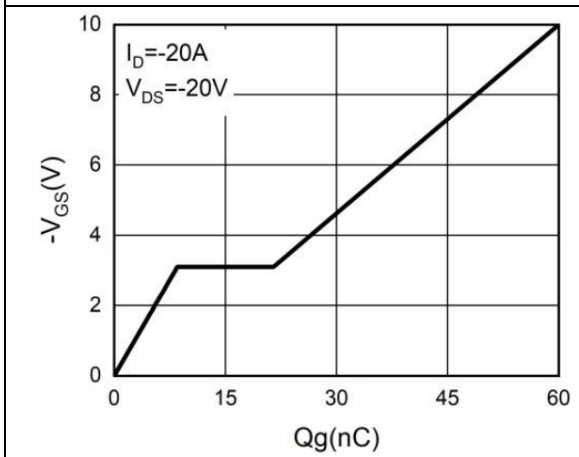


Figure 5. Gate charge waveforms

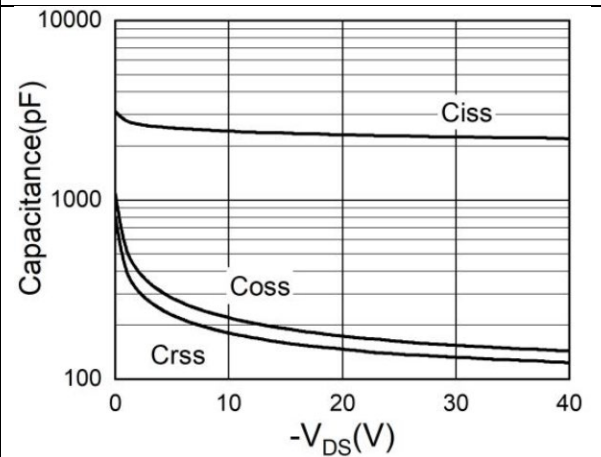
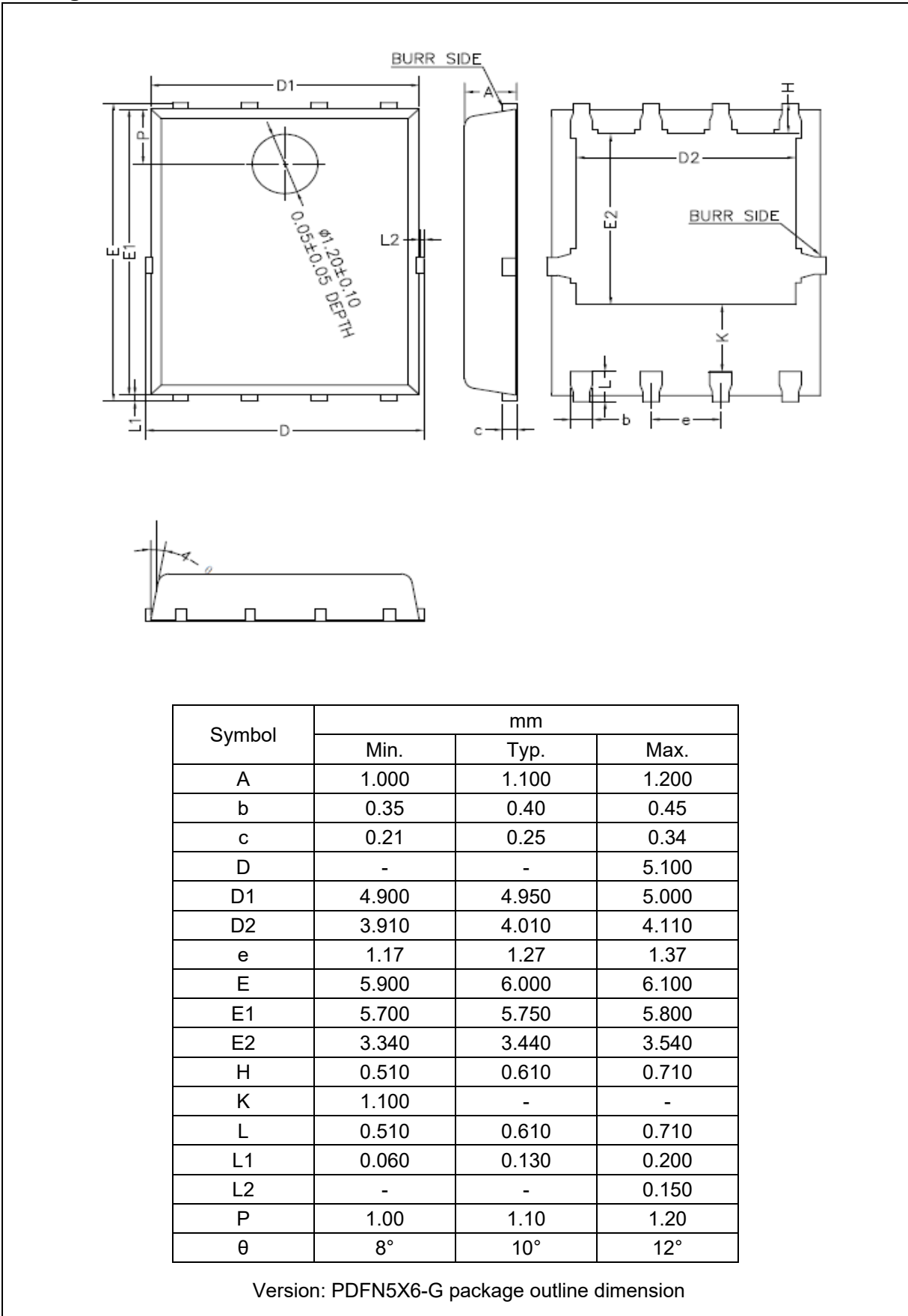


Figure 6. Capacitance

Package Information



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

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