

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 handling capability
- Lead free product is acquired

Applications

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification



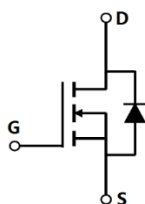
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	60	V
$R_{DS(ON), max} @ V_{GS}=10V$	30	m Ω

Marking Information

Product Name	Package	Marking
OSH06N30DF	TO-252	OSH06N30D

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}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	25	A
Pulsed Drain Current ¹⁾	$I_{D,pulse}$	100	A
Power Dissipation	P_D	35.7	W
Single pulsed avalanche energy ²⁾	E_{AS}	44.8	mJ
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	$R_{\theta JC}$	3.5	$^{\circ}\text{C/W}$

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}	60			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	$R_{DS(ON)}$		23	30	$\text{m}\Omega$	$V_{GS}=10\text{ V}, I_D=10\text{ A}$
Drain-source on-state resistance	$R_{DS(ON)}$		28	36	$\text{m}\Omega$	$V_{GS}=4.5\text{ V}, I_D=8\text{ A}$
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	$V_{DS}=60\text{ V}, V_{GS}=0\text{ V}$

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		985		pF	$V_{GS}=0\text{ V}$, $V_{DS}=30\text{ V}$, $f=1.0\text{ MHz}$
Output capacitance	C_{oss}		52		pF	
Reverse transfer capacitance	C_{rss}		50		pF	
Gate resistance	R_g		1.1		Ω	$V_{GS}=0\text{ V}$, $V_{DS}=0\text{ V}$, $f=1.0\text{ MHz}$
Turn-on Delay Time	$t_{d(on)}$		12.7		ns	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $R_L=3\ \Omega$, $R_{GEN}=3\ \Omega$
Turn-on Rise Time	t_r		2.6		ns	
Turn-Off Delay Time	$t_{d(off)}$		27.2		ns	
Turn-Off Fall Time	t_f		3.2		ns	

Gate Charge Characteristics

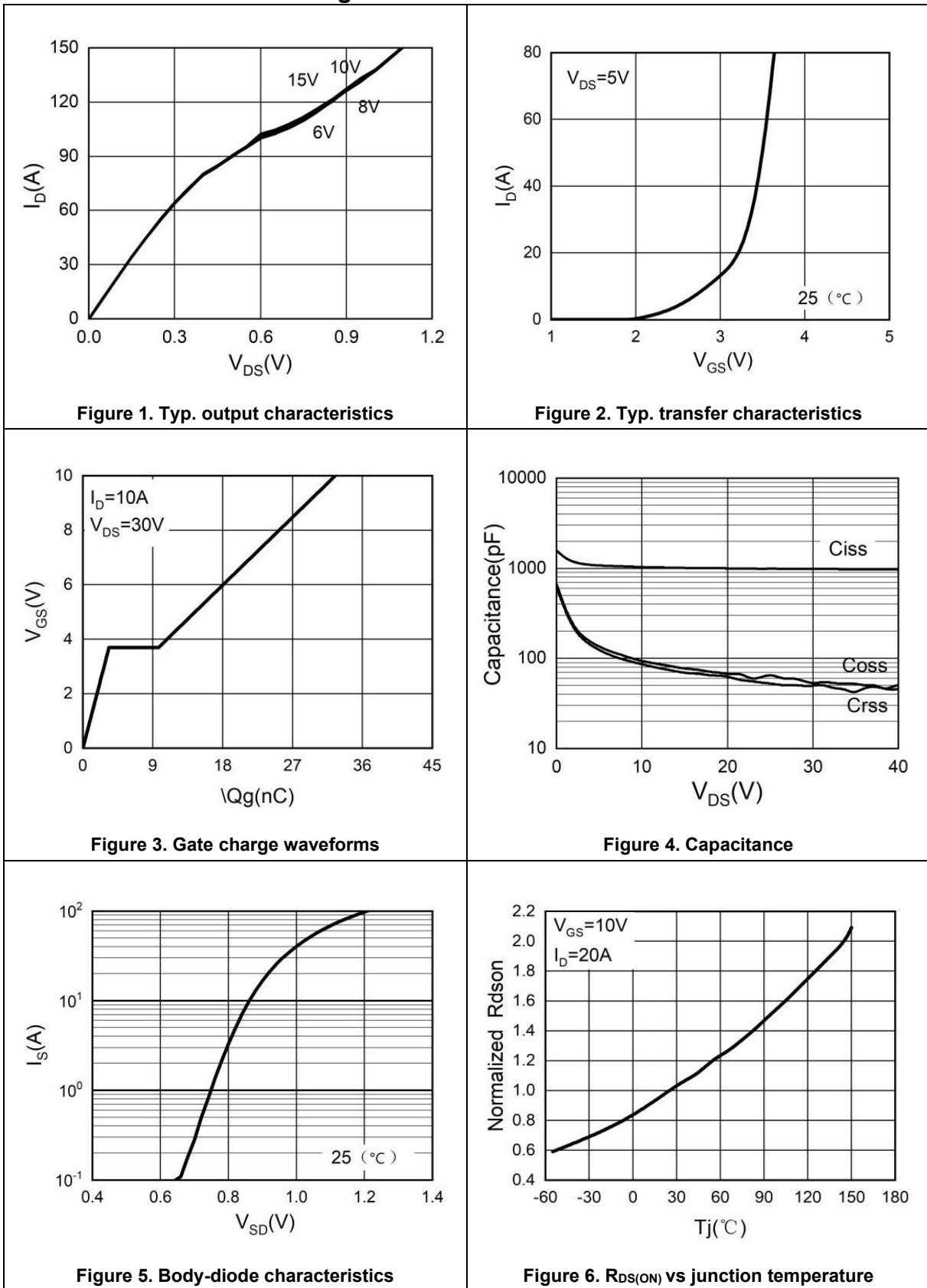
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total Gate Charge	Q_g		32.5		nC	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $I_D=10\text{ A}$
Gate-Source Charge	Q_{gs}		3.36		nC	
Gate-Drain Charge	Q_{gd}		6.4		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Source drain current (Body Diode)	I_{SD}			25	A	$T_A=25^\circ\text{C}$
Diode forward voltage ³⁾	V_{SD}			1.2	V	$I_S=10\text{ A}$, $V_{GS}=0\text{ V}$
Reverse Recovery Time	t_{rr}		19.5		ns	$I_F=10\text{ A}$, $di/dt=100\text{ A/us}$
Reverse Recovery Charge	Q_{rr}		15.8		nC	

- Note:**
- 1) Pulse width limited by maximum allowable junction temperature.
 - 2) E_{AS} condition: $T_J=25^\circ\text{C}$, $V_{DD}=40\text{ V}$, $V_G=10\text{ V}$, $R_g=25\ \Omega$, $L=0.5\text{ mH}$.
 - 3) Repetitive Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristics Diagrams



Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO-252-G	2500	1	2500	6	15000

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