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

- High Dense Design
- Ultra Low On-Resistance
- Reliable and Rugged

RoHS compliant

Applications

- Battery and loading switching
- Ideal for high-frequency switching and synchronous rectification

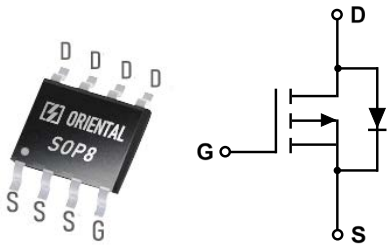
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(ON),\ max}$ @ V_{GS}=-10V	19	mΩ

Marking Information

Product Name	Package	Marking
OSH03P21BF	SOP8	0321

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	-10.7	A
Pulsed Drain Current [1)]	$I_{D,pulse}$	-42.8	A
Power Dissipation	P_D	3.3	W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-ambient [2)]	$R_{\theta JA}$	38	°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	-1.5	-2.2	V	V_{DS}=V_{GS}, I_D=-250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		14	19	mΩ	V_{GS}=-10 V, I_D=-7 A
Drain-source on-state resistance	$R_{DS(ON)}$		16	22	mΩ	V_{GS}=-4.5 V, I_D=-4 A
Gate-source leakage current	I_{GSS}			±100	nA	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}		1400		pF	V_{GS}=0 V, V_{DS}=-15 V, f=1.0 MHz
Output capacitance	C_{oss}		186		pF	
Reverse transfer capacitance	C_{rss}		164		pF	
Turn-on Delay Time	$t_{d(on)}$		8.5		ns	V_{GS}=-10 V, V_{DS}=-15 V, I_D=-10 A, R_{GEN}=1 Ω
Turn-on Rise Time	t_r		9.5		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		32.2		nC	V_{GS}=-10 V, V_{DS}=-15 V, I_D=-10 A
Gate-source charge	Q_{gs}		4.8		nC	
Gate-drain charge	Q_{gd}		7.9		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Source drain current (Body Diode)	I_{SD}			-10	A	T_A=25°C
Diode forward voltage	V_{SD}			-1.2	V	I_S=-10 A, V_{GS}=0 V

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

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

Electrical Characteristics Diagrams

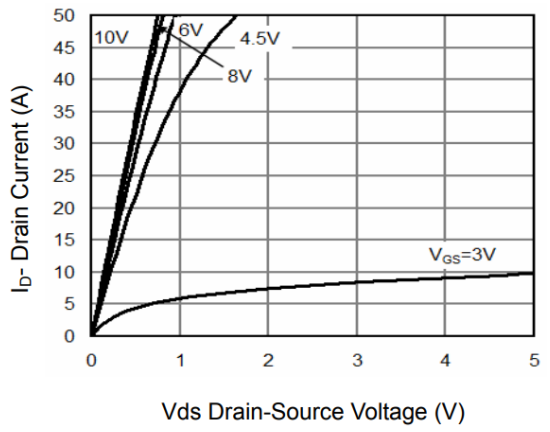


Figure 1. Output characteristics

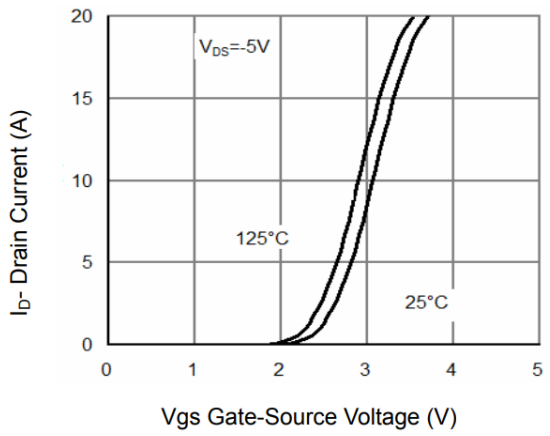


Figure 2. Transfer characteristics

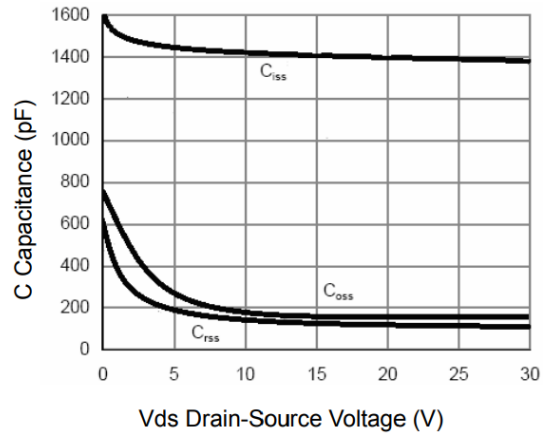


Figure 3. Capacitance

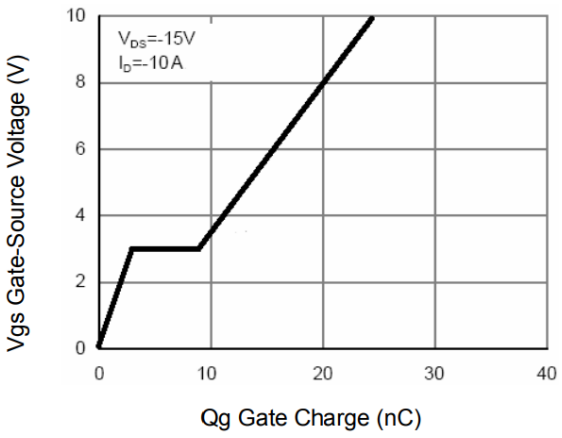


Figure 4. Gate charge

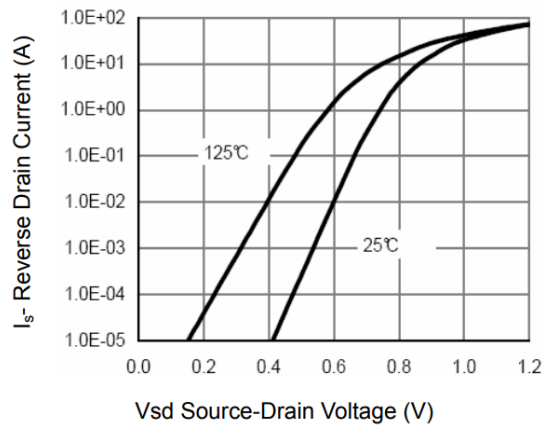


Figure 5. Body-diode characteristics

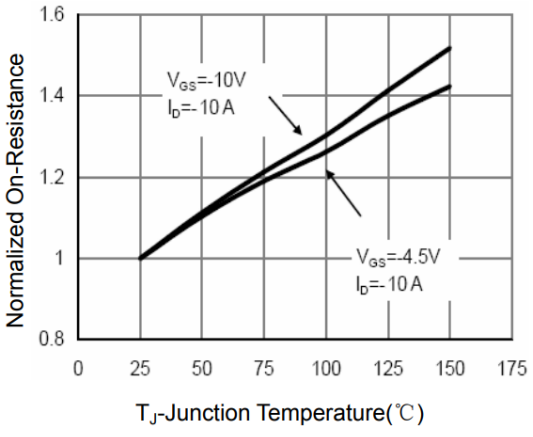
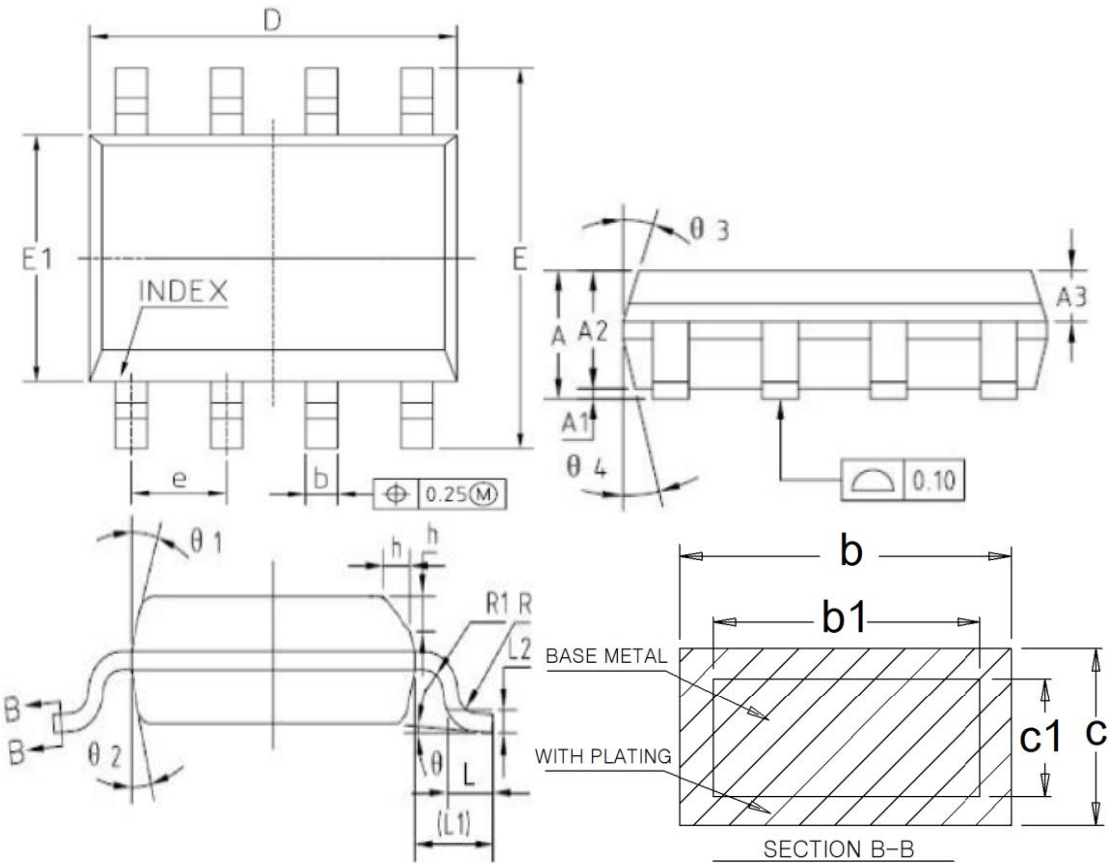


Figure 6. $R_{DS(ON)}$ vs junction temperature

Package Information



Symbol	mm		
	Min.	Typ.	Max.
A	1.45	1.55	1.65
A1	0.10	0.15	0.20
A2	1.353	1.40	1.453
A3	0.55	0.60	0.65
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	4.85	4.90	4.95
E	5.85	6.00	6.15
E1	3.85	3.90	3.95
e	1.245	1.27	1.295
L	0.45	0.60	0.75
L1	-	1.040REF	-
L2	-	0.250BSC	-

Version1: SOP-8-G package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
SOP-8-G	4000	2	8000	6	480000

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