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

Applications

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

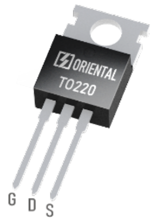
Key Performance Parameters

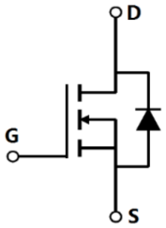
Parameter	Value	Unit
V_{DS}	68	V
$R_{DS(ON), typ}$ @ V_{GS}=10V	7.3	mΩ

Marking Information

Product Name	Package	Marking
OSH068N10PF	TO220	OSH068N10P

Package & Pin information





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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	68	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current[1], T_C=25 °C	I_D	76	A
Continuous drain current[1], T_C=100 °C		48	
Pulsed Drain Current [2]	$I_{D,pulse}$	300	A
Power Dissipation [3], T_C=25 °C	P_D	89	W
Single pulsed avalanche energy[4]	E_{AS}	175	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	$R_{\theta JC}$	1.4	°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}	68			V	V_{GS}=0 V, I_D=250 µA
Gate threshold voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=250 µA
Drain-source on-state resistance	$R_{DS(ON)}$		7.3	9.5	mΩ	V_{GS}=10 V, I_D=40 A
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=20V
				-100		V_{GS}=-20 V
Drain-source leakage current	I_{DSS}			1	µA	V_{DS}=68 V, V_{GS}=0 V, T_j=25 °C
				100		V_{DS}=68 V, V_{GS}=0 V, T_j=125 °C

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		3405		pF	V_{GS}=0 V, V_{DS}=25 V, f=100 KHz
Output capacitance	C_{oss}		301		pF	
Reverse transfer capacitance	C_{rss}		254		pF	
Turn-on delay time	$t_{d(on)}$		15		ns	V_{GS}=10 V, V_{DS}=30 V, R_G=6 Ω, I_D=20 A
Rise time	t_r		94		ns	
Turn-off delay time	$t_{d(off)}$		46		ns	
Fall time	t_f		32		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		91		nC	V_{GS}=10 V, V_{DS}=50 V, I_D=40 A
Gate-source charge	Q_{gs}		16		nC	
Gate-drain charge	Q_{gd}		43		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.2	V	I_S=30 A, V_{GS}=0 V

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) V_{DD}=30 V, V_{GS}=10 V, L=0.5 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

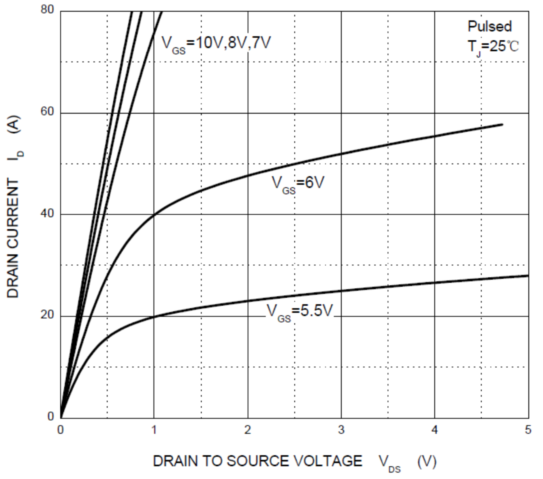


Figure 1. Typ. output characteristics

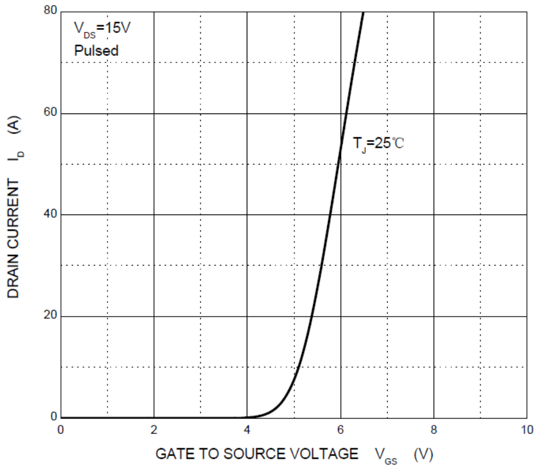


Figure 2. Typ. transfer characteristics

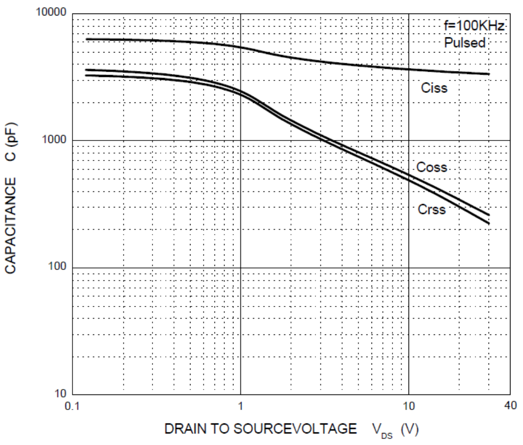


Figure 3. Typ. capacitances

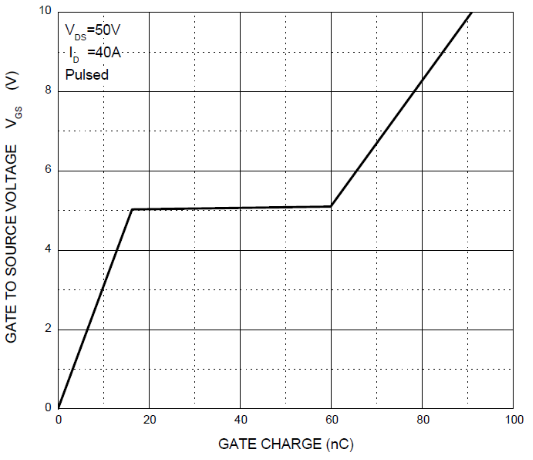


Figure 4. Typ. gate charge

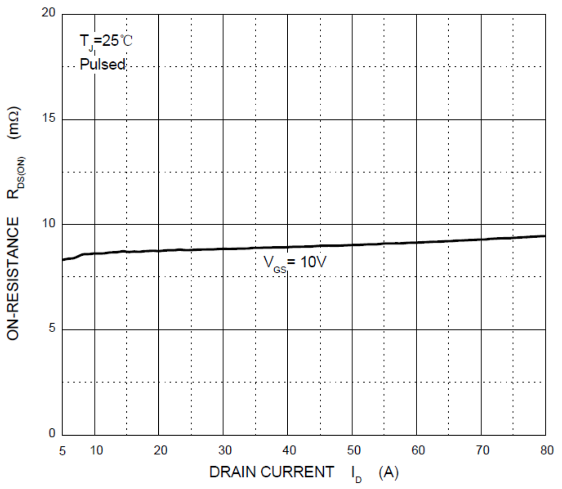


Figure 5. Rdson -Drain current

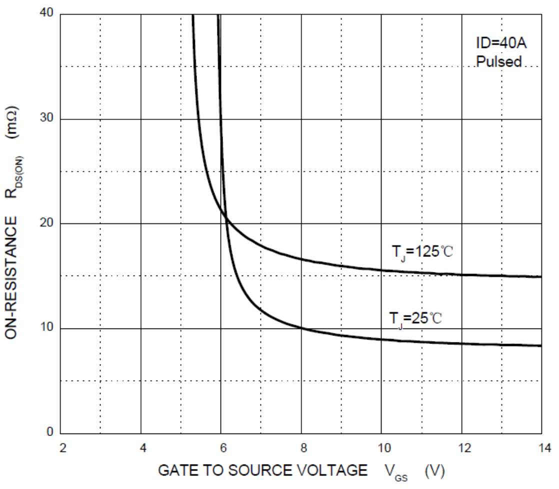
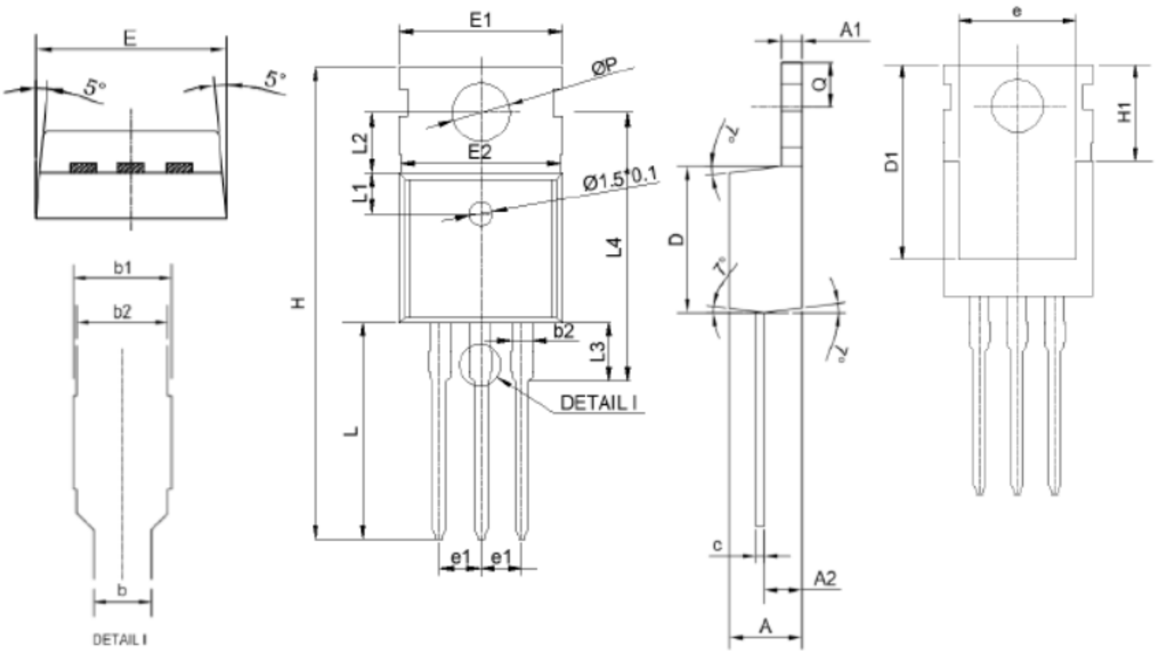


Figure 6. Vgs – Rdson

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.56	4.57	4.58
A1	1.28	1.30	1.32
A2	2.30	2.40	2.50
b	0.70	0.80	0.90
b1	1.27	1.37	1.47
b2	1.26	1.27	1.28
c	0.45	0.50	0.60
D	9.14	9.15	9.16
D1	13.2	13.21	13.22
E	9.95	10.05	10.15
E1	10.0	10.05	10.1
E2	9.87	9.88	9.89
e	7.50	8.00	8.40
e1	2.53	2.54	2.55
H	28.80	29.00	29.20
H1	6.40	6.50	6.60
L	13.05	13.35	13.65
L1	2.40	2.50	2.60
L2	3.60	3.70	3.80
L3	2.92	3.00	3.08
L4	15.82	15.90	15.98
Q	2.73	2.80	2.87
P	3.60	-	3.65

Version : TO220-G package outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220-G	50	20	1000	5	5000

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