Single P-Channel, -30V, -9.2A, Power MOSFET

Features

- ✧ High density cell design for Low $R_{DS(on)}$
- ✧ Green device available
- ✧ Small package : DFN2x2-6L
- ✧ Low gate charge

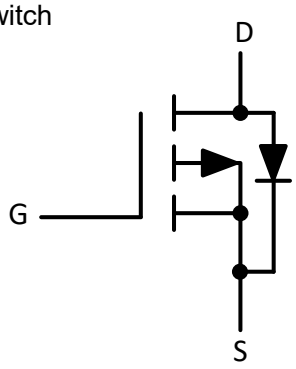
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
-30	19@ V_{GS}=-10V
	27@ V_{GS}=-4.5V

Applications

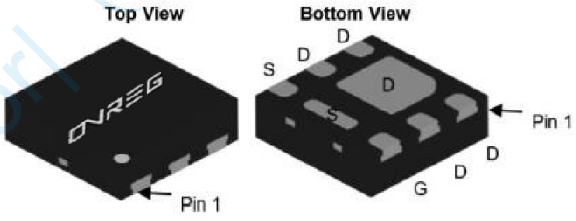
- ✧ High current load applications
- ✧ Load switch for portable devices
- ✧ Battery Switch

Mechanical Data

- ✧ UL Flame Rating : UL94V-0
- ✧ RoHS/WEEE Compliant



Circuit Diagram



DFN2x2-6L

Absolute Maximum Rating at T_A = 25 °C, unless otherwise specified

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	-30	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_A=25℃)	-9.2	A
	Drain Current-Continuous(T_A=100℃)	-5.8	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	-36.8	A
P_D	Maximum Power Dissipation(T_A=25℃)	3.2	W
	Maximum Power Dissipation(T_A=100℃)	1.3	W
E_{AS}	Avalanche energy (Note 2)	72	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

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Electrical Characteristics at T_A = 25 °C, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=-250μA	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V, V_{GS}=0V T_J=25℃			-1	μA
		V_{DS}=-30V, V_{GS}=0V T_J=125℃			-100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1		-2.5	V
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-5A		14		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-7.5A T_J=25℃		19	23.8	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-5A T_J=25℃		27	35.1	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1.0MHz		1020		pF
C_{oss}	Output Capacitance			125		pF
C_{rss}	Reverse Transfer Capacitance			115		pF
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		4.1		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=-10V, V_{DS}=-15V, R_L=2Ω, R_{GEN}=3Ω		8		nS
t_r	Turn-on Rise Time			3.5		nS
$t_{d(off)}$	Turn-Off Delay Time			37		nS
t_f	Turn-Off Fall Time			7		nS
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-15V, I_D=-7.5A		16		nC
Q_{gs}	Gate-Source Charge			2.5		nC
Q_{gd}	Gate-Drain Charge			3		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				-9.2	A
V_{SD}	Forward on Voltage (Note 3)	V_{GS}=0V, I_S=-7.5A			-1.2	V
t_{rr}	Reverse Recovery Time	I_F=-7.5A, dI/dt=-100A/μs		22		ns
Q_{rr}	Reverse Recovery Charge	I_F=-7.5A, dI/dt=-100A/μs		8		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=-30V,V_G=-10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient		39	℃/W

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Typical Characteristics at T_A = 25 °C, unless otherwise specified

Figure 1. Output Characteristics

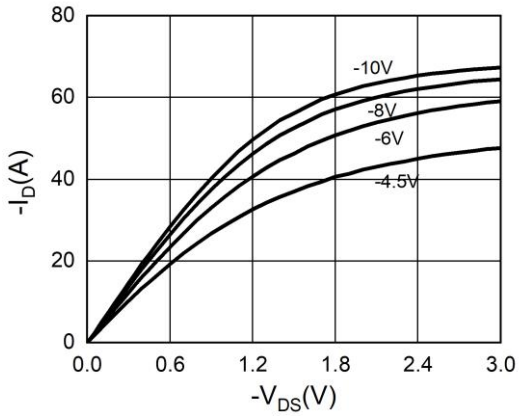


Figure 2. Transfer Characteristics

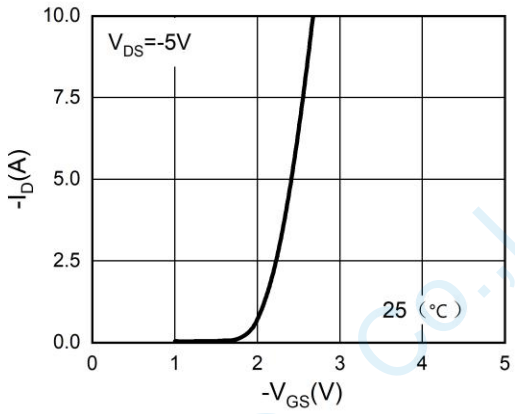


Figure 3. Power Dissipation

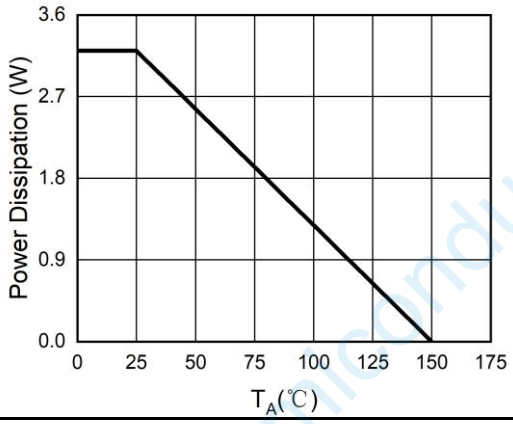


Figure 4. Drain Current

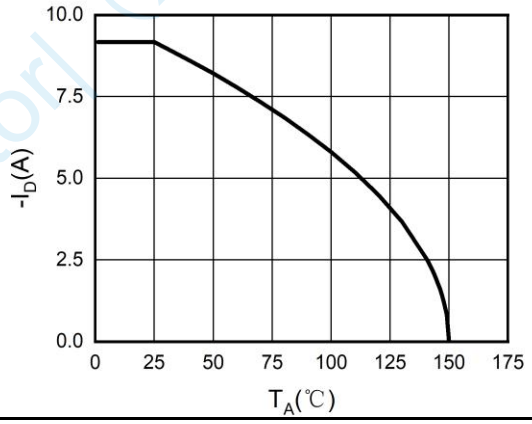


Figure 5. BV_{DSS} vs Junction Temperature

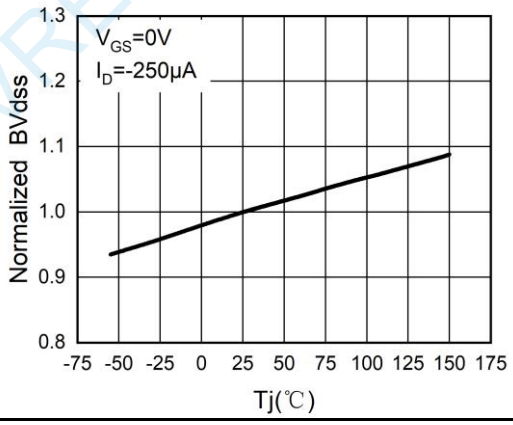
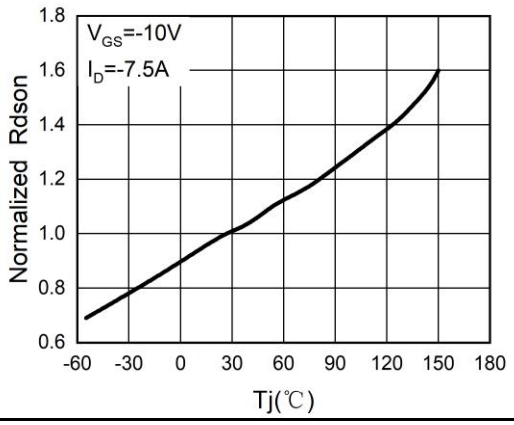


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



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Typical Characteristics at T_A = 25 °C, unless otherwise specified

Figure 7. Gate Charge Waveforms

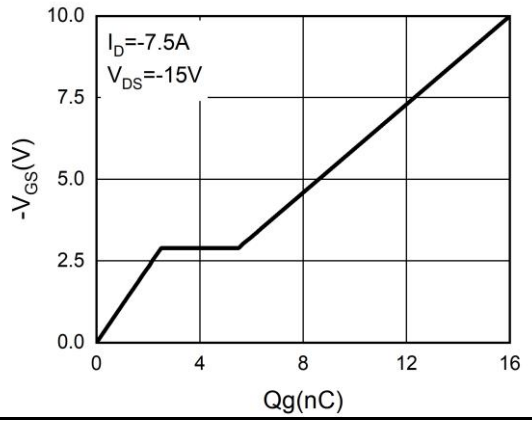


Figure 8. Capacitance

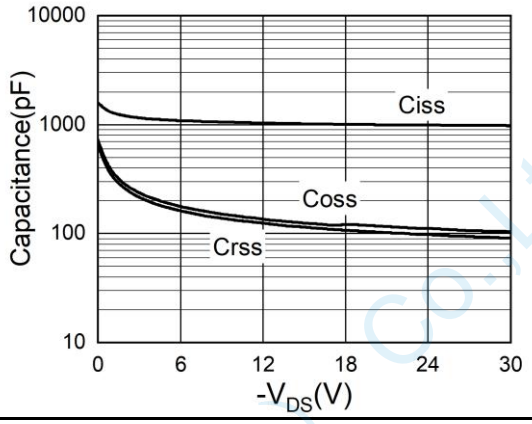


Figure 9. Body-Diode Characteristics

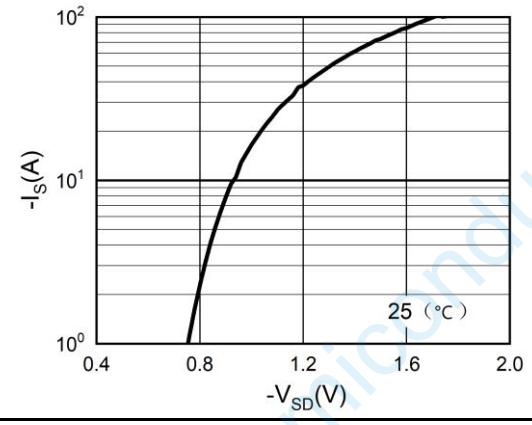
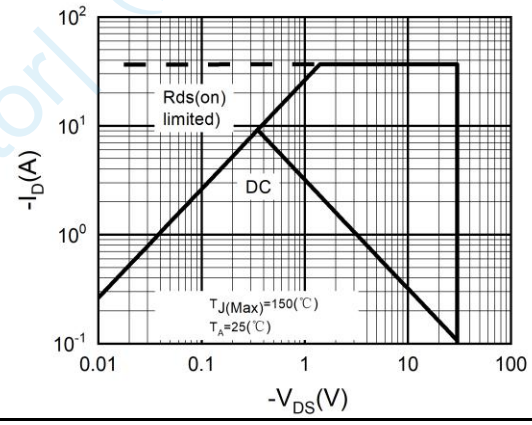


Figure 10. Maximum Safe Operating Area



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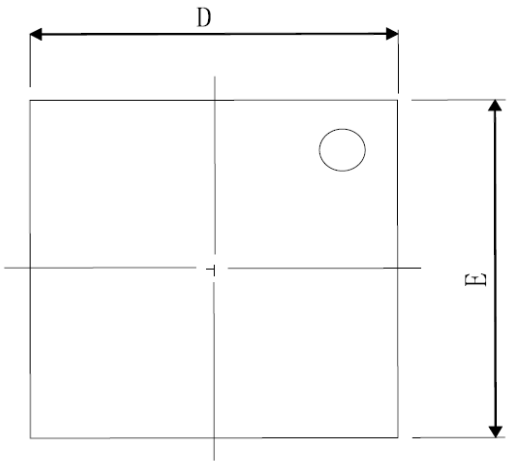
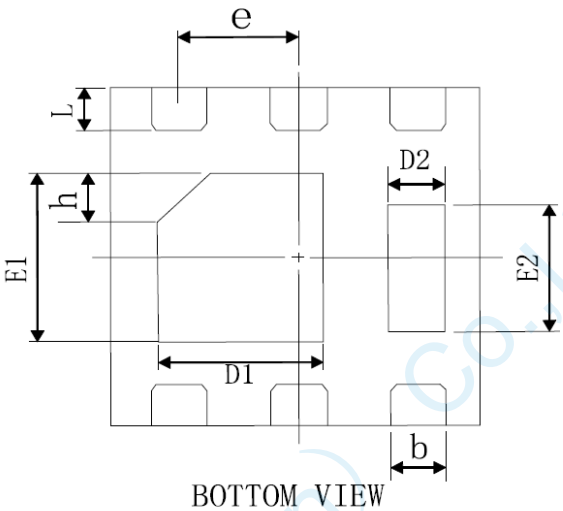
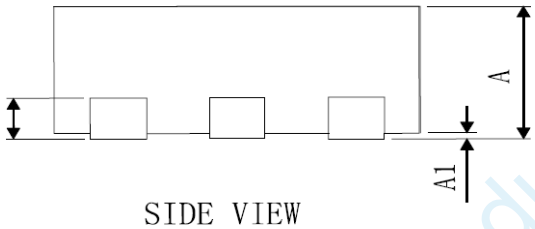
Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.20	0.25	0.30
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
c	0.203 REF		
e	0.65 BSC		

A	0.55	0.60	0.65
A	0.50	0.55	0.60

Marking



X:Date Code

Ordering Information

Part number	Material	Type	Reel size	MOQ
OVM30P19D2	GREEN	T/R	7 inch	5k/reel

OVREG Semiconductor (Xi'an) Co.,Ltd.