N-Channel, 100V, 61A, SGT Power MOSFET

Features

- ✧ High density cell design for Low $R_{DS(on)}$
- ✧ Green device available
- ✧ Small package : PDFN5x6
- ✧ Low gate charge
- ✧ 100% UIS Tested, 100% DVDS Tested

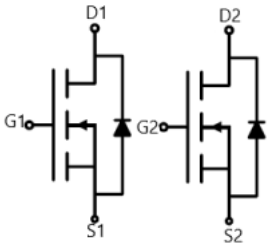
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
100	11.7 @ V_{GS}=4.5V
	9.3 @ V_{GS}=10V

Applications

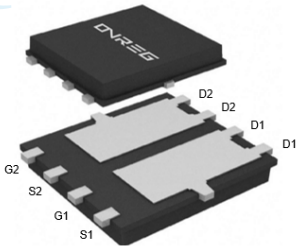
- ✧ High current load applications
- ✧ Load switch for portable devices
- ✧ Battery Switch

Mechanical Data

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



Circuit Diagram



PDFN5x6

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	100	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_C=25℃)	61	A
	Drain Current-Continuous(T_C=100℃)	39	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	244	A
P_D	Maximum Power Dissipation(T_C=25℃)	73	W
	Maximum Power Dissipation(T_C=100℃)	29	W
E_{AS}	Avalanche energy (Note 2)	196	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

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

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	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V T_J=25℃			1	μA
		V_{DS}=100V, 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}=10V, I_D=20A		26.4		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A T_J=25℃		9.3	11.6	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=20A T_J=25℃		11.7	15.2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V, f=1.0MHz		1406		pF
C_{oss}	Output Capacitance			494		pF
C_{rss}	Reverse Transfer Capacitance			16.4		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		1.12		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=50V, R_L=2.5Ω, R_{GEN}=6Ω		7.5		nS
t_r	Turn-on Rise Time			15.8		nS
$t_{d(off)}$	Turn-Off Delay Time			31		nS
t_f	Turn-Off Fall Time			28		nS
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=50V, I_D=20A		26		nC
Q_{gs}	Gate-Source Charge			4.3		nC
Q_{gd}	Gate-Drain Charge			6.7		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				61	A
V_{SD}	Forward on Voltage (Note 3)	V_{GS}=0V, I_S=20A			1.2	V
t_{rr}	Reverse Recovery Time	I_F=20A, dI/dt=100A/S		43		ns
Q_{rr}	Reverse Recovery Charge	I_F=20A, dI/dt=100A/S		35		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=40V,V_G=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

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

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

Figure 1. Output Characteristics

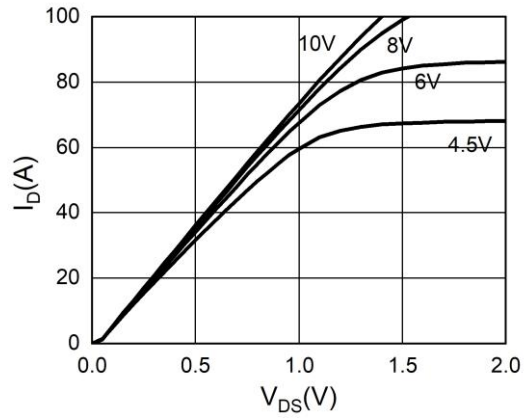


Figure 2. Transfer Characteristics

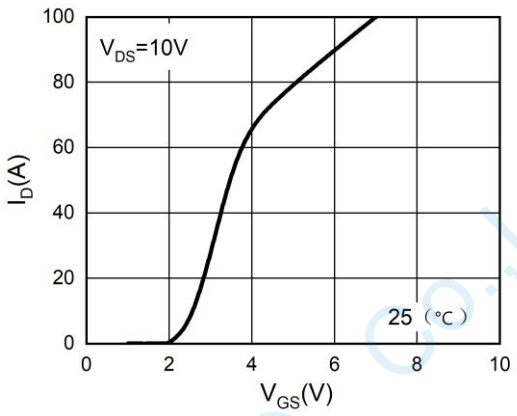


Figure 3. Power Dissipation

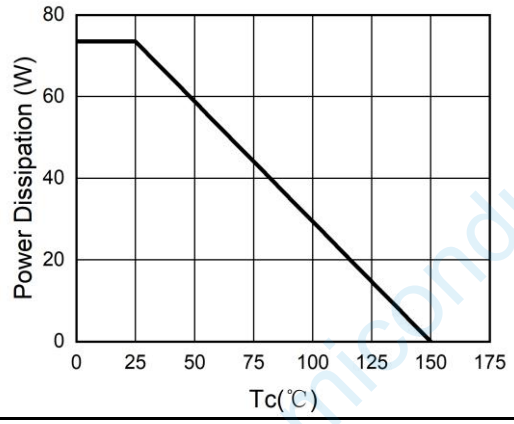


Figure 4. Drain Current

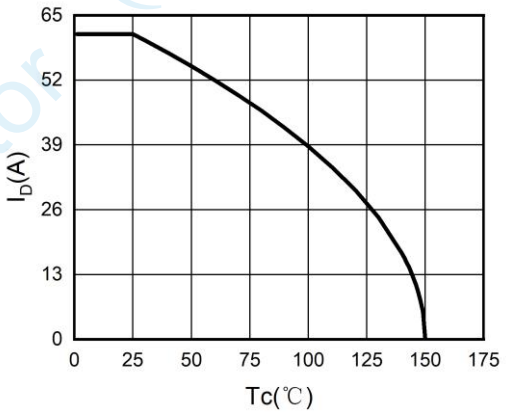


Figure 5. BV_{DSS} vs Junction Temperature

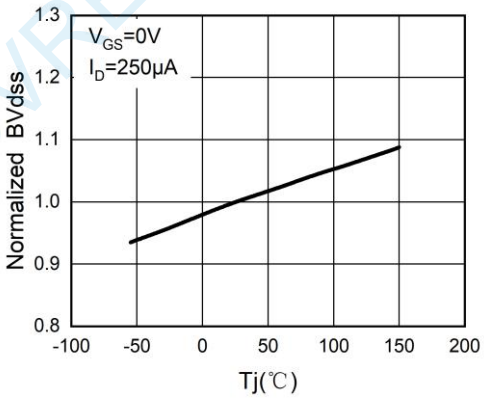
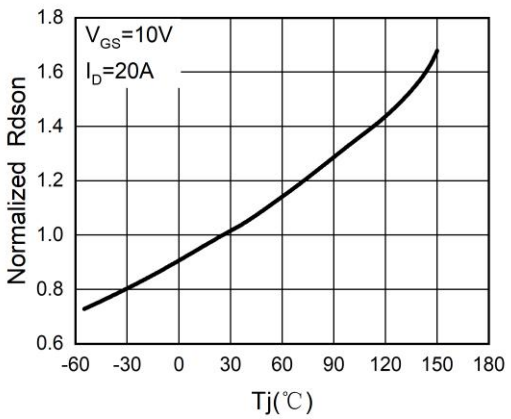


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



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

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

Figure 7. Gate Charge Waveforms

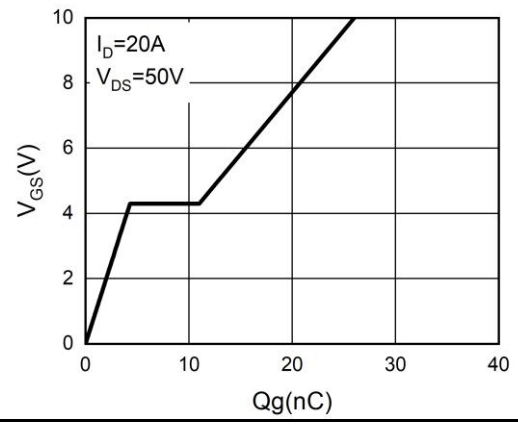


Figure 8. Capacitance

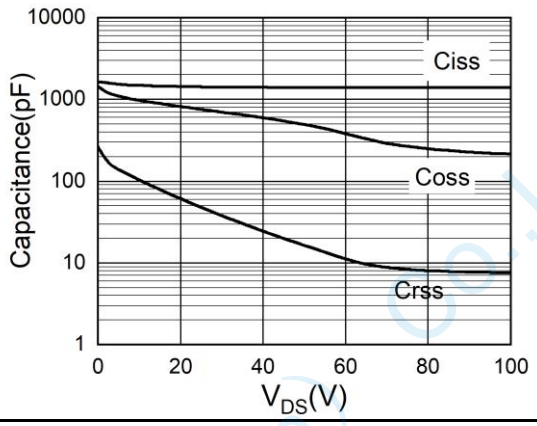


Figure 9. Body-Diode Characteristics

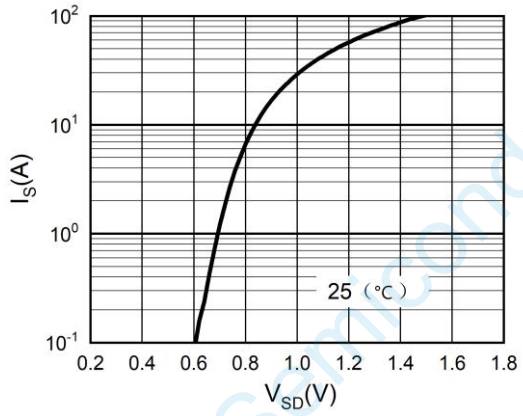
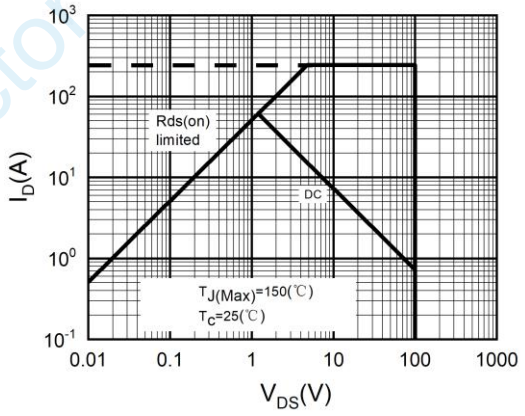
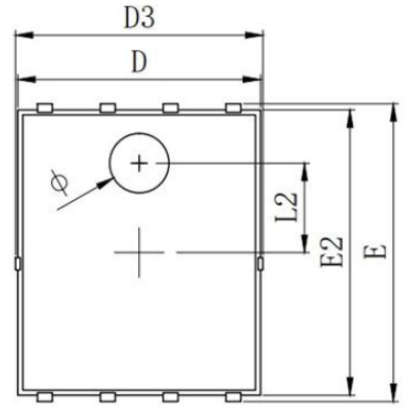


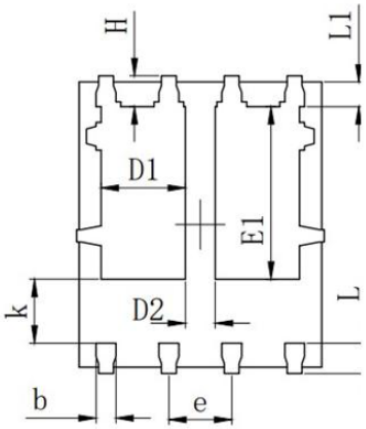
Figure 10. Maximum Safe Operating Area

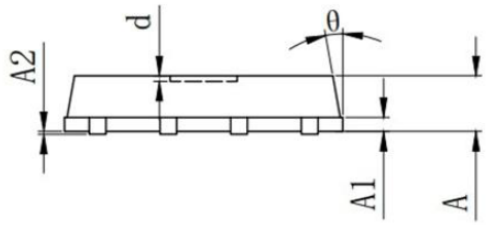


OVREG Semiconductor (xi'an) Co.,Ltd.

Package Information







SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	1.605	1.705	1.805
D2	0.500	0.600	0.700
D3	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100

Marking



X: DATE CODE

Ordering Information

Part number	Material	Type	Reel size	MOQ
OVM100N09D5	GREEN	T/R	13 inch	5k/reel

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