Single N-Channel, 30V, 7mΩ, Power MOSFET

Features

- ✧ High density cell design for Low $R_{DS(on)}$
- ✧ Green device available
- ✧ Small package : SOP-8
- ✧ Low gate charge

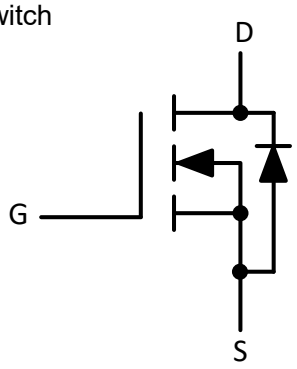
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
30	9.5 @ V_{GS}=4.5V
	7.0 @ V_{GS}=10V

Applications

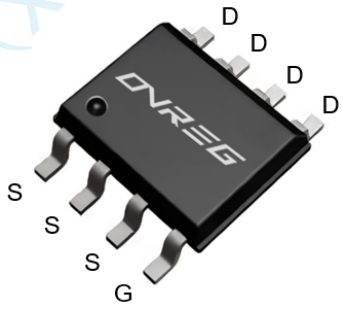
- ✧ PWM Application
- ✧ Load switch for portable devices
- ✧ Battery Switch

Mechanical Data

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



Circuit Diagram



SOP-8

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

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25 ℃	I_D	13	A
	T_C=100℃		8	
Power Dissipation	T_C=25 ℃	P_D	3	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	42	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +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=20A		18		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A T_J=25℃		7	9	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=15A T_J=25℃		9.5	12.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz		1264		pF
C_{oss}	Output Capacitance			254		pF
C_{rss}	Reverse Transfer Capacitance			201		pF
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		1.8		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=15V, R_L=0.75Ω, R_{GEN}=3Ω		12		nS
t_r	Turn-on Rise Time			2.4		nS
$t_{d(off)}$	Turn-Off Delay Time			30.4		nS
t_f	Turn-Off Fall Time			4		nS
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=20A		21.6		nC
Q_{gs}	Gate-Source Charge			2.7		nC
Q_{gd}	Gate-Drain Charge			4.7		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				13.4	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=500A/μs		19.4		ns
Q_{rr}	Reverse Recovery Charge	I_F=20A, dI/dt=500A/μs		11.6		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.

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

Figure 1. Output Characteristics

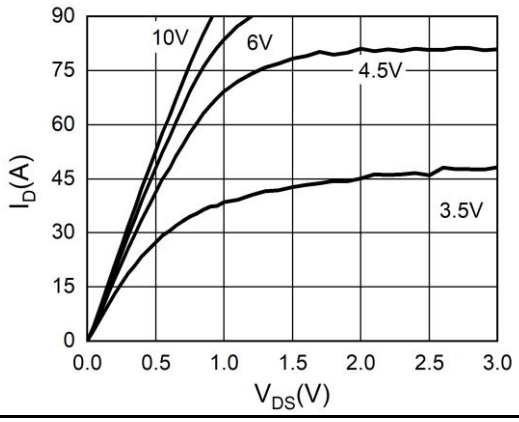


Figure 2. Transfer Characteristics

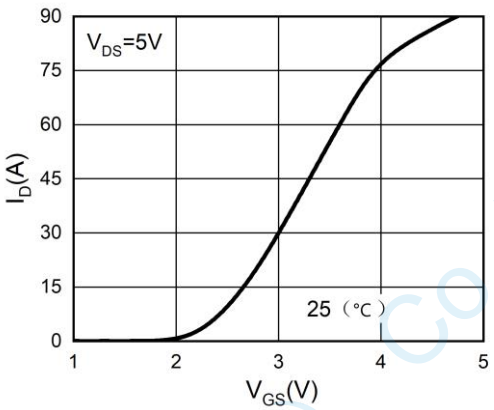


Figure 3. Power Dissipation

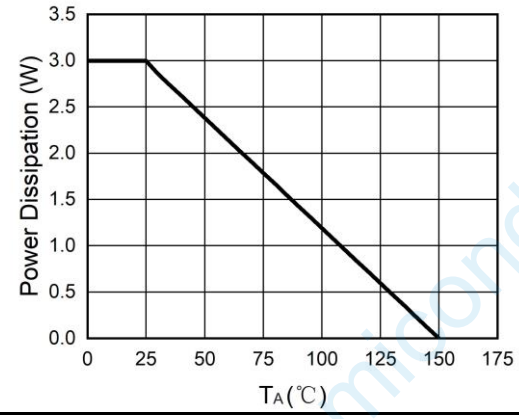


Figure 4. Drain Current

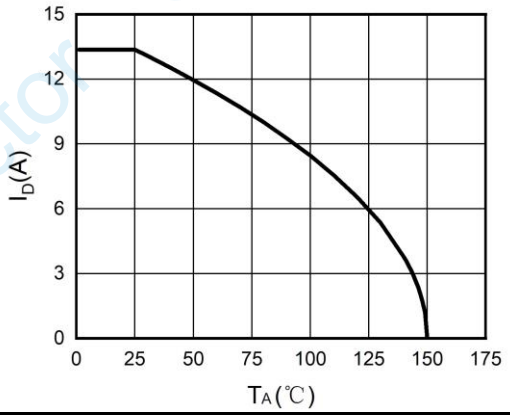


Figure 5. BV_{DSS} vs Junction Temperature

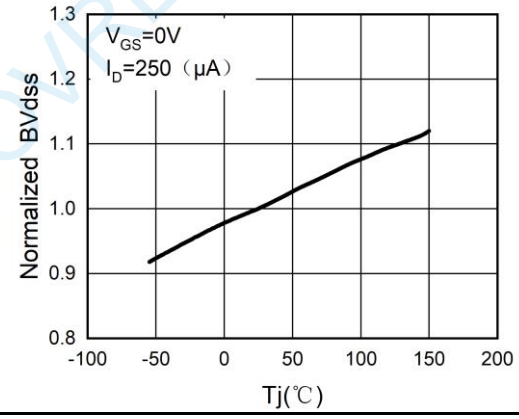
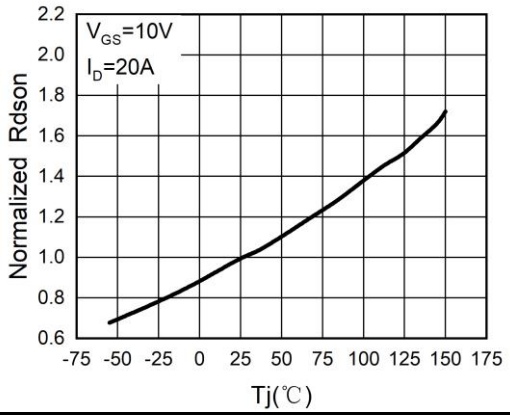


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



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

Figure 7. Gate Charge Waveforms

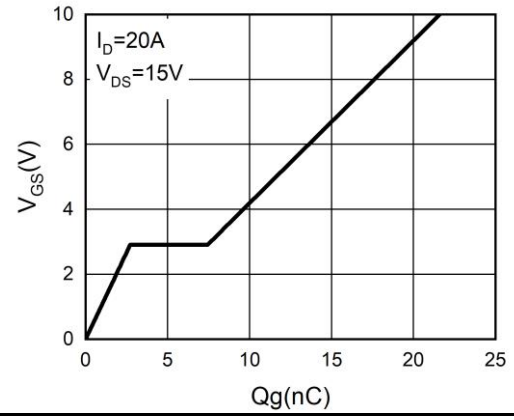


Figure 8. Capacitance

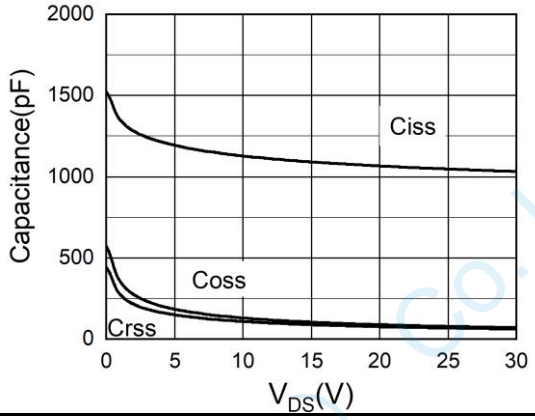


Figure 9. Body-Diode Characteristics

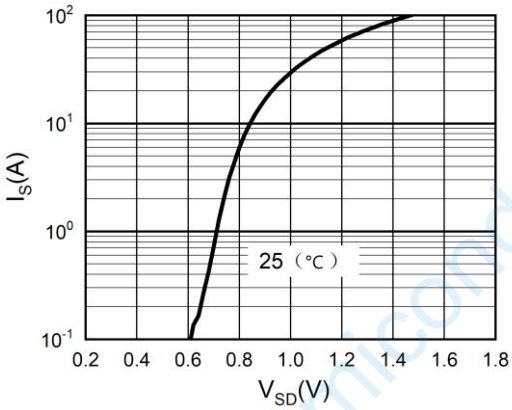
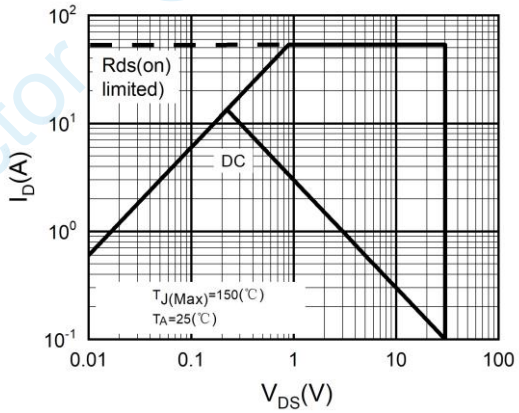


Figure 10. Maximum Safe Operating Area



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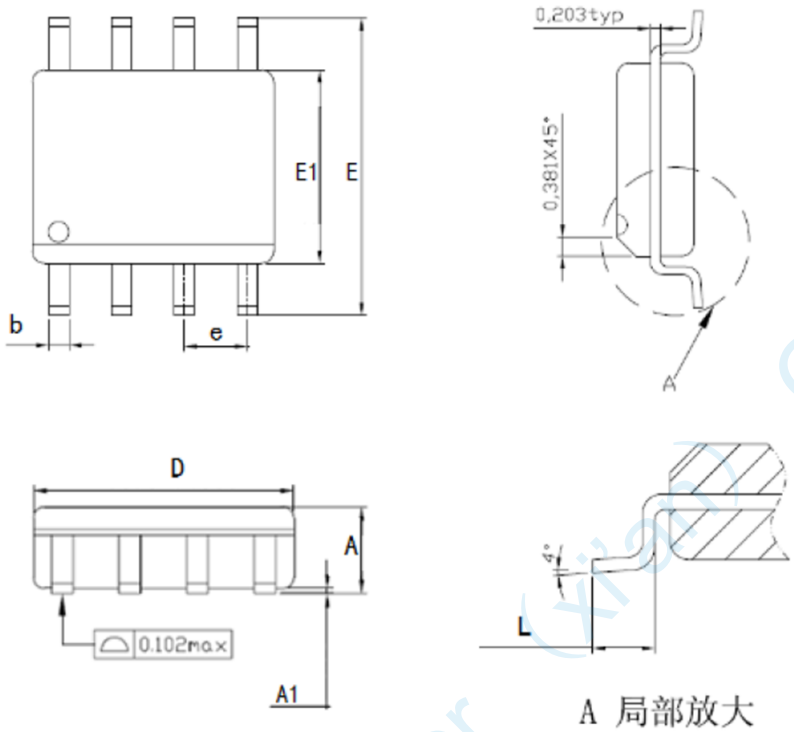
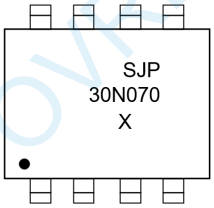
Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max
A	1.35	1.55	1.75
A1	0.1	0.15	0.2
b	0.346	0.406	0.466
D	4.8	4.89	4.98
E	5.75	6.00	6.25
E1	3.81	3.90	3.99
e	1.27TYP		
L	0.406	0.838	1.27

Marking



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Ordering Information

Part number	Material	Type	Reel size	MOQ
OVM30N07P	GREEN	T/R	13 inch	4k/reel

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