Single P-Channel, -30V, -6A, Power MOSFET

Features

- ✧ Trench Technology
- ✧ Supper high density cell design
- ✧ Excellent ON resistance
- ✧ Extremely Low Threshold Voltage
- ✧ Small package SOT-23

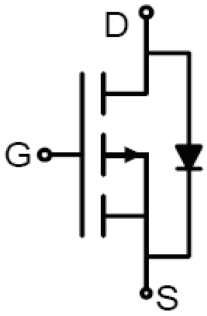
V_{DS} (V)	Max $R_{DS(on)}$ (mΩ)
-30	34.5@ V_{GS}=-10V
	45.9 @ V_{GS}=-4.5V

Applications

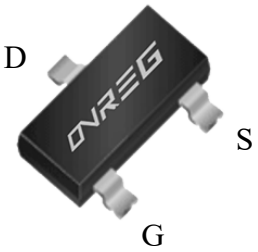
- ✧ PWM applications
- ✧ Power supply converters circuit
- ✧ Load/Power Switching for portable device

Mechanical Data

- ✧ UL Flame Rating : UL94V-0
- ✧ Reel Size : 7 inch
- ✧ RoHS/WEEE Complain



Circuit Diagram



SOT-23

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℃)	-6	A
	Drain Current-Continuous(T_A=100℃)	-2.9	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	-18	A
P_D	Maximum Power Dissipation(T_A=25℃)	1.1	W
	Maximum Power Dissipation(T_A=100℃)	0.45	W
E_{AS}	Avalanche energy (Note 2)	36	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	-0.9		-2.5	V
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-5A		9.3		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-5A T_J=25℃		26.5	34.5	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-4A T_J=25℃		34.5	45.9	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1.0MHz		781		pF
C_{oss}	Output Capacitance			99		pF
C_{rss}	Reverse Transfer Capacitance			83		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		4.4		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=-10V, V_{DS}=-15V, R_L=3Ω, R_{GEN}=3Ω		8		nS
t_r	Turn-on Rise Time			16		nS
$t_{d(off)}$	Turn-Off Delay Time			45		nS
t_f	Turn-Off Fall Time			33		nS
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-15V, I_D=-5A		8		nC
Q_{gs}	Gate-Source Charge			2		nC
Q_{gd}	Gate-Drain Charge			2		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				-4.5	A
V_{SD}	Forward on Voltage (Note 3)	V_{GS}=0V, I_S=-5A			-1.2	V
t_{rr}	Reverse Recovery Time	I_F=-5A, dI/dt=100A/μs		8		ns
Q_{rr}	Reverse Recovery Charge	I_F=-5A, dI/dt=100A/μs		3		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		110	℃/W

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

Figure 1. Output Characteristics

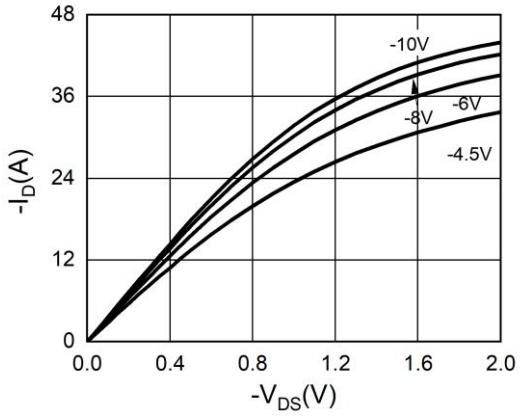


Figure 2. Transfer Characteristics

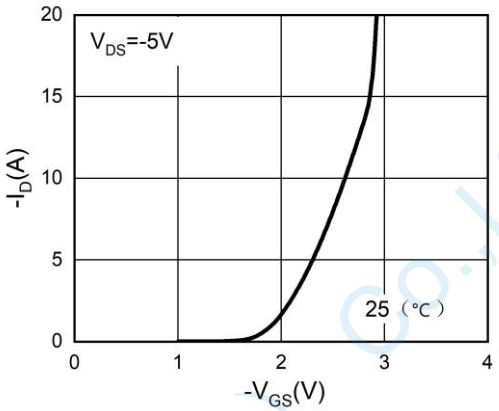


Figure 3. Power Dissipation

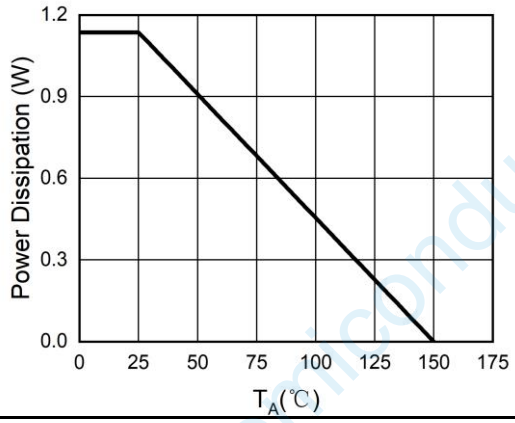


Figure 4. Drain Current

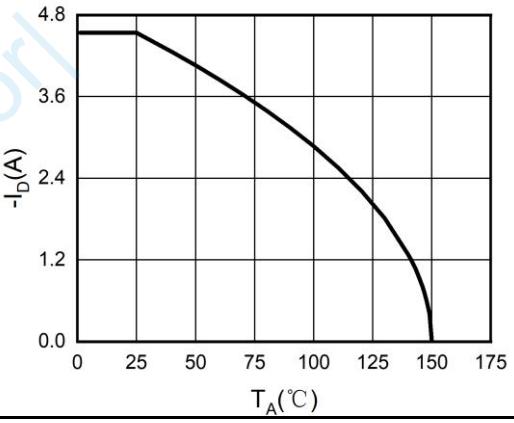


Figure 5. BV_{DSS} vs Junction Temperature

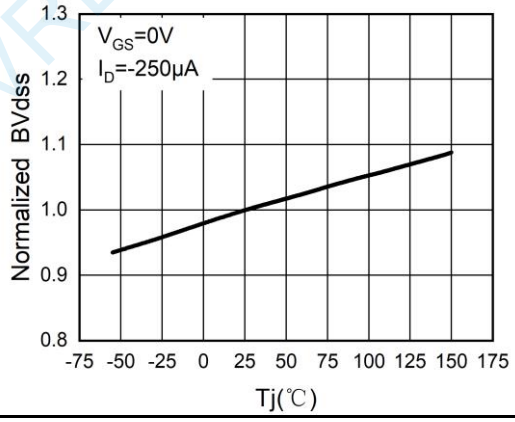
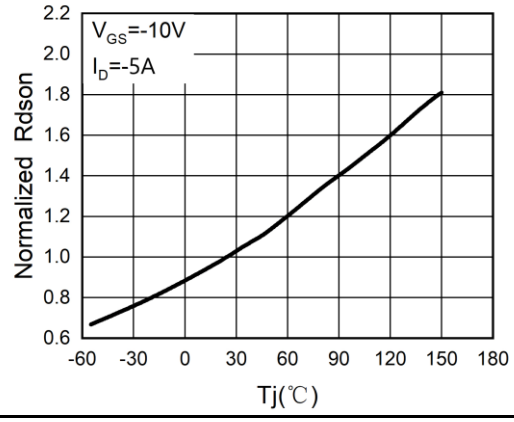


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



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

Figure 7. Gate Charge Waveforms

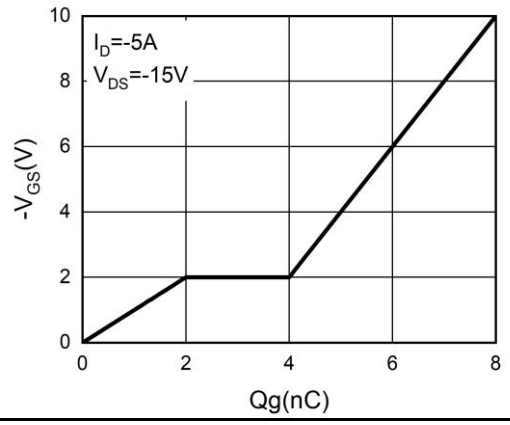


Figure 8. Capacitance

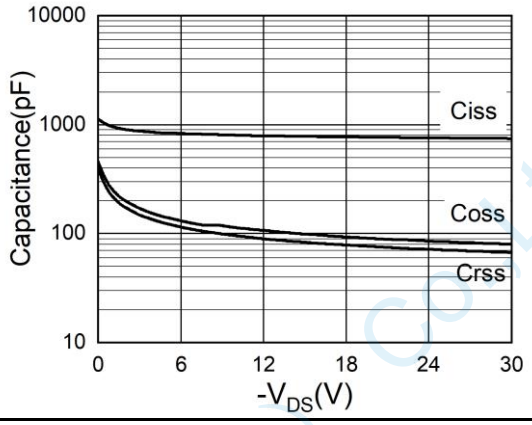


Figure 9. Body-Diode Characteristics

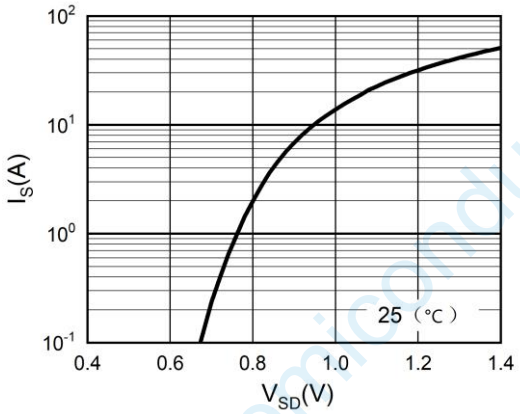
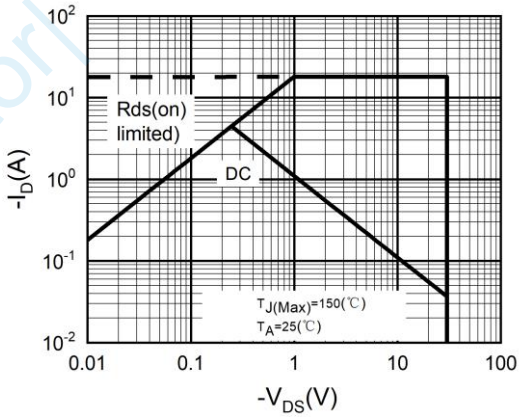


Figure 10. Maximum Safe Operating Area



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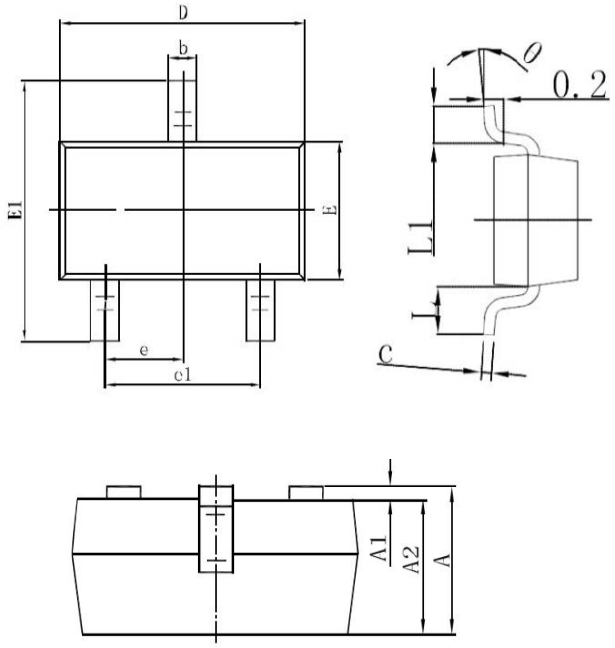
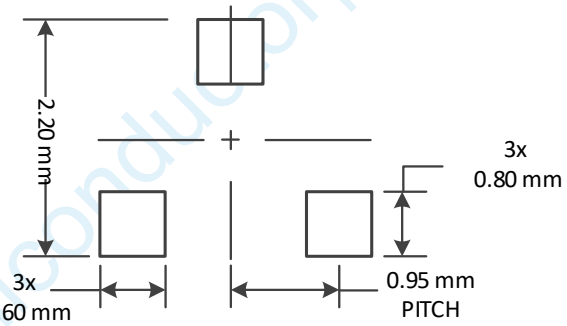
Package Information



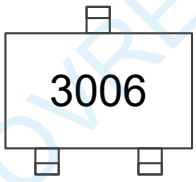
SYMBOL	MIN	NOM	MAX
A	0.90	1.05	1.20
A1	0.00	0.05	0.10
A2	0.90	1.00	1.10
b	0.30	0.40	0.50
c	0.08	0.10	0.15
D	2.80	2.90	3.00
E	1.20	1.30	1.40
E1	2.30	2.40	2.50
L	0.30	0.40	0.50
θ	0°	5°	10°
L1	0.55 REF		
e	0.95 BSC		
e1	1.90 REF		

Recommend PCB Layout



Notes: This PCB Layout Is For Reference Purposes Only

Marking



Ordering Information

Part number	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
OVM30P25T	GREEN	T/R	7 inch	3k/reel	10reel= 30k/box	4boxes=120k/carton