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XINBOLE

Product Specification

AON7380

N-Channel Enhancement Mode MOSFET

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RoHS

Descriptions

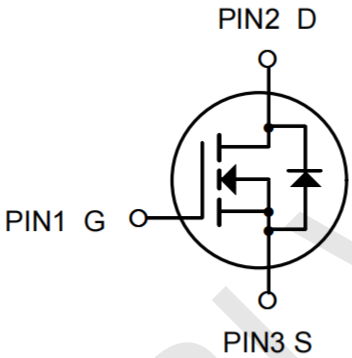
The AON7380 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Features

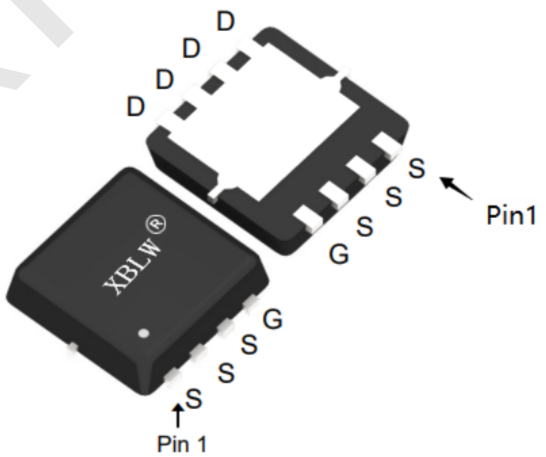
- V_{DS} = 30V, I_D = 35A
- $R_{DS(ON)}$ <10mΩ @ V_{GS}=10V

Applications

- Battery protection
- Load switch
- Uninterruptible power supply



N-Channel MOSFET



DFN3X3-8L

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
AON7380	DFN3x3-8L	AON7380	Tape	5000Pcs/Reel

Absolute Maximum Ratings (T_C=25 °C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	35	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V[1]	25	A
I_{DM}	Pulsed Drain Current	112	A
EAS	Single Pulse Avalanche Energy[3]	24.2	mJ
I_{AS}	Avalanche Current	22	A
P_D@T_C=25°C	Total Power Dissipation[4]	37.5	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	4	°C/W

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	30	---	---	V
△BV_{DSS}/△T_J	BVDSS Temperature Coefficient	Reference to 25°C,I_D=1mA	---	0.0193	---	V/°C
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V,I_D=30A	---	7.5	10	mΩ
		V_{GS}=4.5V,I_D=15A	---	11	18	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS},I_D =250uA	1.2	---	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-3.97	---	mV/°C
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V,V_{GS}=0V,T_J=25°C	---	---	1	uA
		V_{DS}=24V,V_{GS}=0V,T_J=55°C	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V,I_D=30A	---	34	---	S
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V , f=1MHz	---	1.8	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V,V_{GS}=4.5V, I_D=15A	---	9.8	---	nC
Q_{gs}	Gate-Source Charge		---	4.2	---	
Q_{gd}	Gate-Drain Charge		---	3.6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,V_{GS}=10V, R_G=3.3Ω I_D=15A	---	4	---	ns
T_r	Rise Time		---	8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	31	---	
T_f	Fall Time		---	4	---	
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V,f=1MHz	---	940	---	pF
C_{oss}	Output Capacitance		---	131	---	
C_{rss}	Reverse Transfer Capacitance		---	109	---	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V,Force Current	---	---	43	A
I_{SM}	Pulsed Source Current[2,5]		---	---	112	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25°C	---	---	1	V
t_{rr}	Reverse Recovery Time	I_F=30A, dI/dt=100A/μs, T_J=25°C	---	8.5	---	nS
Q_{rr}	Reverse Recovery Charge		---	2.2	---	nC

Note :

1 .The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

3 .The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=22A.

4.The power dissipation is limited by 175°C junction temperature.

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

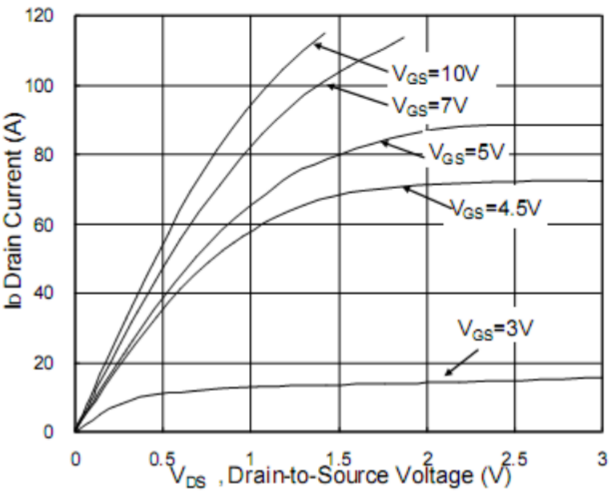


Fig.1 Typical Output Characteristics

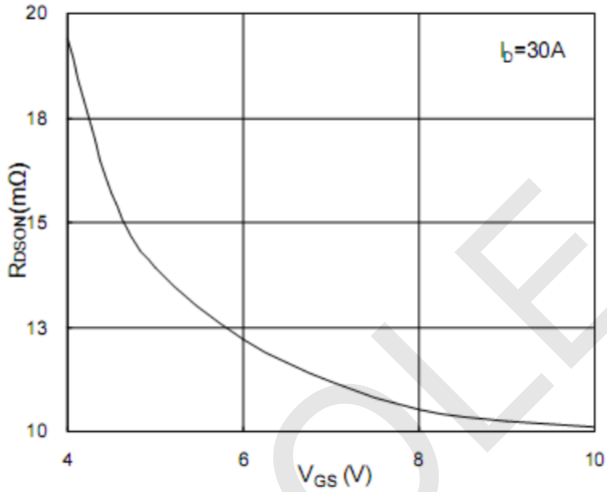


Fig.2 On-Resistance vs. G-S Voltage

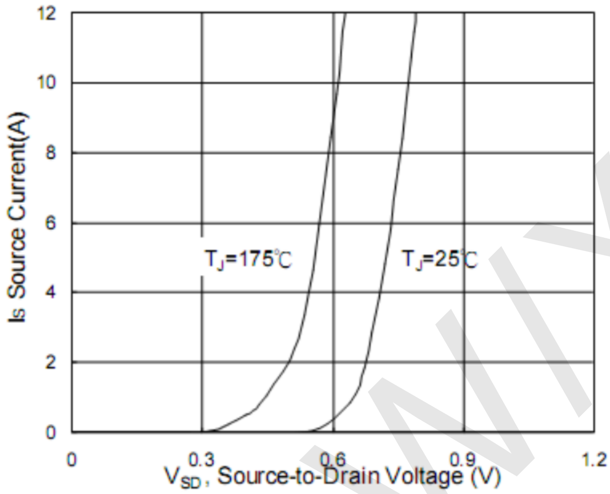


Fig.3 Forward Characteristics of Reverse

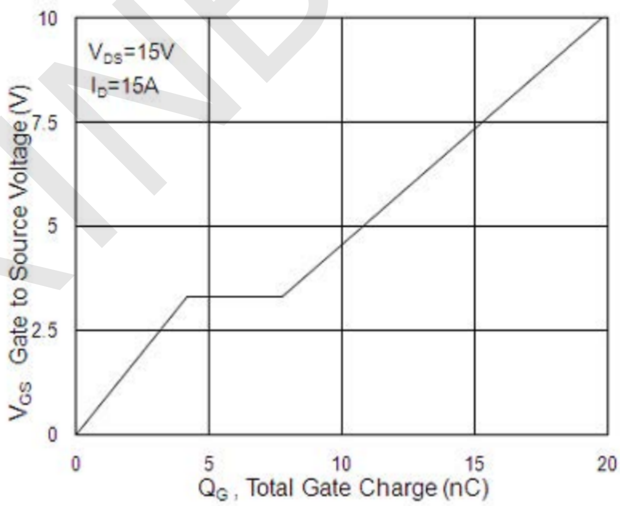


Fig.4 Gate-Charge Characteristics

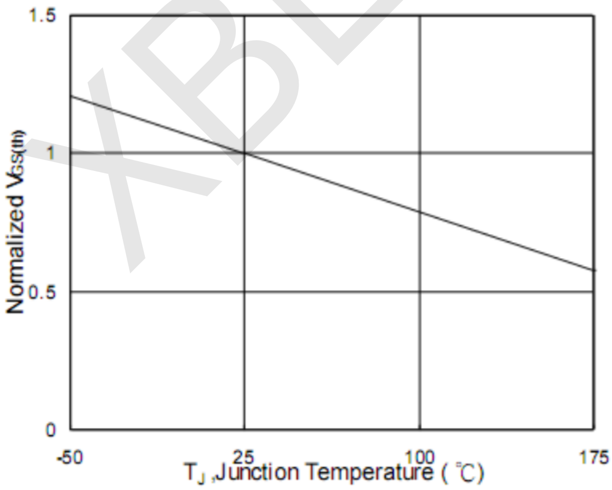


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

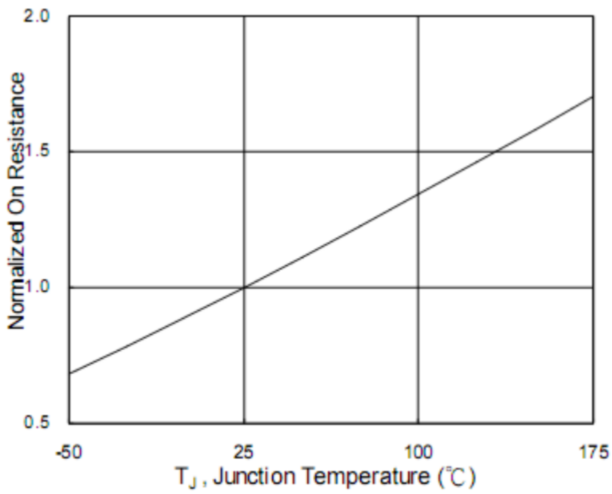


Fig.6 Normalized R_{DSON} vs. T_J

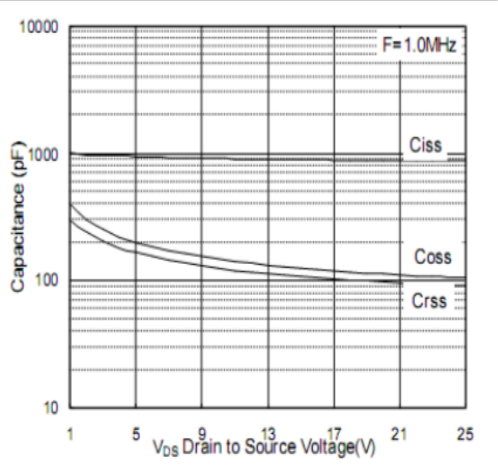


Fig 7. Capacitance

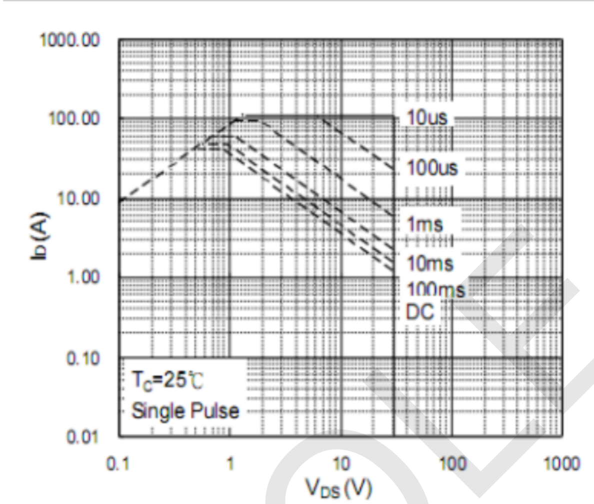


Fig 8. Safe Operating Area

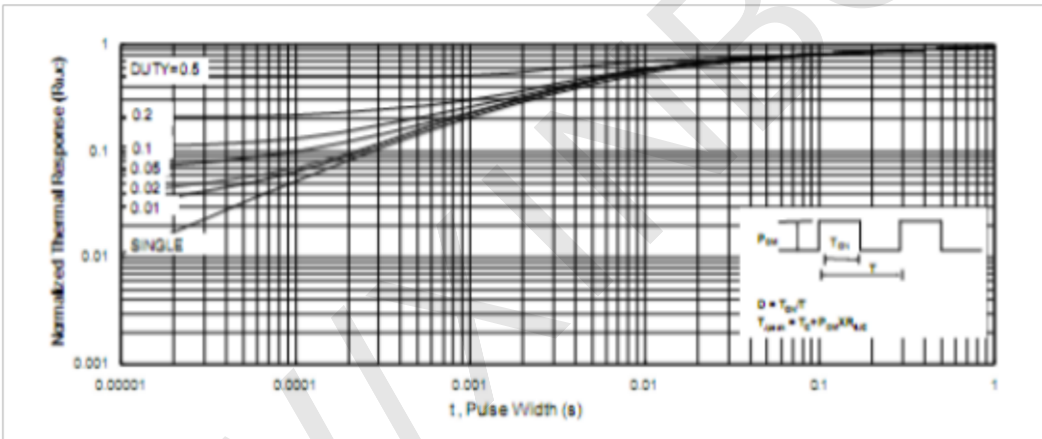


Fig 9. Normalized Maximum Transient Thermal Impedance

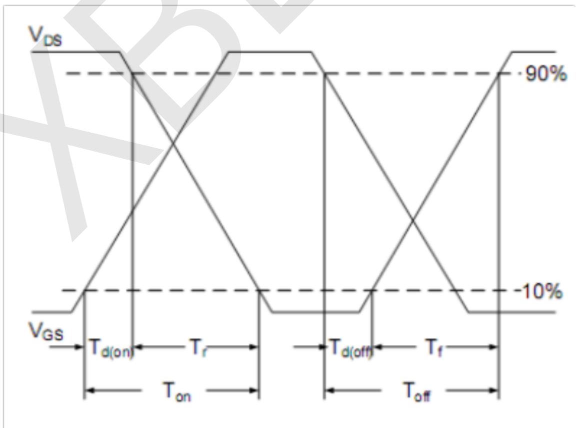


Fig 10.Switching Time Waveform

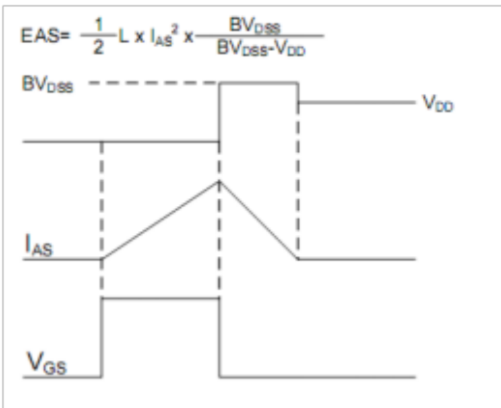
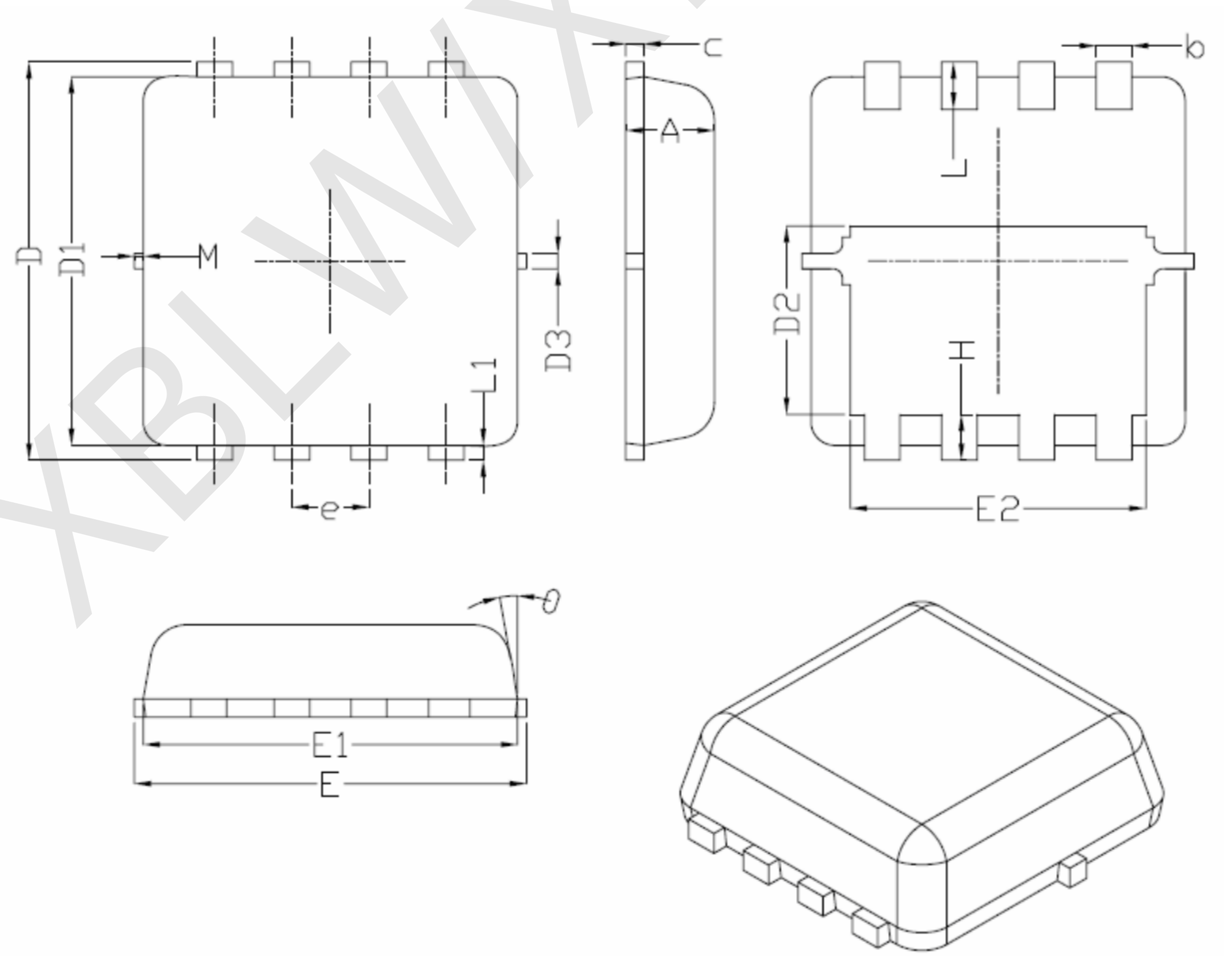


Fig 11. Unclamped Inductive Switching Waveform

Package Information

Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°



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