



Product Specification

AON7400A

N-Channel Enhancement Mode MOSFET

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Descriptions

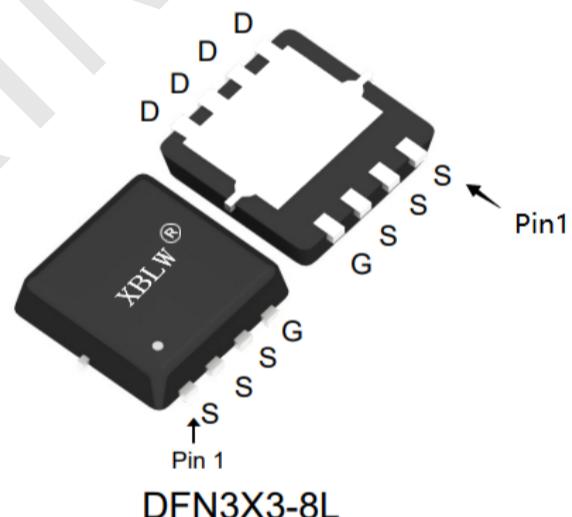
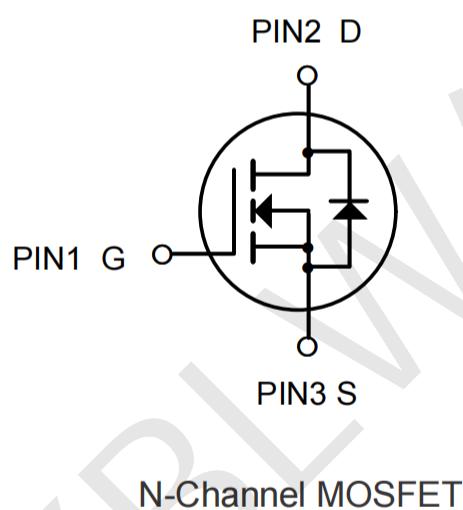
The AON7400A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Features

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

Applications

- Battery protection
- Load switch
- Uninterruptible power supply



Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
AON7400A	DFN3X3-8L	AON7400A	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 _{θJA}	Thermal Resistance Junction-Ambient ¹	62	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	4	°C/W

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_{\text{D}}=250\text{uA}$	30	---	---	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to $25^\circ\text{C}, \text{I}_{\text{D}}=1\text{mA}$	---	0.019 3	---	$\text{V}/^\circ\text{C}$
$\text{R}_{\text{DS}(\text{ON})}$	Static Drain-Source On-Resistance ²	$\text{V}_{\text{GS}}=10\text{V}, \text{I}_{\text{D}}=30\text{A}$	---	7.5	10	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4.5\text{V}, \text{I}_{\text{D}}=15\text{A}$	---	11	18	
$\text{V}_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$\text{V}_{\text{GS}}=\text{V}_{\text{DS}}, \text{I}_{\text{D}}=250\text{uA}$	1.2	---	2.5	V
$\Delta \text{V}_{\text{GS}(\text{th})}$	$\text{V}_{\text{GS}(\text{th})}$ Temperature Coefficient		---	-3.97	---	$\text{mV}/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=24\text{V}, \text{V}_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	---	---	1	uA
		$\text{V}_{\text{DS}}=24\text{V}, \text{V}_{\text{GS}}=0\text{V}, T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$\text{V}_{\text{GS}}=\pm 20\text{V}, \text{V}_{\text{DS}}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=5\text{V}, \text{I}_{\text{D}}=30\text{A}$	---	34	---	S
R_{g}	Gate Resistance	$\text{V}_{\text{DS}}=0\text{V}, \text{V}_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	1.8	---	Ω
Q_{g}	Total Gate Charge (4.5V)	$\text{V}_{\text{DS}}=15\text{V}, \text{V}_{\text{GS}}=4.5\text{V}, \text{I}_{\text{D}}=15\text{A}$	---	9.8	---	nC
Q_{gs}	Gate-Source Charge		---	4.2	---	
Q_{gd}	Gate-Drain Charge		---	3.6	---	
$\text{T}_{\text{d}(\text{on})}$	Turn-On Delay Time	$\text{V}_{\text{DD}}=15\text{V}, \text{V}_{\text{GS}}=10\text{V}, \text{R}_{\text{G}}=3.3\Omega, \text{I}_{\text{D}}=15\text{A}$	---	4	---	ns
T_r	Rise Time		---	8	---	
$\text{T}_{\text{d}(\text{off})}$	Turn-Off Delay Time		---	31	---	
T_f	Fall Time		---	4	---	
C_{iss}	Input Capacitance	$\text{V}_{\text{DS}}=15\text{V}, \text{V}_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	940	---	pF
C_{oss}	Output Capacitance		---	131	---	
C_{rss}	Reverse Transfer Capacitance		---	109	---	
I_{s}	Continuous Source Current ^{1,5}	$\text{V}_{\text{G}}=\text{V}_{\text{D}}=0\text{V}, \text{Force Current}$	---	---	43	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	112	A
V_{SD}	Diode Forward Voltage ²	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_{\text{s}}=1\text{A}, T_J=25^\circ\text{C}$	---	---	1	V
t_{rr}	Reverse Recovery Time	$\text{I}_{\text{F}}=30\text{A}, \text{dI}/\text{dt}=100\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$	---	8.5	---	nS
Q_{rr}	Reverse Recovery Charge		---	2.2	---	nC

Note :

- 1 .The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3 .The EAS data shows Max. rating . The test condition is $\text{V}_{\text{DD}}=25\text{V}, \text{V}_{\text{GS}}=10\text{V}, \text{L}=0.1\text{mH}, \text{I}_{\text{AS}}=22\text{A}$.
- 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

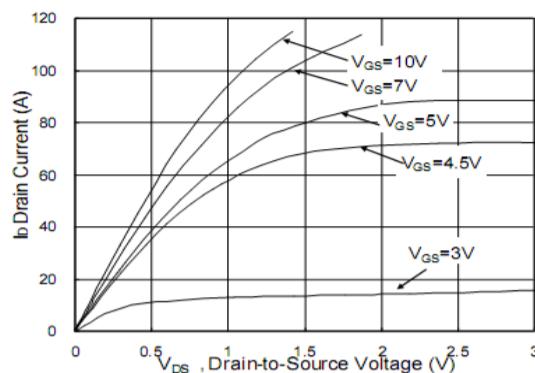


Fig.1 Typical Output Characteristics

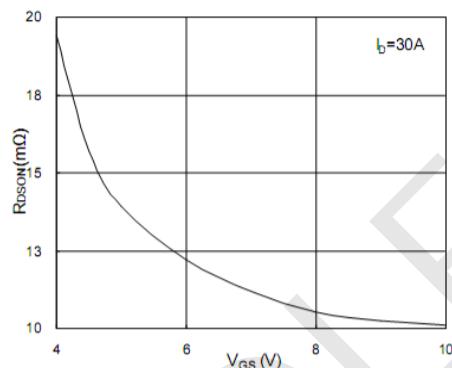


Fig.2 On-Resistance vs. G-S Voltage

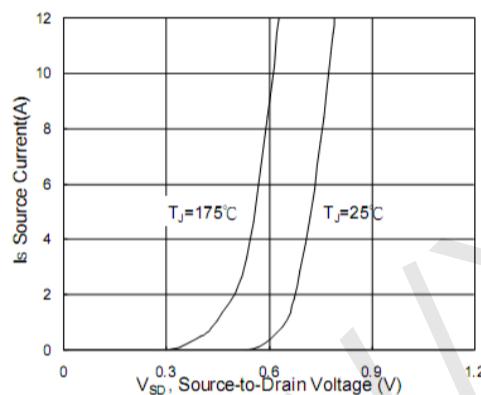


Fig.3 Forward Characteristics of Reverse

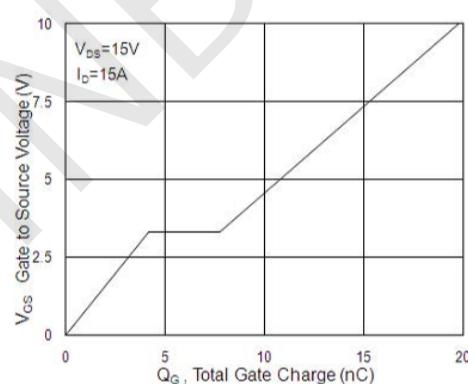


Fig.4 Gate-Charge Characteristics

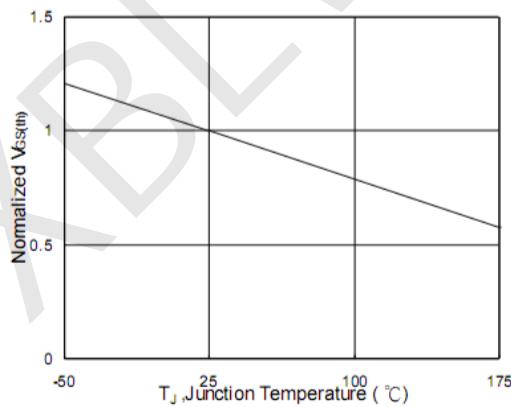


Fig.5 Normalized Vgs(th) vs. Tj

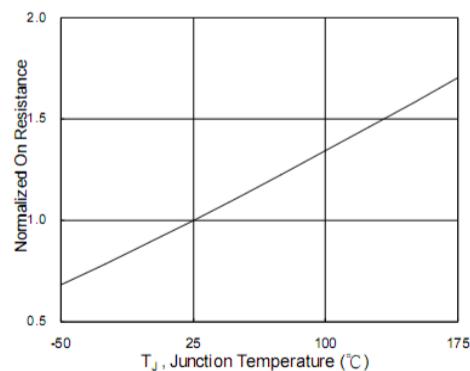


Fig.6 Normalized Rds(on) vs. Tj

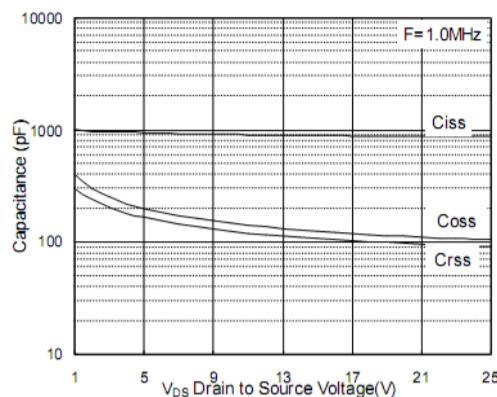


Fig.7 Capacitance

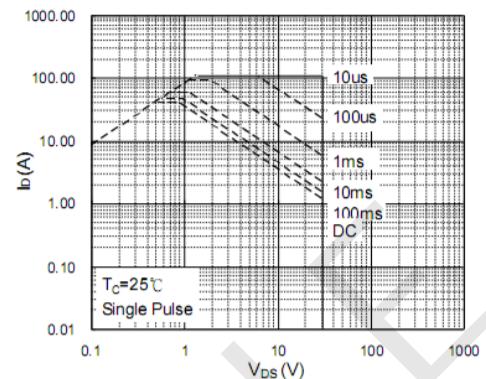


Fig.8 Safe Operating Area

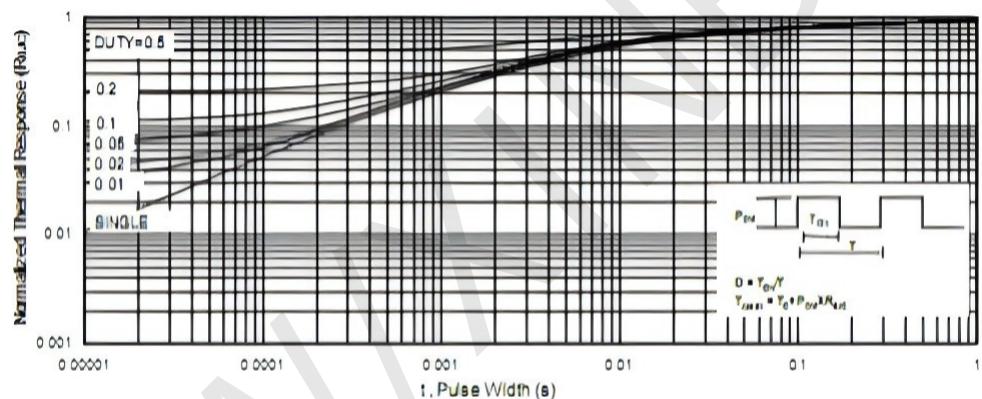


Fig.9 Normalized Maximum Transient Thermal Impedance

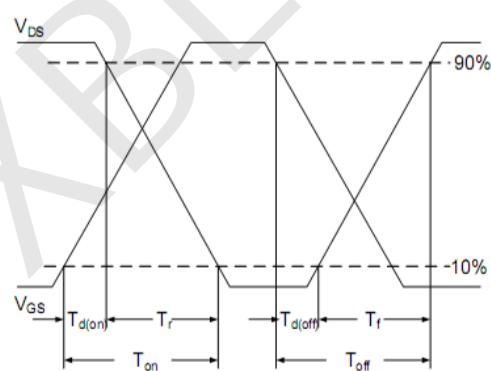


Fig.10 Switching Time Waveform

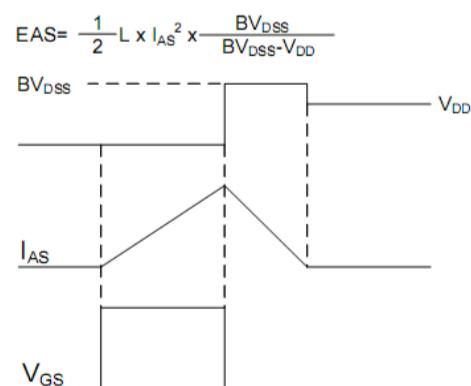
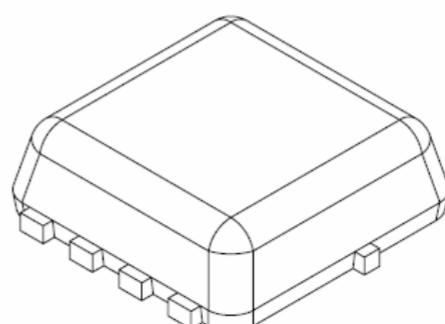
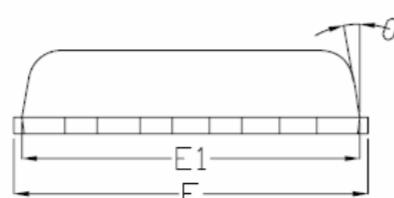
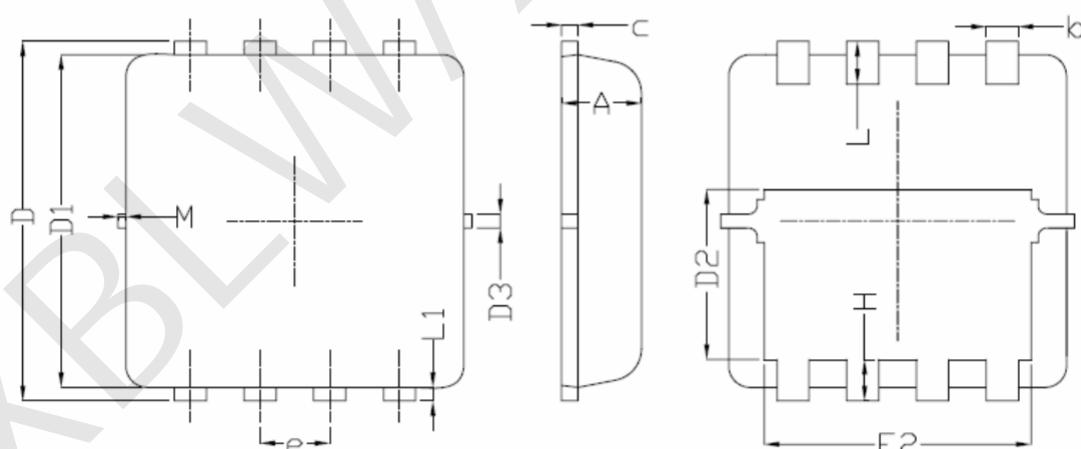


Fig.11 Unclamped Inductive Switching Waveform

Package Information

DFN3X3-8L

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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