

AON7400A(ES)

Rev-1.4

SuperMOS –PDFN3X3-8L 30V BV_{DSS} , 6.5m Ω $R_{DS(on)}$, N-channel MOSFET

1. Description

The AON7400A(ES) is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AON7400A(ES) is Pb-free.

2. Features

- 30V, $R_{DS(ON)}$ =6.5m Ω (TYP.) @ V_{GS} =10V
 $R_{DS(ON)}$ =10.0m Ω (TYP.) @ V_{GS} =4.5V
- Use trench MOSFET technology
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

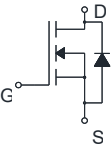
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED!

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AON7400A(ES)	PDFN3X3-8L	ESN7466/lot	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate		
1/2/3	Source		
5/6/7/8	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	40	A
	$T_C=75^{\circ}\text{C}$		31	
Maximum Power Dissipation	$T_C=25^{\circ}\text{C}$	P_D	30	W
	$T_C=75^{\circ}\text{C}$		18	
Pulsed Drain Current		I_{DM}	160	A
Avalanche Current, Single Pulsed ^a		I_{AS}	18	A
Avalanche Energy, Single Pulsed ^a		E_{AS}	48	mJ
Operating Junction Temperature		T_J	150	$^{\circ}\text{C}$
Lead Temperature		T_L	260	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation				
Parameter		Symbol	Typical	Unit
Junction-to-Ambient Thermal Resistance	$t \leq 10 \text{ s}$	$R_{\theta JA}$	40	$^{\circ}\text{C/W}$
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	4.2	

Note:

a: $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=0.3\text{mH}$, $R_G=25\Omega$

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Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.35	1.8	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =18A		6.5	12	mΩ
		V _{GS} =4.5V, I _D =15A		10	18	
Forward Trans conductance	g _{FS}	V _{DS} =5.0V, I _D =18A		19	40	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		876		pF
Output Capacitance	C _{OSS}			155		
Reverse Transfer Capacitance	C _{RSS}			140		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DS} =15V, I _D =6A		11		nC
Gate-to-Source Charge	Q _{GS}			2.7		
Gate-to-Drain Charge	Q _{GD}			5.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =20V, I _D =6A, R _G =6Ω		4.7		ns
Rise Time	t _r			35		
Turn-Off Delay Time	t _{d(OFF)}			35		
Fall Time	t _f			15		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1.9A		0.7	1.5	V

7. Typical Characteristic

Figure 1. Typ. Output

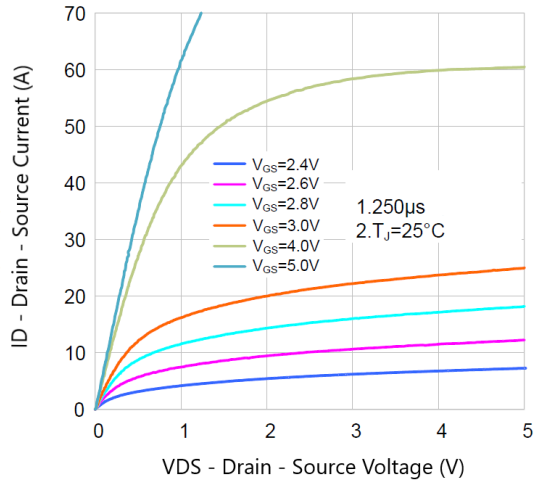


Figure 2. Transfer Characteristics

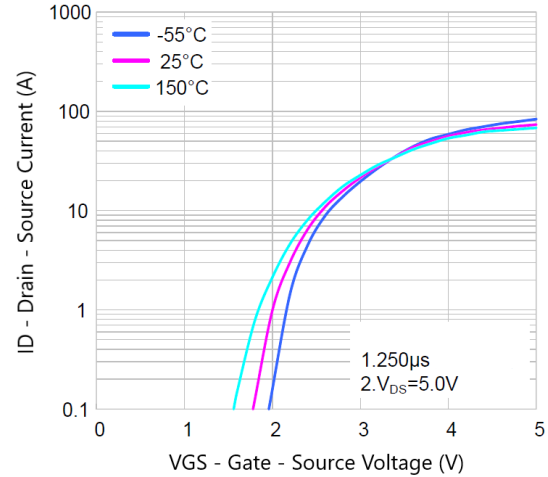


Figure 3. Rdson-Drain Current

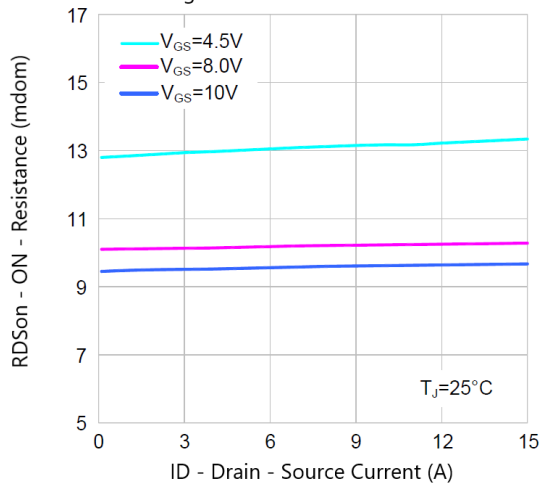


Figure 4: On-Resistance vs. Gate-Source

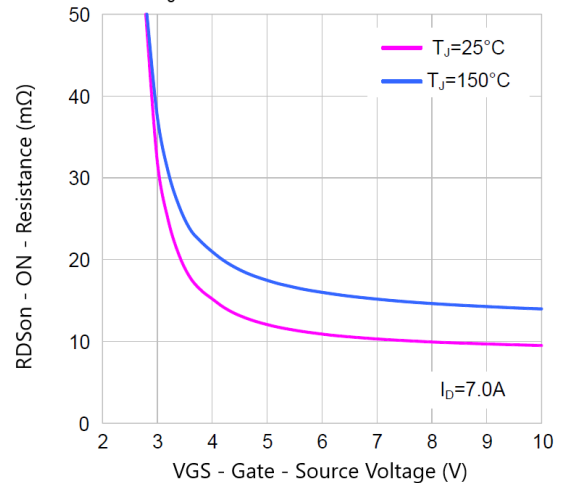


Figure 5. Gate-source threshold voltage as a function of junction temperature

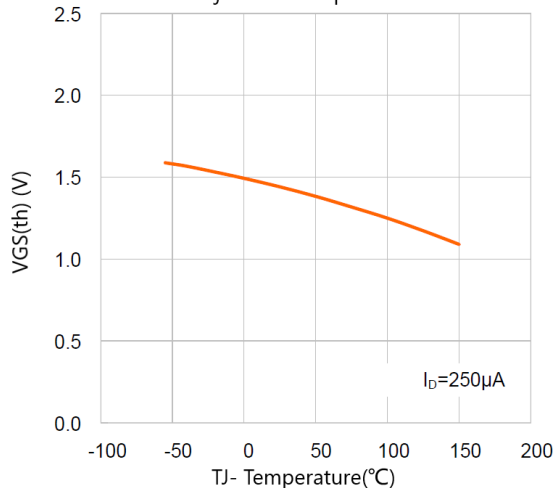
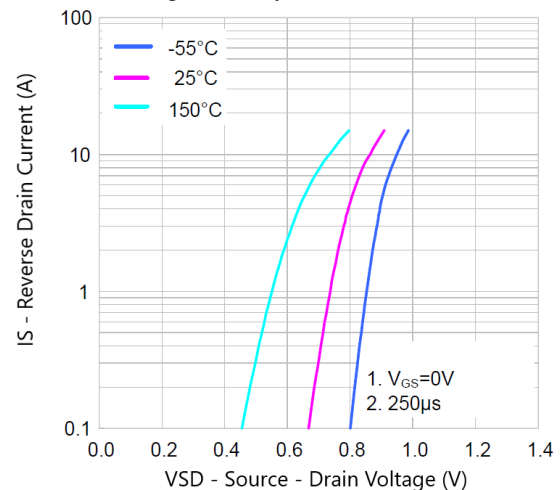


Figure 6. Body-Diode Characteristics



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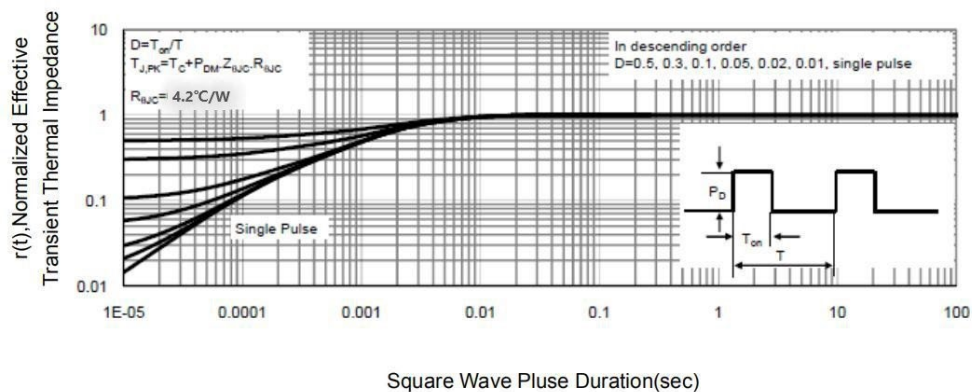
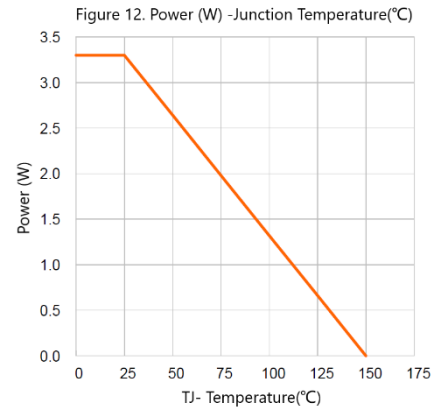
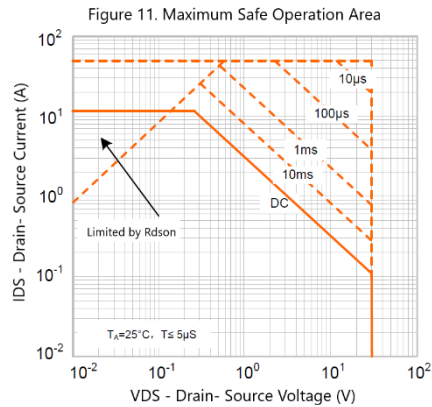
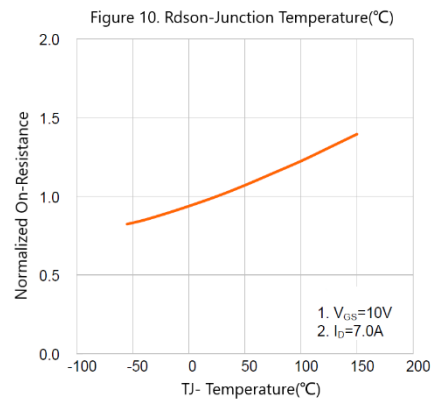
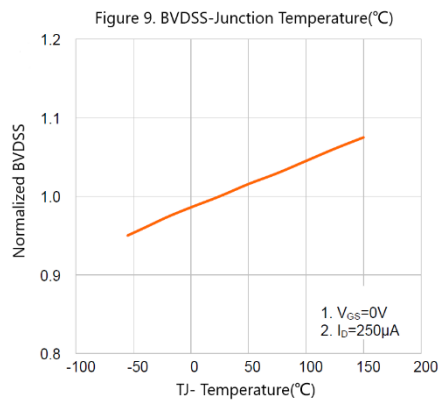
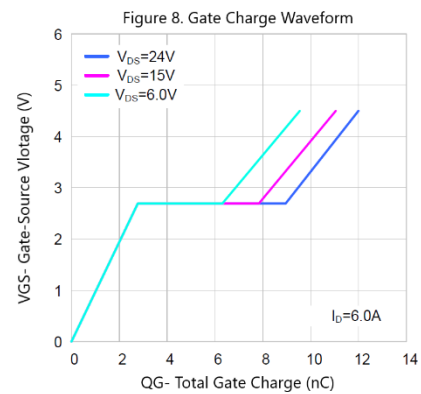
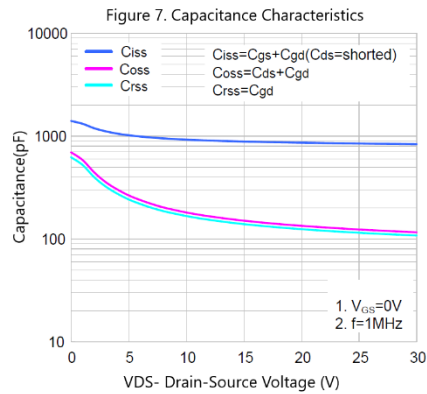
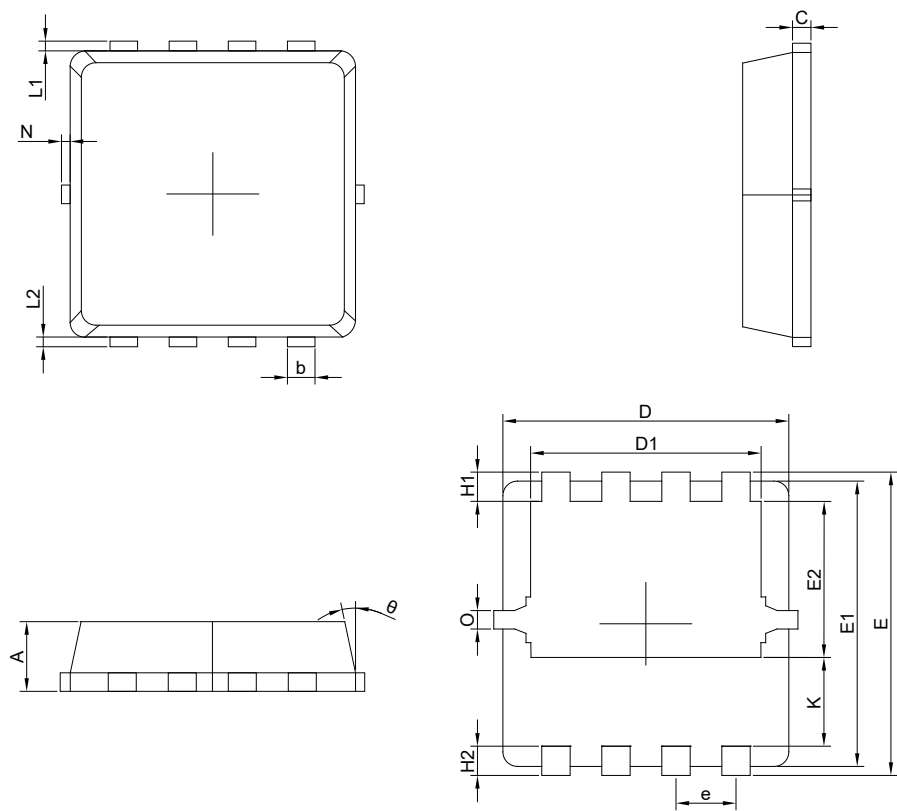


Figure 13 Normalized Maximum Transient Thermal Impedance

8. Dimension (PDFN3X3-8L)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.65	0.75	0.85	e	0.65 BSC.		
b	0.25	0.30	0.35	H1	0.21	0.31	0.41
C	0.15	0.20	0.25	H2	0.30	0.40	0.50
D	3.00	3.10	3.20	K	0.78	0.88	0.98
D1	2.40	2.50	2.60	L1/L2	0.10 REF.		
E	3.20	3.30	3.40	θ	11°	12°	13°
E1	3.00	3.10	3.20	N	0	-	0.15
E2	1.60	1.70	1.80	O	0.2 REF.		

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