SuperMOS – PDFN5*6-8L 100V BV_{DSS}, 91mΩ $R_{DS(ON)}$, N-channel MOSFET

1. Description

The AON6484(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 AON6484(ES) is Pb-free.

2. Features

- 100V, $R_{DS(ON)}$=91mΩ(Tpy), V_{GS}=10V
  $R_{DS(ON)}$=97mΩ(Tpy), 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

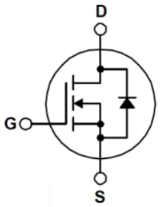
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED!

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AON6484(ES)	PDFN5*6-8L	ESN6484/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	Note d	
1/2/3	Source		
5/6/7/8	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 ℃ ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	11	A
	T_C=75°C		9	
Maximum Power Dissipation	T_C=25°C	P_D	25	W
	T_C=75°C		15	
Pulsed Drain Current [a]		I_{DM}	44	A
Avalanche Current, Single Pulsed [b]		I_{AS}	12.5	A
Avalanche Energy, Single Pulsed [b]		E_{AS}	23.4	mJ
Operating Junction Temperature		T_J	150	°C
Lead Temperature		T_L	260	°C
Storage Temperature Range		T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance	t ≤ 10 s	$R_{\theta JA}$	21	25	°C/W
Junction-to-Case Thermal Resistance [c]	Steady State	$R_{\theta JC}$	3.5	5	

Note:

a: Repetitive rating, pulse width limited by junction temperature, tp=10μs, Duty Cycle=1%

b: EAS condition：Tj=25℃, V_{DD}=50V, V_G=10V, L=0.3mH, Rg=25Ω

c: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

d: This diagram is only an electrical schematic, and the actual pin size is based on POD.

Electrical Characteristics

At TA = 25℃ 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	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	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	1.8	3.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=7.5A		91	122	mΩ
		V_{GS}=4.5V, I_D=5A		97	142	
Forward Trans conductance	g_{FS}	V_{DS}=5.0V, I_D=7.5A			40	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS}=0V, f=1MHz, V_{DS}=50V		780		pF
Output Capacitance	C_{OSS}			58		
Reverse Transfer Capacitance	C_{RSS}			26		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS}=4.5V, V_{DS}=50V, I_D=7.5A		19.2		nC
Gate-to-Source Charge	Q_{GS}			3.5		
Gate-to-Drain Charge	Q_{GD}			5.3		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=50V, R_L=6Ω, R_G=3Ω		6		ns
Rise Time	t_r			2.6		
Turn-Off Delay Time	$t_{d(OFF)}$			22		
Fall Time	t_f			2.5		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A		0.7	1.2	V

7. Typical Characteristic

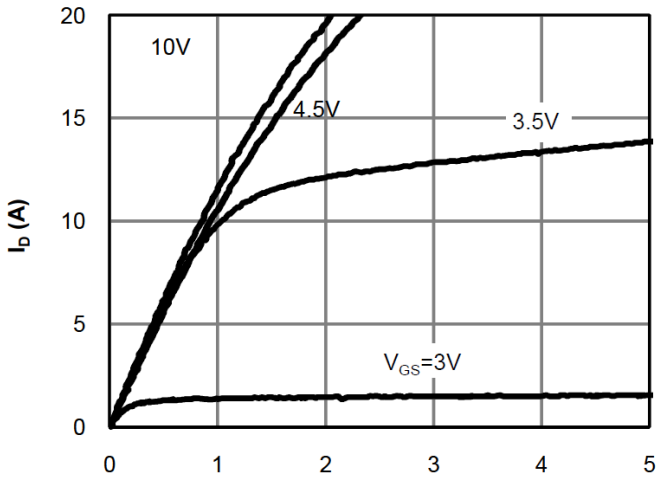


Fig 1: On-Region Characteristics

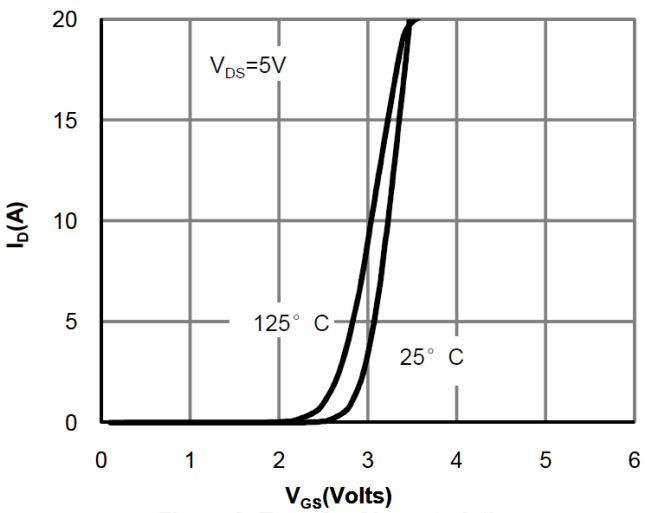


Figure 2: Transfer Characteristics

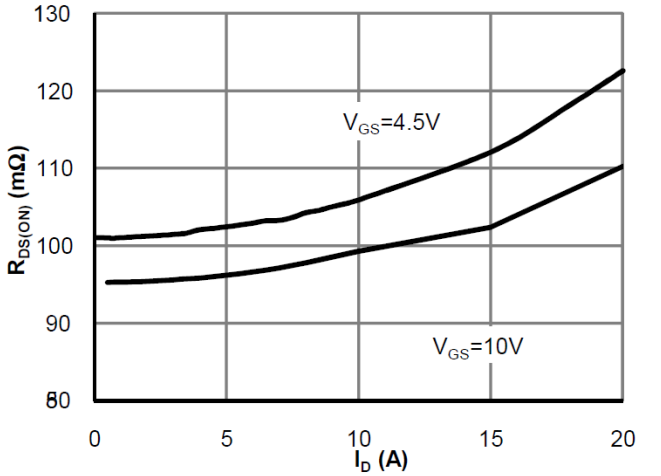


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

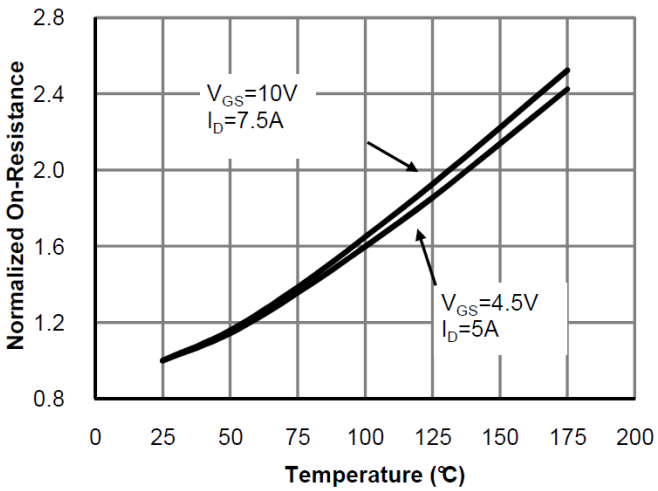


Figure 4: On-Resistance vs. Junction Temperature

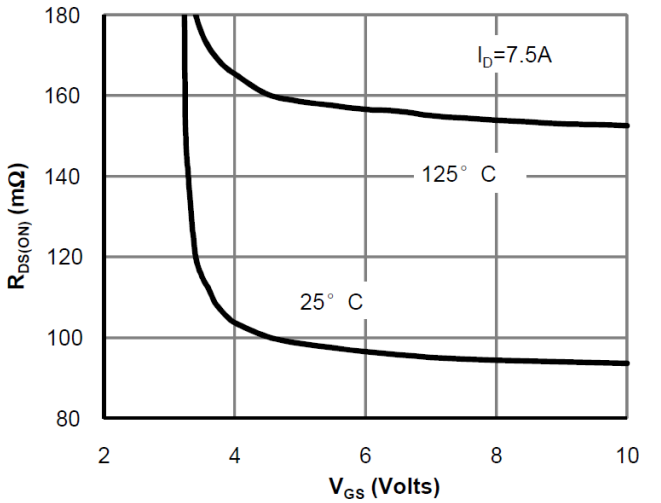


Figure 5: On-Resistance vs. Gate-Source Voltage

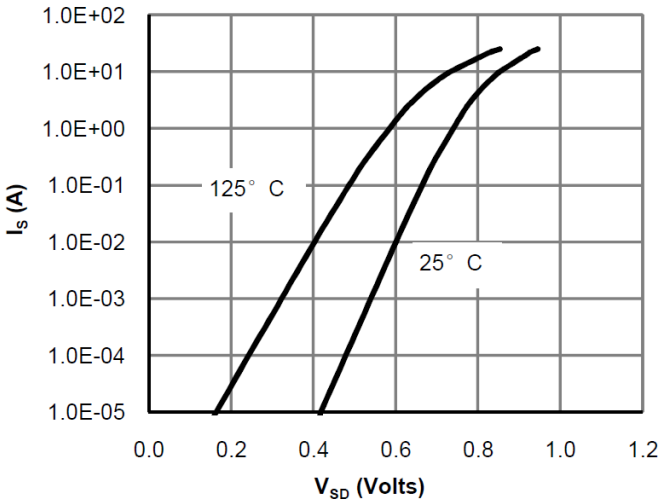


Figure 6: Body-Diode Characteristics

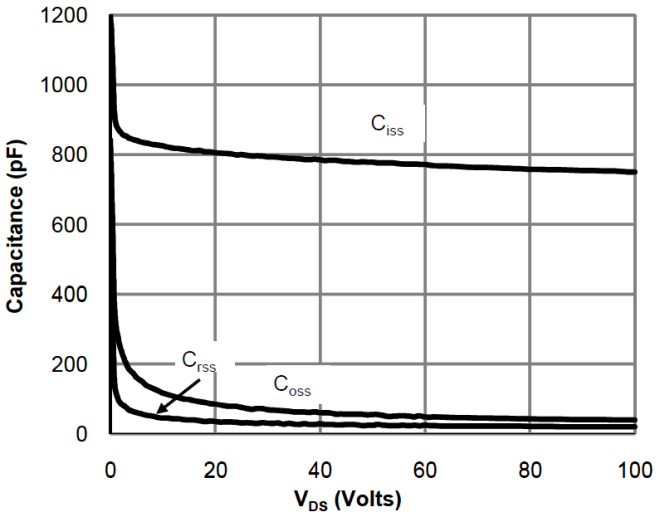
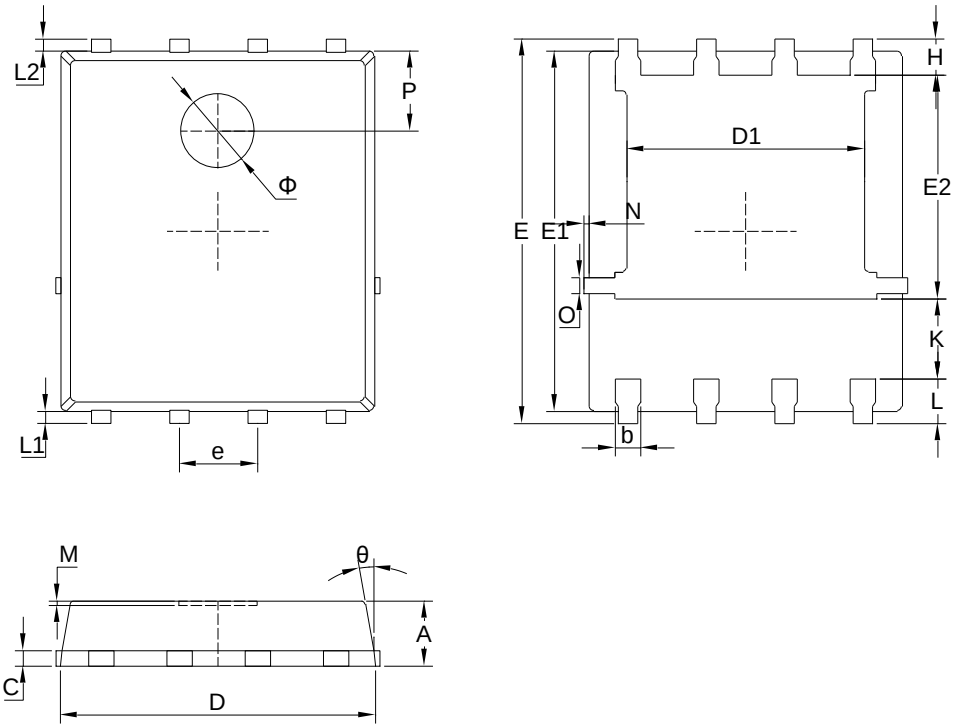


Figure 7: Capacitance Characteristics

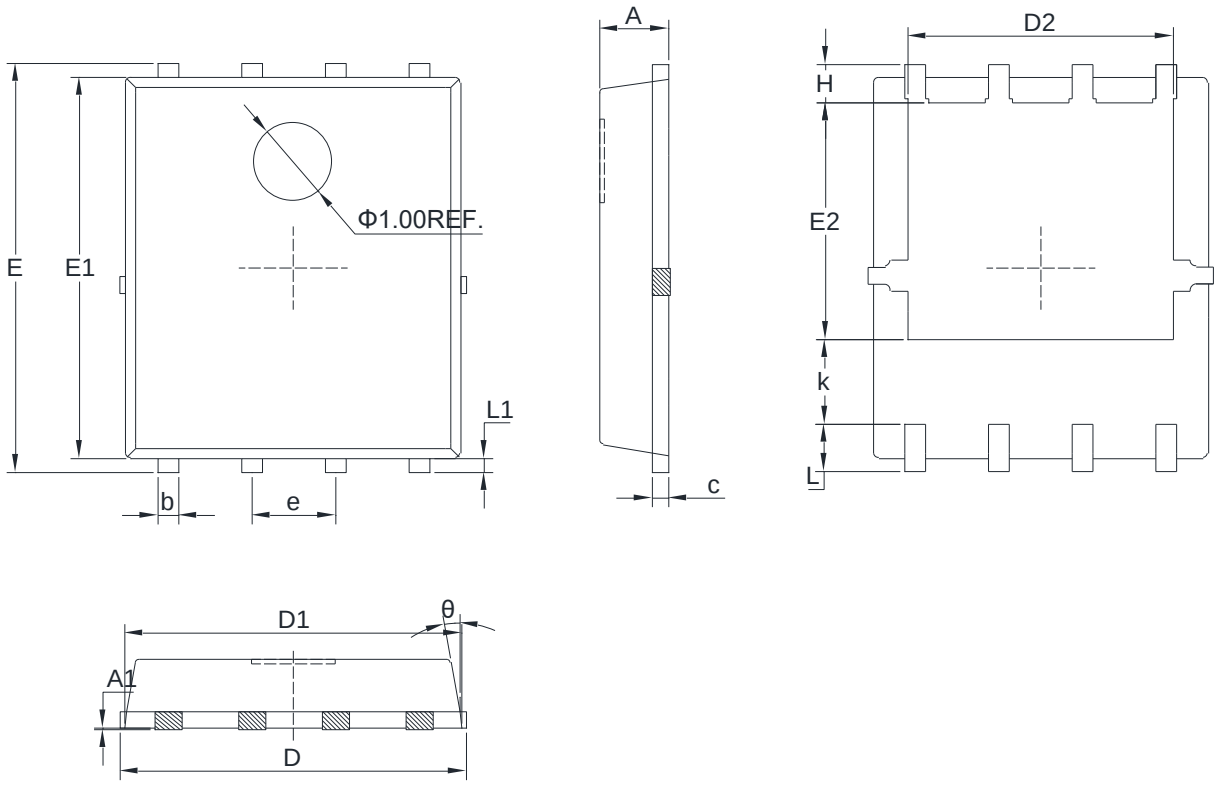
8. Dimension (PDFN5*6-8L)

POD A(J)



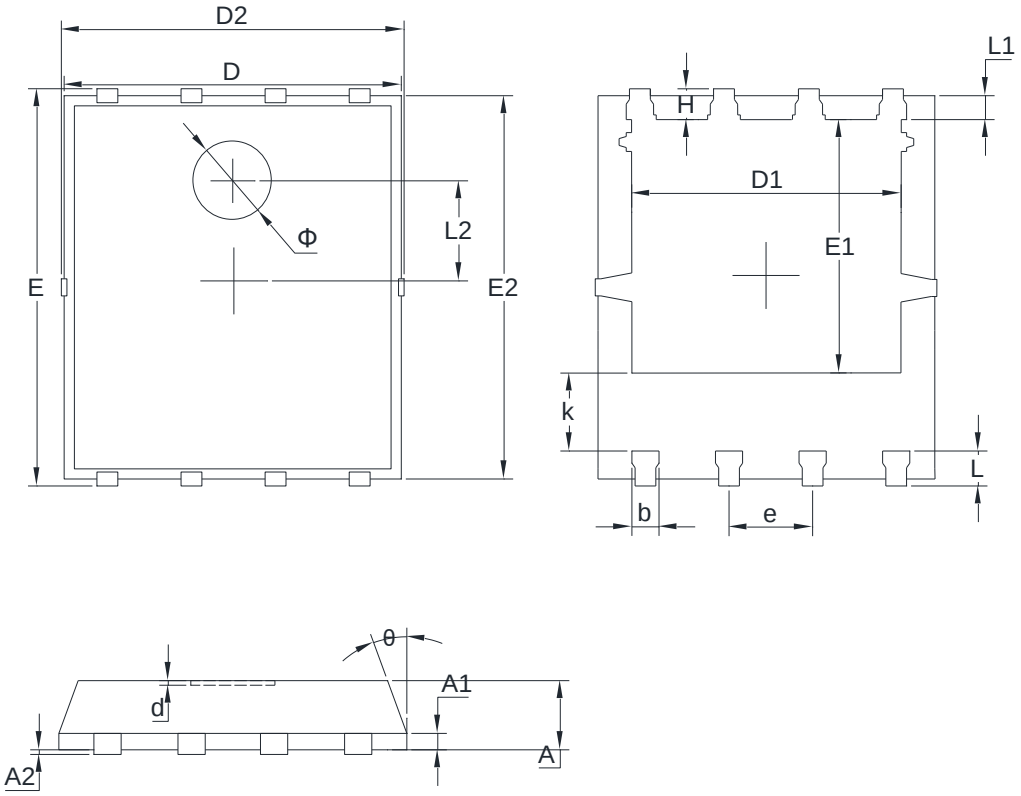
Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0. 90	1. 05	1. 20	H	0. 48	0. 58	0. 68
b	0. 35	0. 40	0.50	K	1. 17	1. 27	1. 37
C	0. 20	0. 25	0. 35	L	0. 64	0. 74	0. 84
D	4. 90	5. 05	5. 20	L1/L2	0. 20 REF.		
D1	3.72	3. 82	3. 92	θ	8°	10°	12°
E	6. 00	6. 15	6. 30	M	0. 08 REF.		
E1	5. 60	5. 75	5. 90	N	0	-	0. 15
E2	3. 47	3. 57	3. 67	O	0. 25 REF.		
e	1. 27 BSC.			P	1. 28 REF.		
Φ	1.20 REF						

POD B(Q)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.90	1.00	1.10	H	0.46	0.56	0.66
A1			0.05	k	1.10		
b	0.30	0.40	0.50	L	0.51	0.61	0.71
c	0.20	0.25	0.30	L1	0.05	0.15	0.25
D	4.80	5.10	5.40	θ	8°	10°	12°
D2	3.75	3.90	4.05	D1	4.80	4.90	5.00
E	5.95	6.05	6.15				
E1	5.65	5.75	5.85				
e	1.27BCS						
E2	3.34	3.49	3.64				

POD C(X)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.900	1.000	1.100	H	0.549	0.625	0.701
A1	0.254 REF			k	1.190	1.290	1.390
A2	0.000		0.050	L	0.534	0.610	0.686
D	4.824	4.900	4.976	L1	0.424	0.500	0.576
D1	3.910	4.010	4.110	θ	8°	10°	12°
D2	4.924	5.000	5.076	L2	1.800 REF		
E	5.924	6.000	6.076	Φ	1.100	1.200	1.300
E1	3.375	3.475	3.575	d			0.100
e	1.270 TYP			b	0.350	0.400	0.450
E2	5.674	5.750	5.826				

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