SuperMOS – PDFN3*3-8L -30V 5.8mΩ $R_{DS(ON)}$, P-channel MOSFET

1. Description

The AONR21357-ES uses advanced trench technology MOSFETs to provide excellent $R_{DS(ON)}$ and low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AONR21357-ES Pb-free

2. Features

- -30V $R_{DS(ON)}$=5.8mΩ(Typ.) @V_{GS}=-10V
  $R_{DS(ON)}$=8mΩ(Typ.) @V_{GS}=-4.5V
- Fast Switching
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

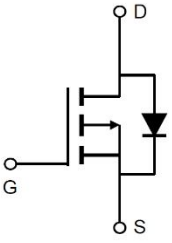
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AONR21357-ES	PDFN3*3-8L	ESN21357/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 ℃ ambient temperature unless otherwise specified.

Parameter		Symbol	Limited	Unit
Drain-Source Voltage		BV_{DSS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	-50	A
	T_C=100°C		-32	
Maximum Power Dissipation	T_C=25°C	P_D	69	W
	T_C=100°C		28	
Pulsed Drain Current		I_{DM}	-200	A
Single Pulse Avalanche Current [a]		I_{AS}	-40	A
Single Pulse Avalanche Energy [a]		E_{AS}	80	mJ
Operating Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C

Thermal resistance ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance (t ≤ 10s)	$R_{\theta JC}$		1.8	°C/W
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$		65	

Notes:

a: The EAS data shows Max. rating The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH

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	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=-30V			-1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=-250uA	-1.0		-2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-20A		5.8	9	mΩ
		V_{GS}=-4.5V, I_D=-15A		8	14	
Forward Transconductance	g_{FS}	V_{DS}=-10V, I_D=-20A		50		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS} =-15V f=1MHz		3522		pF
Output Capacitance	C_{OSS}			465		
Reverse Transfer Capacitance	C_{RSS}			370		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS}=-10V, V_{DS}=-15V I_D=-20A		35		nC
Gate-to-Source Charge	Q_{GS}			10		
Gate-to-Drain Charge	Q_{GD}			10.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	V_{GS}=-10V, V_{DS}=-15V I_D=-20A, R_G=3Ω		11		ns
Rise Time	t_r			13.3		
Turn-Off Delay Time	$t_{d(OFF)}$			74		
Fall Time	t_f			35		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=-20A	-0.45		-1.5	V

7. Typical Characteristic

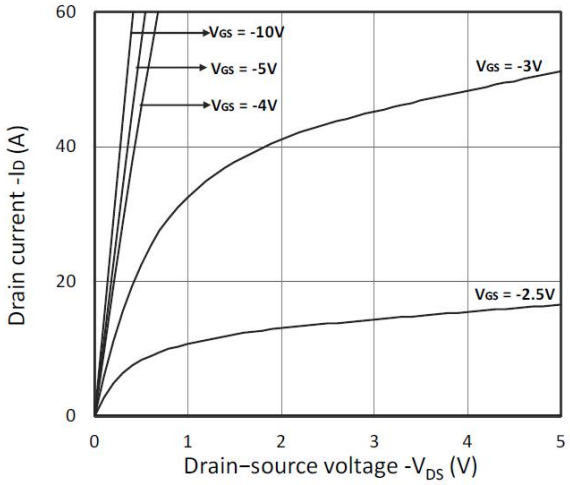


Figure 1. Output Characteristics

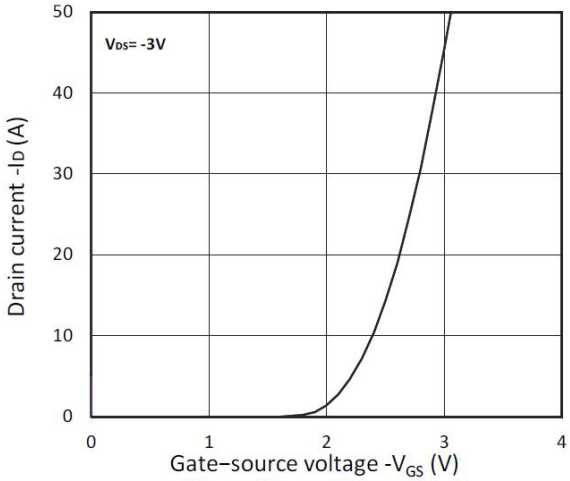


Figure 2. Transfer Characteristics

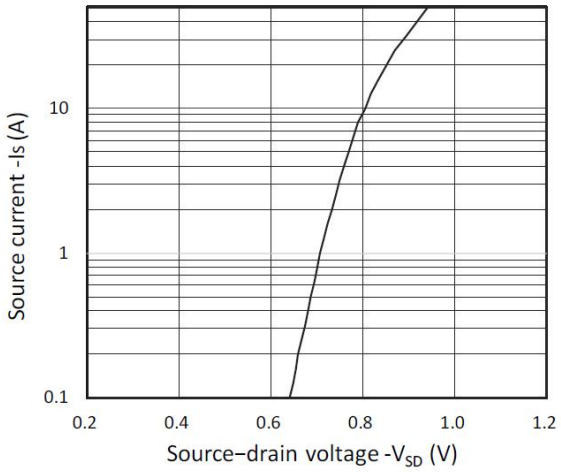


Figure 3. Forward Characteristics of Reverse

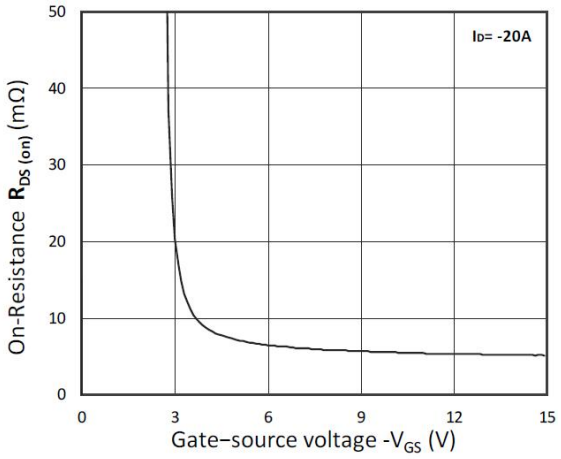


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

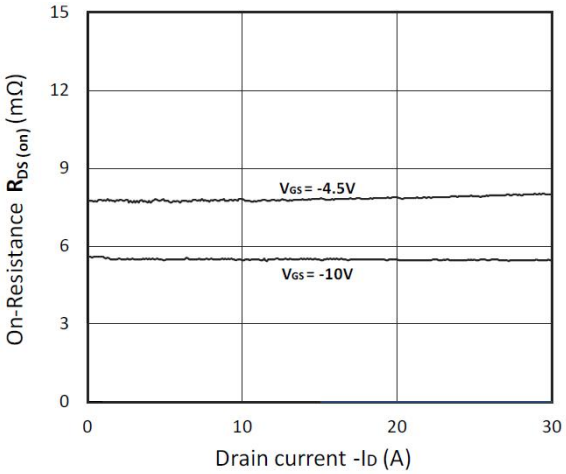


Figure 5. $R_{DS(ON)}$ vs. I_D

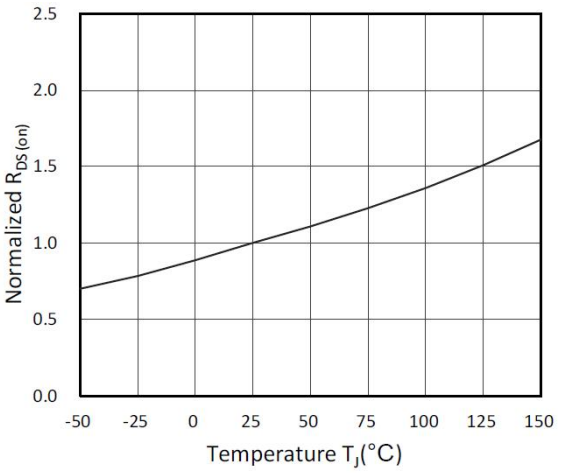


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

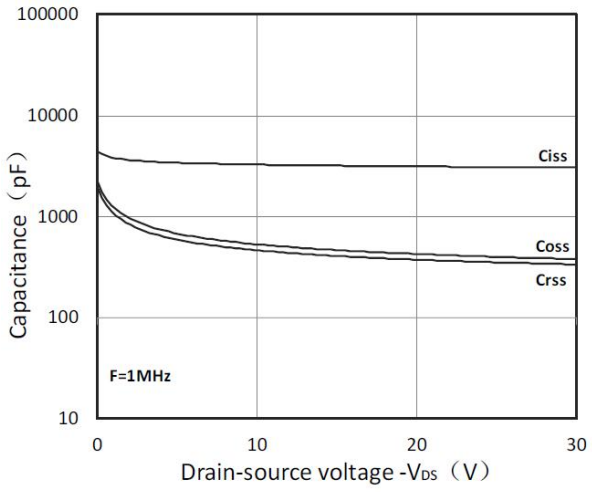


Figure 7. Capacitance Characteristics

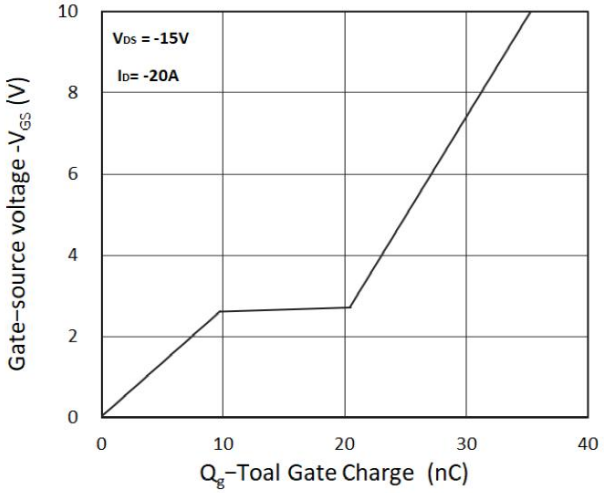


Figure 8. Gate Charge Characteristics

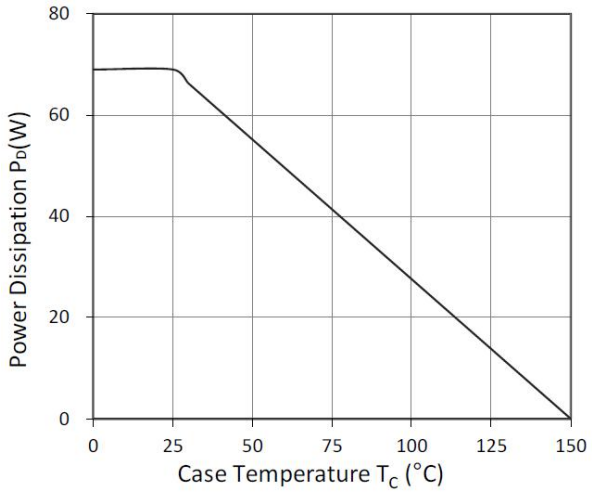


Figure 9. Power Dissipation

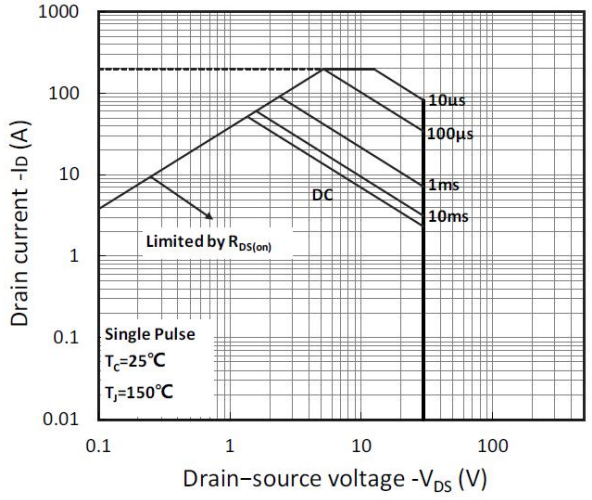


Figure10. Safe Operating Area

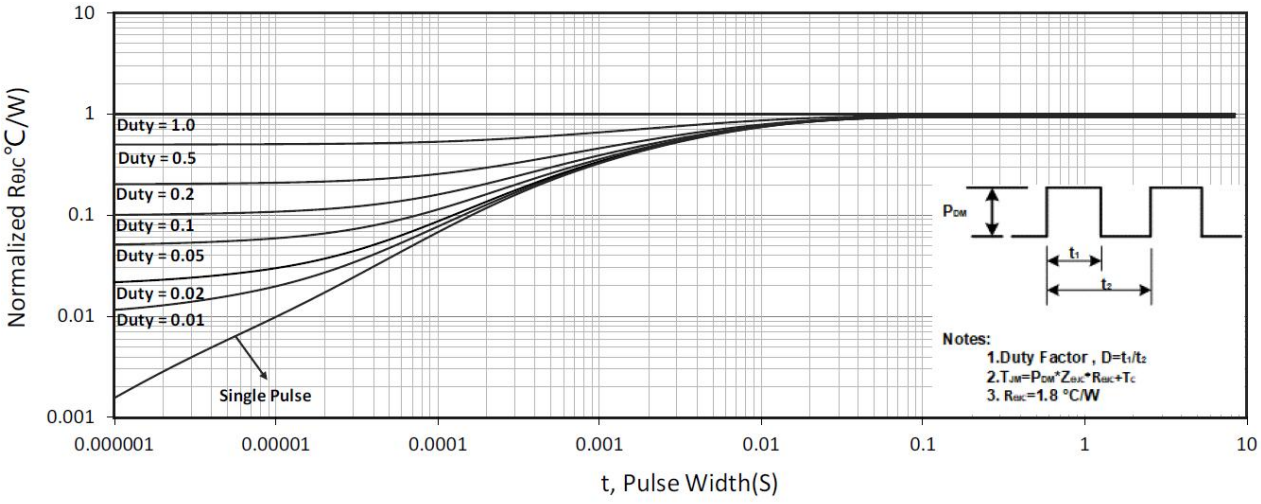
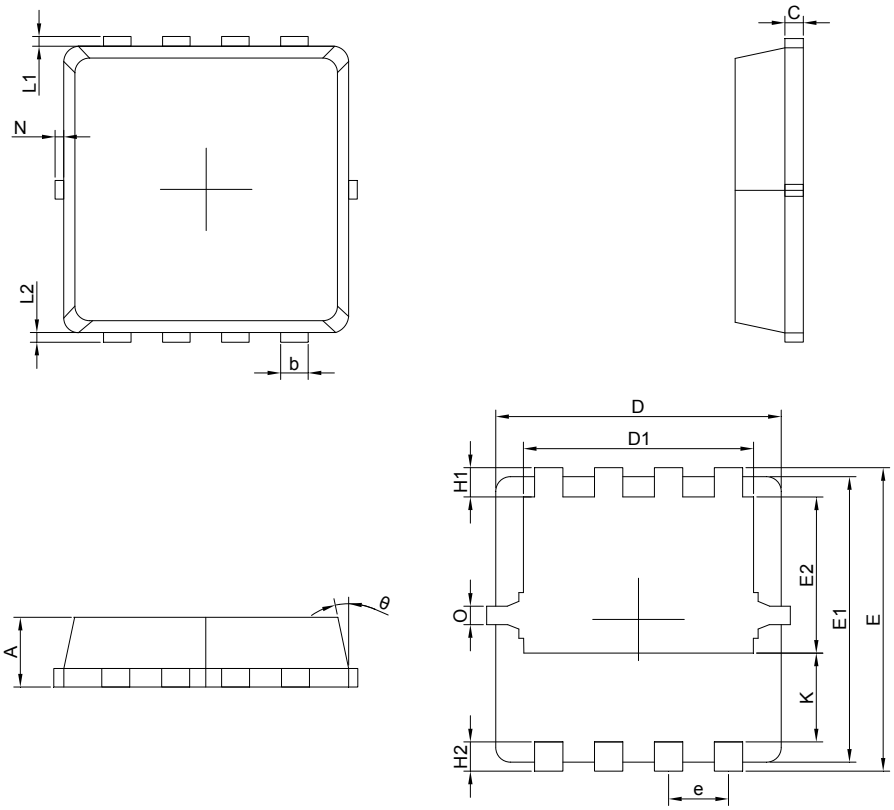


Figure 11. Normalized Maximum Transient Thermal Impedance

8. Dimension (PDFN3*3-8L)



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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