

Description

The AON6298 is the new generation Split Gate trench N-ch MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

- High - speed switching
- Excellent gate charge x $R_{DS(ON)}$ product (FOM) for extremely low $R_{DS(ON)}$
- **100% UIS Tested**
- **100% Avalanche Tested**
- Lead-Free, Halogen-Free; RoHS Compliant

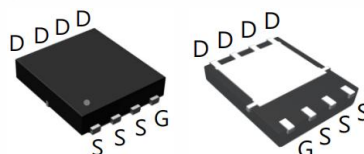
Applications

- LED applications
- Load Switch
- Power Management

V_{DS}	100V
I_D	50A
$R_{DS(ON)}$	11.8mΩ @ $V_{GS}=10V$
$R_{DS(ON)}$	15mΩ @ $V_{GS}=4.5V$

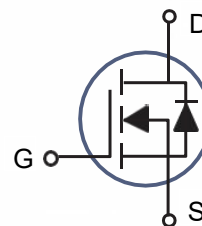
Outline

PDFN5x6-8L Pin Configuration



Equivalent

- (4)Gate
- (1\2\3)Source
- (5\6\7\8)Drain



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
AON6298	PDFN5x6-8L		5000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous ^(Note2)	$T_C=25^{\circ}C$	I_D	50	A
	$T_C=70^{\circ}C$		46	A
-Pulsed ^(Note 1- Note 2)		I_{DM}	200	A
Single Pulse Avalanche Energy ^(Note 3)		E_{AS}	110	mJ
Maximum Power Dissipation	$T_C=25^{\circ}C$	P_D	86	W
	$T_C=70^{\circ}C$		57	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	60	$^{\circ}C/W$
Thermal Resistance Junction-Case		$R_{\theta JC}$	1.3	$^{\circ}C/W$

Electrical Characteristics (T_C=25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V , V _{GS} =0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250uA	1	1.7	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =15A		11.8	14	mΩ
		V _{GS} =4.5V , I _D =10A		15	19	mΩ
Forward Transconductance	g _{FS}	V _{GS} =10V , I _D =2A		10		S
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =15V ,		1200		pF
Output Capacitance	C _{OSS}	V _{GS} =0 V ,		660		pF
Reverse Transfer Capacitance	C _{RSS}	f =1.0MHz		30		pF
Total Gate Charge	Q _g	V _{DS} =100V , I _D =10A , V _{GS} =10V		25		nC
Gate-Source Charge	Q _{gs}	V _{DS} =15V , I _D =10A ,		6.2		nC
Gate-Drain Charge	Q _{gd}	V _{GS} =10V		5.5		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =50V ,		13		ns
Rise Time	tr	I _D =10A ,		19		ns
Turn-Off Delay Time	t _{D(OFF)}	V _{GS} =10V ,		40		ns
Fall Time	tf	R _{GEN} =5Ω		30		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =10A			1.2	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Starting T_j=25°C ,L=0.1mH,V_{DD}=25V,V_{GS}=10V ,R_G=25Ω
- 4、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. T_C

T_C , Case Temperature ($^{\circ}\text{C}$)

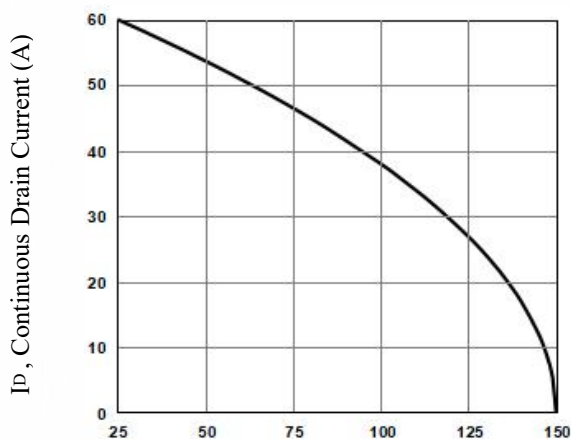


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

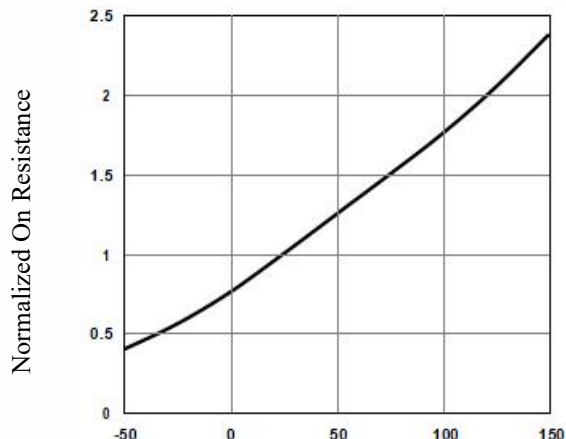


Fig.3 Normalized V_{th} vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

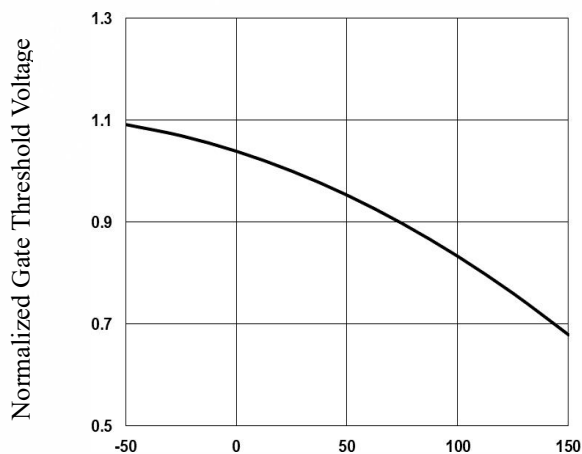


Fig.4 Gate Charge Waveform

Q_g , Gate Charge (nC)

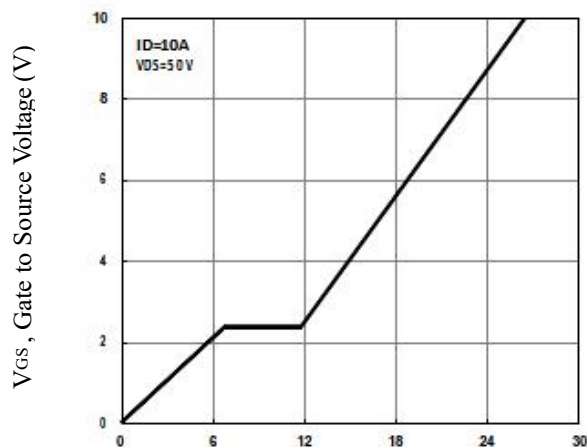


Fig.5 Typical Output Characteristics

V_{DS} , Drain to Source Voltage (V)

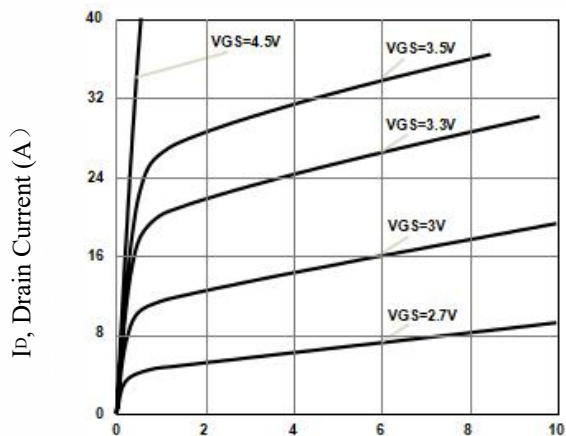


Fig.6 Turn-On Resistance vs. I_D

I_D , Drain Current (A)

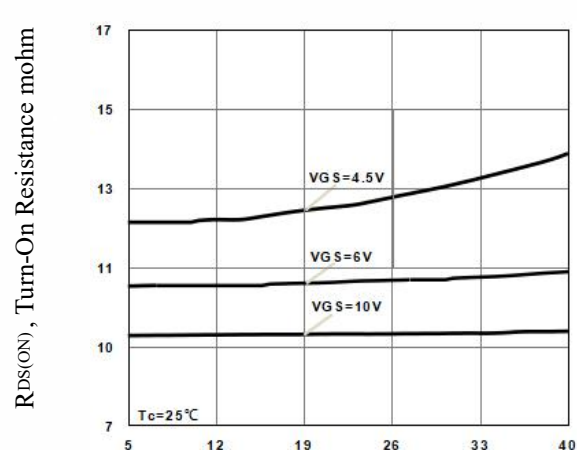


Fig.7 Capacitance Characteristics

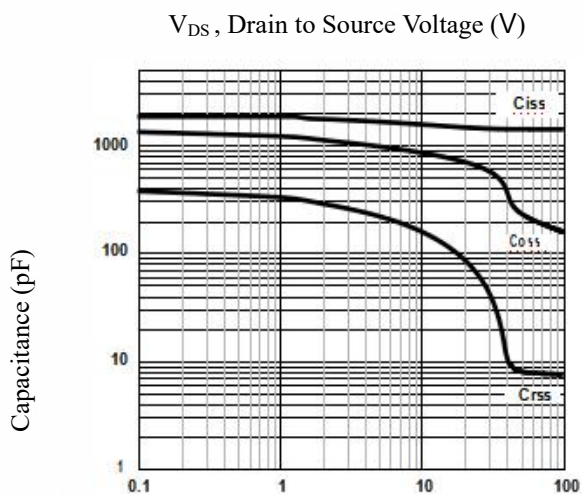


Fig.9 Maximum Safe Operation Area

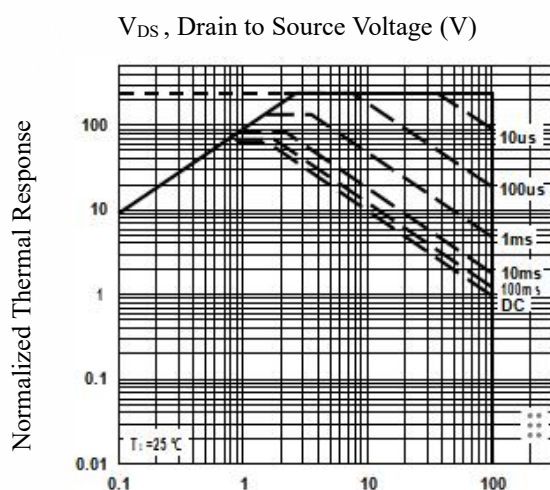


Fig.8 Normalized Transient Impedance

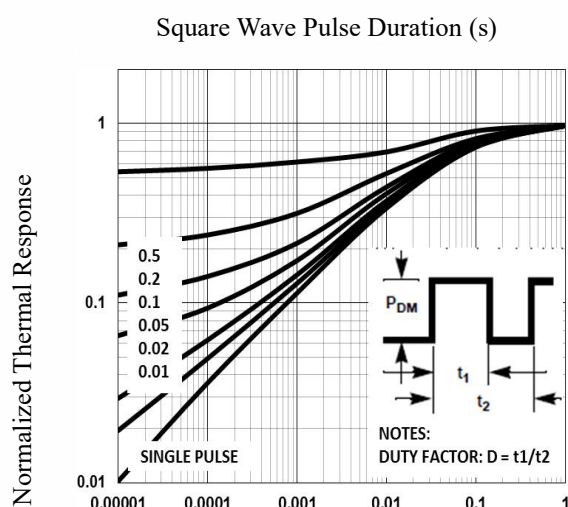


Fig.10 Body Diode Forward Voltage Variation with Source Current

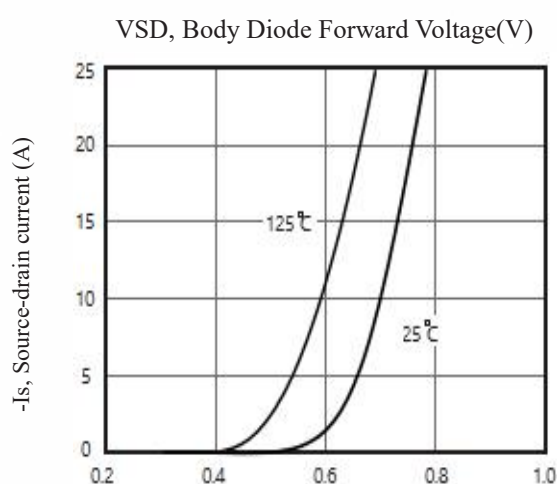


Figure 11a. Switching Test Circuit

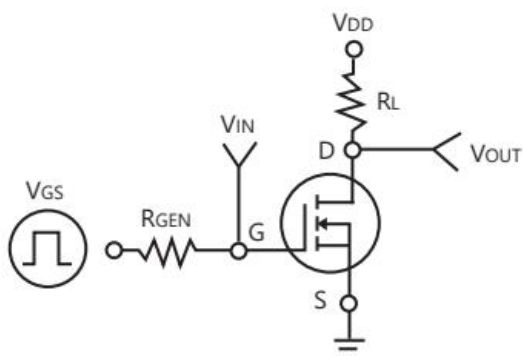


Figure 11b. Switching Waveforms

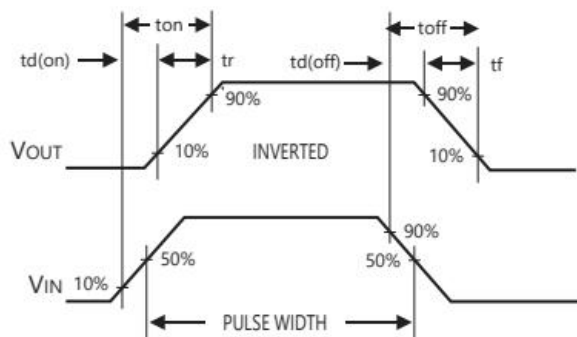


Figure 12a. Unclamped Inductive Test Circuit

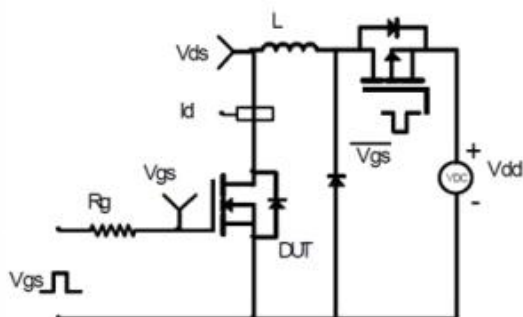
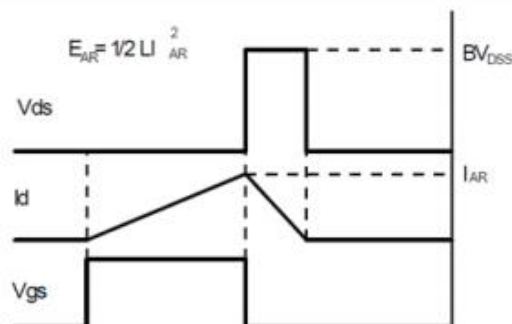


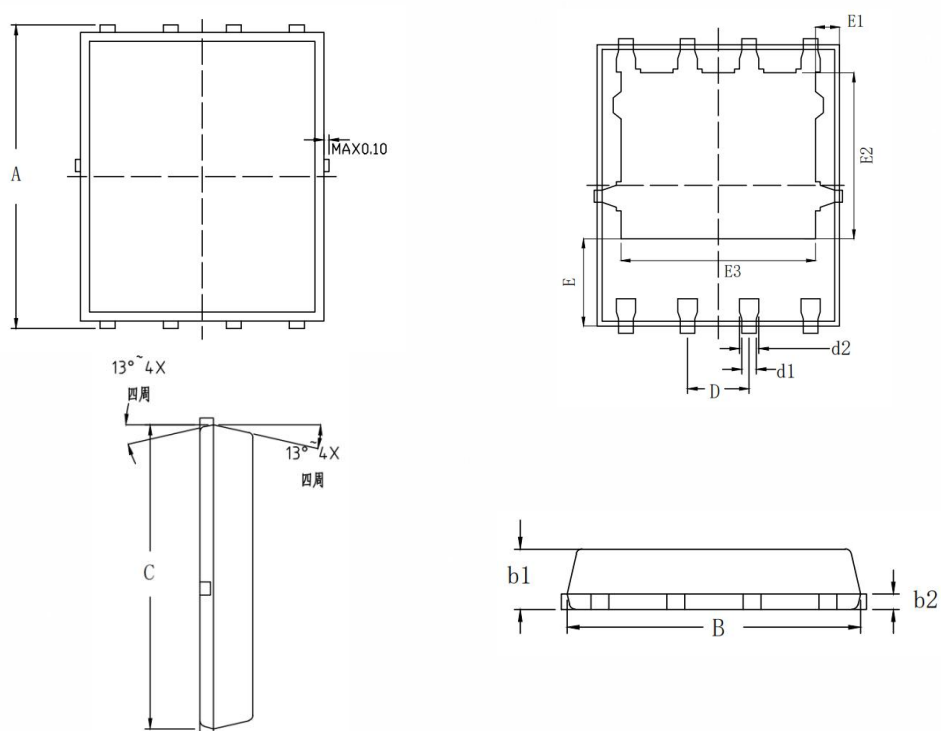
Figure 12b. Unclamped Inductive Waveforms



NOTICE

NKGL reserves the to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein.NKGL does not assume any liability arsing out of the application or use of any product described herein.

PDFN5x6-8L Package Information



COMMON DIMENSION(MM)

PKG		PDFN5x6	
SYMBOL	MIN	TYP	MAX
A	6.000	6.100	6.200
B	4.875	4.900	4.925
b1	0.975	1.000	1.025
b2	0.246	0.254	0.262
C	5.775	5.800	5.825
D	1.245	1.270	1.295
d1	0.275	0.300	0.325
d2	0.375	0.400	0.425
E	1.725	1.775	1.825
E1	0.395	0.445	0.495
E2	3.425	3.475	3.525
E3	3.960	4.010	4.060