



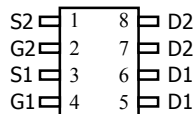
AO4828, AO4828L (Green Product)
Dual N-Channel Enhancement Mode Field Effect Transistor

General Description

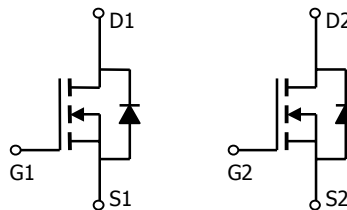
The AO4828 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications. AO4828L (Green Product) is offered in a lead-free package.

Features

- V_{DS} (V) = 60V
- I_D = 4.5A
- $R_{DS(ON)} < 56m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 77m\Omega$ ($V_{GS} = 4.5V$)



SOIC-8



Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^A	$T_A=25^\circ\text{C}$	4.5	A
Pulsed Drain Current ^B	I_{DM}	20	
Power Dissipation	$T_A=25^\circ\text{C}$	2	
			$T_A=70^\circ\text{C}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	48	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^A		Steady-State	74	
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	35	60	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V T _J =55°C			1 5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±20V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	2.1	3	V
I _{D(ON)}	On state drain current	V _{GS} =10V, V _{DS} =5V	20			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =4.5A T _J =125°C		46 80	56 100	mΩ
		V _{GS} =4.5V, I _D =3A		64	77	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =4.5A		11		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =0V		0.74	1	V
I _S	Maximum Body-Diode Continuous Current				3	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, f=1MHz		450	540	pF
C _{oss}	Output Capacitance			60		pF
C _{rss}	Reverse Transfer Capacitance			25		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.65	2	Ω
SWITCHING PARAMETERS						
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =4.5A		8.5	10.5	nC
Q _g (4.5V)	Total Gate Charge			4.3	5.5	nC
Q _{gs}	Gate Source Charge			1.6		nC
Q _{gd}	Gate Drain Charge			2.2		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =30V, R _L =6.7Ω, R _{GEN} =3Ω		4.7		ns
t _r	Turn-On Rise Time			2.3		ns
t _{D(off)}	Turn-Off DelayTime			15.7		ns
t _f	Turn-Off Fall Time			1.9		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =4.5A, di/dt=100A/μs		27.5	35	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =4.5A, di/dt=100A/μs		32		nC

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient.

D. The static characteristics in Figures 1 to 6 are obtained using 80μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

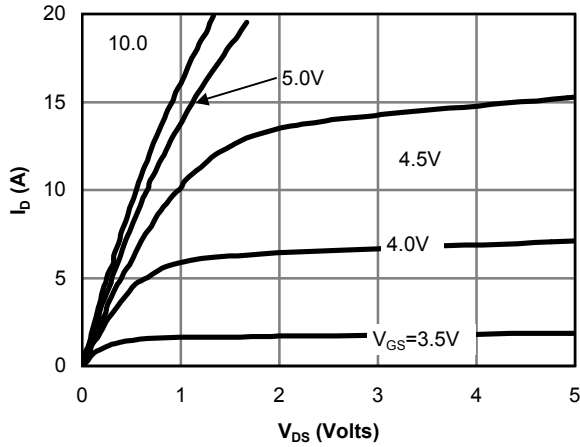


Fig 1: On-Region Characteristics

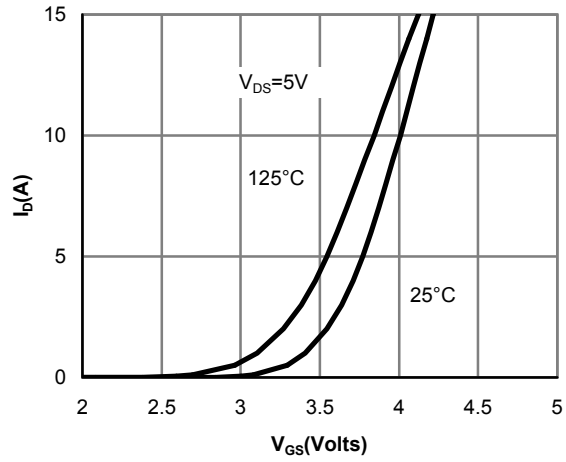


Figure 2: Transfer Characteristics

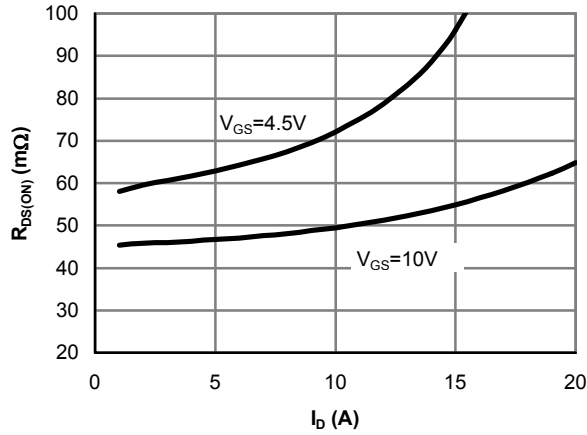


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

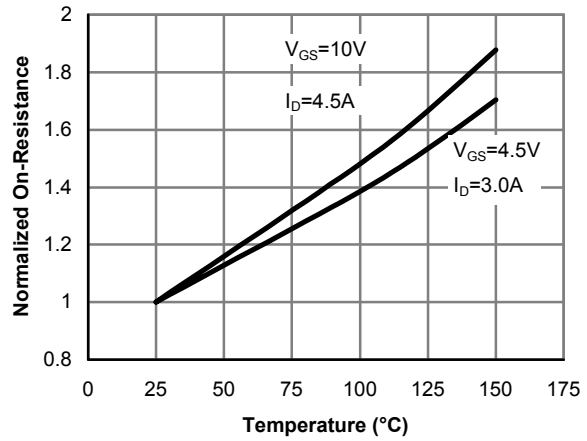


Figure 4: On-Resistance vs. Junction Temperature

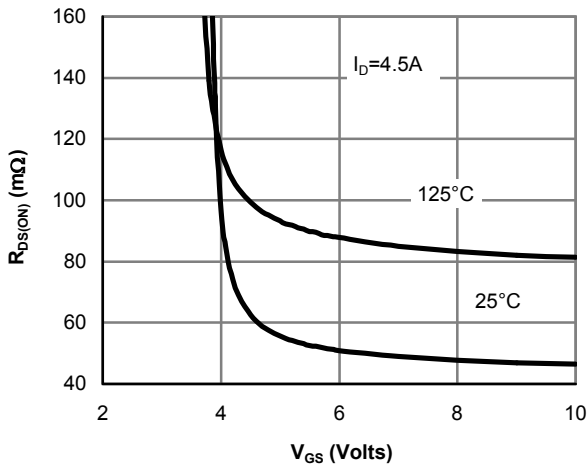


Figure 5: On-Resistance vs. Gate-Source Voltage

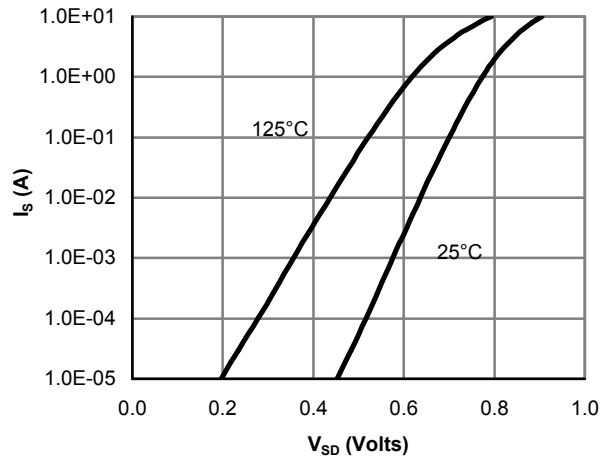


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

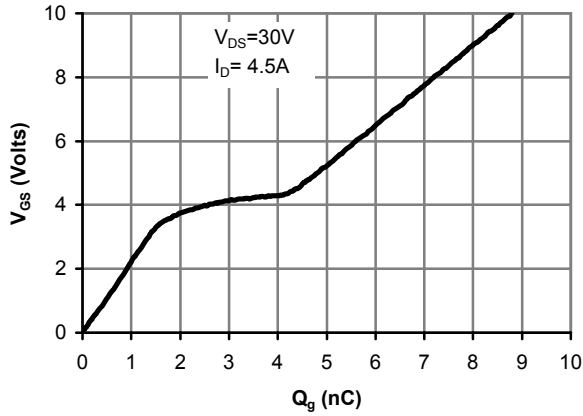


Figure 7: Gate-Charge Characteristics

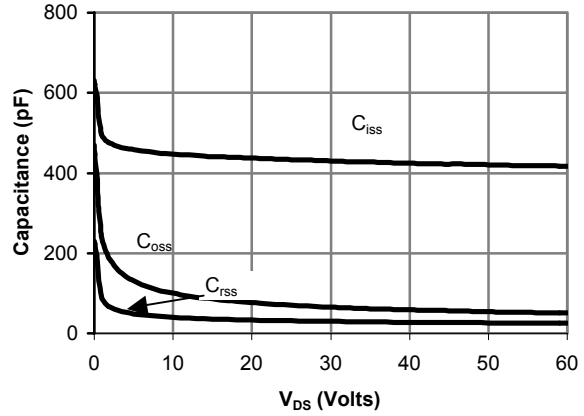


Figure 8: Capacitance Characteristics

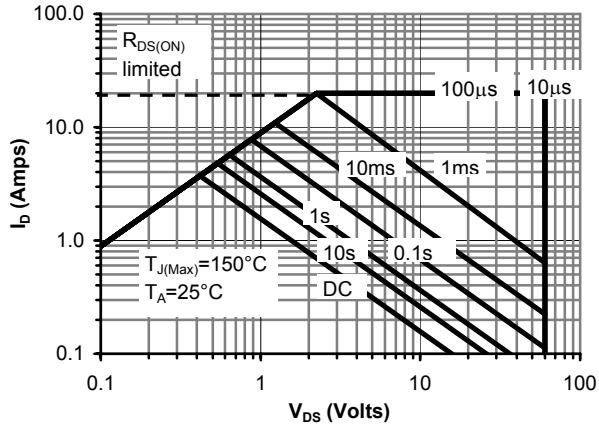


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

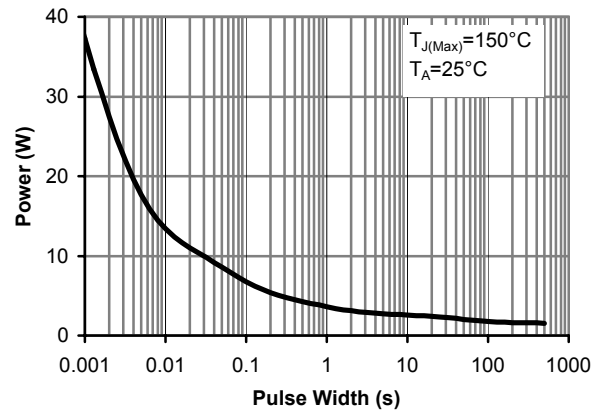


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

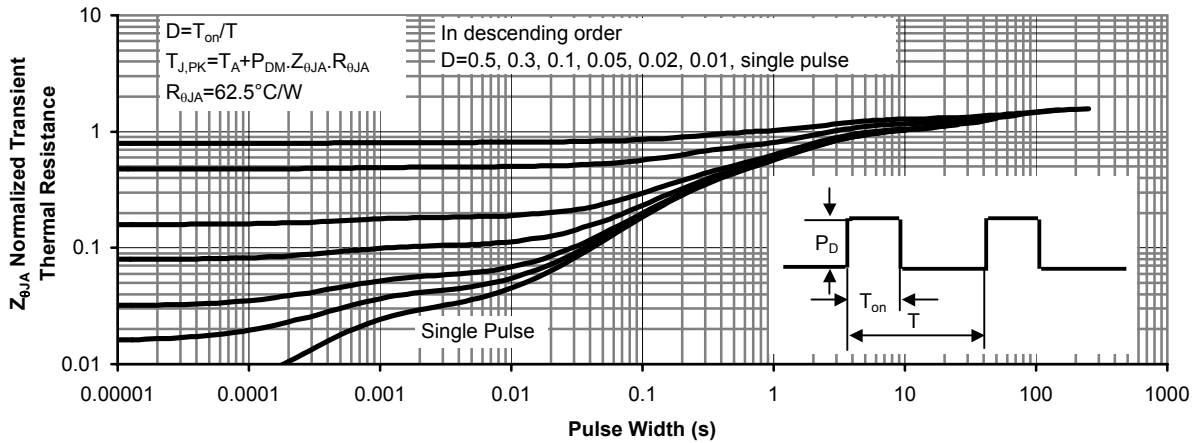
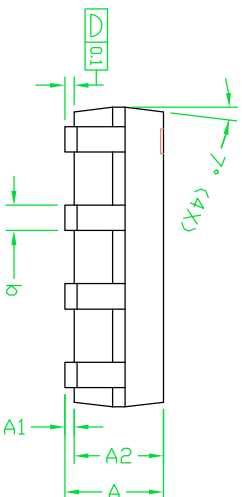
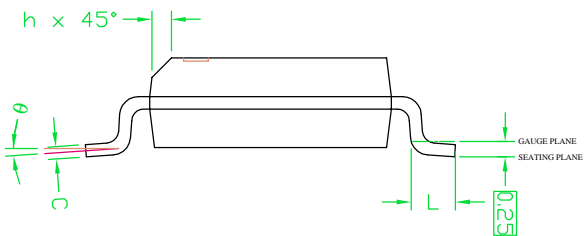
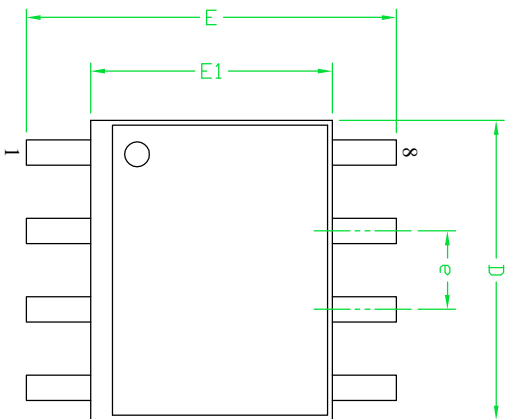
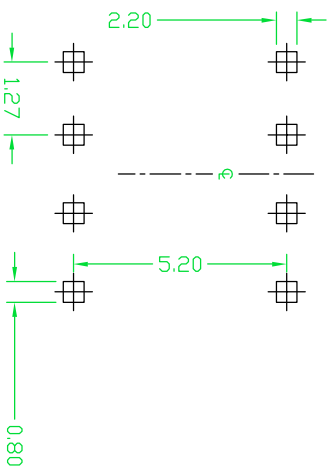


Figure 11: Normalized Maximum Transient Thermal Impedance



RECOMMENDED LAND PATTERN



UNIT: mm

- NOTE**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
 2. DIMENSIONS ARE INCLUSIVE OF PLATING.
 3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 4. DIMENSION L IS MEASURED IN GAUGE PLANE.
 5. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	1.65	1.75	0.053	0.065	0.069
A1	0.10	---	0.25	0.004	---	0.010
A2	1.25	1.50	1.65	0.049	0.059	0.065
b	0.31	---	0.51	0.012	---	0.020
c	0.17	---	0.25	0.007	---	0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27 BSC			0.050 BSC		
E	5.80	6.00	6.20	0.228	0.236	0.244
h	0.25	---	0.50	0.010	---	0.020
L	0.40	---	1.27	0.016	---	0.050
θ	0°	---	8°	0°	---	8°

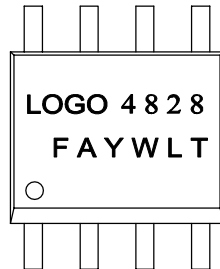
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMAL XX ± XXX ± XXXX ± INTERPRET DIM. AND TOL PER ASME Y14.5M - 1994	THIRD ANGLE PROJECTION 	Document No.	
		Version	
PRINTING IS SCALED TO FIT DO NOT SCALE DRAWING	Title	rev C	SO-8 PACKAGE OUTLINE



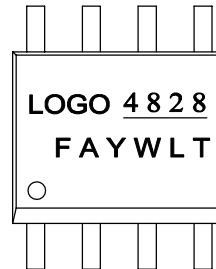
ALPHA & OMEGA
SEMICONDUCTOR, LTD.

Document No.	PD-00260
Version	rev B
Title	AO4828 Marking Description

SO-8 PACKAGE MARKING DESCRIPTION



Standard product



Green product

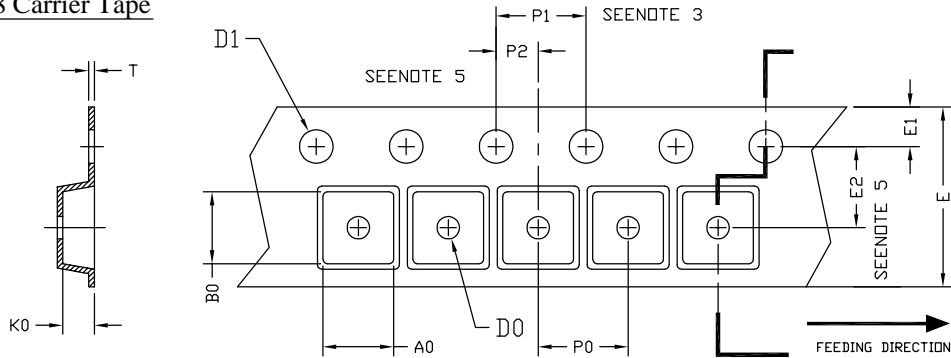
NOTE:

LOGO - AOS LOGO
4828 - PART NUMBER CODE.
F&A - FOUNDRY AND ASSEMBLY LOCATION
Y - YEAR CODE
W - WEEK CODE.
L T - ASSEMBLY LOT CODE

PART NO.	DESCRIPTION	CODE
AO4828	Standard product	4828
AO4828L	Green product	<u>4828</u>



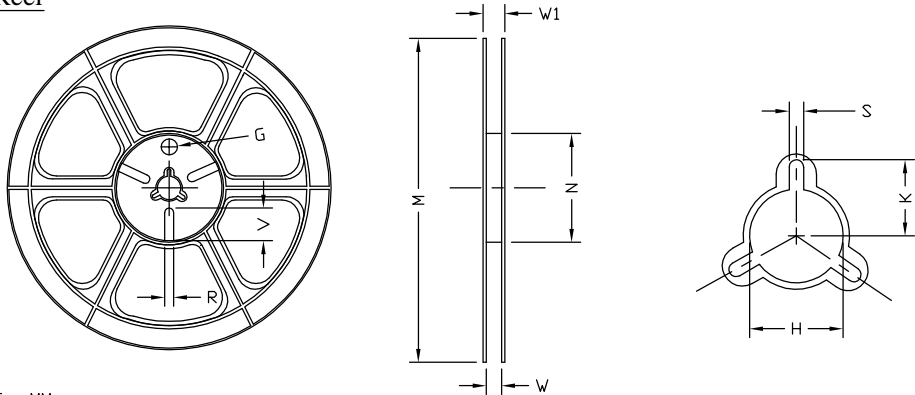
SOP-8 Carrier Tape



UNIT: MM

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SD-8 (12 mm)	6.40 ±0.10	5.20 ±0.10	2.10 ±0.10	1.60 ±0.10	1.50 +0.10	12.00 ±0.30	1.75 ±0.10	5.50 ±0.05	8.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.25 ±0.05

SOP-8 Reel



UNIT: MM

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
12 mm	ø330	ø330.00 ±0.50	ø97.00 ±0.10	13.00 ±0.30	17.40 ±1.00	ø13.00 +0.50 -0.20	10.60	2.00 ±0.50	---	---	---

SOP-8 Tape

Leader / Trailer & Orientation

