AO4485
P-Ch 40V Fast Switching MOSFETs

V_{DSS} -40 V
I_D -13 A
$R_{DS(ON)}$ 14mΩ

Description

The AO4485 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

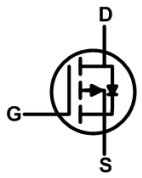
The AO4485 meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

GK xxx
4485

LOGO GK xxx CODE

Features

100% EAS Guaranteed
Green Device Available
Super Low Gate Charge
Excellent CdV/dt effect decline
Advanced high cell density Trench technology



Schematic Diagram



SOP-8 top & bottom view

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	-13	A
	T_A=100°C		-8.5	
Pulsed Drain Current[1]		I_{DM}	-52	A
Single Pulse Avalanche Energy[2]		EAS	80	mJ
Total Power Dissipation	T_A=25°C	P_D	3	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[3]	$R_{\theta JA}$	41	°C/W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-40	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25℃	I_{DSS}	V_{DS} = -40V, V_{GS} = 0V	-	-	-1	μA
	T_J=100℃			-	-	-100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.5	-2.2	V
Drain-Source On-Resistance[4]		$R_{DS(on)}$	V_{GS} = -10V, I_D = -10A	-	14.0	19	mΩ
			V_{GS} = -4.5V, I_D = -5 A	-	19.5	25	
Forward Transconductance[4]		g_{fs}	V_{DS} = -10V, I_D = -10A	-	44	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = -20V, V_{GS} =0V, f =1MHz	-	2525	-	pF
Output Capacitance		C_{oss}		-	190	-	
Reverse Transfer Capacitance		C_{rss}		-	172	-	
Gate Resistance		R_g	f =1MHz	-	10	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = -10V,V_{DS} = -20V, I_D= -10A	-	35	-	nC
Gate-Source Charge		Q_{gs}		-	5.5	-	
Gate-Drain Charge		Q_{gd}		-	8	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} = -10V, V_{DD} = -20V, R_G = 3Ω, I_D= -10A	-	14.5	-	ns
Rise Time		t_r		-	20.2	-	
Turn-Off Delay Time		$t_{d(off)}$		-	32	-	
Fall Time		t_f		-	10	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = -10A, V_{GS} = 0V	-	-	-1.2	V
Continuous Source Current	T_C=25°C	I_S	-	-	-	-13	A

Note :

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH, I_{AS}= -34A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

RATING AND CHARACTERISTIC CURVES

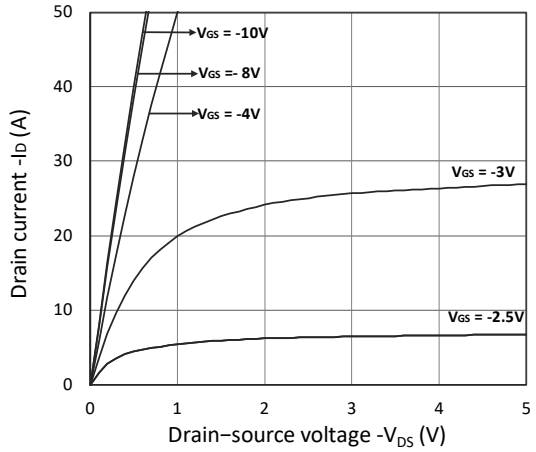


Figure 1. Output Characteristics

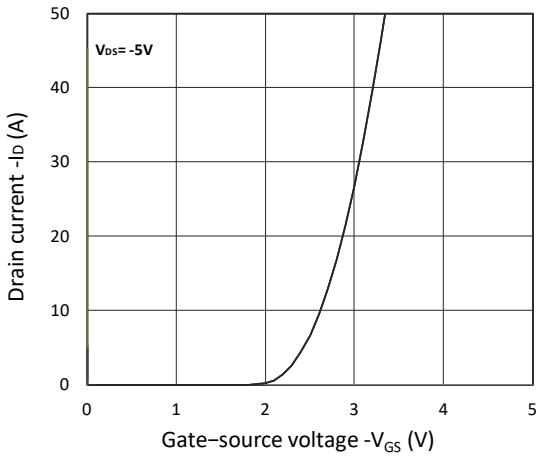


Figure 2. Transfer Characteristics

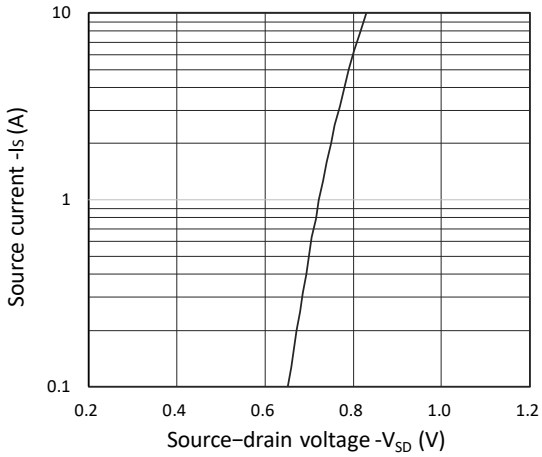


Figure 3. Forward Characteristics of Reverse

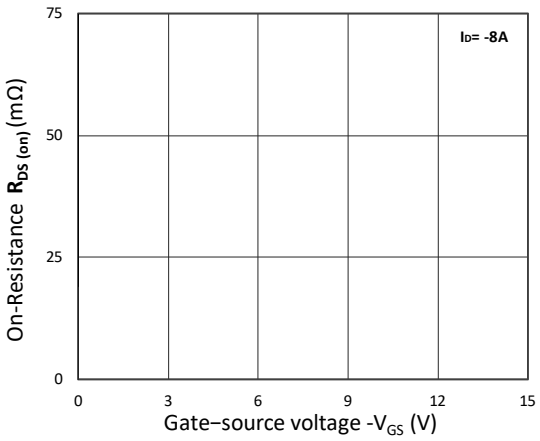


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

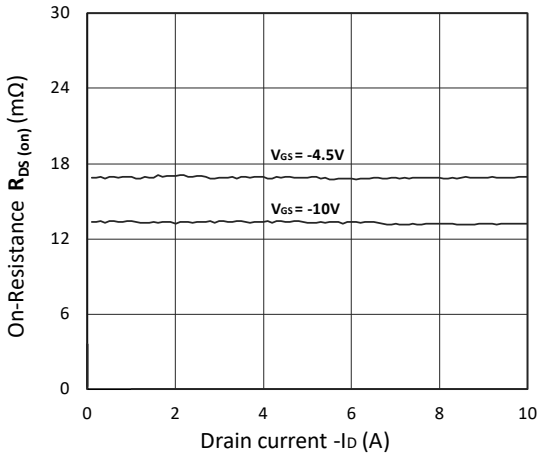


Figure 5. $R_{DS(ON)}$ vs. I_D

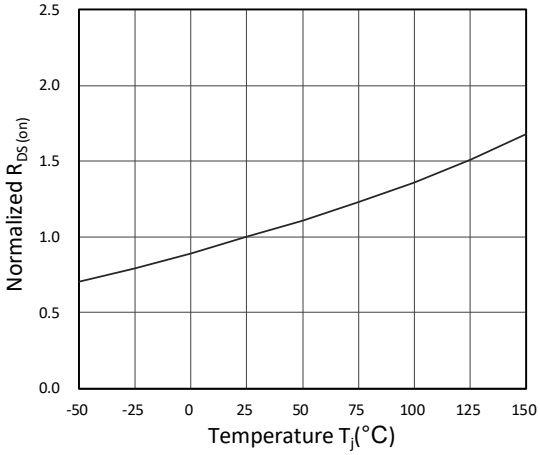


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

RATING AND CHARACTERISTIC CURVES

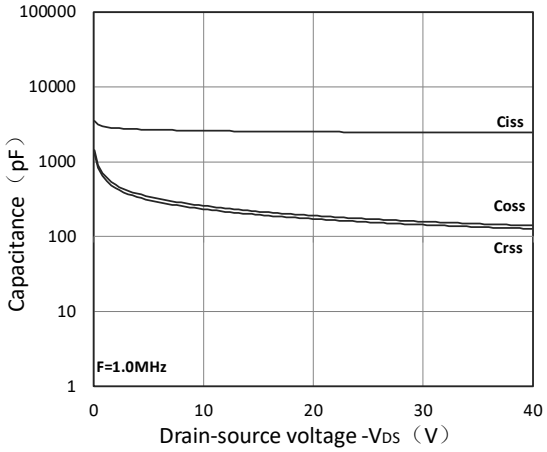


Figure 7. Capacitance Characteristics

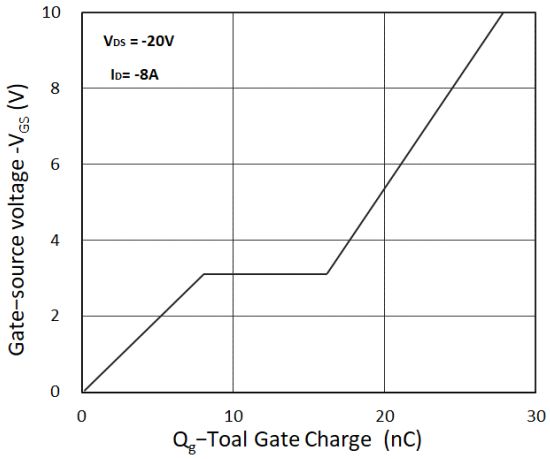


Figure 8. Gate Charge Characteristics

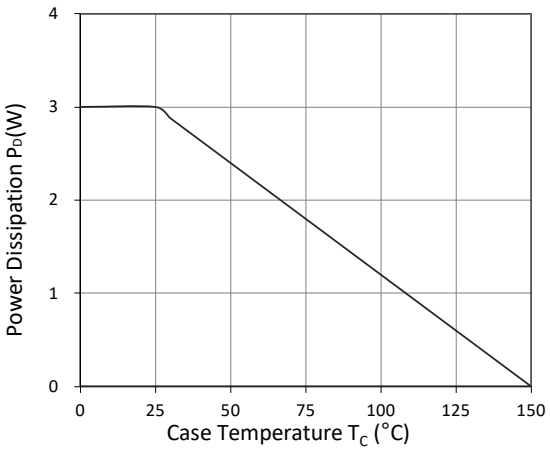


Figure 9. Power Dissipation

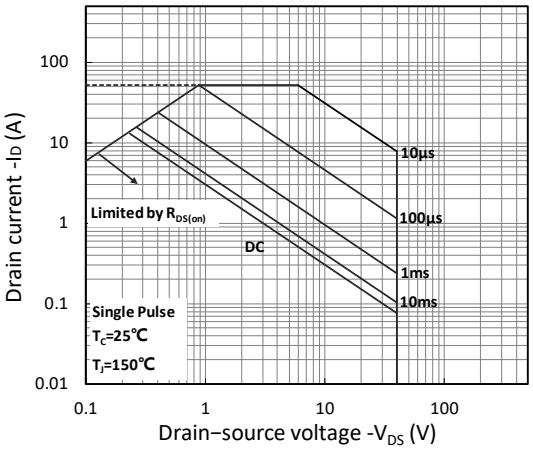


Figure10. Safe Operating Area

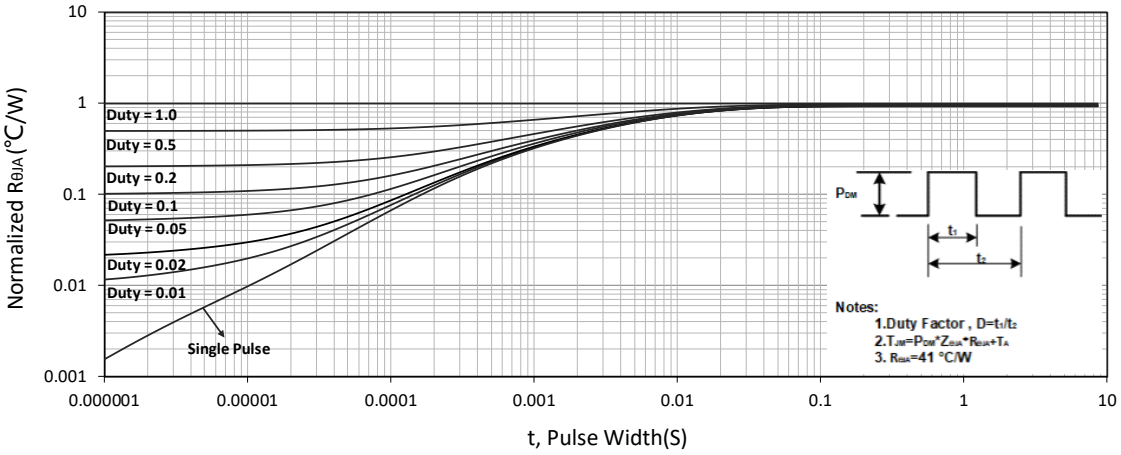
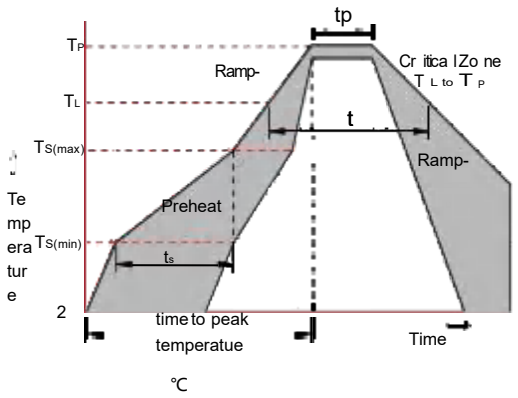


Figure 11. Normalized Maximum Transient Thermal Impedance

Soldering parameters

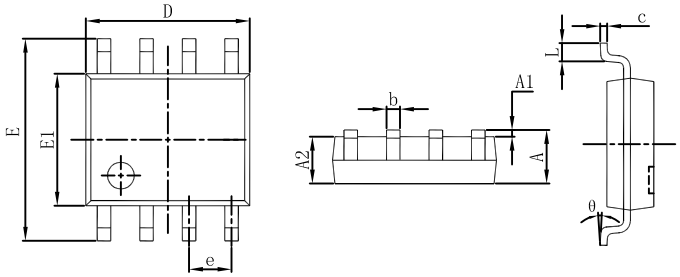
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition

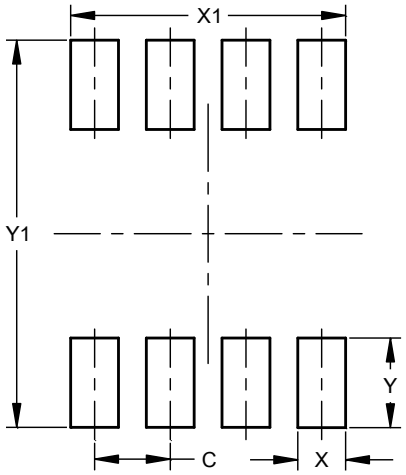


Package Dimensions & Suggested Pad Layout

SOP-8



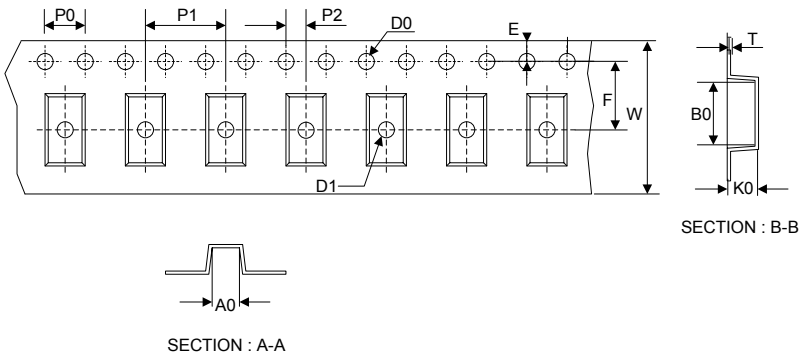
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Dimensions	Value (in mm)
C	1.27
X	0.70
X1	4.51
Y	2.00
Y1	7.00

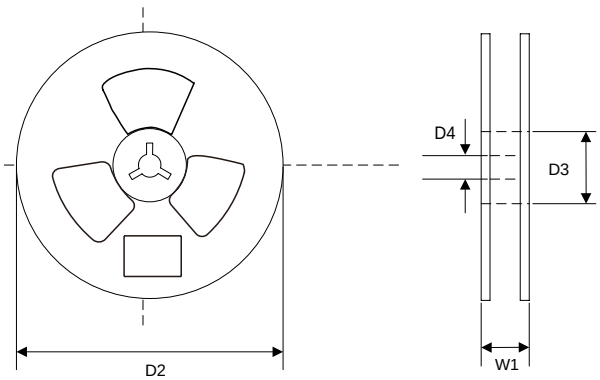
Tape & rell specification

Tape



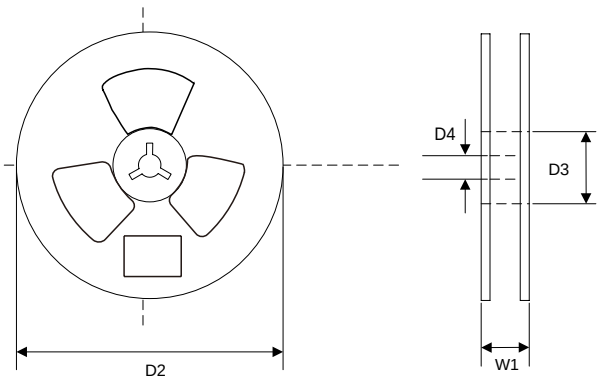
Symbol	Dimension (mm)
P0	4.00±0.20
P1	8.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.55±0.20
E	1.75±0.15
F	5.50±0.20
W	12.00±0.20
A0	7.00±0.20
B0	5.70±0.20
K0	1.35±0.20
T	0.23±0.20

13” Reel



D2	330.0±5.0
D3	73Min.
D4	13.5±2.5
W1	16.0±3.0
Quantity: 3000PCS	

13” Reel



D2	330.0±5.0
D3	73Min.
D4	13.5±2.5
W1	16.0±3.0
Quantity: 4000PCS	

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