

Description

The AO4410 is the high cell density trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The AO4410 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved

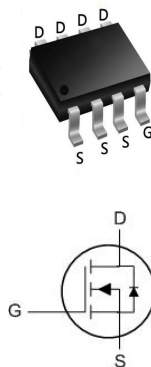
Super Low Gate Charge

100% EAS Guaranteed

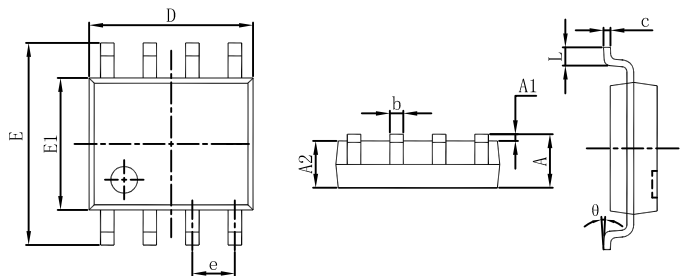
Green Device Available

Excellent CdV/dt effect decline

Advanced high cell density Trench technology



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°

Product Summary

BVDSS	RDSON	ID
30V	7.0mΩ	18 A

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	18	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ¹	10	A
I _{DM}	Pulsed Drain Current ²	60	A
EAS	Single Pulse Avalanche Energy ³	40	mJ
I _{AS}	Avalanche Current	35	A
P _D @T _A =25°C	Total Power Dissipation ⁴	5	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	41	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	10	°C/W

AO4410

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =15A	-	7.0	9	mΩ
		V _{GS} =4.5V, I _D =10A	-	11	14	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	1116	-	pF
C _{oss}	Output Capacitance		-	187	-	pF
C _{rss}	Reverse Transfer Capacitance		-	152	-	pF
Q _g	Total Gate Charge	V _{DS} =15V, I _D =8A, V _{GS} =10V	-	13.3	-	nC
Q _{gs}	Gate-Source Charge		-	3.1	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	5	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =15A, R _{GEN} =3Ω, V _{GS} =10V	-	15	-	ns
t _r	Turn-on Rise Time		-	19	-	ns
t _{d(off)}	Turn-off Delay Time		-	35	-	ns
t _f	Turn-off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	15	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	60	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =15A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =15A, dI/dt=100A/μs	-	14	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	4.1	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25°C, V_{GS}=15V, R_G=25Ω, L=0.5mH, I_{AS}=12.6A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

RATING AND CHARACTERISTIC CURVES (AO4410)

Figure1: Output Characteristics

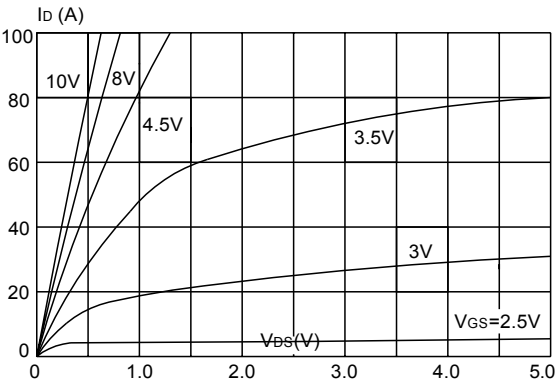


Figure 2: Typical Transfer Characteristics

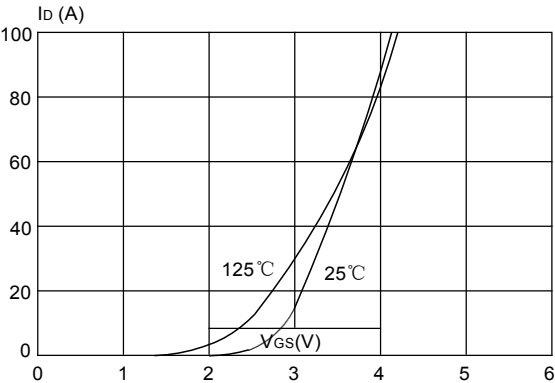


Figure 3: On-resistance vs. Drain Current

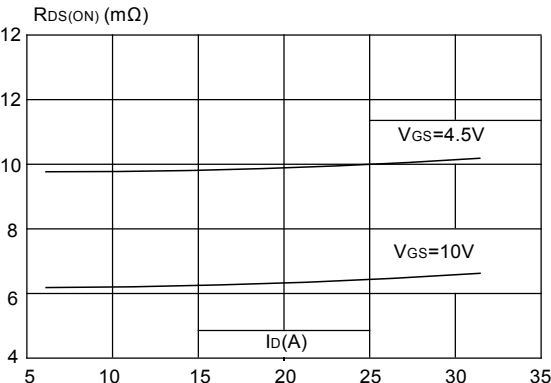


Figure 4: Body Diode Characteristics

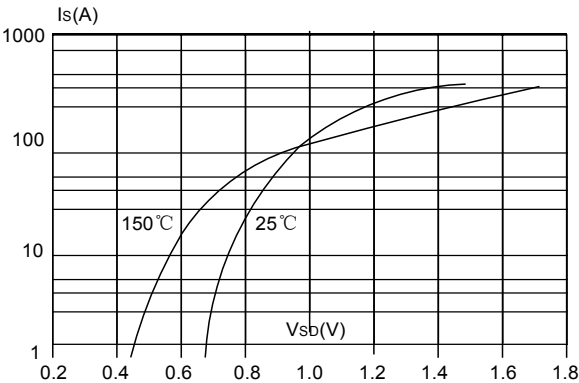


Figure 5: Gate Charge Characteristics

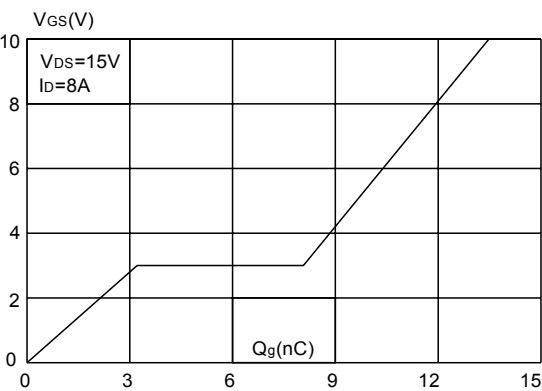
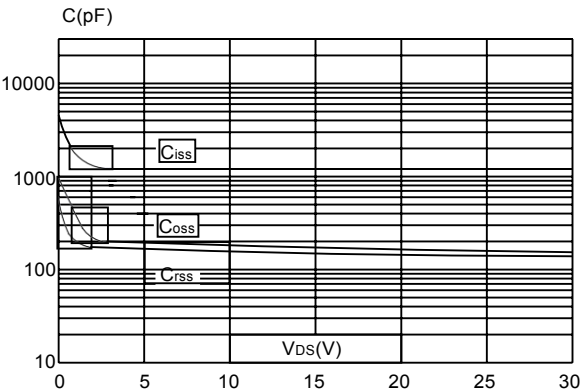


Figure 6: Capacitance Characteristics



RATING AND CHARACTERISTIC CURVES (4410)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

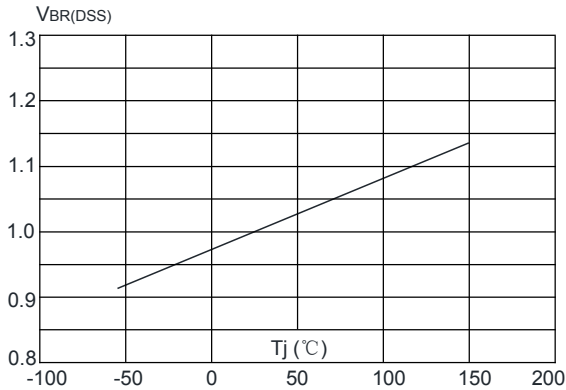


Figure 8: Normalized on Resistance vs. Junction Temperature

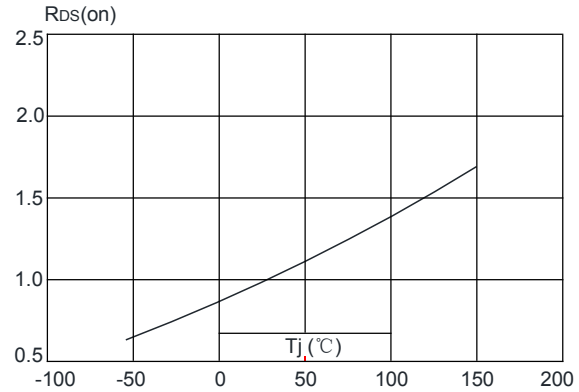


Figure 9: Maximum Safe Operating Area

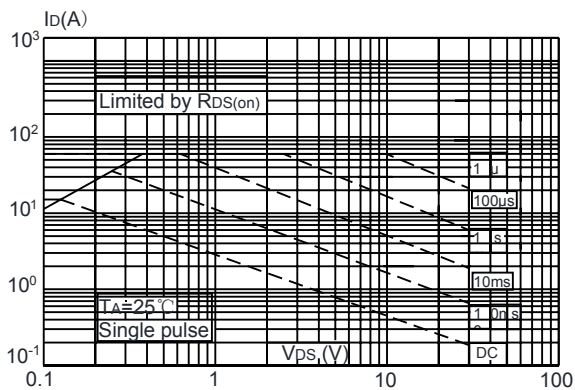


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

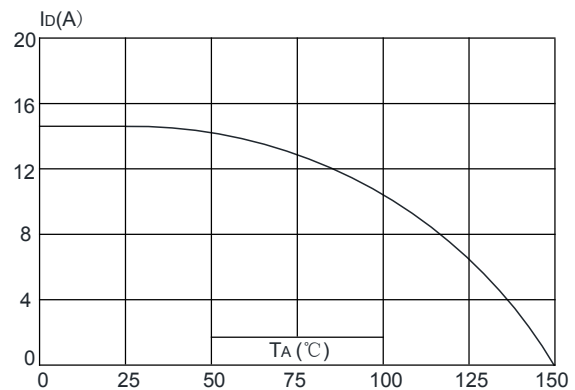


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

