

Product Specification

XBLW AO3416A

N-Channel Enhancement Mode MOSFET

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Description

The AO3416A uses advanced trench technology to provide excellent RDS(ON) , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

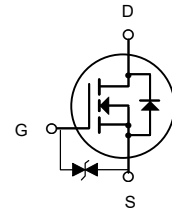
General Features

- VDS = 20V ID =6.5A
- RDS(ON) < 22mΩ @ VGS=4.5V
- ESD=2500HBM



Application

- Battery protection
- Load switch
- Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW AO3416A	SOT-23-3L	AGBV	Tape	3000Pcs/Reel

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
V _{DS}	Drain-Source Voltage	20	V
V _{GS}	Gate-Source Voltage	±12	V
I _D	Drain Current-Continuous	6.5	A
I _{DM}	Drain Current-Pulsed (Note 1)	30	A
P _D	Maximum Power Dissipation	1.4	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 To 150	°C
R _{θJA}	Thermal Resistance, Junction-to-Ambient (Note 2)	89	°C/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20		-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.7	1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =6.5A	-	14	22	mΩ
		V _{GS} =2.5V, I _D =5.5A	-	17	26	mΩ
		V _{GS} =1.8V, I _D =5A	-	28	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =6.5A	8	-	-	S
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1.0MHz	-	660	-	PF
Output Capacitance	C _{oss}		-	160	-	PF
Reverse Transfer Capacitance	C _{rss}		-	87	-	PF
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, R _L =1.5Ω V _{GS} =5V, R _{GEN} =3Ω	-	0.5		nS
Turn-on Rise Time	t _r		-	1		nS
Turn-Off Delay Time	t _{d(off)}		-	12		nS
Turn-Off Fall Time	t _f		-	4		nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6.5A, V _{GS} =4.5V	-	8		nC
Gate-Source Charge	Q _{gs}		-	2.5	-	nC
Gate-Drain Charge	Q _{gd}		-	3	-	nC
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =6.5A	-	-	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	6.5	A

Notes:

Repetitive Rating: Pulse width limited by maximum junction temperature.
 Surface Mounted on FR4 Board, t ≤ 10 sec.
 Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
 Guaranteed by design, not subject to production

Typical Characteristics

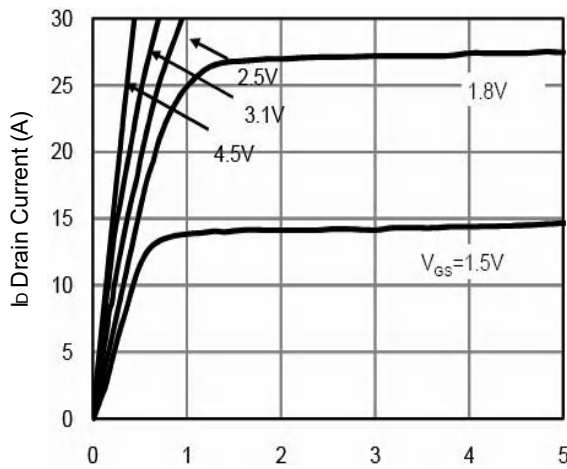


Fig.1 Typical Output Characteristics

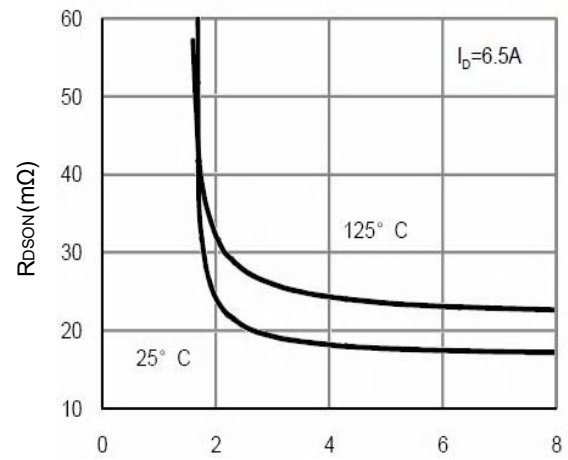


Fig.2 On-Resistance vs. Gate-Source

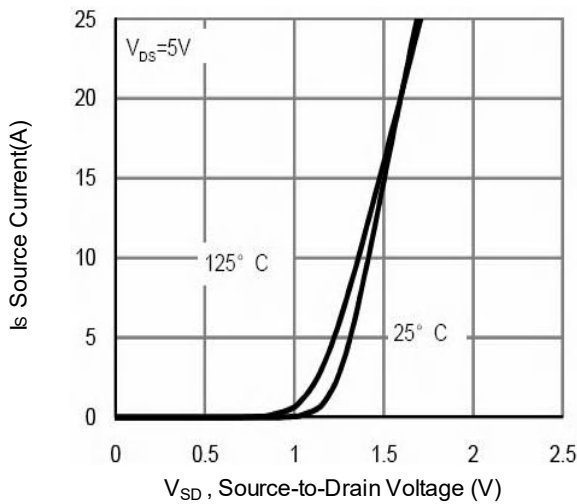


Fig.3 Forward Characteristics of Reverse

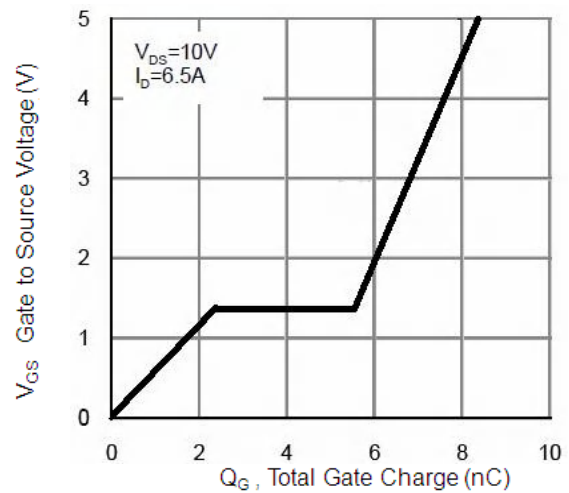


Fig.4 Gate-Charge Characteristics

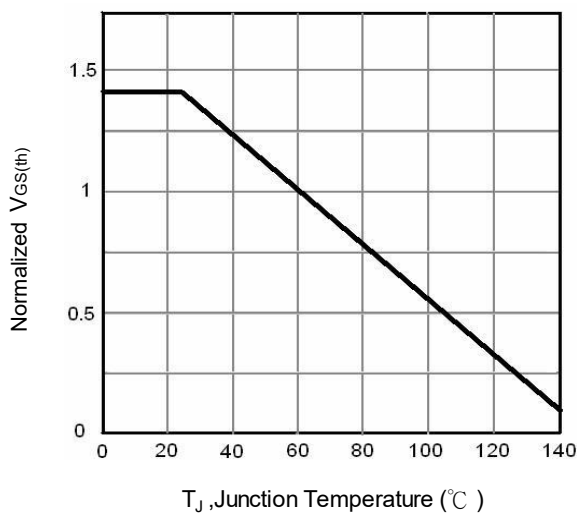


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

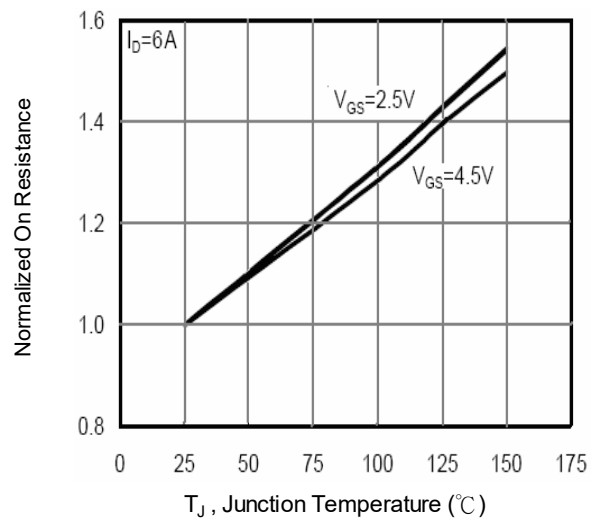


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

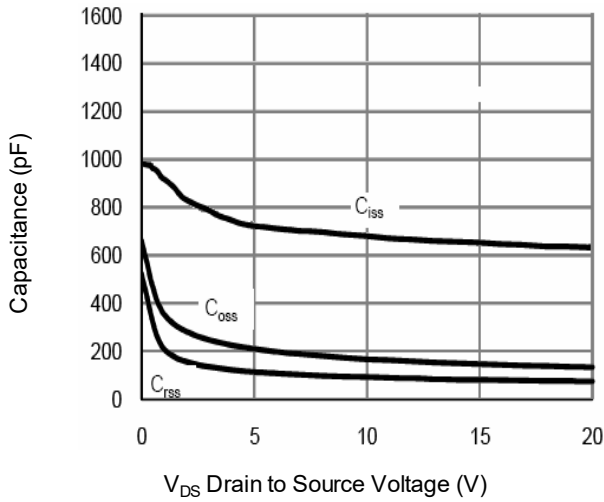


Fig.7 Capacitance

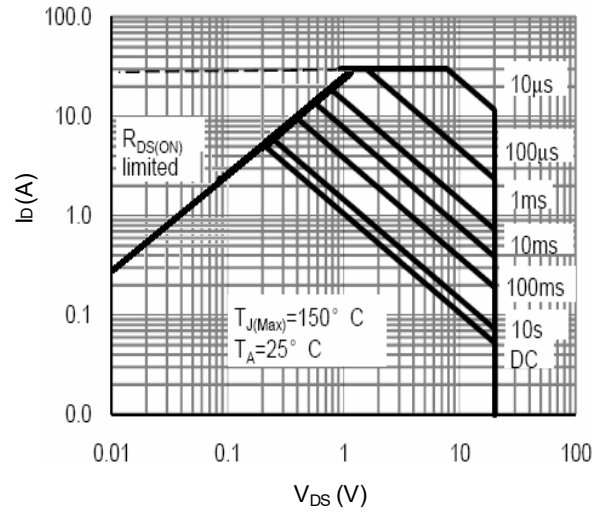


Fig.8 Safe Operating Area

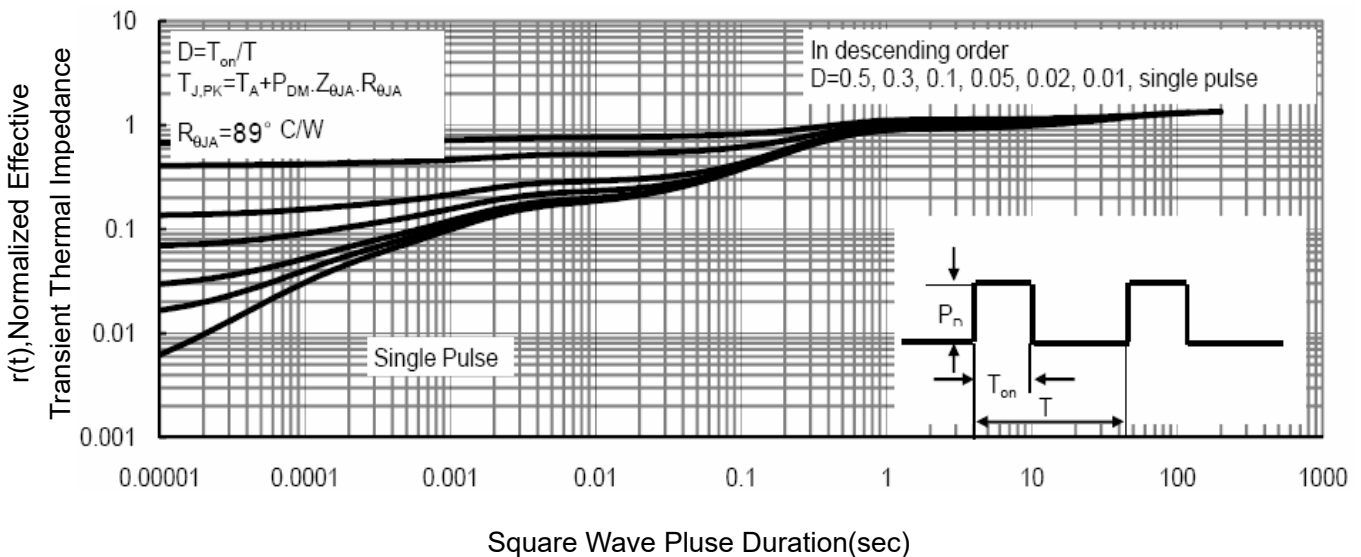


Fig.9 Normalized Maximum Transient Thermal Impedance

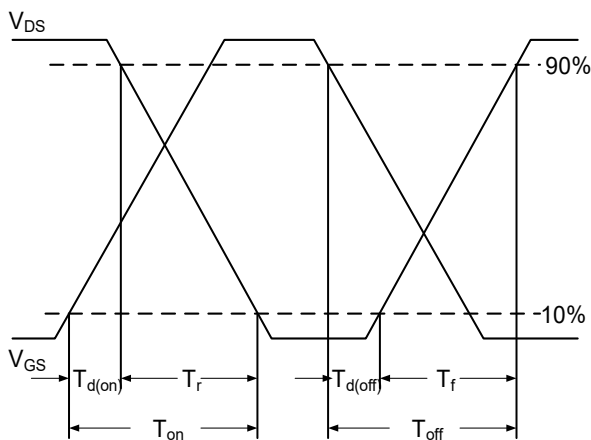


Fig.10 Switching Time Waveform

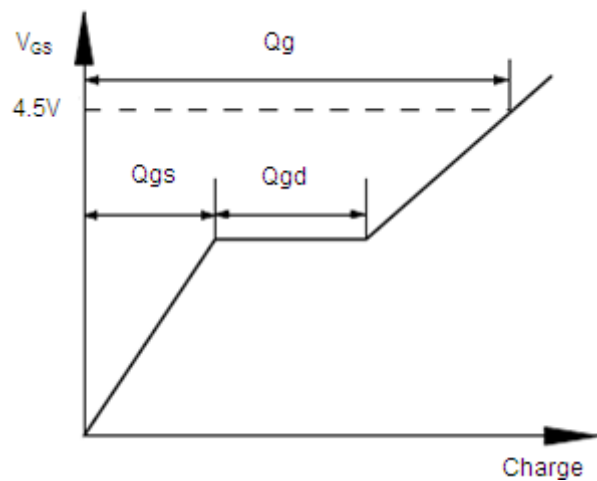
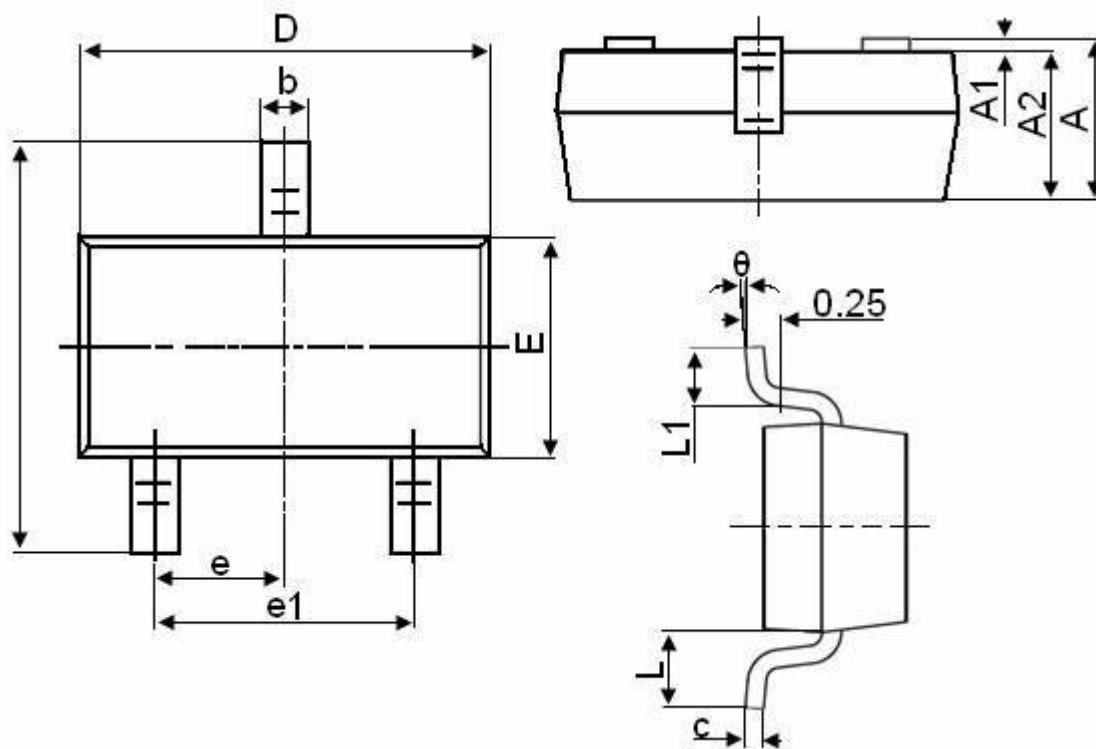


Fig.11 Gate Charge Waveform

Package Information

SOT23 3L



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.800	3.000
E	1.500	1.700
E1	2.650	2.950
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.600
θ	0°	8°

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