

AO3400

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2021/10	New
V1.1	2022/11	Modify Ordering Information
V1.2	2023/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

Description

The AO3400 uses advanced trench technology to provide excellent $R_{DS(ON)}$, 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

- ※ $V_{DS} = 30V$ $I_D = 6A$
- ※ $R_{DS(ON)} < 20m\Omega$ @ $V_{GS} = 10V$

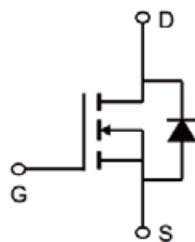
Applications

- ※ Lithium battery protection
- ※ Wireless impact
- ※ Mobile phone fast charging

The appearance of the product



SOT-23



Equivalent Circuit

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
AO3400	SOT-23	A09T	REEL	3000PCS/REEL

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5\text{V}^1$	6	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5\text{V}^1$	4.9	A
I_{DM}	Pulsed Drain Current ²	20	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation ³	1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	125	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	85	$^\circ\text{C/W}$

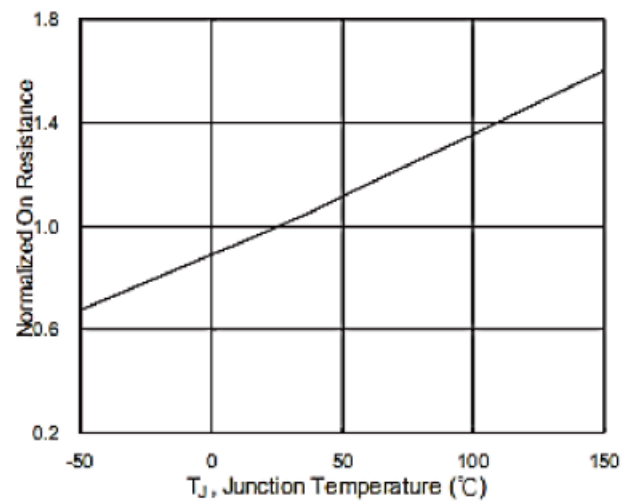
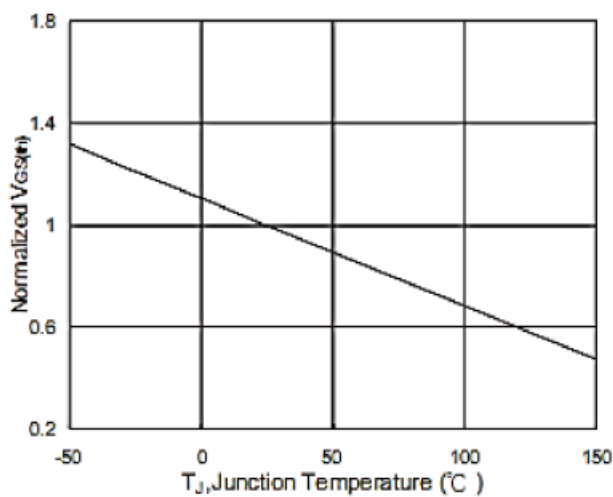
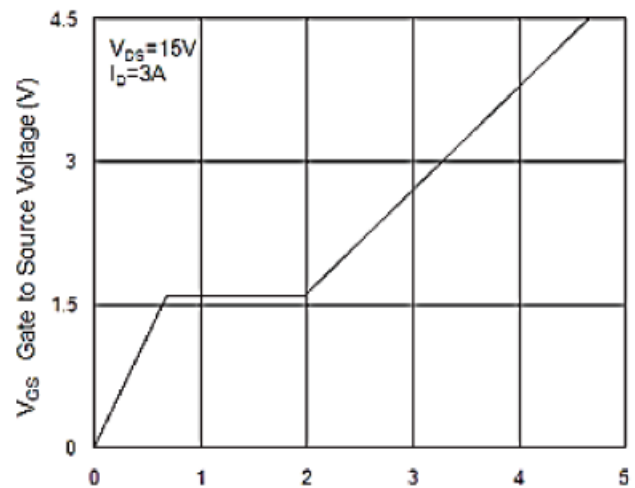
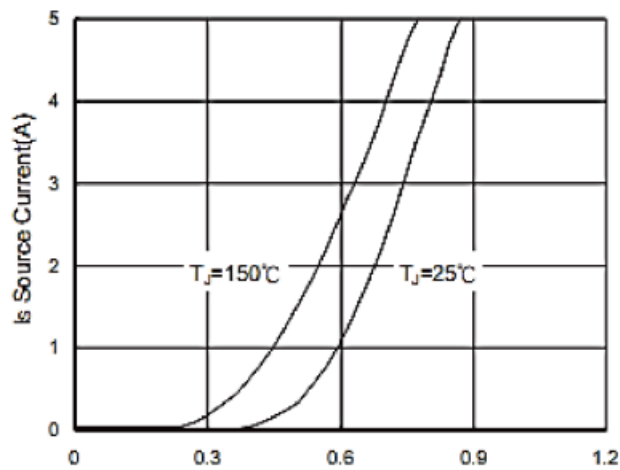
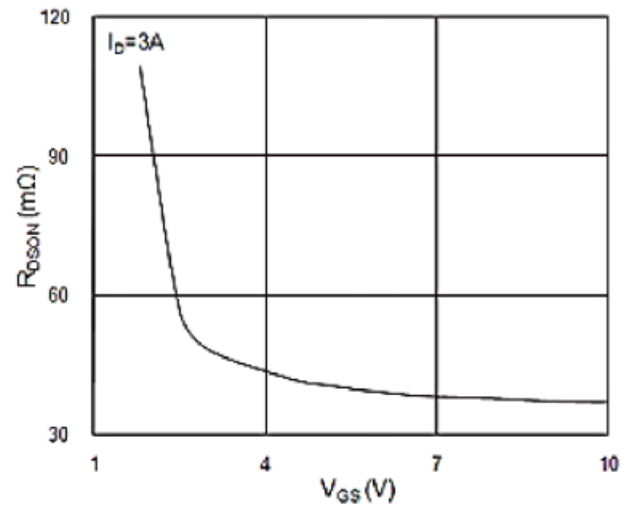
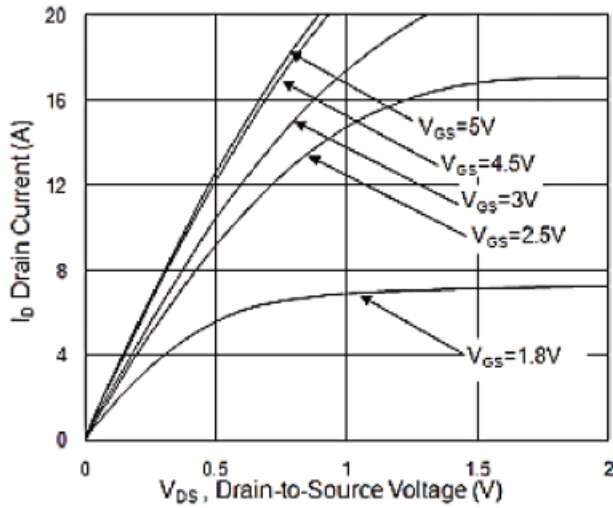
Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
On/Off States						
B _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	30	33	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =5.8A	---	20	28	mΩ
		V _{GS} =4.5V , I _D =5A	---	24	32	
		V _{GS} =2.5V , I _D =4A	---	31	55	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.5	0.85	1.2	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V , V _{GS} =0V , T _J =25℃	---	---	1	uA
		V _{DS} =24V , V _{GS} =0V , T _J =55℃	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V , I _D =5A	---	25	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V , V _{GS} =0V , f=1MHz	---	860	---	pF
C _{oss}	Output Capacitance		---	84	---	
C _{rss}	Reverse Transfer Capacitance		---	70	---	
Q _g	Total Gate Charge (4.5V)	V _{DS} =15V , V _{GS} =4.5V , I _D =5.8A	---	11.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.6	---	
Q _{gd}	Gate-Drain Charge		---	2.9	---	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V , V _{GS} =10V , R _G =3Ω I _D =5A	---	5	---	ns
T _r	Rise Time		---	47.	---	
T _{d(off)}	Turn-Off Delay Time		---	26	---	
T _f	Fall Time		---	8	---	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V , Force Current	---	---	6	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25℃	---	---	1.2	V

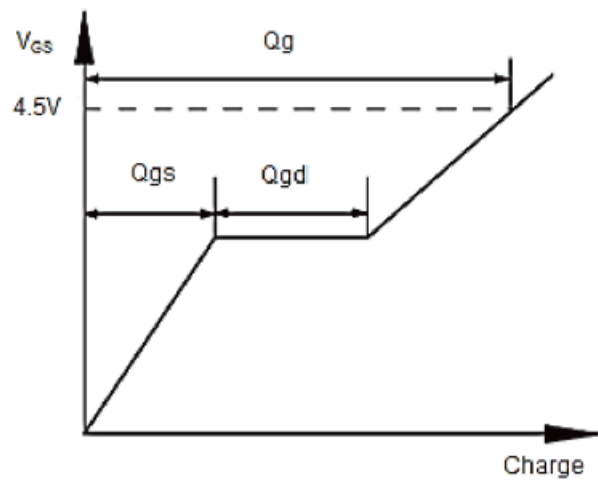
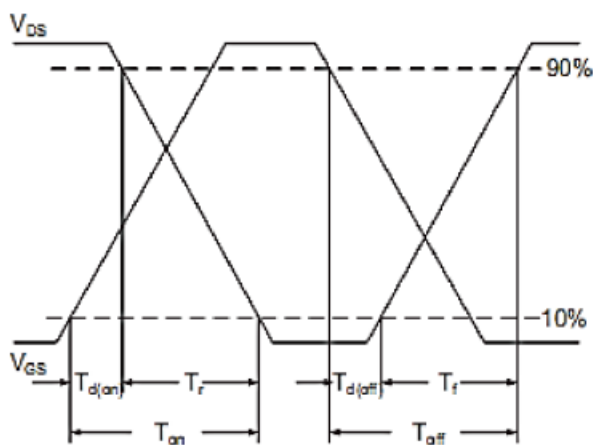
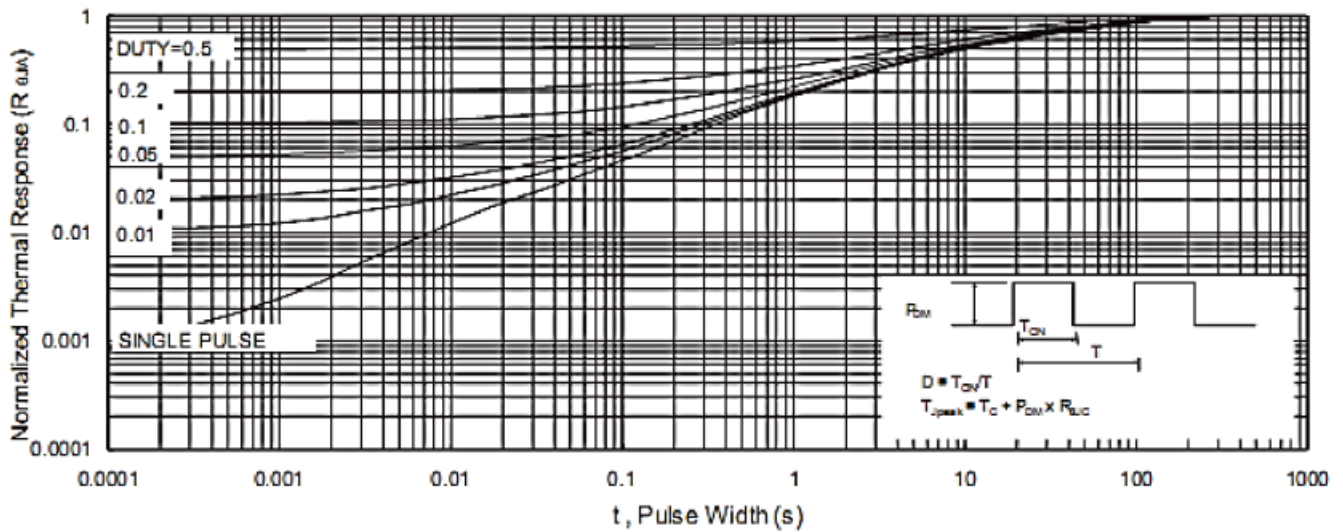
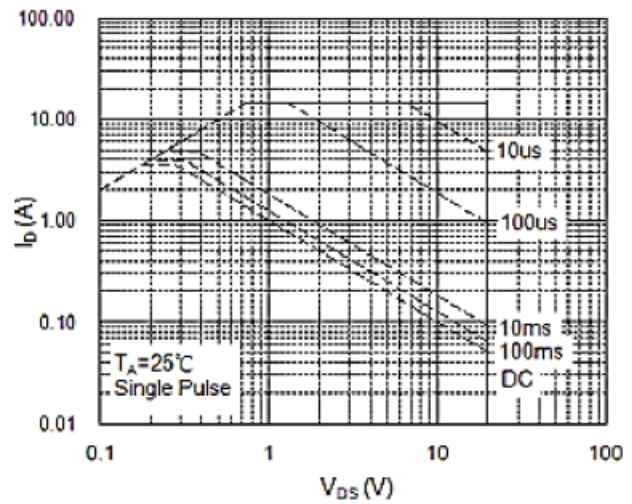
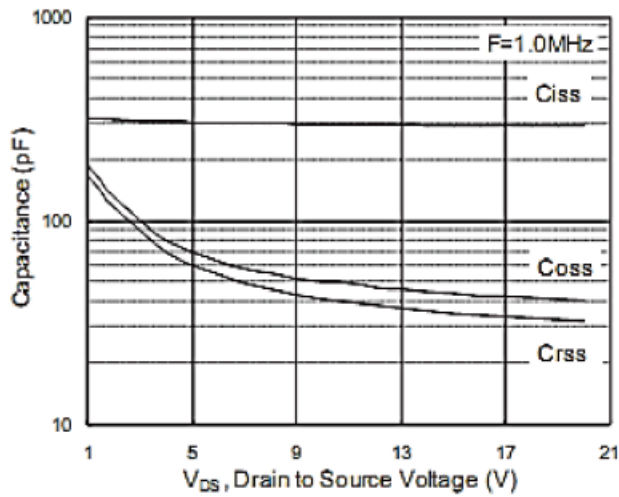
Note :

- 1、.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

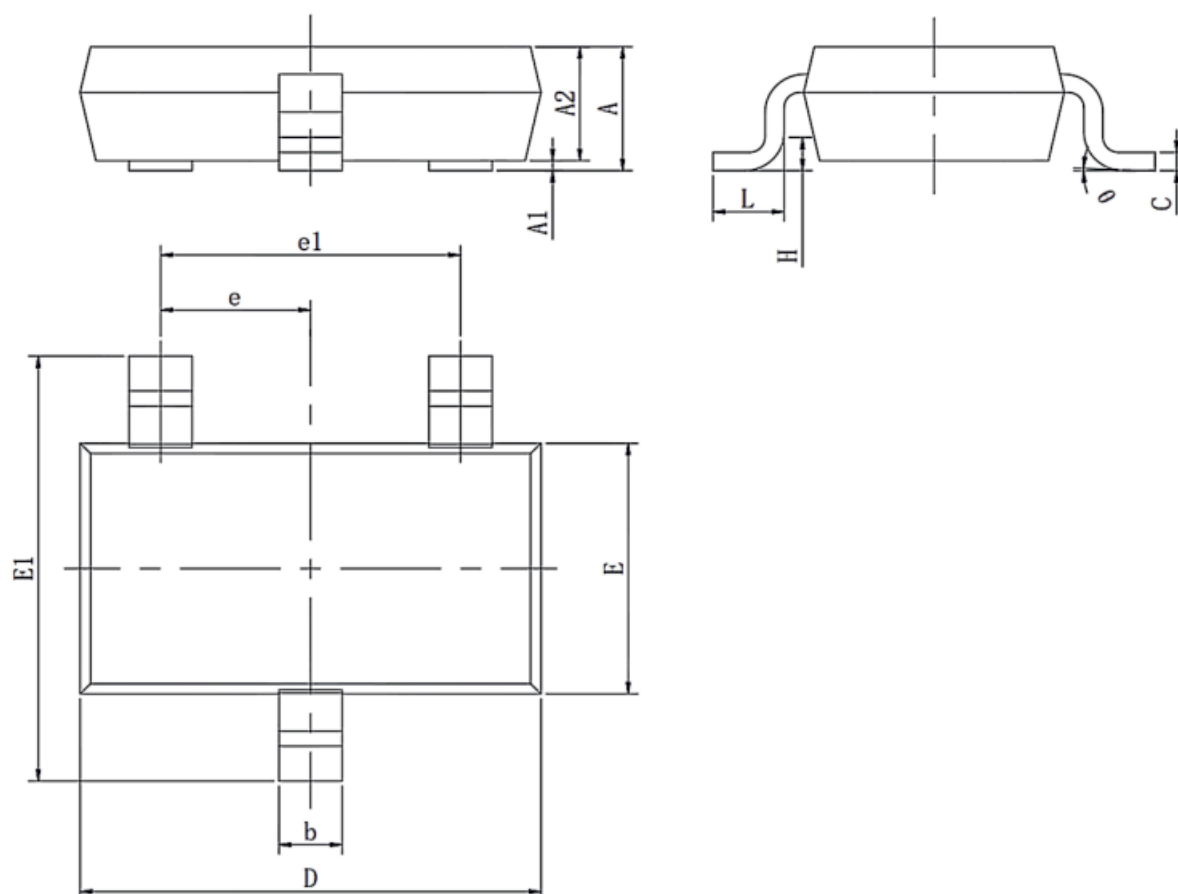
Typical Characteristics



Typical Characteristics



Outline Dimensions

SOT-23
Unit : mm


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
D	2.800	3.020	0.110	0.119
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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