

1.Description

The AO3415A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 1.8V. This device is suitable for use as a load switch applications.

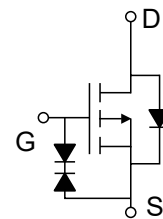
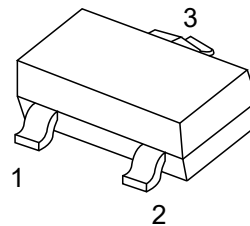
3.Features

- Excellent $R_{DS(ON)}$, low gate charge, low gate voltages

5.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23



6.Maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current ($t \leq 10\text{s}$)	I_D	-4	A
Maximum Power Dissipation ($t \leq 10\text{s}$)	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$



7. $T_A=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameters						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.3	-0.56	-1	
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 8V$			± 10	μA
		$V_{DS}=0V, V_{GS}=\pm 4.5V$			± 1	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$			-1	
Drain-source on-state resistance(note1)	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-4A$		34	36	m Ω
		$V_{GS}=-2.5V, I_D=-4A$		43	60	
Forward transconductance(note2)	g_{FS}	$V_{DS}=-5V, I_D=-4A$	8			S
Body diode voltage(note2)	V_{SD}	$I_S=-1A, V_{GS}=0V$			-1	V
Dynamic Parameters (note3)						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		1450		pF
Output Capacitance	C_{oss}			205		
Reverse Transfer Capacitance	C_{rss}			160		
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		6.5		Ω
Switching Parameters						
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V$ $I_D=-4A$		17.2		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			4.5		
Turn-On Delay Time (note3)	$t_{D(on)}$	$V_{DS}=-10V, V_{GS}=-4.5V$ $R_{GEN}=3\Omega, R_L=2.5\Omega$		9.5		ns
Turn-On Rise Time (note3)	t_r			17		
Turn-Off Delay Time (note3)	$t_{D(off)}$			94		
Turn-Off Fall Time (note3)	t_f			35		

1. Repetitive rating, pulse width limited by junction temperature.

2. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3. These parameters have no way to verify



8.1 Typical Characteristics

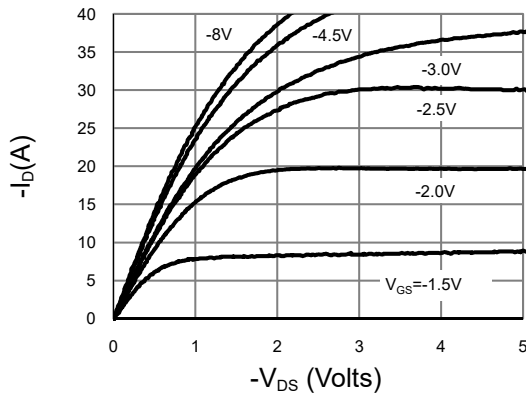


Fig 1: On-Region Characteristics

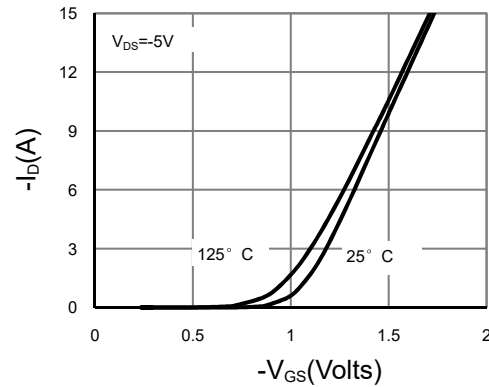


Figure 2: Transfer Characteristics

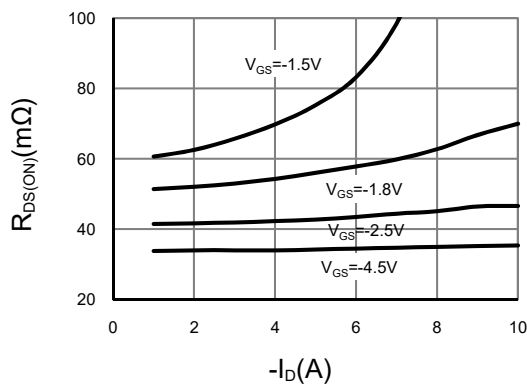


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

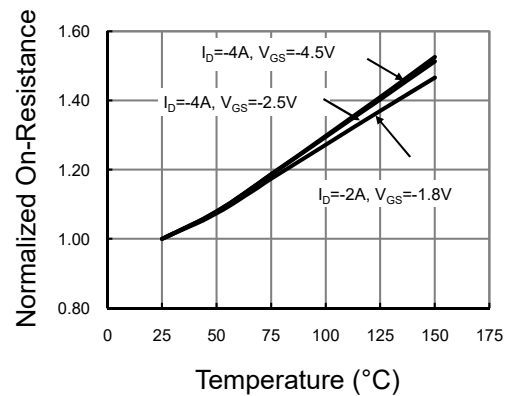


Figure 4: On-Resistance vs. Junction Temperature

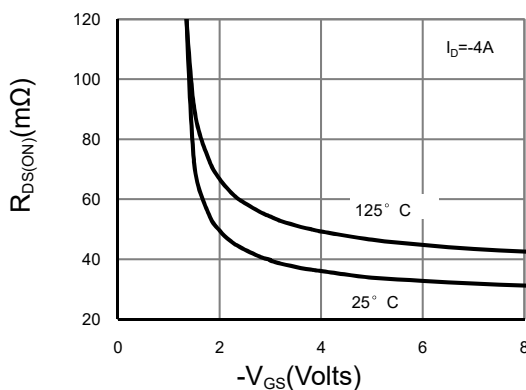


Figure 5: On-Resistance vs. Gate-Source Voltage

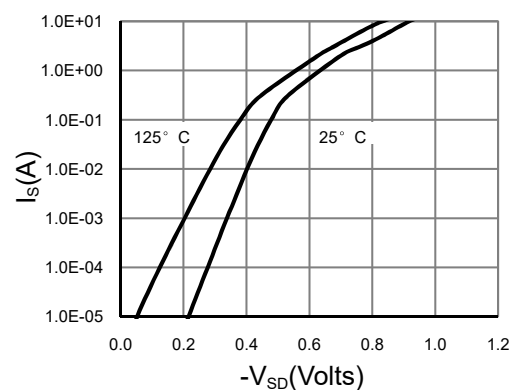


Figure 6: Body-Diode Characteristics



8.2 Typical Characteristics

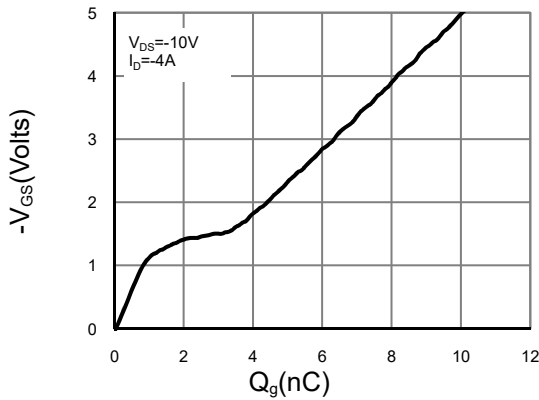


Figure 7: Gate-Charge Characteristics

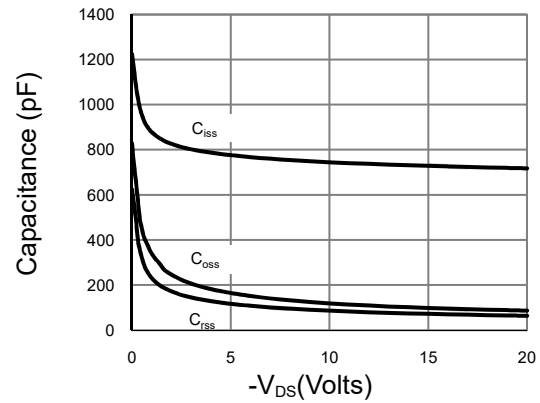


Figure 8: Capacitance Characteristics

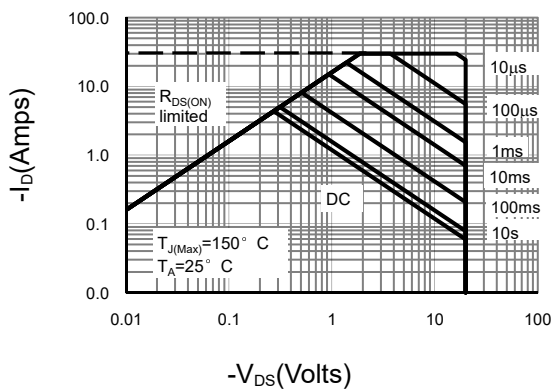


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

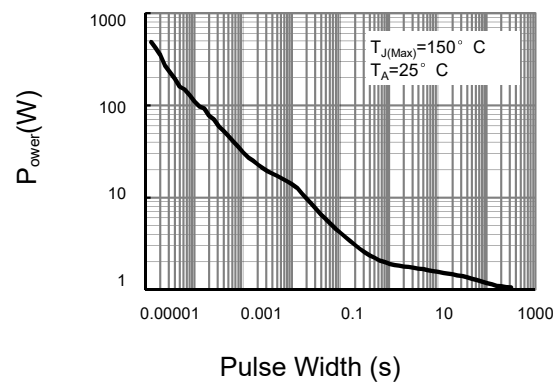


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

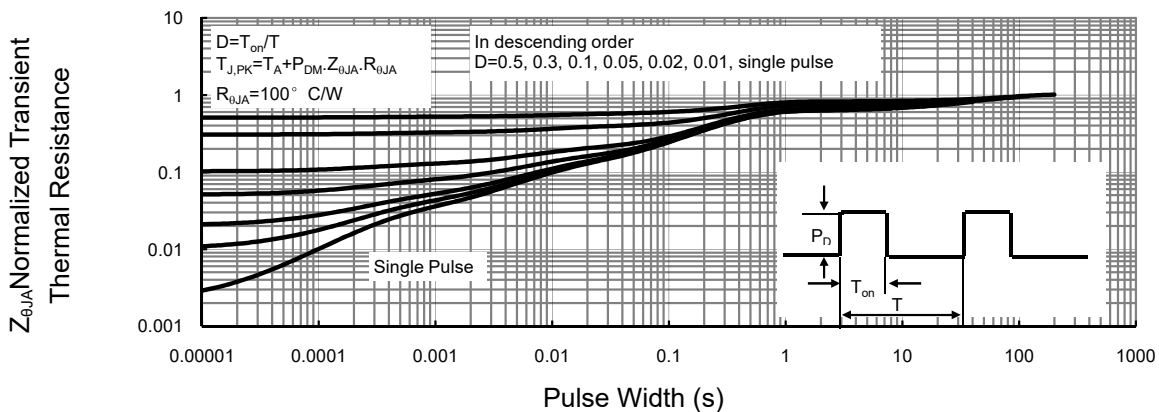
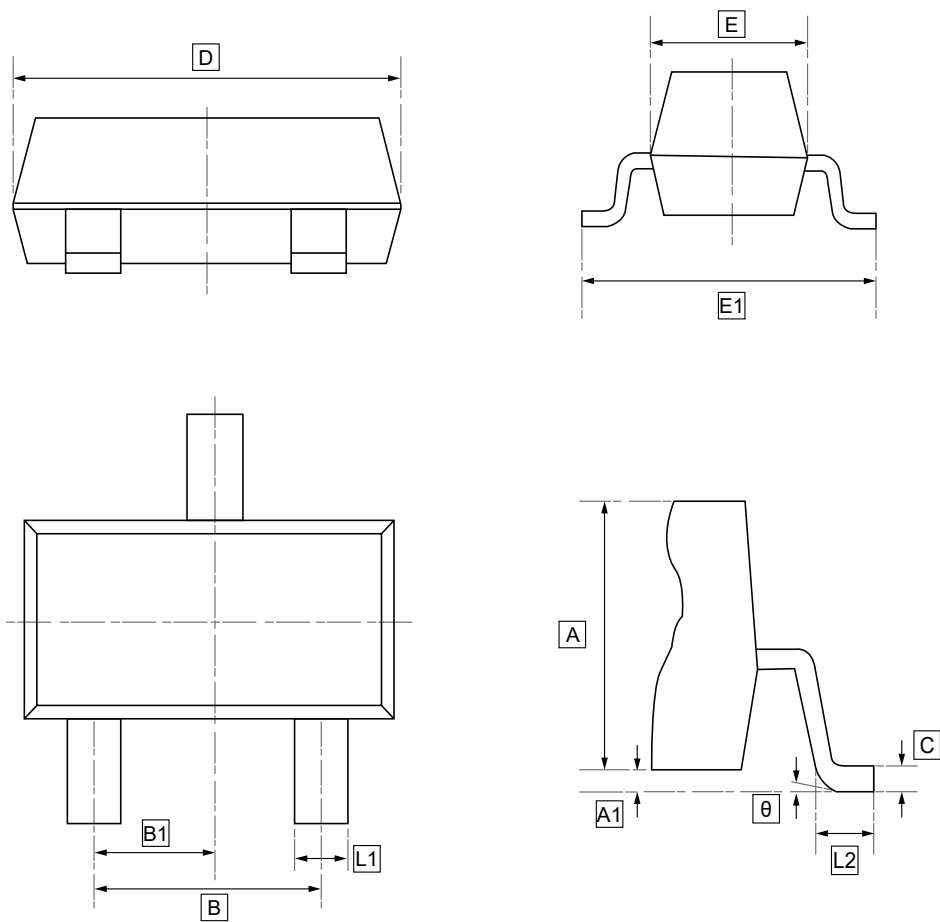


Figure 11: Normalized Maximum Transient Thermal Impedance



9.SOT-23 Package Outline Dimensions

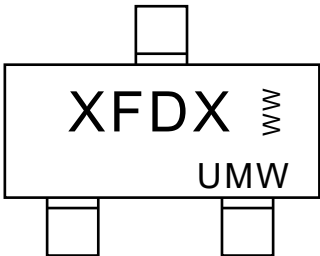


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	L1	L2	C	D	E	E1	B	B1	θ
Min	1.050	0.000	0.300	0.350	0.100	2.820	1.500	2.700	1.800	0.950	0°
Max	1.150	0.100	0.500	0.550	0.200	3.020	1.700	2.900	2.000	TYP	8°



10.Ordering information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3415A	SOT-23	3000	Tape and reel



11.Disclaimer

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