

1.Description

The AO4435A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

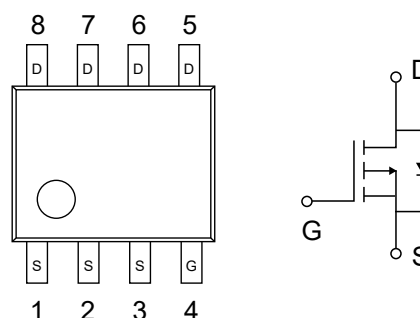
2.Features

- $V_{DS(V)} = -30V$
- $I_D = -12A$
- $R_{DS(ON)} < 20m\Omega (V_{GS} = 10V)$

3.Pinning information

Pin	Symbol	Description
4	G	GATE
1,2,3	S	SOURCE
5,6,7,8	D	DRAIN

SOP-8



4.Absolute Maximum Ratings $T_A = 25^\circ C$

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current ³ , $V_{GS} = 10V$	$T_A = 25^\circ C$	I_D	-12	A
	$T_A = 70^\circ C$		-10	
Pulsed Drain Current ¹		I_{DM}	-50	
Total Power Dissipation	$T_A = 25^\circ C$	P_D	2.5	W
Linear Derating Factor			0.02	W/ $^\circ C$
Storage Temperature Range		T_{STG}	-55 to 150	$^\circ C$
Junction Temperature Range		T_J	-55 to 150	$^\circ C$
Maximum Thermal Resistance, Junction-ambient ³		R_{thJA}	50	$^\circ C/W$



5. Electrical Characteristic ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-30			V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-7\text{A}$		15	20	mΩ
		$V_{GS}=-4.5\text{V}$, $I_D=-5\text{A}$		25	32	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.6	-0.9	-1.5	V
Forward Transconductance	g_{FS}	$V_{DS}=-10\text{V}$, $I_D=-7\text{A}$		16		S
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$			-30	uA
Gate-Source Leakage	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$			± 100	uA
Total Gate Charge	Q_g	$I_D=-7\text{A}$		18	29	nC
Gate-Source Charge	Q_{gs}	$V_{DS}=-24\text{V}$		3		nC
Gate-Drain ("Miller") Charge	Q_{gd}	$V_{GS}=-4.5\text{V}$		10		nC
Turn-on Delay Time	$t_{D(on)}$	$V_{DS}=-15\text{V}$		8		ns
Rise Time	t_r	$I_D=-1\text{A}$		6.6		ns
Turn-off Delay Time	$t_{D(off)}$	$R_G=3.3\Omega$		44		ns
Fall Time	t_f	$V_{GS}=-10\text{V}$		34		ns
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$		1175	1690	pF
Output Capacitance	C_{oss}	$V_{DS}=-25\text{V}$		195		pF
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		190		pF
Forward On Voltage ²	V_{SD}	$I_S=-2.1\text{A}$, $V_{GS}=0\text{V}$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-7\text{A}$, $V_{GS}=0\text{V}$		28		ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100\text{A}/\mu\text{s}$		18		nC

Notes:

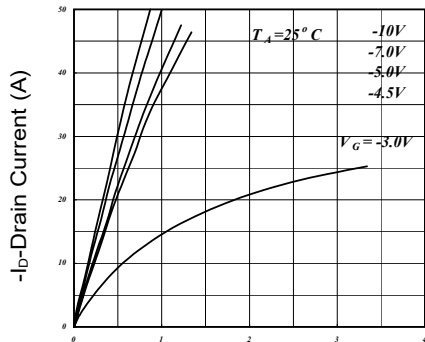
1. Pulse width limited by Max. junction temperature.

2. Pulse test

3. Surface mounted on 1 in ² copper pad of FR4 board, $t < 10\text{sec}$; 125°C/W when mounted on Min. cop.

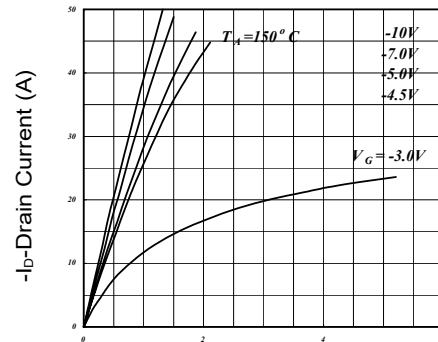


6.1 Typical characteristic



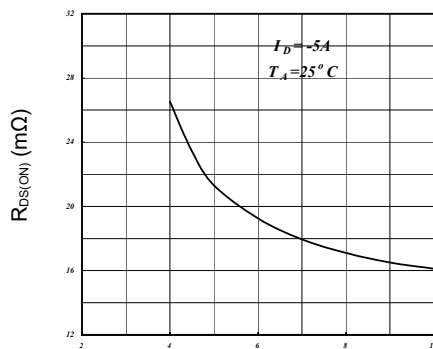
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 1. Typical Output Characteristics



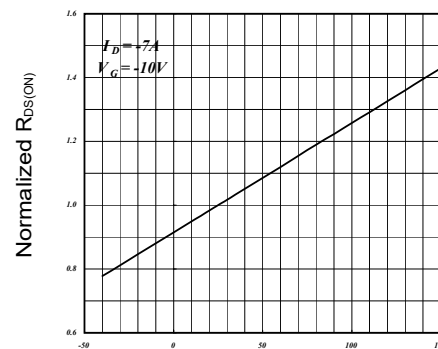
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics



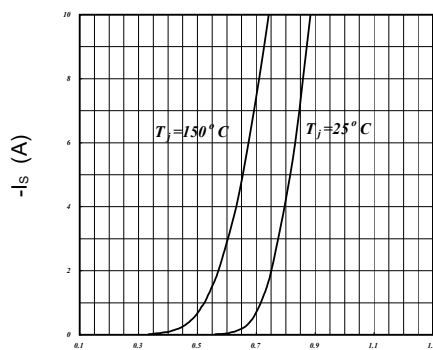
$-V_{GS}$ - Gate-to-Source Voltage (V)

Fig 3. On-Resistance v.s. Gate Voltage



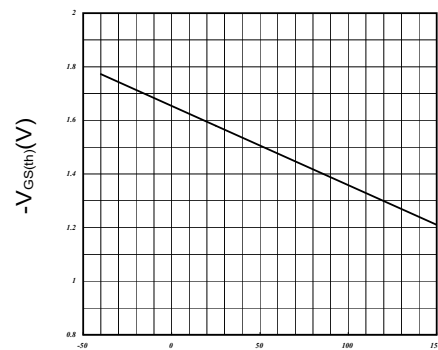
T_J , Junction Temperature ($^{\circ}\text{C}$)

Fig 4. Normalized On-Resistance v.s. Junction Temperature



$-V_{SD}$, Source-to-Drain Voltage (V)

Fig 5. Forward Characteristic of Reverse Diode

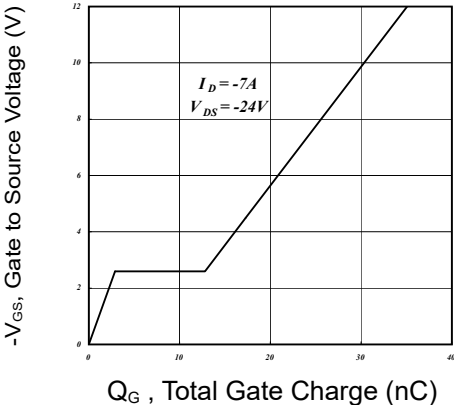
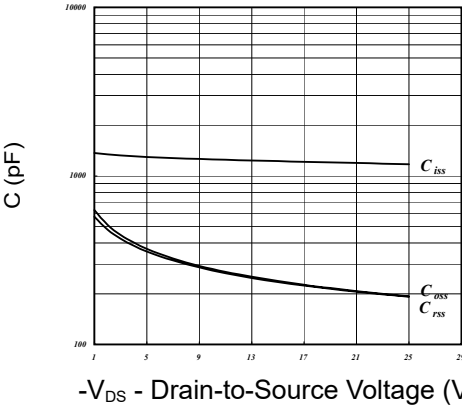
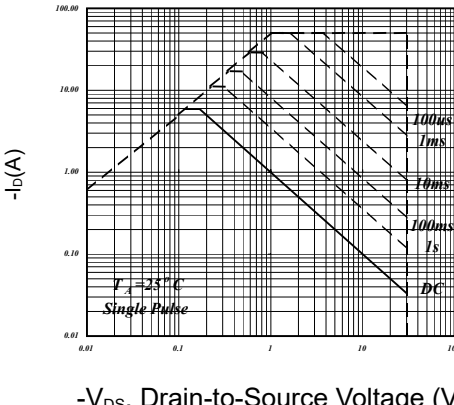
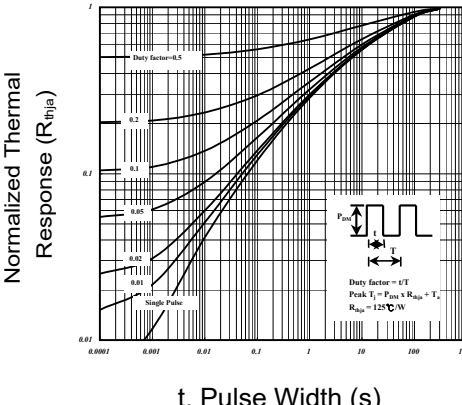
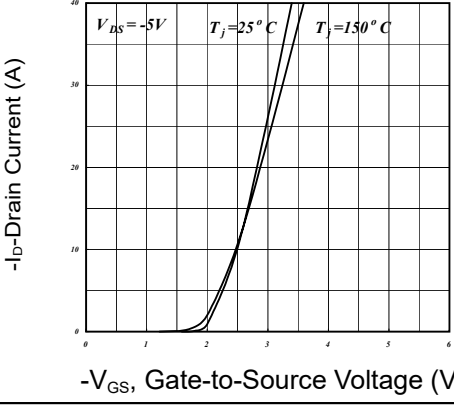
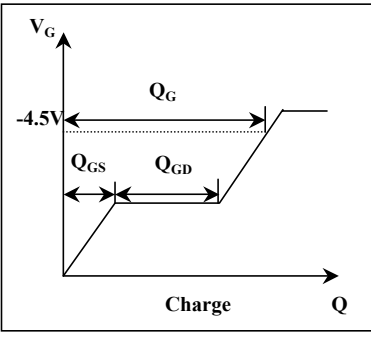


T_J - Junction Temperature ($^{\circ}\text{C}$)

Fig 6. Gate Threshold Voltage v.s. Junction Temperature

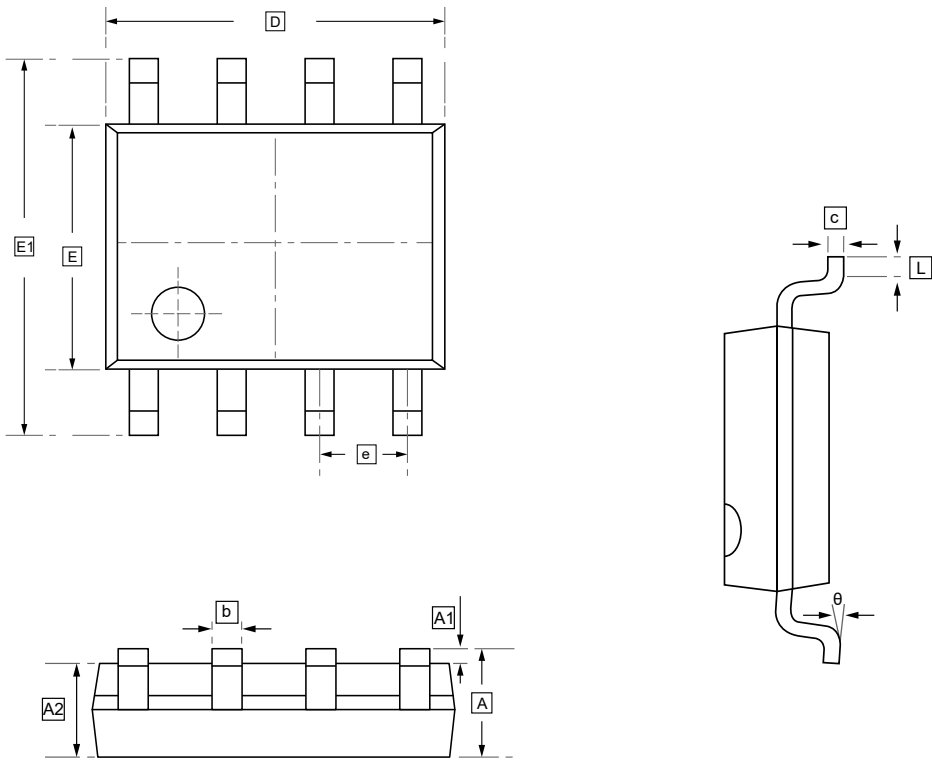


6.2Typical characteristic

	
Fig 7. Gate Charge Characteristics	Fig 8. Typical Capacitance Characteristics
	
Fig 9. Maximum Safe Operating Area	Fig 10. Effective Transient Thermal Impedance
	
Fig 11. Transfer Characteristics	Fig 12. Gate Charge Circuit



7.SOP-8 Package Outline Dimensions

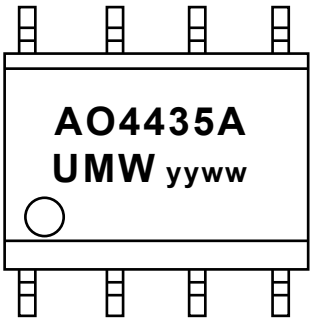


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	8°



8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4435A	SOP-8	3000	Tape and reel



9.Disclaimer

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