

1.Description

The AO4410 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.

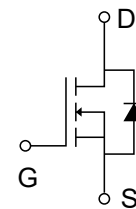
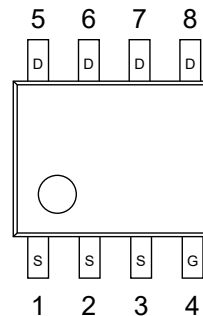
2.Features

- $V_{DS(V)} = 30V$
- $I_D = 18A$
- $R_{DS(ON)} < 5.5m\Omega (V_{GS}=10V)$
- $R_{DS(ON)} < 6.2m\Omega (V_{GS}=4.5V)$

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}	± 12	
Continuous Drain Current	$T_A = 25^\circ C$	I_D	18	A
	$T_A = 70^\circ C$		15	
Pulsed Drain Current		I_{DM}	80	
Power Dissipation	$T_A = 25^\circ C$	P_D	3.1	W
	$T_A = 70^\circ C$		2	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	R_{thJA}	40	$^\circ C/W$
	Steady-State		75	
Thermal Resistance.Junction- to-Lead		R_{thJL}	24	
Junction Temperature		T_J	-55 to 150	$^\circ C$
Storage Temperature Range		T_{STG}	-55 to 150	



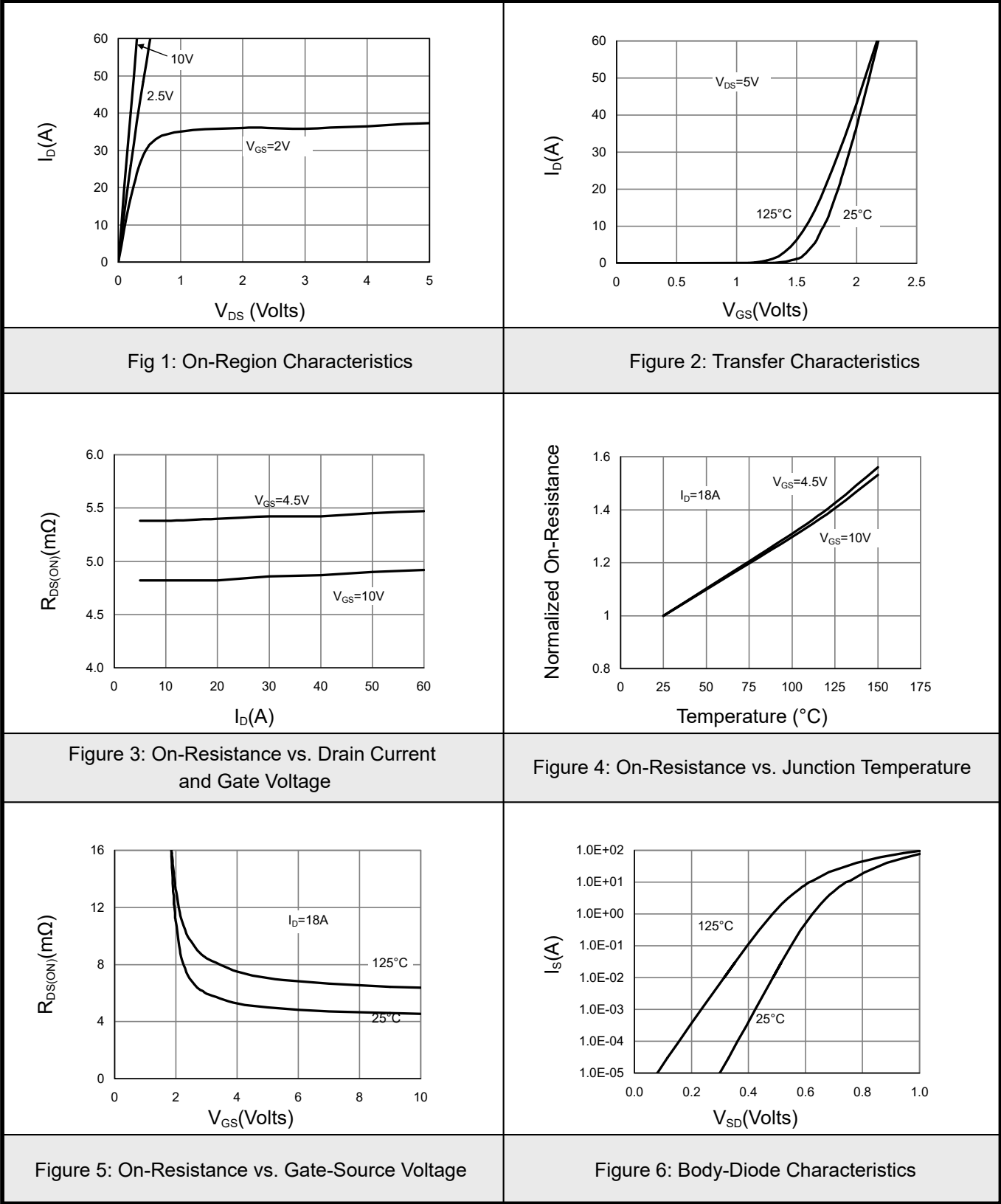
5. Electrical Characteristics $T_A=25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$			5	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 12\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	0.8		1.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=18\text{A}$			5.5	m Ω
		$V_{GS}=10\text{V}$, $I_D=18\text{A}$, $T_J=55^\circ\text{C}$			7.4	
		$V_{GS}=4.5\text{V}$, $I_D=15\text{A}$			6.2	
On state drain current	$I_{D(on)}$	$V_{GS}=4.5\text{V}$, $V_{DS}=5\text{V}$	80			A
Forward Transconductance	g_{FS}	$V_{DS}=5\text{V}$, $I_D=18\text{A}$		102		S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=15\text{V}$, $f=1\text{MHz}$		9130	10500	pF
Output Capacitance	C_{oss}			625		
Reverse Transfer Capacitance	C_{rss}			387		
Gate resistance	R_g	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		0.4	0.5	Ω
Total Gate Charge	Q_g	$V_{GS}=10\text{V}$, $V_{DS}=15\text{V}$ $I_D=18\text{A}$		72.4	85	nC
Gate Source Charge	Q_{gs}			13.4		
Gate Drain Charge	Q_{gd}			16.8		
Turn-On DelayTime	$t_{D(on)}$	$V_{GS}=10\text{V}$, $V_{DS}=15\text{V}$ $R_L=0.83\Omega$, $R_{GEN}=3\Omega$		11	15	ns
Turn-On Rise Time	t_r			7	11	
Turn-Off DelayTime	$t_{D(off)}$			99	135	
Turn-Off Fall Time	t_f			13	19.5	
Body Diode Reverse Recovery Time	t_{rr}	$I_F=18\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		33	40	nC
Body Diode Reverse Recovery Charge	Q_{rr}			22.2	30	
Maximum Body-Diode Continuous Current	I_S				4.5	A
Diode Forward Voltage	V_{SD}	$I_S=1\text{A}$, $V_{GS}=0\text{V}$			1	V

Note : The static characteristics in Figures 1 to 6 are obtained using $<300\mu\text{s}$ pulses, duty cycle 0.5% max.



6.1 Typical characteristic





6.2 Typical Characteristics

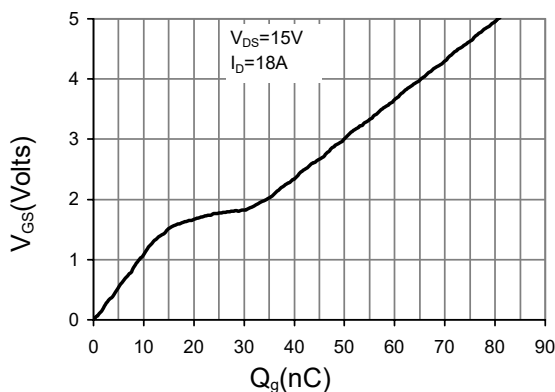


Figure 7: Gate-Charge Characteristics

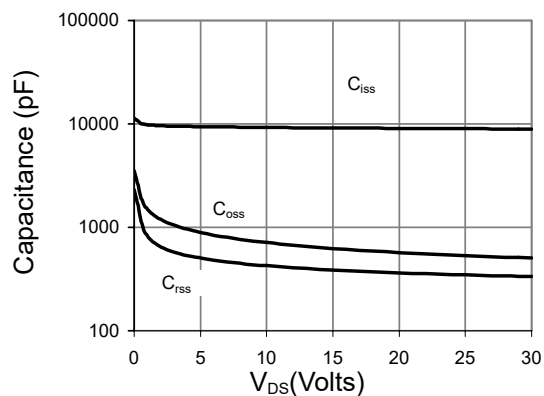


Figure 8: Capacitance Characteristics

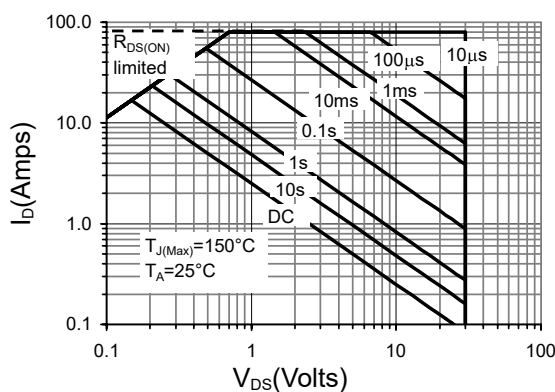


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

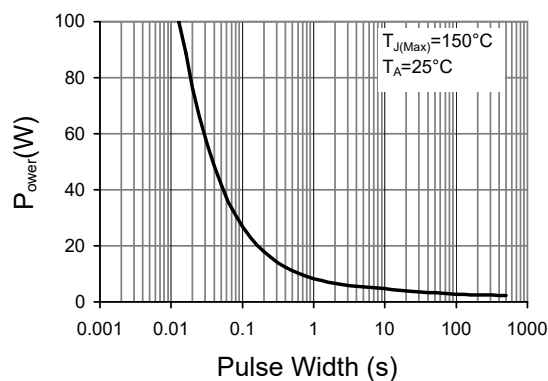


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

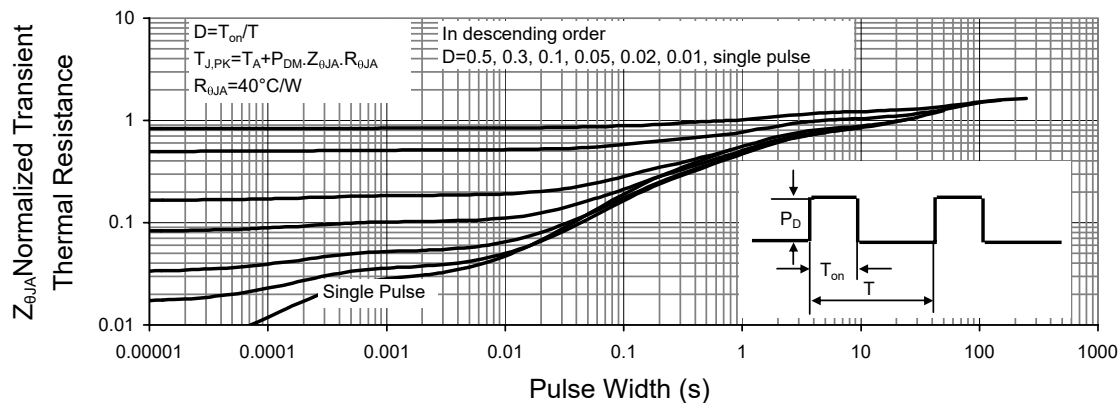
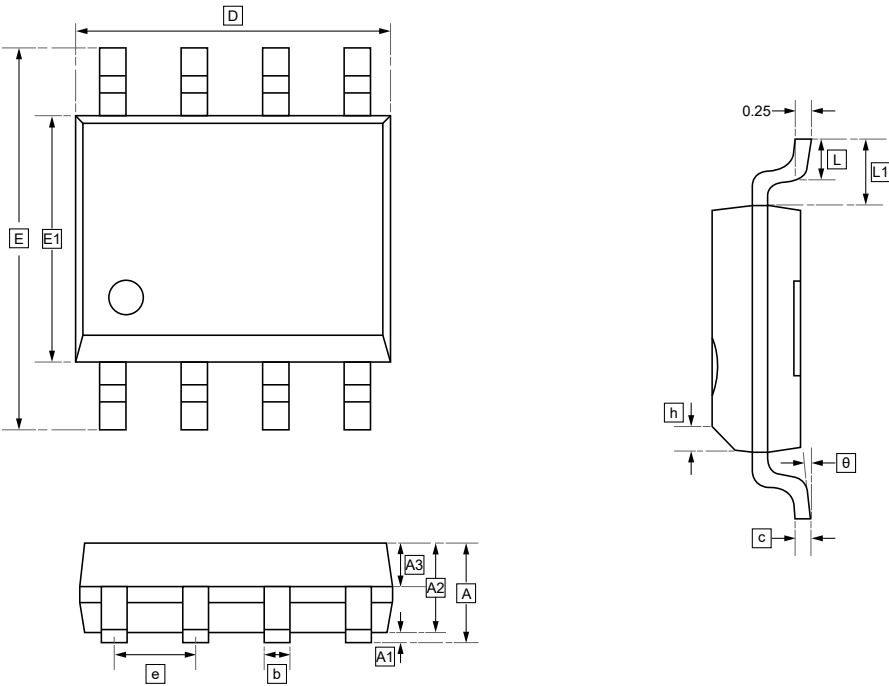


Figure 11: Normalized Maximum Transient Thermal Impedance



7.SOP-8 Package Outline Dimensions



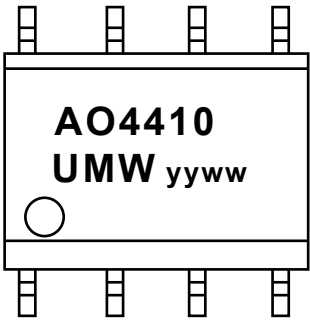
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.80	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.00	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°



8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4410	SOP-8	3000	Tape and reel



9.Disclaimer

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