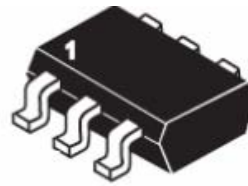


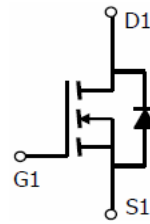


Description

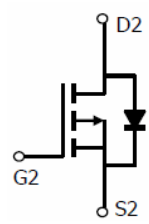
The AO4608 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.



SOT-23-6L top view



N-channel



P-channel

General Features

● N-Channel

$$V_{DS} = 20V, I_D = 4.5A$$

$$R_{DS(ON)} < 30m\Omega @ V_{GS}=4.5V$$

$$R_{DS(ON)} < 50m\Omega @ V_{GS}=2.5V$$

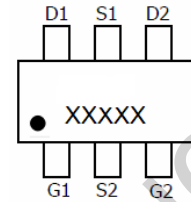
● P-Channel

$$V_{DS} = -20V, I_D = -4.5A$$

$$R_{DS(ON)} < 35m\Omega @ V_{GS}=-4.5V$$

$$R_{DS(ON)} < 40m\Omega @ V_{GS}=-2.5V$$

- High power and current handling capability
- Lead free product is acquired
- Surface mount package



Marking and pin Assignment

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	± 10	± 10	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	4.5	-4.5	A
	$T_A=70^\circ\text{C}$		2.4	-2.4	
Pulsed Drain Current ^(Note 1)		I_{DM}	13	-13	A
Maximum Power Dissipation	$T_A=25^\circ\text{C}$	P_D	0.8	0.8	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 To 150	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note2)	$R_{\theta JA}$	N-Ch	156	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient ^(Note2)	$R_{\theta JA}$	P-Ch	156	$^\circ\text{C/W}$


N-CH Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	20	22	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V,V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	0.5	0.75	1.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =2.5V, I _D =3A	-	25	40	m Ω
		V _{GS} =4.5V, I _D =3A	-	33	45	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =3A	-	8	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{ISS}	V _{DS} =10V,V _{GS} =0V, F=1.0MHz	-	260	-	PF
Output Capacitance	C _{OSS}		-	48	-	PF
Reverse Transfer Capacitance	C _{rSS}		-	27	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, R _L =3.3Ω V _{GS} =4.5V,R _{GEN} =6Ω	-	2.5	-	nS
Turn-on Rise Time	t _r		-	3.2	-	nS
Turn-Off Delay Time	t _{d(off)}		-	21	-	nS
Turn-Off Fall Time	t _f		-	3	-	nS
Total Gate Charge	Q _g	V _{DS} =10V,I _D =3A, V _{GS} =4.5V	-	2.9	5	nC
Gate-Source Charge	Q _{gs}		-	0.4	-	nC
Gate-Drain Charge	Q _{gd}		-	0.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V,I _S =3 A	-	-	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	3	A

Notes:

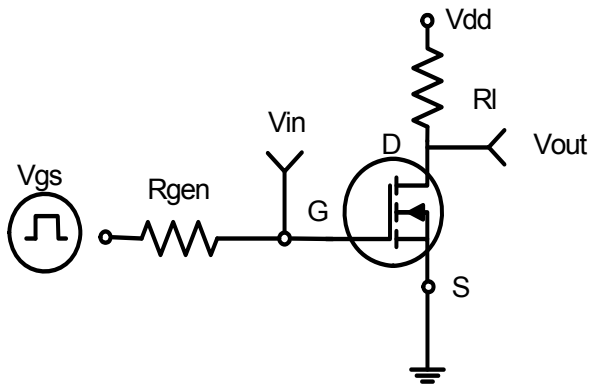
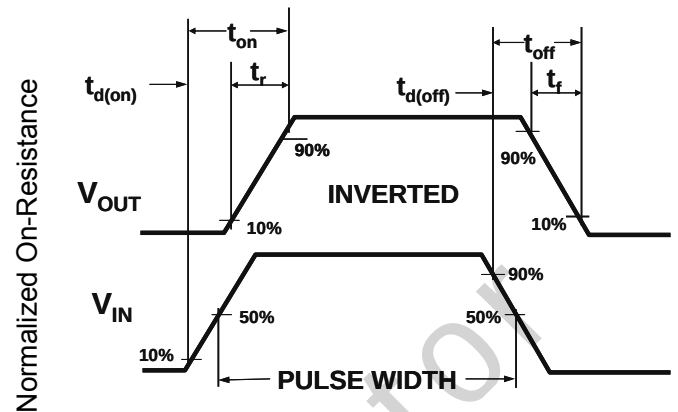
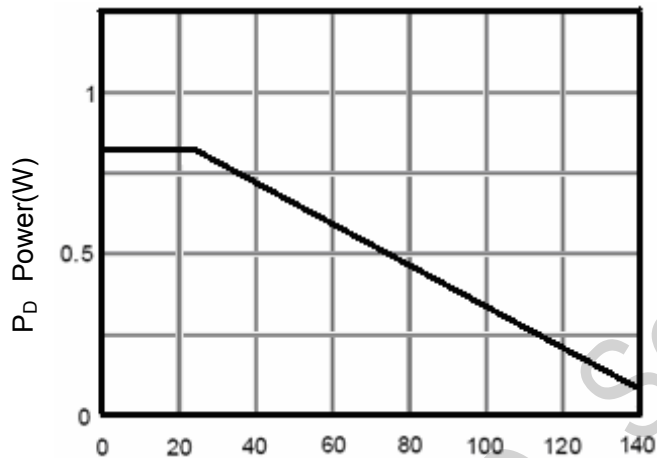
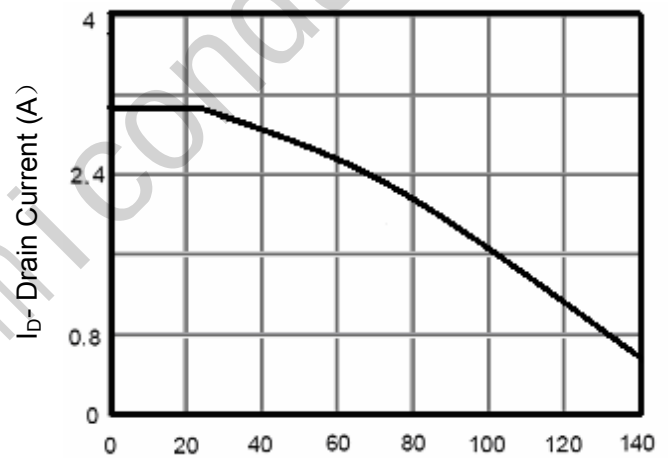
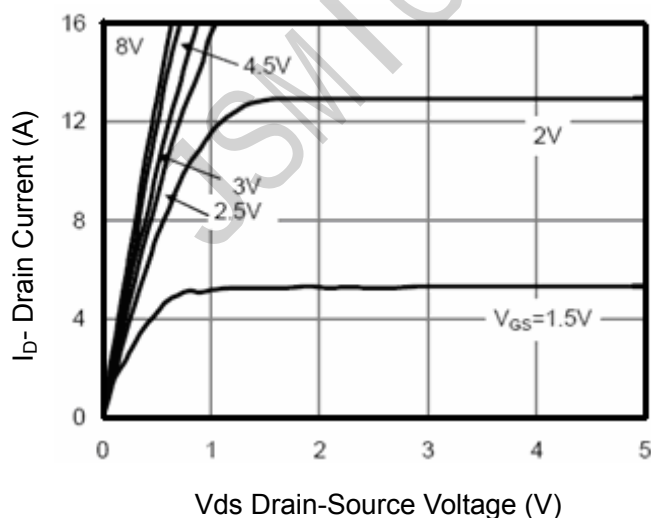
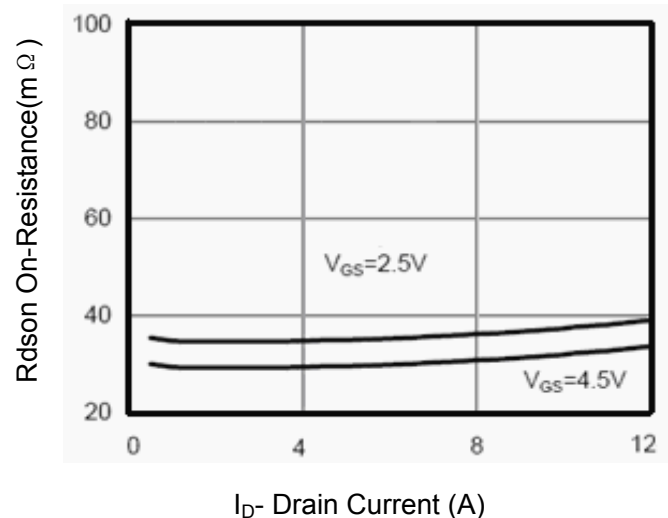
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

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

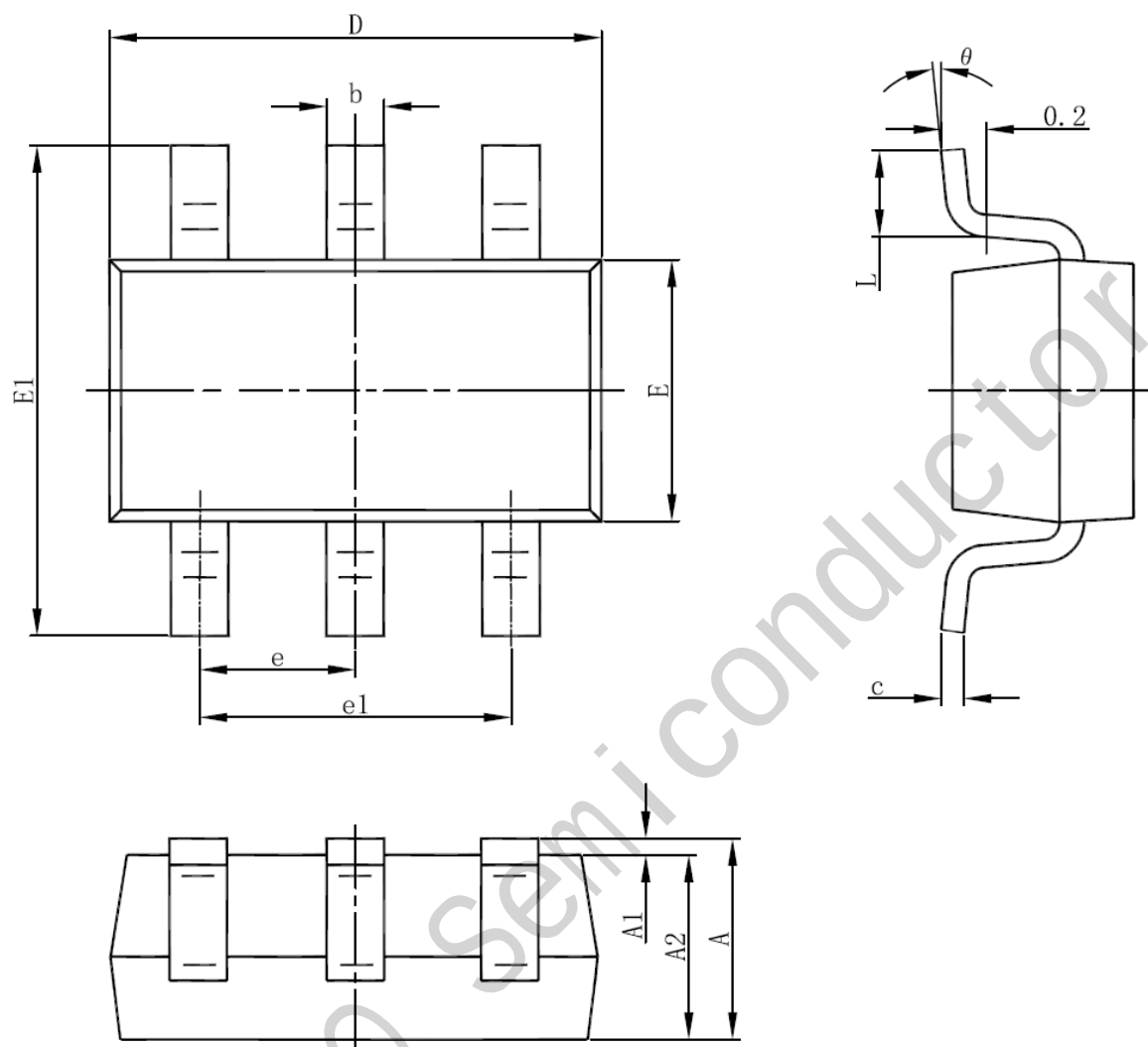
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20		-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-3A$	-	33	40	Ω m
		$V_{GS}=-2.5V, I_D=-2A$	-	42	50	Ω m
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-3A$	-	9.5	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{Iss}	$V_{DS}=-10V, V_{GS}=0V,$ $F=1.0MHz$	-	325	-	PF
Output Capacitance	C_{OSS}		-	63	-	PF
Reverse Transfer Capacitance	C_{rSS}		-	37	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V, R_L=5\Omega$ $V_{GS}=-4.5V, R_{GEN}=3\Omega$	-	11	-	nS
Turn-on Rise Time	t_r		-	5.5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	22	-	nS
Turn-Off Fall Time	t_f		-	8	-	nS
Total Gate Charge	Q_g	$V_{DS}=-10V, I_D=-3A,$ $V_{GS}=-4.5V$	-	3.2	-	nC
Gate-Source Charge	Q_{gs}		-	0.6	-	nC
Gate-Drain Charge	Q_{gd}		-	0.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-3A$	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

**N- Channel Typical Electrical and Thermal Characteristics (Curves)****Figure 1: Switching Test Circuit****Figure 2: Switching Waveforms****Figure 3 Power Dissipation****Figure 4 Drain Current****Figure 5 Output Characteristics****Figure 6 Drain-Source On-Resistance**

SOT23-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°