

**General Description**

AO4629 uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. This complementary N and P channel MOSFET configuration is ideal for low Input Voltage inverter applications.

**Product Summary**
**N-Channel**

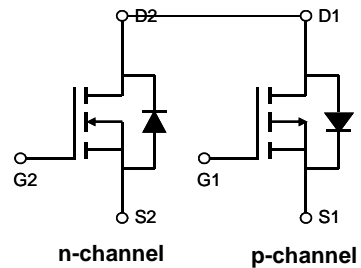
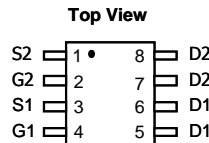
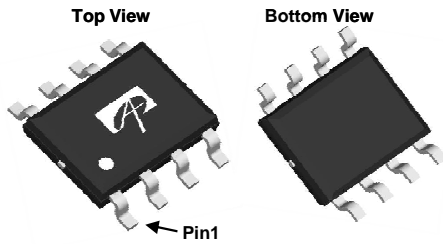
$V_{DS} = 30V$   
 $I_D = 6A$  ( $V_{GS} = 10V$ )  
 $R_{DS(ON)} < 30m\Omega$  ( $V_{GS} = 10V$ )  
 $< 42m\Omega$  ( $V_{GS} = 4.5V$ )

100% UIS Tested  
 100%  $R_g$  Tested

**P-Channel**

$-30V$   
 $-5.5A$  ( $V_{GS} = -10V$ )  
 $R_{DS(ON)} < 41m\Omega$  ( $V_{GS} = -10V$ )  
 $< 74m\Omega$  ( $V_{GS} = -4.5V$ )

100% UIS Tested  
 100%  $R_g$  Tested


**SOIC-8**

**Absolute Maximum Ratings  $T_A = 25^\circ C$  unless otherwise noted**

Parameter	Symbol	Max n-channel	Max p-channel	Units
Drain-Source Voltage	$V_{DS}$	30	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	6	A
		$T_A = 70^\circ C$	5	
Pulsed Drain Current <sup>C</sup>	$I_{DM}$	30	-25	A
Avalanche Current <sup>C</sup>	$I_{AS}, I_{AR}$	10	17	A
Avalanche energy $L = 0.1mH$ <sup>C</sup>	$E_{AS}, E_{AR}$	5	14	mJ
Power Dissipation <sup>B</sup>	$P_D$	$T_A = 25^\circ C$	2	W
		$T_A = 70^\circ C$	1.3	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150		$^\circ C$

**Thermal Characteristics**

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	48	62.5	$^\circ C/W$
Maximum Junction-to-Ambient <sup>A,D</sup>		Steady-State	74	90
Maximum Junction-to-Lead	$R_{\theta JL}$	32	40	$^\circ C/W$

**N-Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			1 5	μA
I <sub>uses</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.8	2.4	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	30			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =6A T <sub>J</sub> =125°C		25 40	30 48	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		33	42	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =6A		15		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.76	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				2.5	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		255	310	pF
C <sub>oss</sub>	Output Capacitance			45		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			35	50	pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	1.6	3.25	4.9	Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g(10V)</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =6A	4	5.2	6.3	nC
Q <sub>g(4.5V)</sub>	Total Gate Charge		2	2.55	3.2	nC
Q <sub>gs</sub>	Gate Source Charge			0.85		nC
Q <sub>gd</sub>	Gate Drain Charge			1.3		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =2.5Ω, R <sub>GEN</sub> =3Ω		4.5		ns
t <sub>r</sub>	Turn-On Rise Time			2.5		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			14.5		ns
t <sub>f</sub>	Turn-Off Fall Time			3.5		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time		I <sub>F</sub> =6A, dI/dt=100A/μs		8.5	12
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =6A, dI/dt=100A/μs		2.2	3	nC

A. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25° C. The value in any given application depends on the user's specific board design.

B. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150° C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150° C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25° C.

D. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T<sub>J(MAX)</sub>=150° C. The SOA curve provides a single pulse rating.

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