



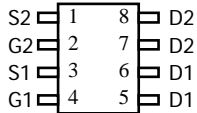
**AO4802, AO4802L ( Green Product )**  
**Dual N-Channel Enhancement Mode Field Effect Transistor**

**General Description**

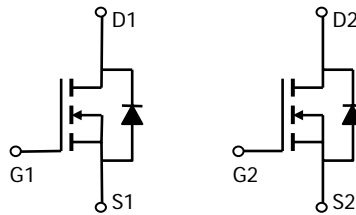
The AO4802 uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. They offer operation over a wide gate drive range from 1.8V to 12V. The two devices may be used individually, in parallel or to form a bidirectional blocking switch. AO4802L ( Green Product ) is offered in a lead-free package.

**Features**

- $V_{DS}$  (V) = 30V
- $I_D$  = 7A
- $R_{DS(ON)} < 26m\Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 30m\Omega$  ( $V_{GS} = 4.5V$ )
- $R_{DS(ON)} < 40m\Omega$  ( $V_{GS} = 2.5V$ )
- $R_{DS(ON)} < 70m\Omega$  ( $V_{GS} = 1.8V$ )



**SOIC-8**



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>A</sup>	$I_D$	$T_A=25^\circ\text{C}$	7
		$T_A=70^\circ\text{C}$	6
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	40	A
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	2
		$T_A=70^\circ\text{C}$	1.44
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

**Thermal Characteristics**

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	$t \leq 10s$	48	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>		Steady-State	74	$^\circ\text{C/W}$
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	35	40	$^\circ\text{C/W}$

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> =24V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			1 5	μA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250μA	0.6	0.8	1	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =4.5V, 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> =7A T <sub>J</sub> =125°C		22 28	26 36	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A		25	30	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A		34	40	mΩ
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =2A		52	70	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =5A	12	17		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A		0.66	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				3	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		767		pF
C <sub>OSS</sub>	Output Capacitance			111		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			82		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.3		Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =7A		10		nC
Q <sub>gs</sub>	Gate Source Charge			1.2		nC
Q <sub>gd</sub>	Gate Drain Charge			3.1		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =2.2Ω, R <sub>GEN</sub> =6Ω		5		ns
t <sub>r</sub>	Turn-On Rise Time			5.5		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			39		ns
t <sub>f</sub>	Turn-Off Fall Time			4.7		ns
t <sub>rr</sub>	Body Diode Reverse Recovery time	I <sub>F</sub> =5A, dI/dt=100A/μs		15		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery charge	I <sub>F</sub> =5A, dI/dt=100A/μs		7.1		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 a given application depends on the user's specific board design. The current rating is based on the t<sub>s</sub> 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

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

D. The static characteristics in Figures 1 to 6 are obtained using 80μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The SOA curve provides a single pulse rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

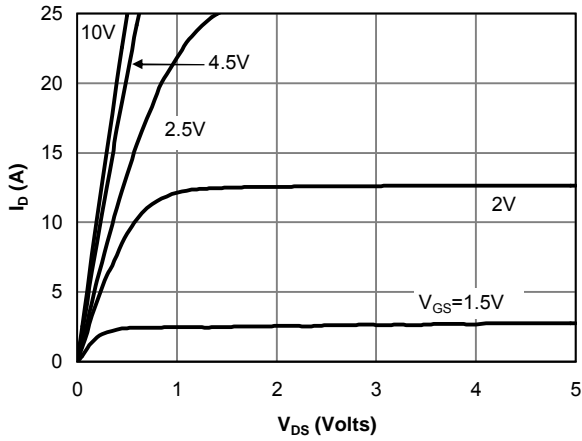


Fig 1: On-Region Characteristics

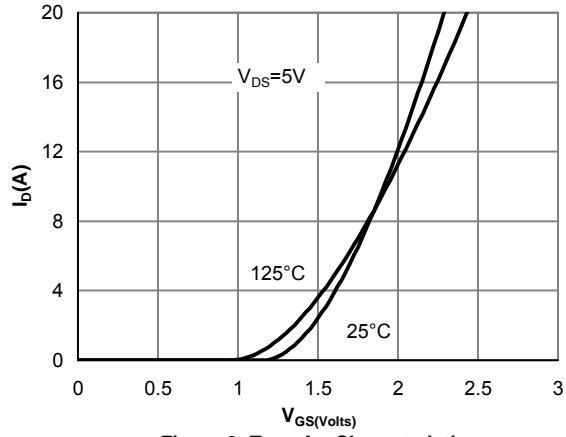


Figure 2: Transfer Characteristics

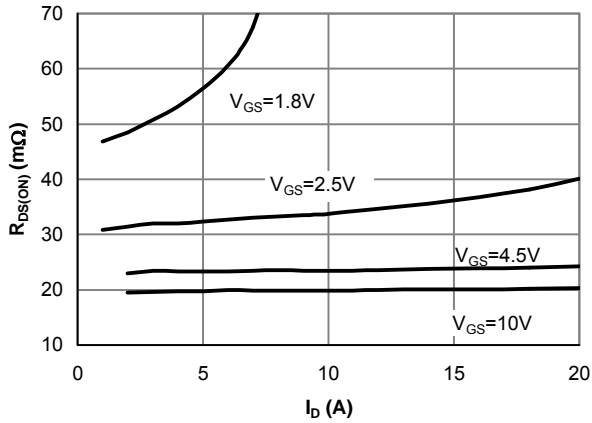


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

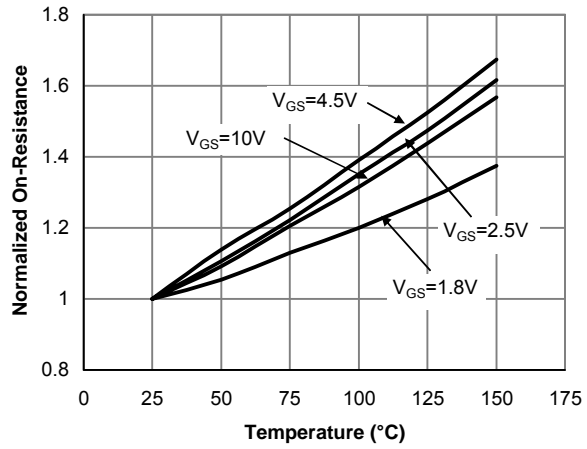


Figure 4: On-Resistance vs. Junction Temperature

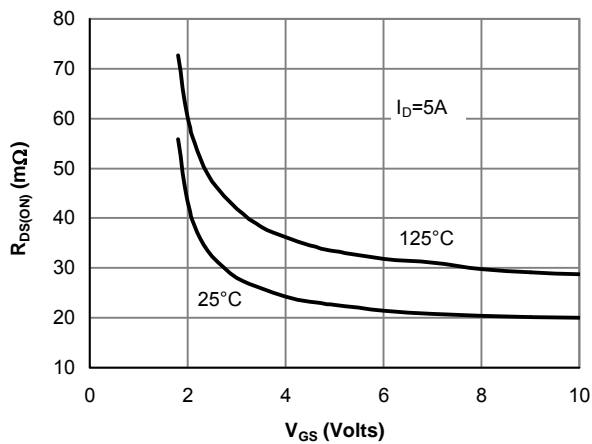


Figure 5: On-Resistance vs. Gate-Source Voltage

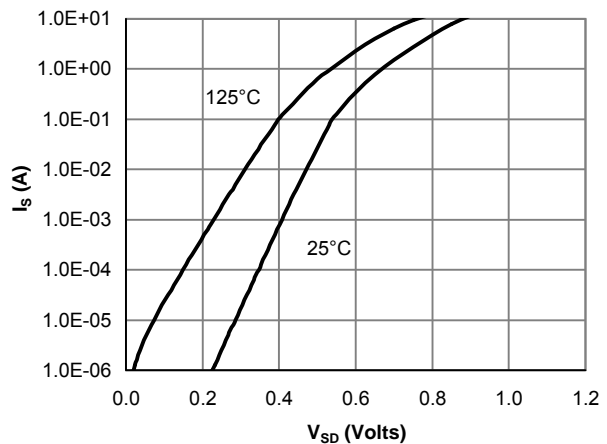


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

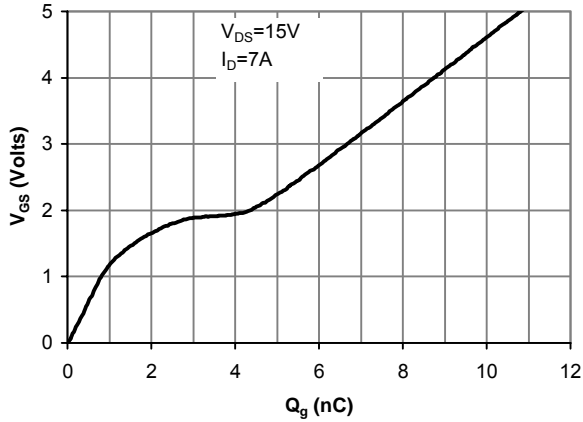


Figure 7: Gate-Charge Characteristics

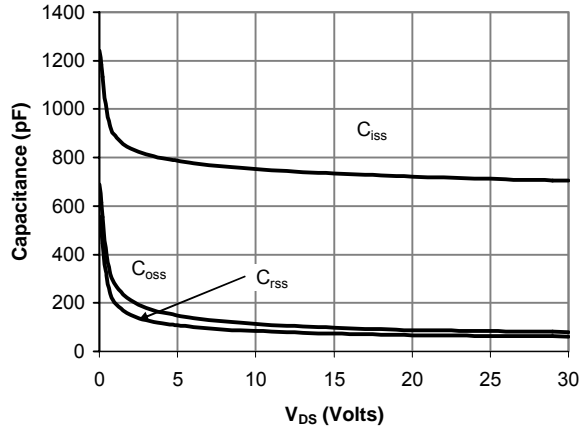


Figure 8: Capacitance Characteristics

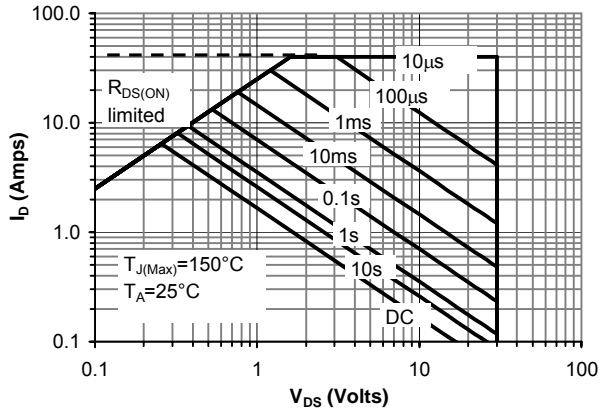


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

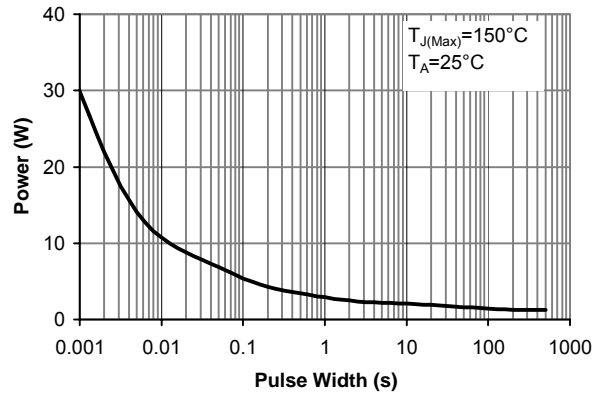


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

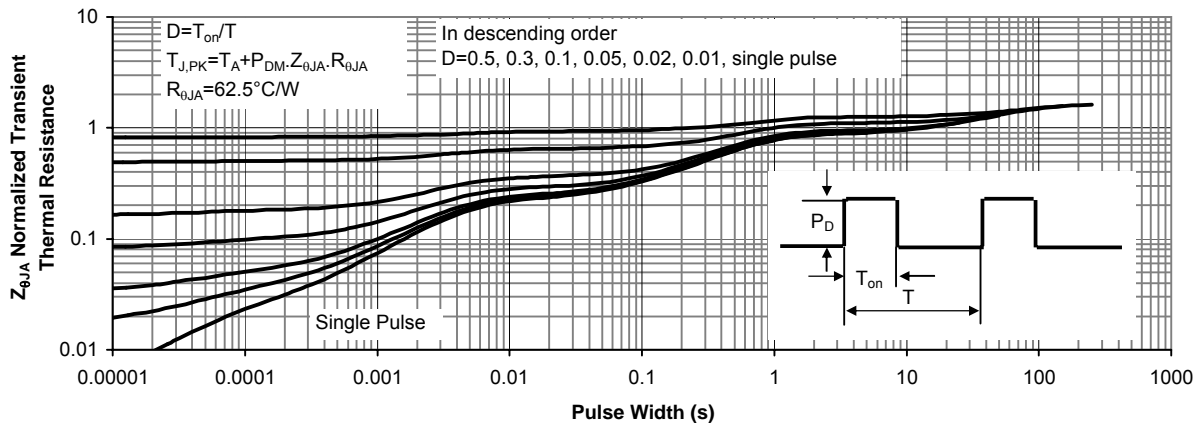


Figure 11: Normalized Maximum Transient Thermal Impedance