



# AON4803

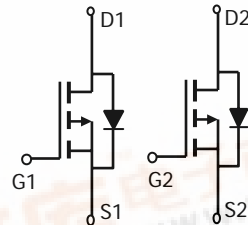
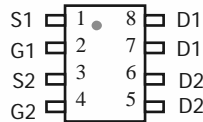
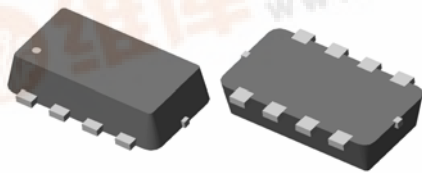
## Dual P-Channel Enhancement Mode Field Effect Transistor

### General Description

The AON4803 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltage as low as 1.8V. This device is suitable for use as a load switch or in PWM applications. *Standard Product AON4803 is Pb-free (meets ROHS & Sony 259 specifications).*

### Features

- $V_{DS}$  (V) = -20V
- $I_D$  = -3.4A ( $V_{GS}$  = -4.5V)
- $R_{DS(ON)}$  < 90m $\Omega$  ( $V_{GS}$  = -4.5V)
- $R_{DS(ON)}$  < 120m $\Omega$  ( $V_{GS}$  = -2.5V)
- $R_{DS(ON)}$  < 165m $\Omega$  ( $V_{GS}$  = -1.8V)



DFN3X2-8L

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

Parameter	Symbol	MOSFET	Units
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current <sup>A</sup>	$I_D$	$T_A=25^\circ\text{C}$	-3.4
		$T_A=70^\circ\text{C}$	-2.7
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	-15	A
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	1.7
		$T_A=70^\circ\text{C}$	1.1
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

Parameter: Thermal Characteristics MOSFET	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	51	75	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>		88	110	
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	28	35	



**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	-20			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	μA
		T <sub>J</sub> =55°C			-5	
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA	-0.3	-0.65	-1	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-15			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.4A		73	90	mΩ
		T <sub>J</sub> =125°C		103	125	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.5A		100	120	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1.5A		135	165	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.4A	4	7		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	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1MHz		540	700	pF
C <sub>OSS</sub>	Output Capacitance			72		pF
C <sub>rSS</sub>	Reverse Transfer Capacitance			49		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		12		Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-3.4A		6.1	7.9	nC
Q <sub>gs</sub>	Gate Source Charge			0.6		nC
Q <sub>gd</sub>	Gate Drain Charge			1.6		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, R <sub>L</sub> =2.9Ω, R <sub>GEN</sub> =3Ω		10		ns
t <sub>r</sub>	Turn-On Rise Time			12		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			44		ns
t <sub>f</sub>	Turn-Off Fall Time			22		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-3.4A, di/dt=100A/μs		21		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =-3.4A, di/dt=100A/μs		7.5		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. The current rating is based on the t ≤ 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.

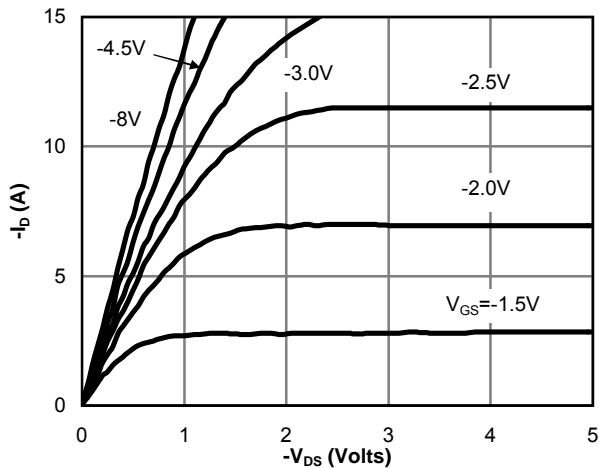
D: The static characteristics in Figures 1 to 6,12,14 are obtained using 80μs pulses, duty cycle 0.5% max.

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.

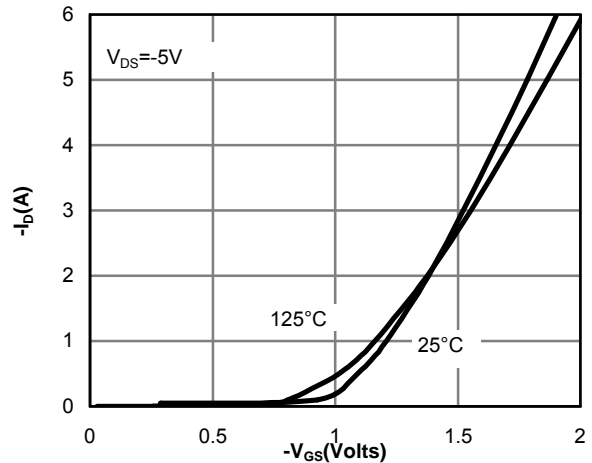
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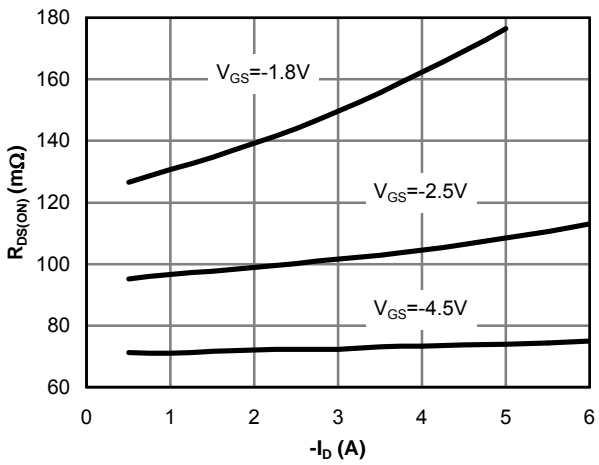
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



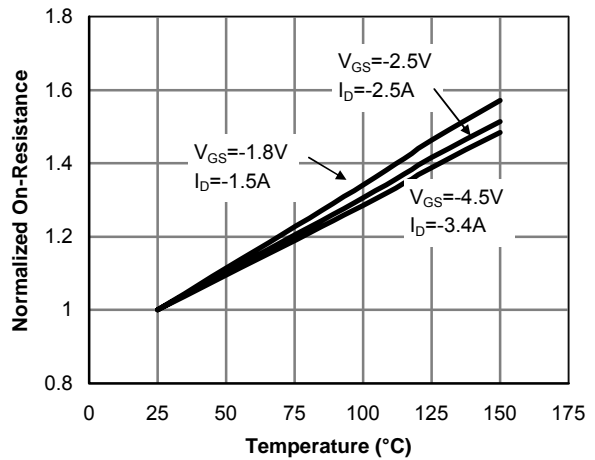
**Fig 1: On-Region Characteristics**



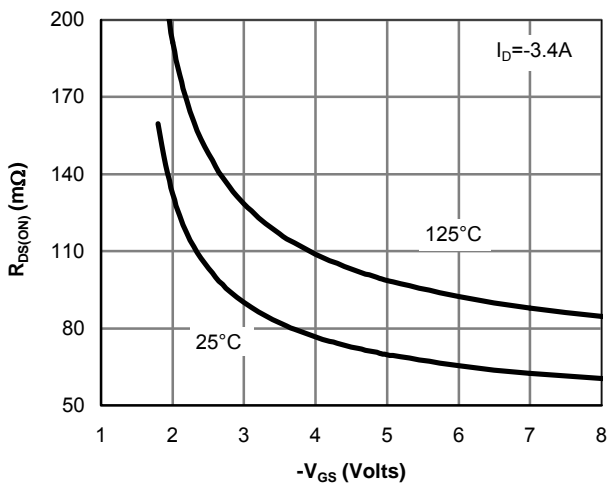
**Figure 2: Transfer Characteristics**



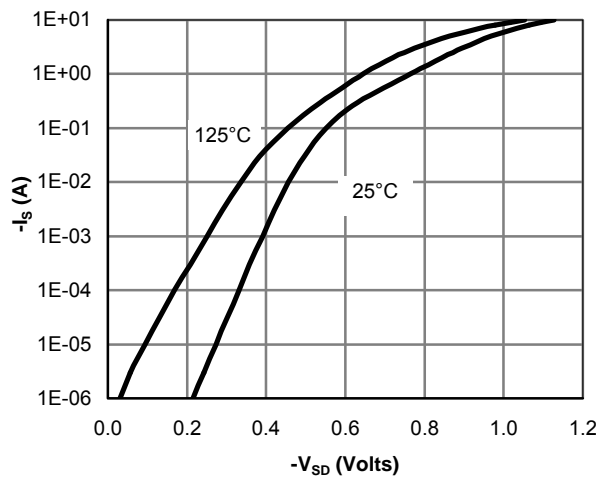
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**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**

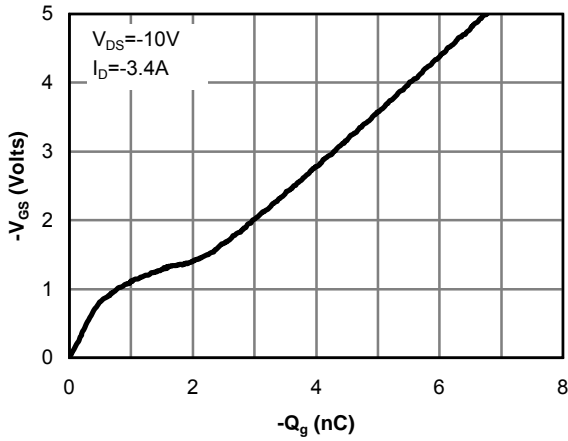


Figure 7: Gate-Charge Characteristics

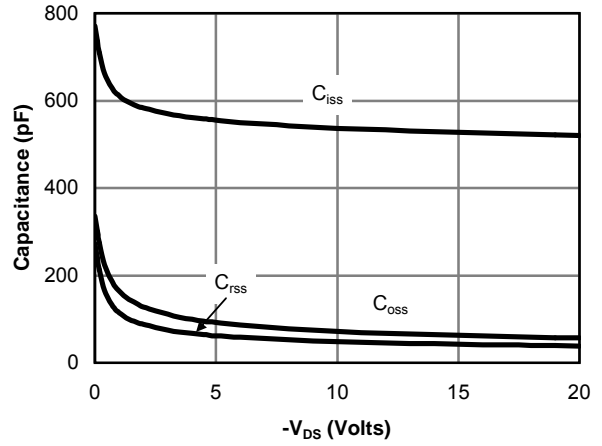


Figure 8: Capacitance Characteristics

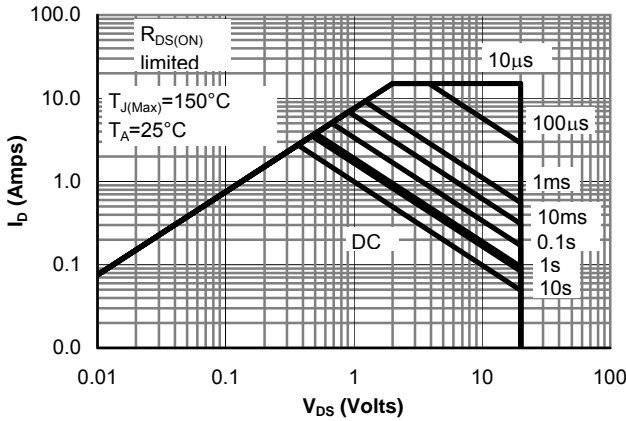


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

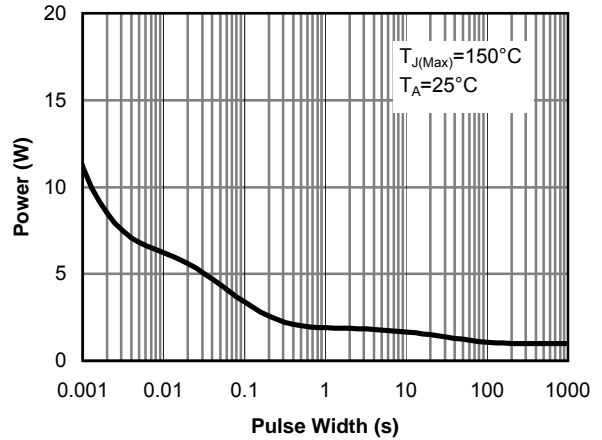


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

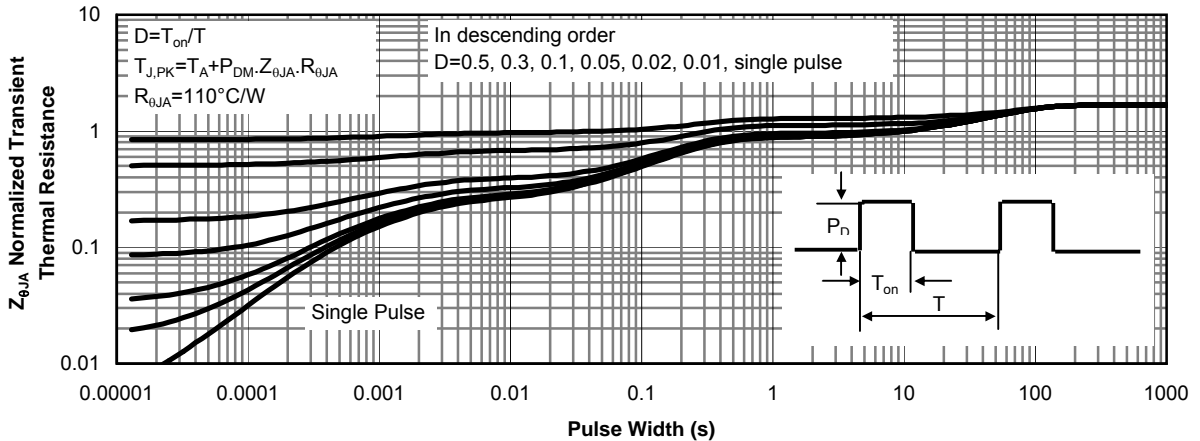


Figure 11: Normalized Maximum Transient Thermal Impedance