

**SuperMOS – SOP8 -30V  $V_{DSS}$ ,  $39m\Omega$   $R_{DS(on)}$ , -5.8A  $I_D$  P-channel MOSFET**

**1. Description**

The AO4803A is P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AO4803A is Pb-free.

**2. Features**

- -30V,  $R_{DS(ON)}=39m\Omega(Typ)$ ,  $V_{GS}=-10V$
- $R_{DS(ON)}=55m\Omega(Typ)$ ,  $V_{GS}=-4.5V$
- Fast Switching
- High density cell design for low  $R_{DS(on)}$
- Material : Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

**3. Applications**

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

**100% UIS TESTED**

**4. Ordering Information**

Part Number	Package	Marking	Material	Quantity per reel	Flammability Rating
AO4803A	SOP8	ES4803A/lot	Halogen free	3,000 PCS	UL 94V-0

Table-1 Ordering information

**5. Pin Configuration and Functions**

Pin	Function	Outline	Circuit Diagram
1	Source1		
2	Gate1		
7/8	Drain1		
3	Source2		
4	Gate2		
5/6	Drain2		

Table-2 Pin configuration

## 6. Specification

### Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$BV_{DSS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	-5.8	A
		$T_A=75^\circ\text{C}$	-4.5	
Maximum Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	3.2	W
		$T_A=75^\circ\text{C}$	1.9	
Pulsed Drain Current	$I_{DM}$	-23.2	A	
Avalanche Current, Single Pulsed <sup>a</sup>	$I_{AS}$	11	A	
Avalanche Energy, Single Pulsed <sup>a</sup>	$E_{AS}$	18	mJ	
Operating Junction Temperature	$T_J$	150	°C	
Storage Temperature Range	$T_{stg}$	-55 to +150	°C	

#### Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup> ( $t \leq 10\text{s}$ )	$R_{\theta JA}$	32	40	°C/W

Note:

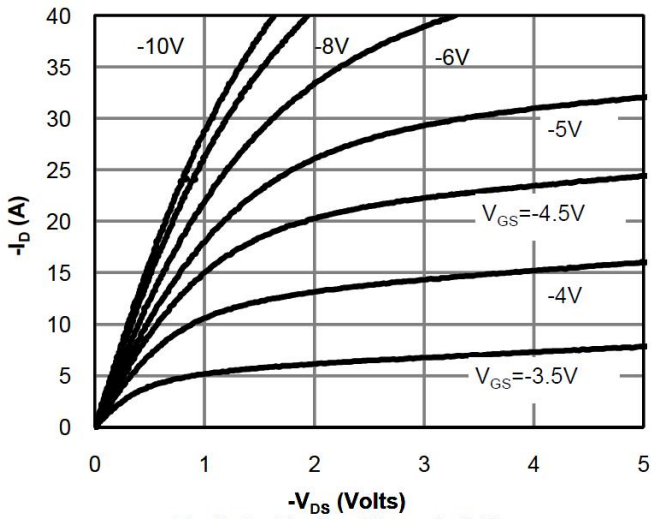
a:  $T_J=25^\circ\text{C}, V_{DD}=-30\text{V}, V_G=-10\text{V}, L=0.3\text{mH}, R_g=25\Omega$

## Electrical Characteristics

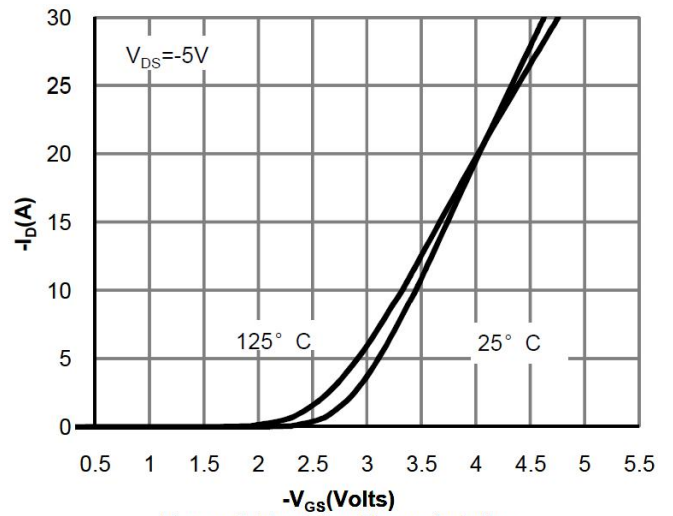
At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	-1.5	-2.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$		39	60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4A$		55	80	
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-5A$			40	S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V$ $V_{DS}=-15V$ $f=1MHz$		520		pF
Output Capacitance	$C_{OSS}$			100		
Reverse Transfer Capacitance	$C_{RSS}$			65		
Gate Resistance	$R_g$	$f=1MHz$		7.5		$\Omega$
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-5A$		9.2	11	nC
Gate-to-Source Charge	$Q_{GS}$			1.6		
Gate-to-Drain Charge	$Q_{GD}$			2.2		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $R_L=3\Omega$ $R_G=3\Omega$		7.5		ns
Rise Time	$t_r$			5.5		
Turn-Off Delay Time	$t_{d(OFF)}$			19		
Fall Time	$t_f$			7		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.0A$		-0.7	-1	V

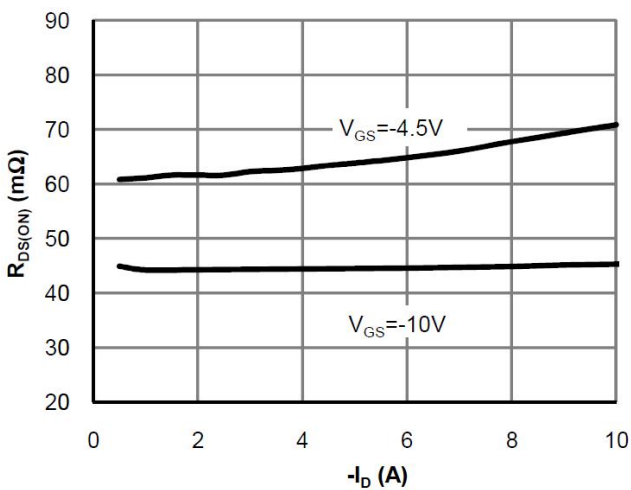
7. Typical Characteristic



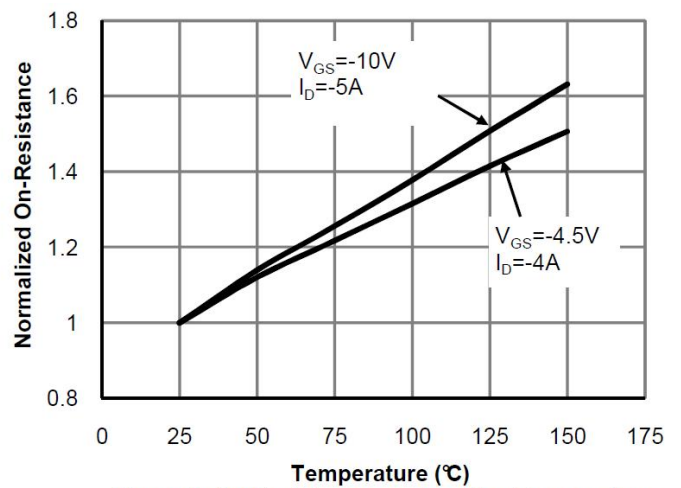
**Fig 1: On-Region Characteristics**



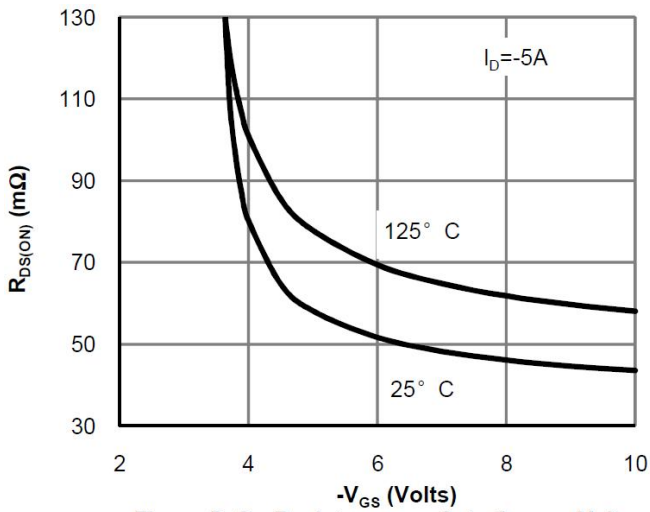
**Figure 2: Transfer Characteristics**



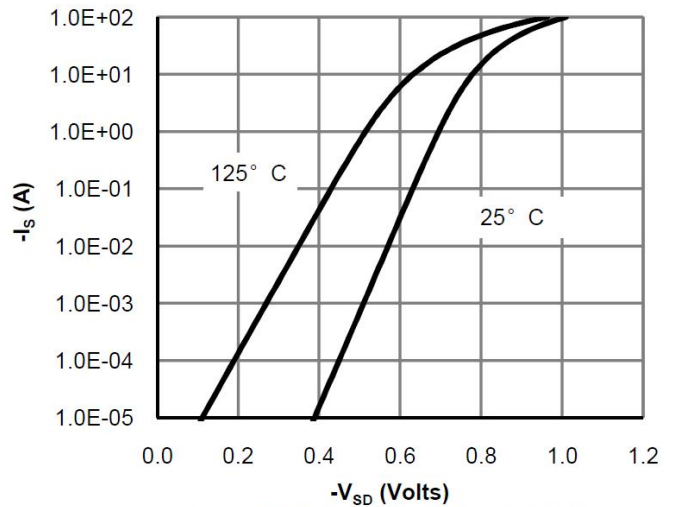
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



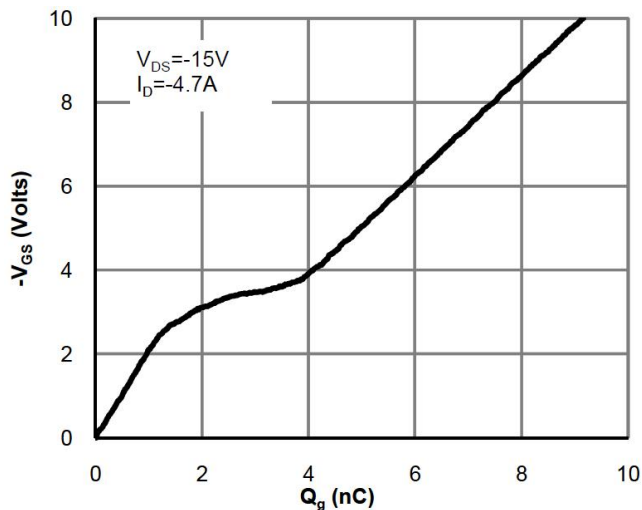
**Figure 4: On-Resistance vs. Junction Temperature**



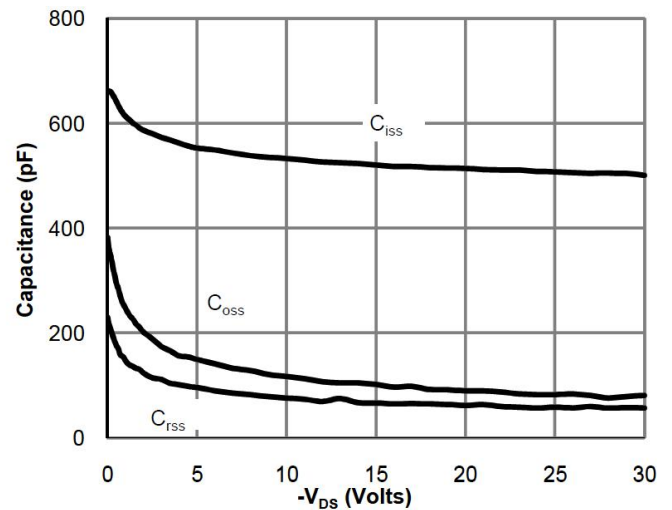
**Figure 5: On-Resistance vs. Gate-Source Voltage**



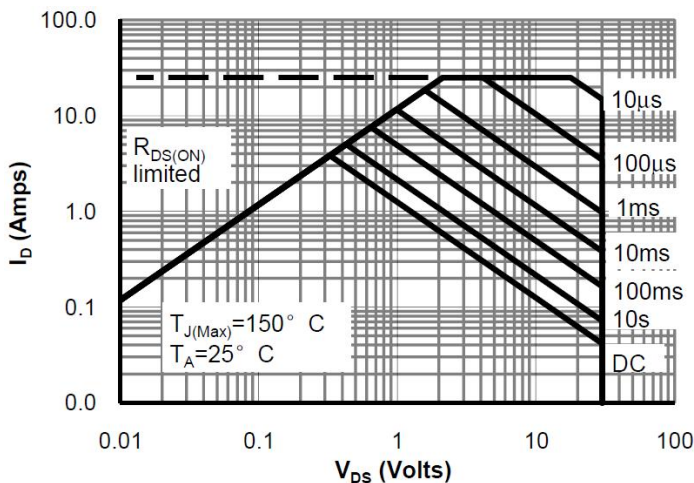
**Figure 6: Body-Diode Characteristics**



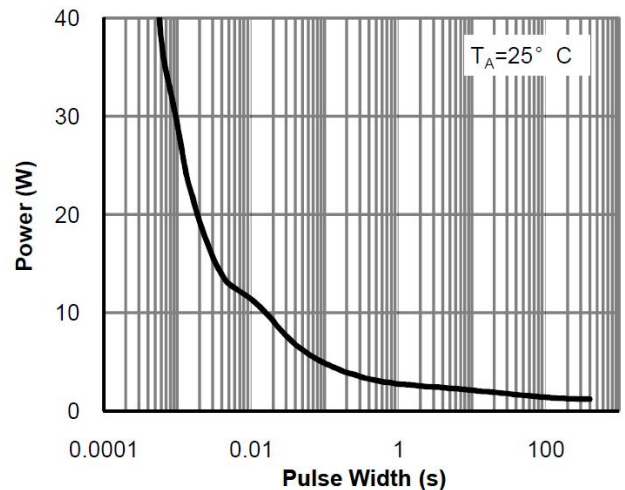
**Figure 7: Gate-Charge Characteristics**



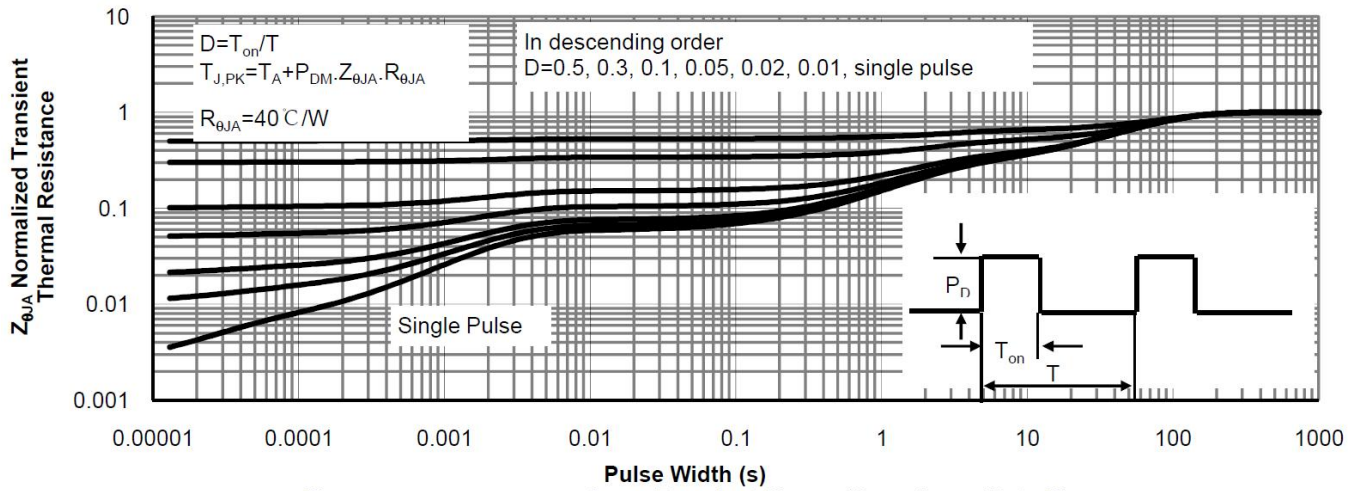
**Figure 8: Capacitance Characteristics**



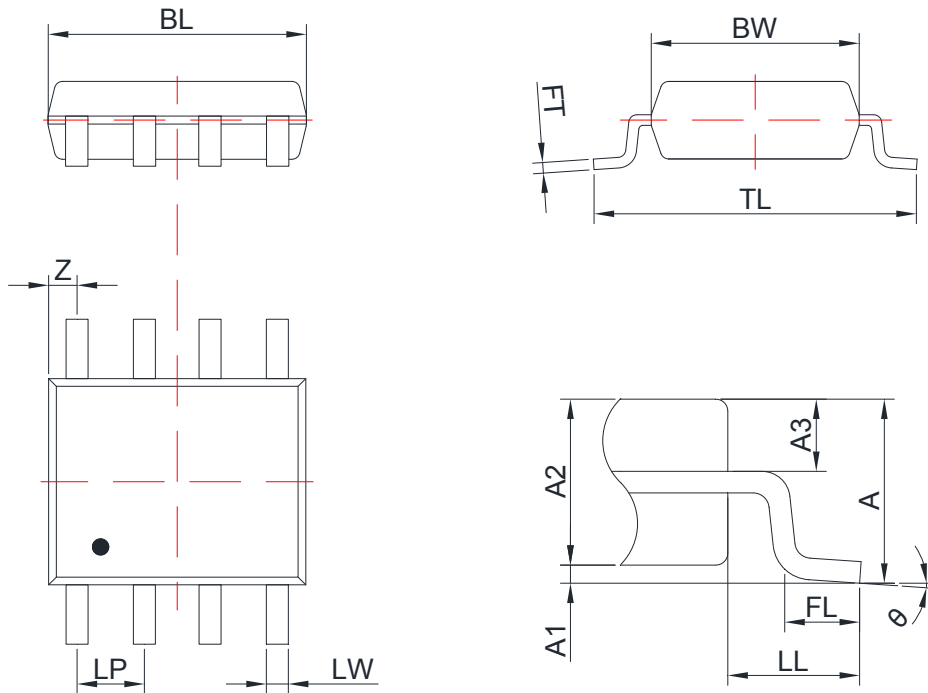
**Figure 9: Maximum Forward Biased Safe Operating Area**



**Figure 10: Single Pulse Power Rating Junction-to-Ambient**



**8. Dimension (SOP8)**



COMMON DIMENSIONS: UNITS OF MEASURE=MILLIMETER

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	1.75		FL	0.50	0.80
A1	0.05	0.15	LP	1.25	1.30
A2	1.40	1.50	LL	1.1 BSC	
A3	0.623 BSC		LW	0.38	0.43
BL	4.92	5.80	TL	5.90	6.10
BW	3.70	4.10	Z	0.54	
FT	0.20	0.21	θ	0°	8°

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