

**SuperMOS –SOP8 30V  $V_{DSS}$  16m $\Omega$   $R_{DS(on)}$  7.7A  $I_D$ , N-channel MOSFET**

**1. Description**

The AO4842 is N-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 AO4842 is Pb-free.

**2. Features**

- 30V,  $R_{DS(ON)}=16m\Omega(Typ)$ ,  $V_{GS}=10V$
- $R_{DS(ON)}=25m\Omega(Typ)$ ,  $V_{GS}=4.5V$
- Use trench MOSFET technology
- 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	Packing	Quantity per reel	Flammability Rating	Reel Size
AO4842	SOP8	ES4842/lot	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	13 inches

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	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	$T_A=25^{\circ}C$	7.7	A
		$T_A=75^{\circ}C$	5.8	
Maximum Power Dissipation	$P_D$	$T_A=25^{\circ}C$	2	W
		$T_A=75^{\circ}C$	1.2	
Avalanche Current, Single Pulsed <sup>b</sup>	$I_{AS}$	12	A	
Avalanche Energy, Single Pulsed <sup>b</sup>	$E_{AS}$	21.6	mJ	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	30	A	
Operating Junction Temperature	$T_J$	150	°C	
Lead Temperature	$T_L$	260	°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>	$t \leq 10$ s	$R_{\theta JA}$	50	62.5	°C/W

Note:

a: Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

b: EAS condition:  $T_J=25^{\circ}C, V_{DD}=30V, V_G=10V, L=0.3mH, R_g=25\Omega$

## 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	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1.0	$\mu A$
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	2.2	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=7.7A$		16	23	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$		25	37	
Forward Trans conductance	$g_{FS}$	$V_{DS}=5.0V, I_D=7.7A$			40	S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, f=1MHz, V_{DS}=15V$		373	448	pF
Output Capacitance	$C_{OSS}$			67		
Reverse Transfer Capacitance	$C_{RSS}$			41		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=4.5V, V_{DS}=15V, I_D=7.7A$		7.2	11	nC
Gate-to-Source Charge	$Q_{GS}$			14.9		
Gate-to-Drain Charge	$Q_{GD}$			2.9		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=10V, V_{DS}=15V, R_L=1.95\Omega, R_{GEN}=3\Omega$		4.5		ns
Rise Time	$t_r$			2.7		
Turn-Off Delay Time	$t_{d(OFF)}$			14.9		
Fall Time	$t_f$			2.9		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1.0A$	0.45		1.2	V

7. Typical Characteristic

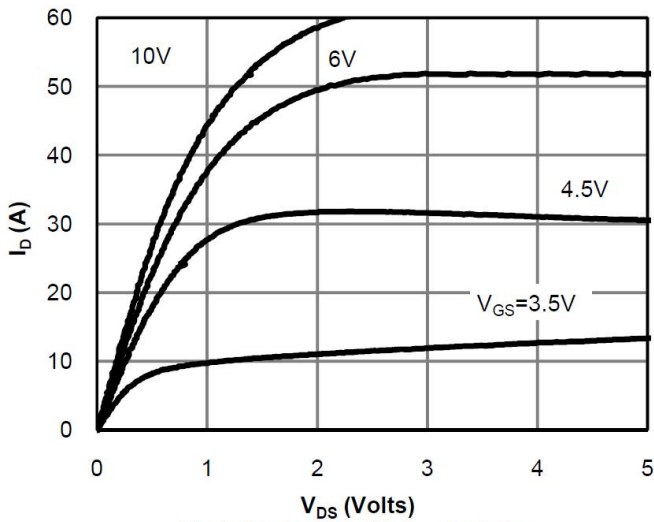


Fig 1: On-Region Characteristics

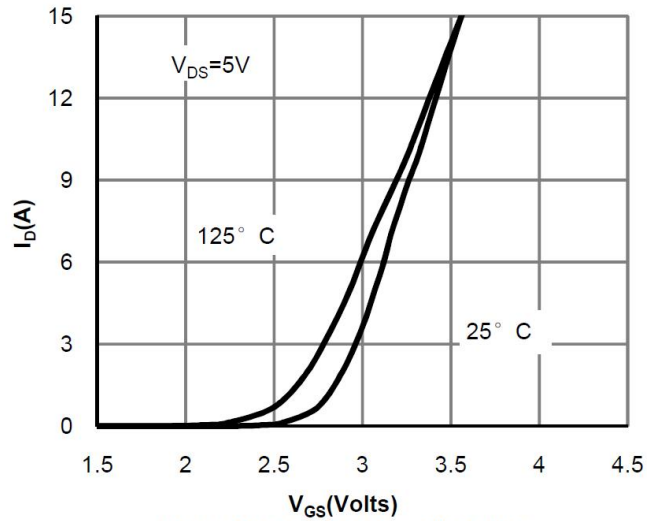


Figure 2: Transfer Characteristics

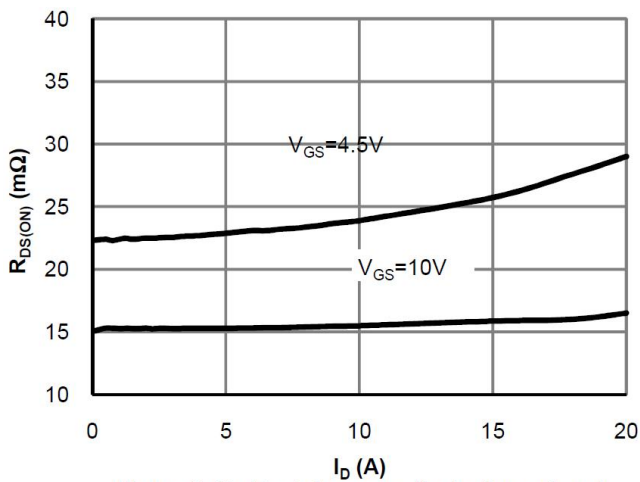


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

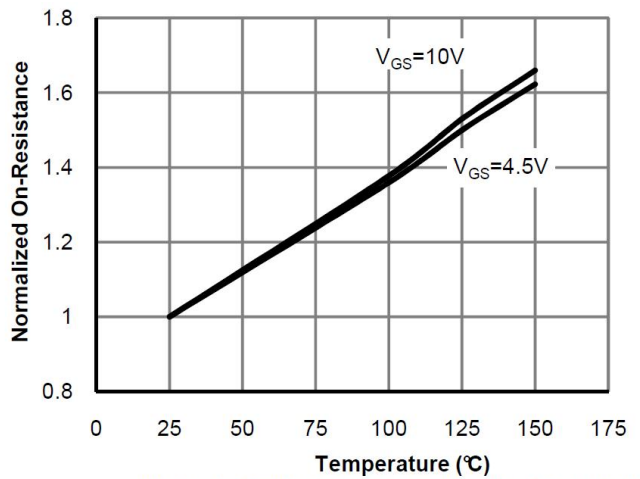


Figure 4: On-Resistance vs. Junction Temperature

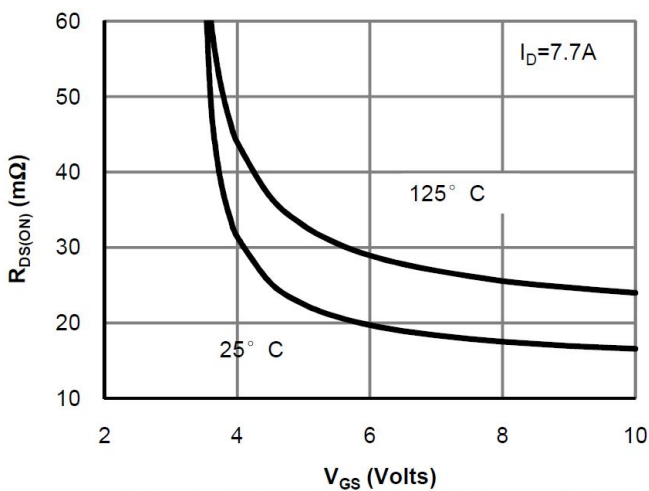


Figure 5: On-Resistance vs. Gate-Source Voltage

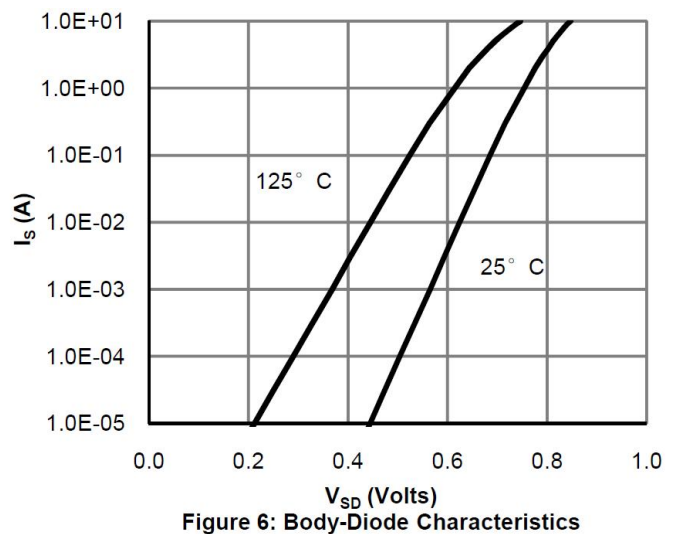


Figure 6: Body-Diode Characteristics

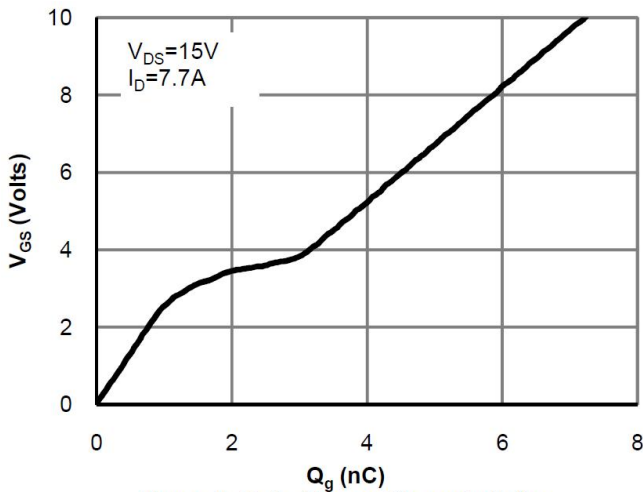


Figure 7: Gate-Charge Characteristics

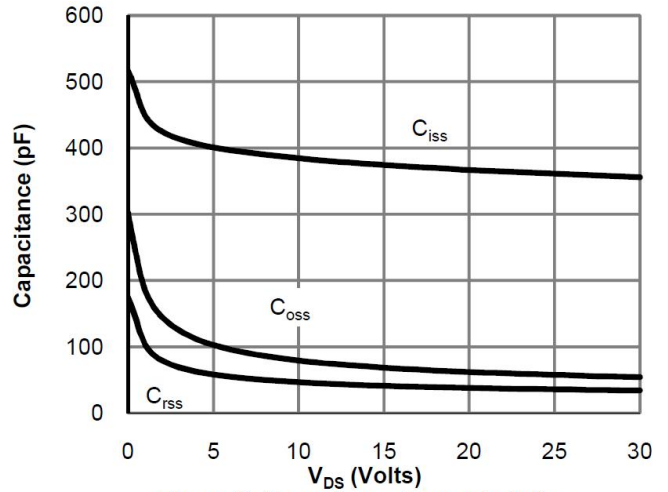


Figure 8: Capacitance Characteristics

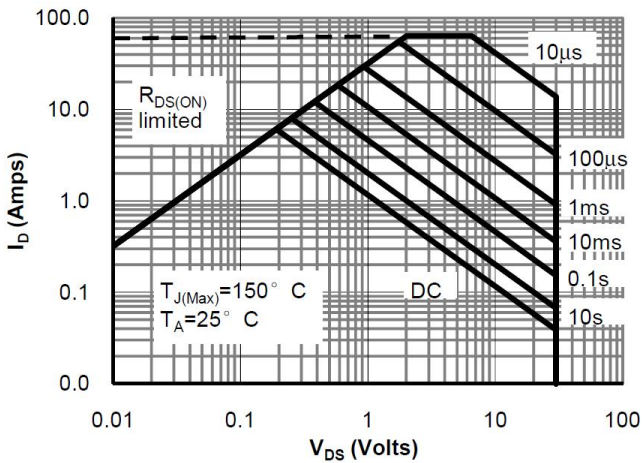


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

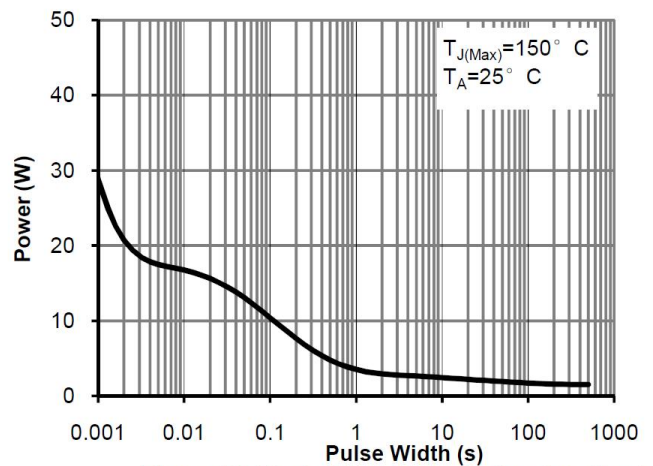


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

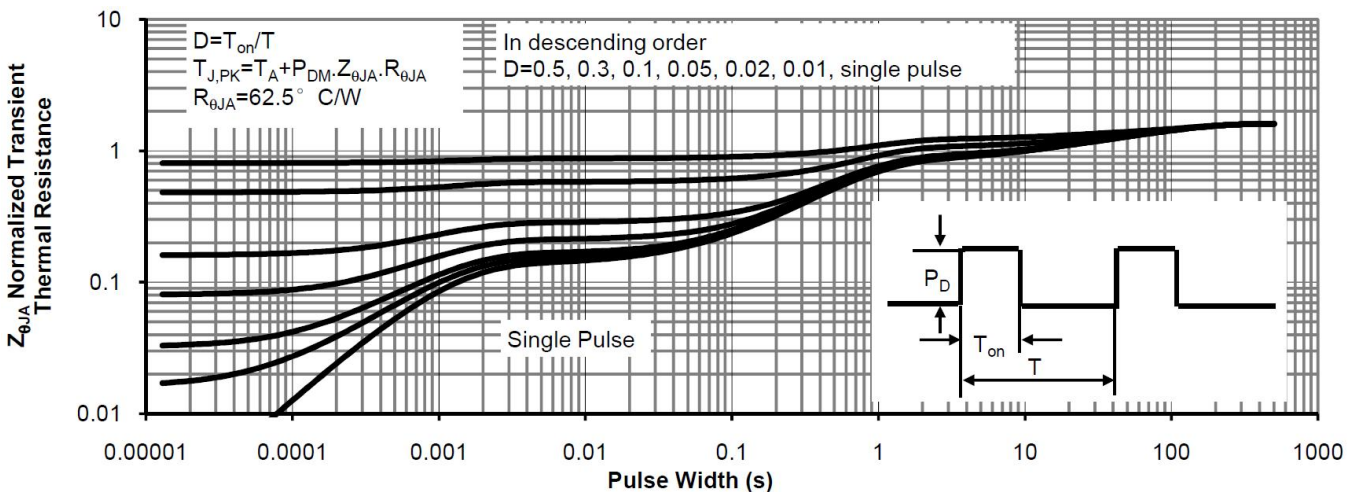
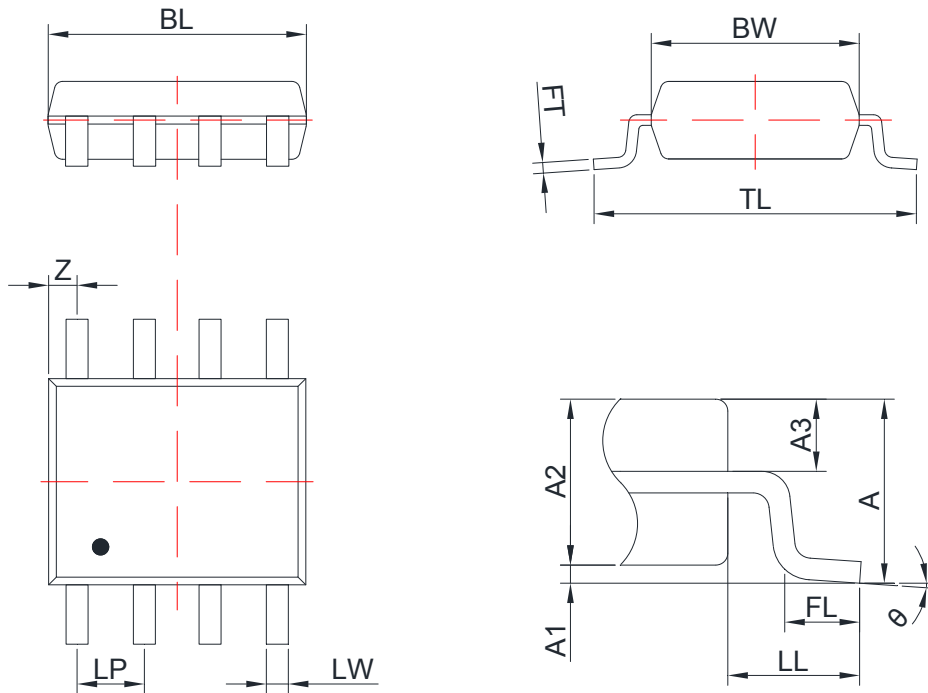


Figure 11: Normalized Maximum Transient Thermal Impedance

**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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