SuperMOS –SOP8 30V BV_{DSS} 16mΩ $R_{DS(on)}$ 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, $R_{DS(ON)}$=16mΩ(Typ), V_{GS}=10V
  $R_{DS(ON)}$=25mΩ(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

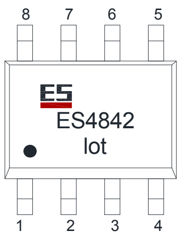
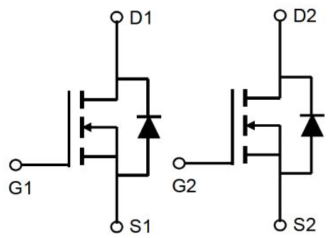
Pin	Function	Outline	Circuit Diagram
1	Source1		
2	Gate1		
7/8	Drain1		
3	Source2		
4	Gate2		
5/6	Drain2		

Table-2 Pin configuration

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 ℃ 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	T_A=25°C	I_D	7.7	A
	T_A=75°C		5.8	
Maximum Power Dissipation	T_A=25°C	P_D	2	W
	T_A=75°C		1.2	
Avalanche Current, Single Pulsed [b]		I_{AS}	12	A
Avalanche Energy, Single Pulsed [b]		E_{AS}	21.6	mJ
Pulsed Drain Current [a]		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 [a]	t ≤ 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：Tj=25℃,V_{DD}=30V,V_G=10V,L=0.3mH,Rg=25Ω

Electrical Characteristics

At TA = 25℃ unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1.0	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250uA	1.0	1.5	2.2	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=7.7A		16	23	mΩ
		V_{GS}=4.5V, I_D=5A		25	37	
Forward Trans conductance	g_{FS}	V_{DS}=5.0V, I_D=7.7A			40	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
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		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=15V, R_L=1.95Ω, R_{GEN}=3Ω		4.5		ns
Rise Time	t_r			2.7		
Turn-Off Delay Time	$t_{d(OFF)}$			14.9		
Fall Time	t_f			2.9		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1.0A	0.45		1.2	V

7. Typical Characteristic

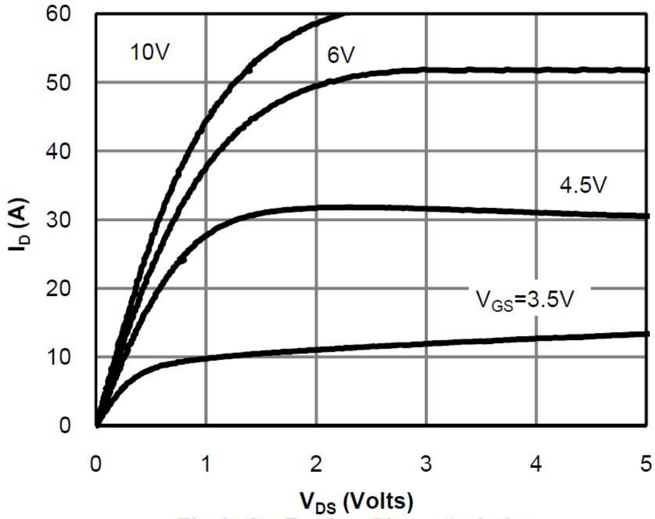


Fig 1: On-Region Characteristics

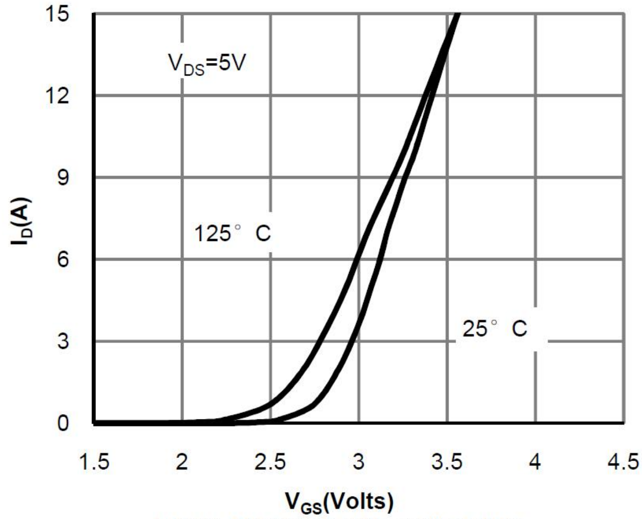


Figure 2: Transfer Characteristics

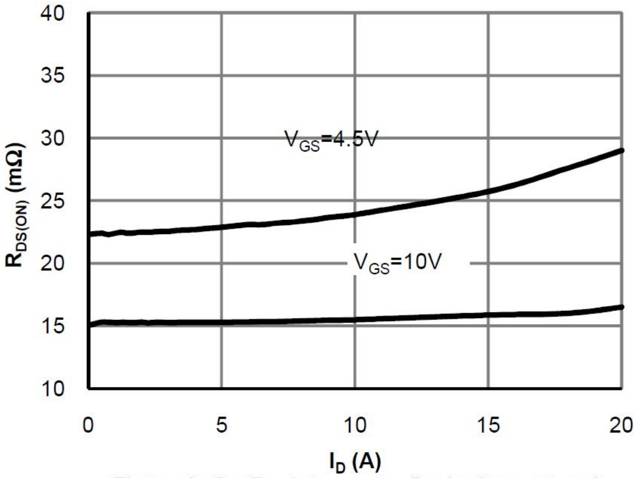


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

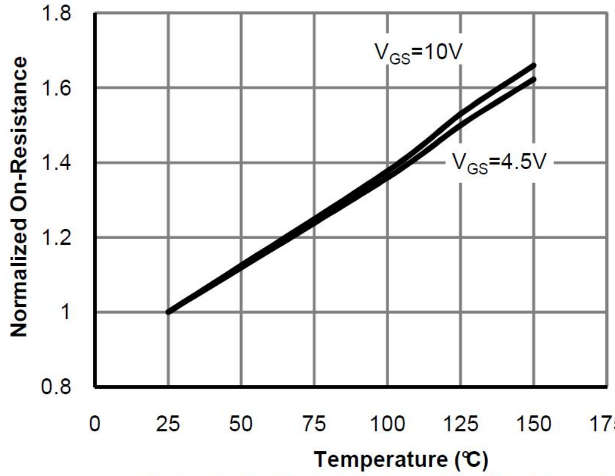


Figure 4: On-Resistance vs. Junction Temperature

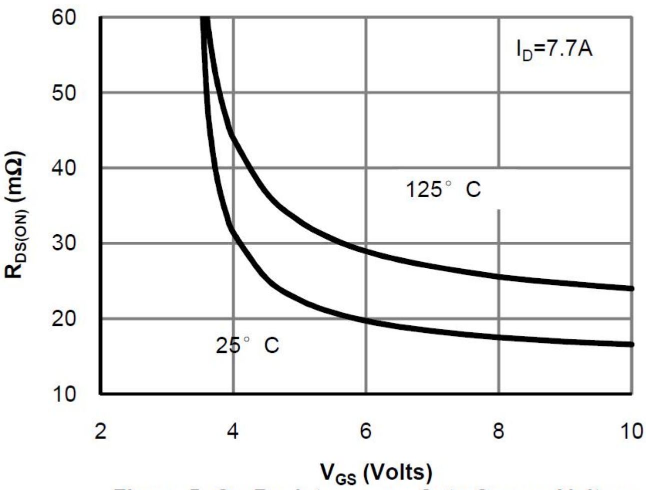


Figure 5: On-Resistance vs. Gate-Source Voltage

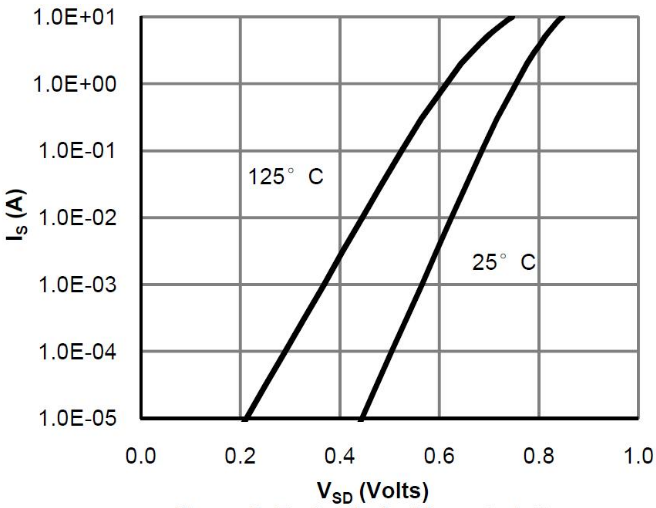


Figure 6: Body-Diode Characteristics

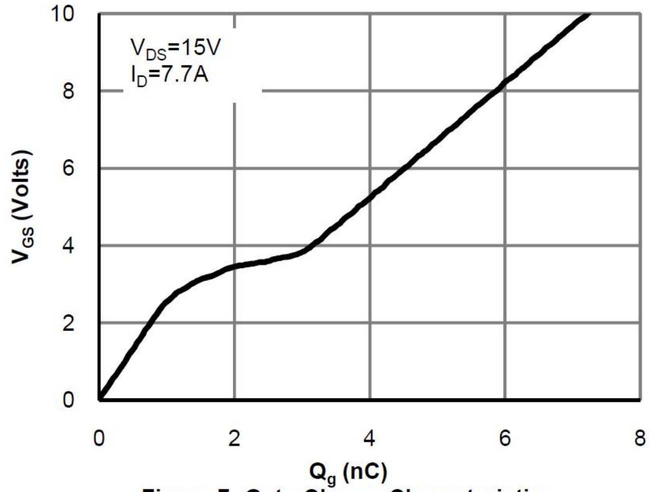


Figure 7: Gate-Charge Characteristics

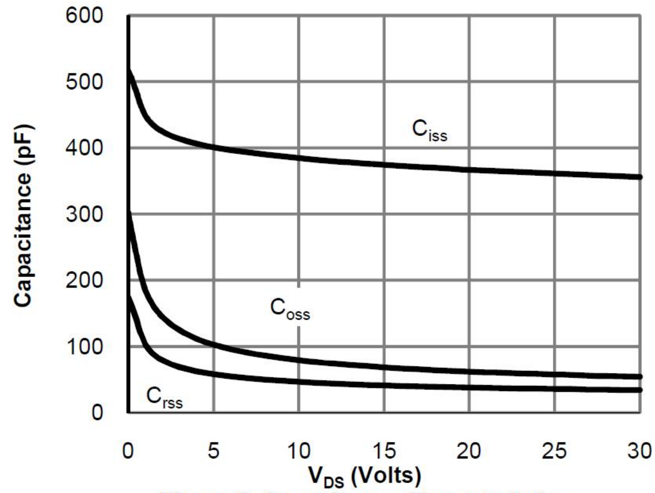


Figure 8: Capacitance Characteristics

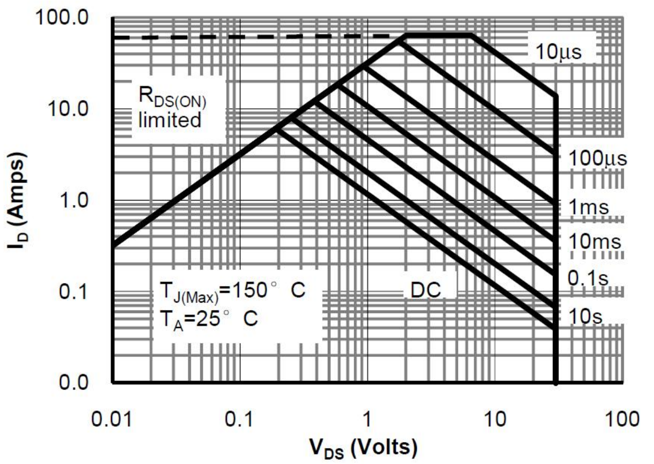


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

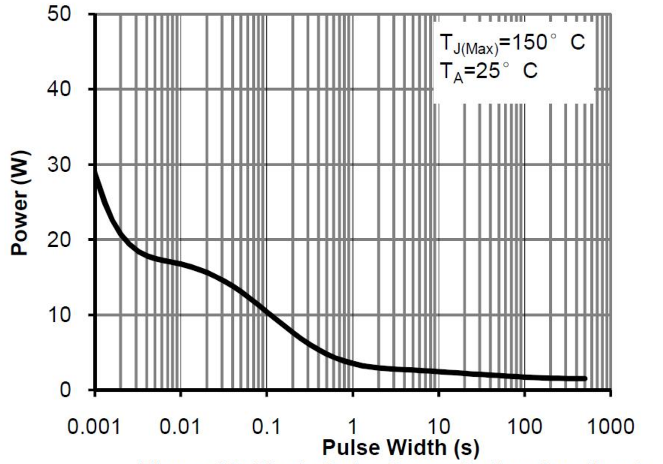


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

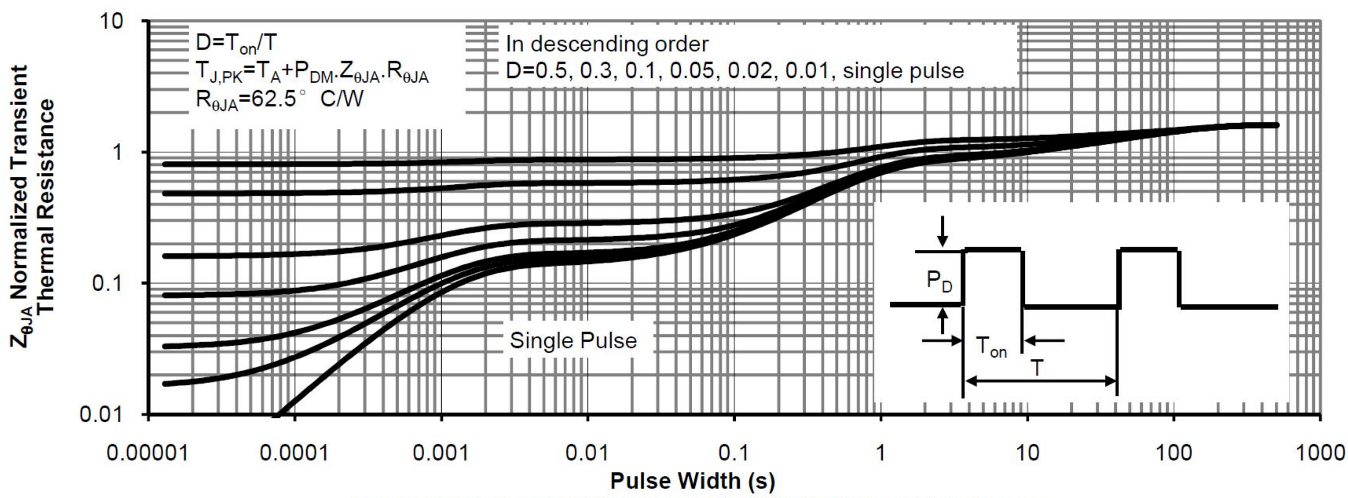
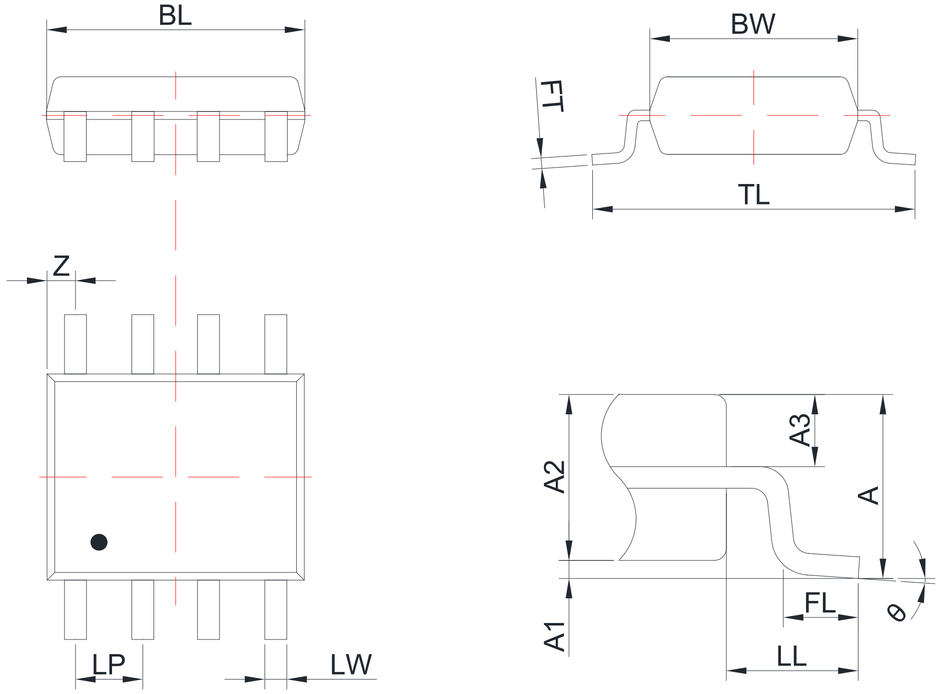


Figure 11: Normalized Maximum Transient Thermal Impedance

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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