

SuperMOS – SOP8 -30V BV_{DSS}, 40mΩ R_{DS(on)}, P-channel MOSFET

1. Description

The AO4801-ES 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 AO4801-ES is Pb-free.

2. Features

- -30V, R_{DS(ON)}=40mΩ(TYP.) @V_{GS}=-10V
- R_{DS(ON)}=49mΩ(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


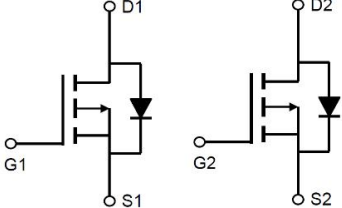
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AO4801-ES	SOP8	ES4801/LOT	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

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

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}	± 12	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-5.7
		$T_A=100^\circ\text{C}$	-3.6
Maximum Power Dissipation	P_D	$T_A=25^\circ\text{C}$	3.13
		$T_A=100^\circ\text{C}$	1.25
Pulsed Drain Current	I_{DM}	-22.8	A
Avalanche Current, Single Pulsed ^a	I_{AS}	8.5	A
Avalanche Energy, Single Pulsed ^a	E_{AS}	10.8	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	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	40	°C/W

Note:

a: $T_J=25^\circ\text{C}$, $V_{DD}=-15\text{V}$, $V_G=10\text{V}$, $L=0.3\text{mH}$, $R_g=25\Omega$

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
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	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.5	-0.8	-1.1	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4A$		40	58	m Ω
		$V_{GS}=-4.5V, I_D=-3A$		49	65	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=-15V$ $f=1MHz$		954		pF
Output Capacitance	C_{OSS}			115		
Reverse Transfer Capacitance	C_{RSS}			77		
Gate Resistance	R_g	$f=1MHz$		6		Ω
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-4.5V, V_{DS}=-15V$ $I_D=-4A$		9.4		nC
Gate-to-Source Charge	Q_{GS}			2		
Gate-to-Drain Charge	Q_{GD}			3		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-4.5V, V_{DS}=-15V$ $R_L=3.6\Omega, R_G=6\Omega$		6.3		ns
Rise Time	t_r			3.2		
Turn-Off Delay Time	$t_{d(OFF)}$			38.2		
Fall Time	t_f			12		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1.0A$		-0.8	-1.5	V

7. Typical Characteristic

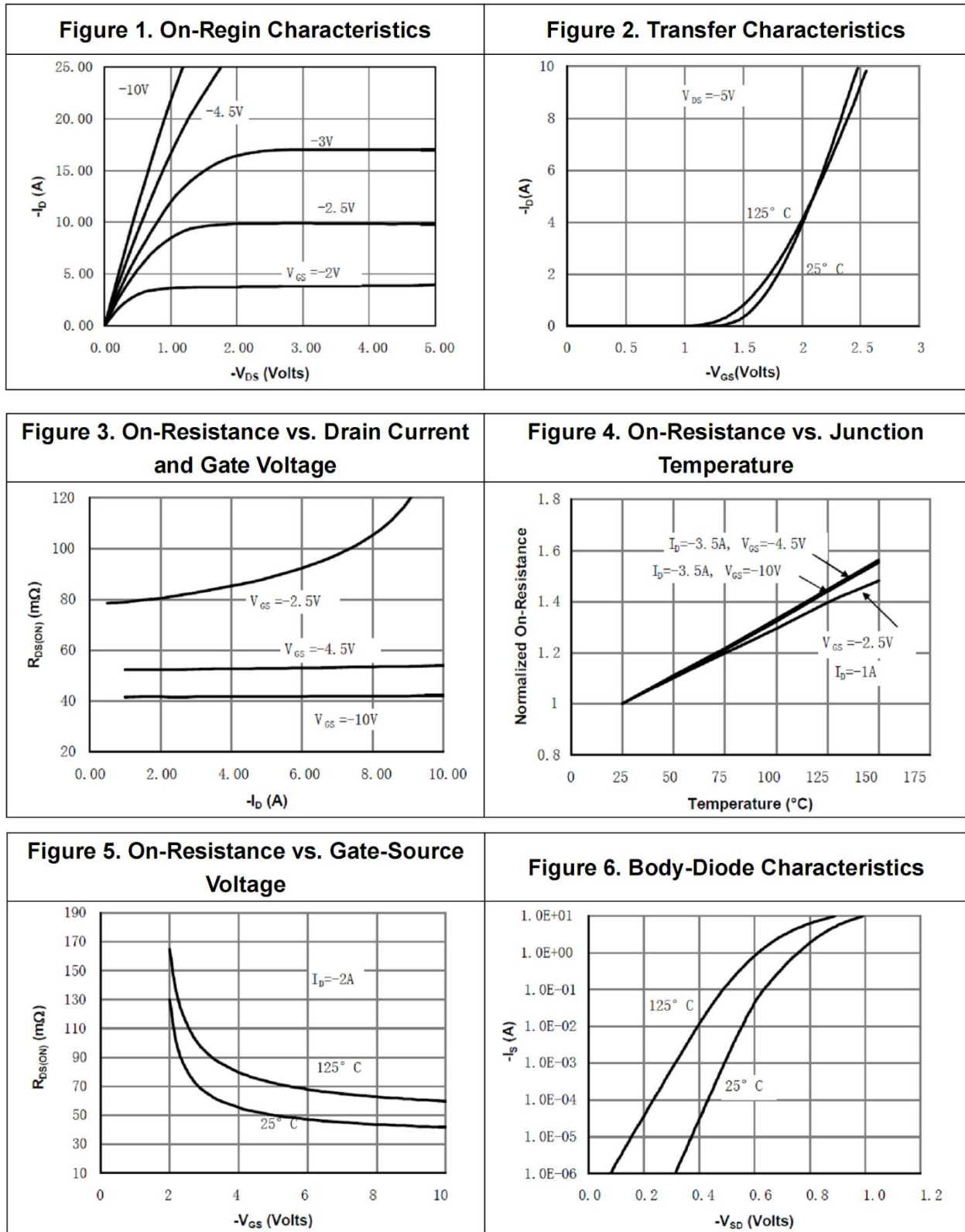


Figure 7. Gate-Charge Characteristics

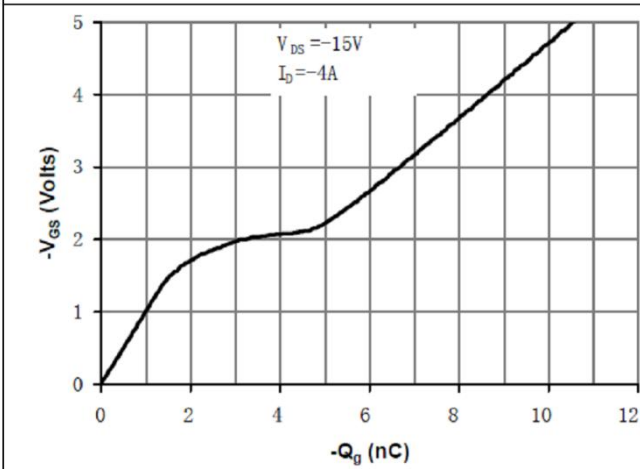


Figure 8. Capacitance Characteristics

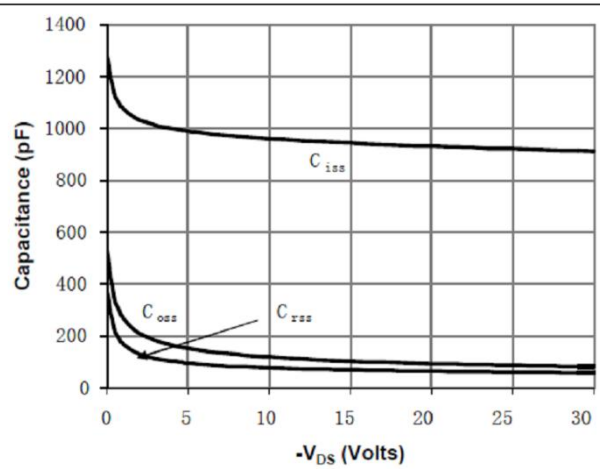


Figure 9. Maximum Forward Biased Safe Operating Area

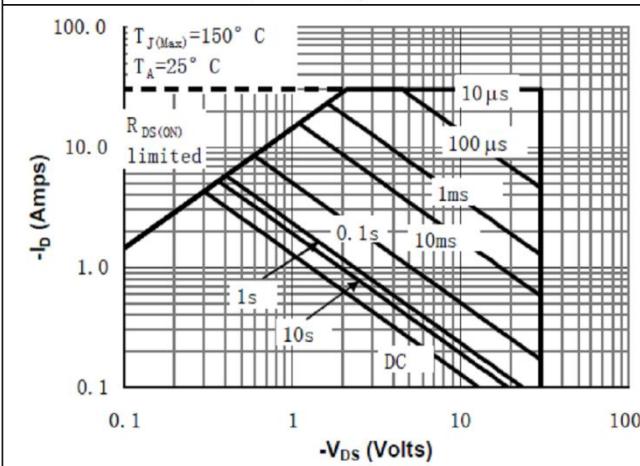


Figure 10. Single Pulse Power Rating Junction-to-Ambient

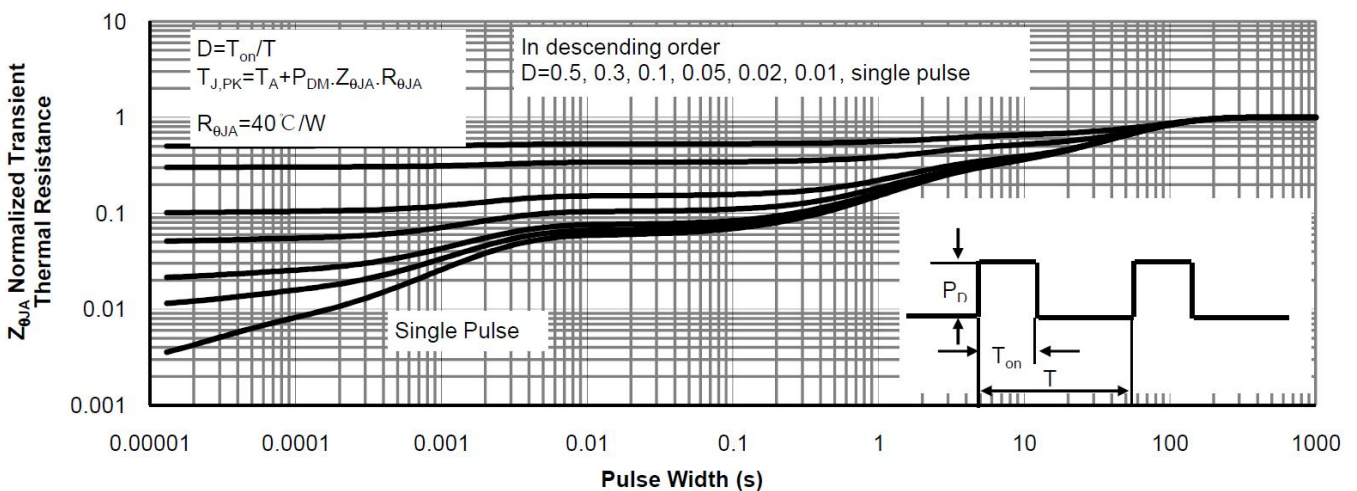
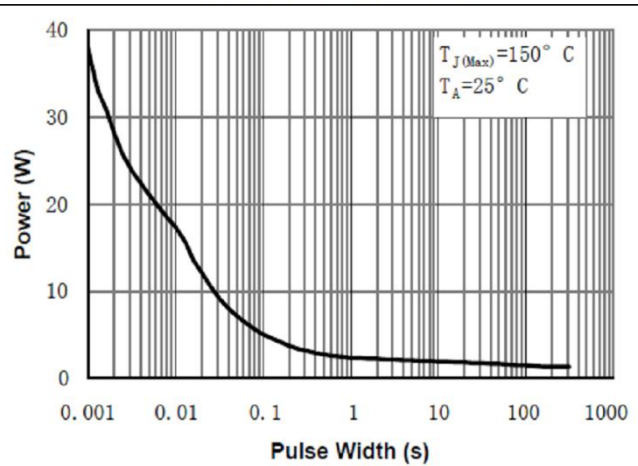
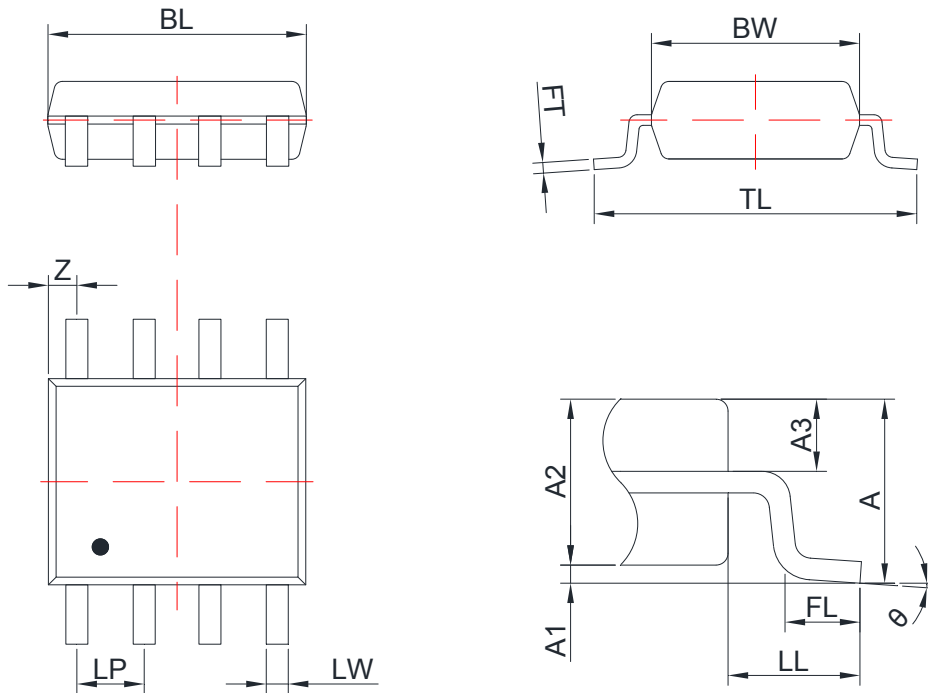


Figure 11: Normalized Maximum Transient Thermal Impedance

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	4.80	5.00	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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