

SuperMOS – SOP8 -30V V_{DSS} , 13.5m Ω $R_{DS(on)}$, -10.5A I_D P-channel MOSFET

1. Description

The AO4435 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 AO4435 is Pb-free.

2. Features

- -30V, $R_{DS(ON)}$ =13.5m Ω (Typ), V_{GS} =-10V
- $R_{DS(ON)}$ =18.5m Ω (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 100% UIS TESTED
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

4. Ordering Information

Part Number	Package	Marking	Material	Quantity per reel	Flammability Rating
AO4435	SOP8	ES4435/lot	Halogen free	3,000 PCS	UL 94V-0

Table-1 Ordering information

5. Pin Configuration and Functions


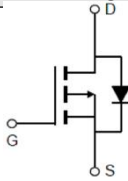
Pin	Function	Outline	Circuit Diagram
4	Gate		
1/2/3	Source		
5/6/7/8	Drain		

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}	±25	V
Continuous Drain Current	I_D	$T_A=25^{\circ}C$	-10.5
		$T_A=70^{\circ}C$	-8.0
Maximum Power Dissipation	P_D	$T_A=25^{\circ}C$	3.1
		$T_A=70^{\circ}C$	2.0
Pulsed Drain Current	I_{DM}	-80	A
Avalanche Current, Single Pulsed ^a	I_{AS}	20	A
Avalanche Energy, Single Pulsed ^a	E_{AS}	60	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	$R_{\theta JA}$	32	40	°C/W
Junction-to-Lead Thermal Resistance	$R_{\theta JL}$	3.2	4	

Note:

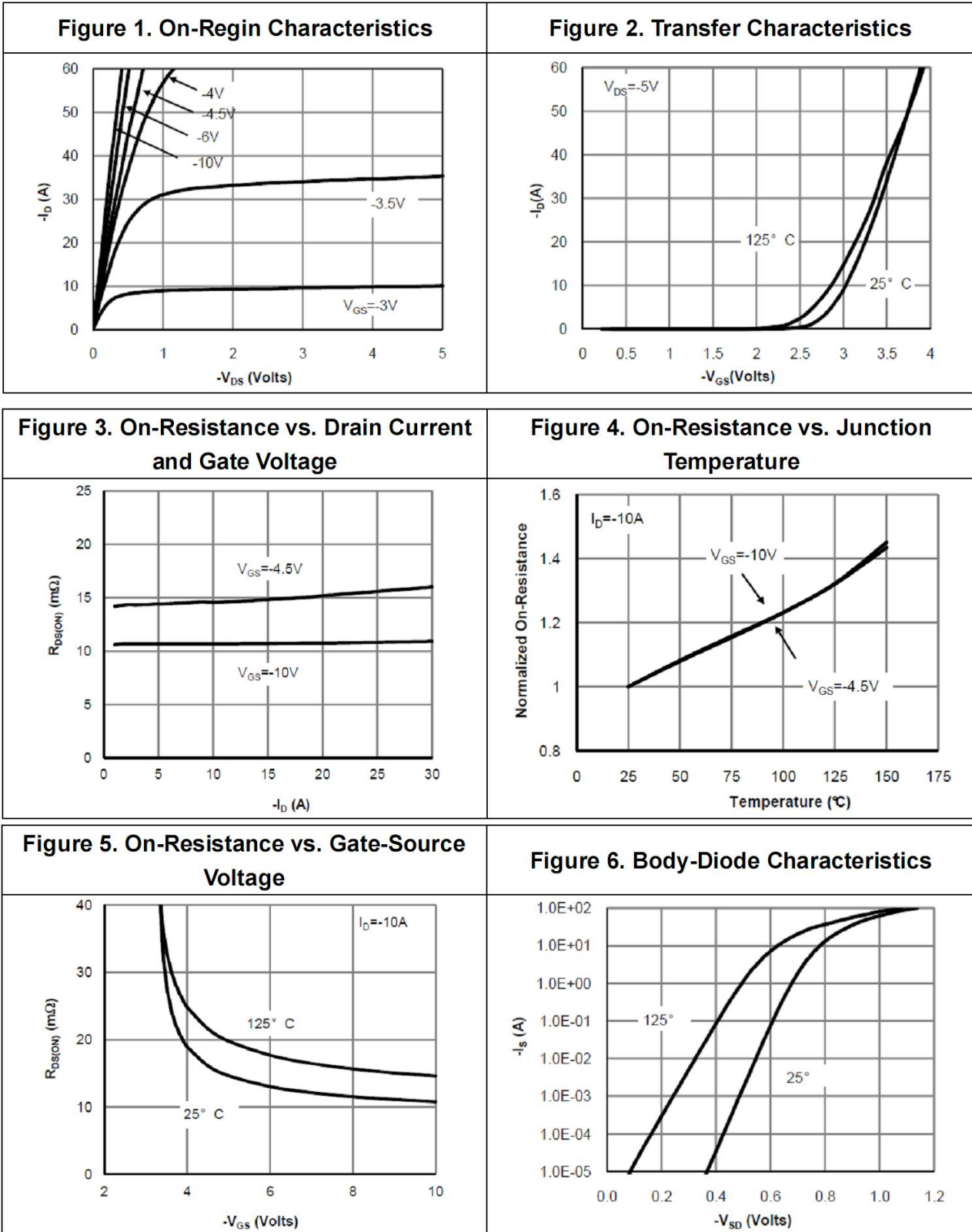
a: EAS condition: $T_J=25^{\circ}C, V_{DD}=-30V, V_G=-10V, L=0.3mH, R_g=25\Omega$

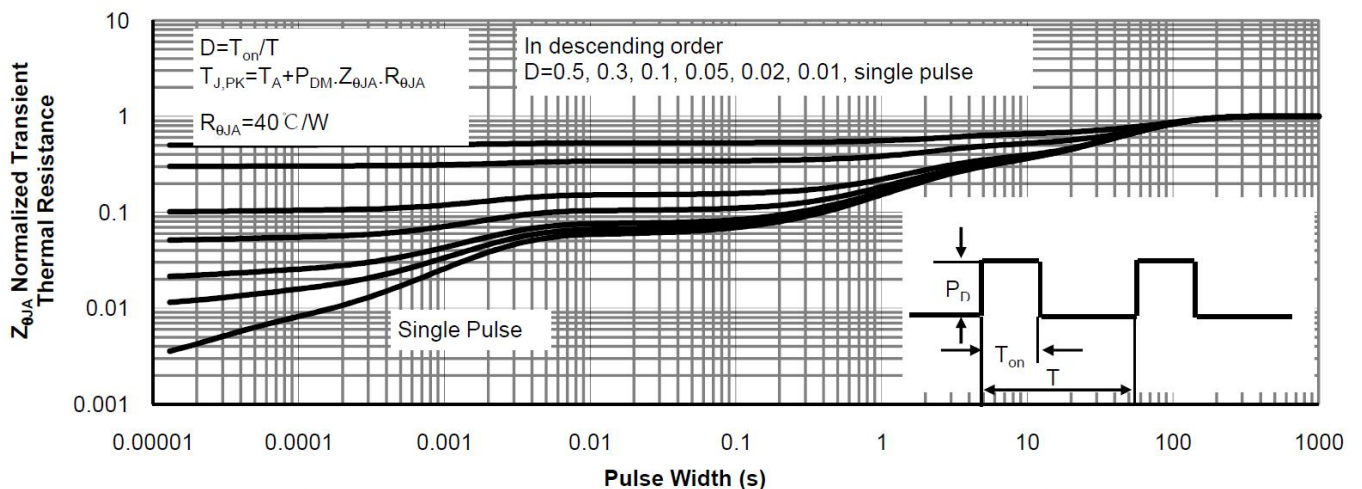
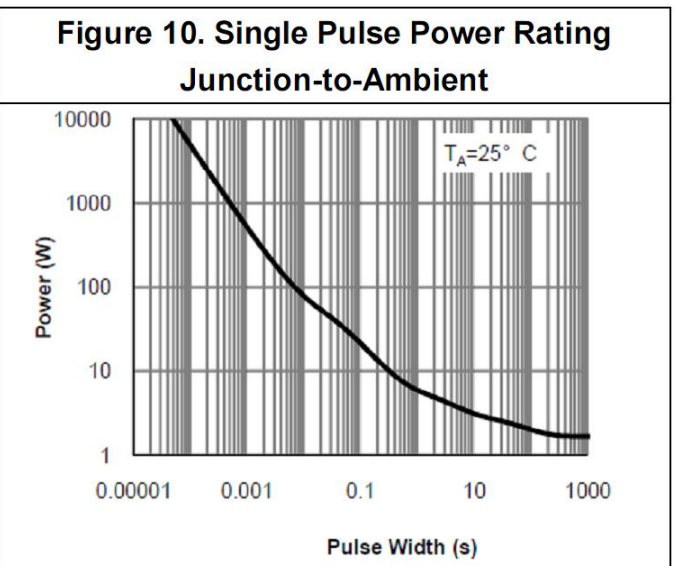
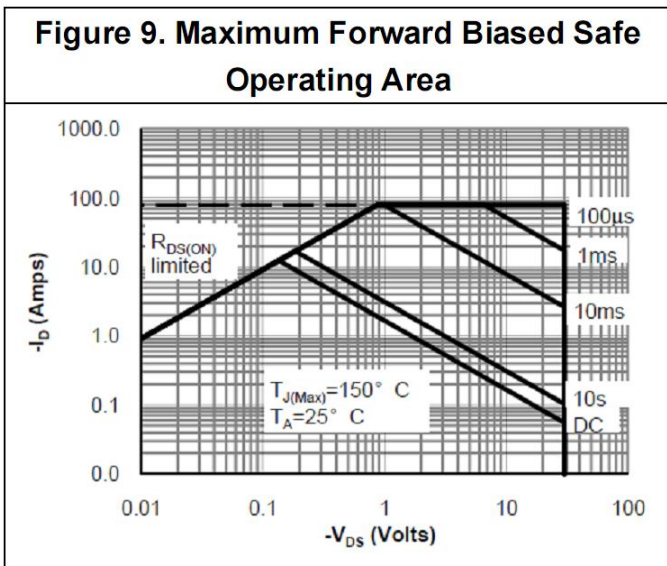
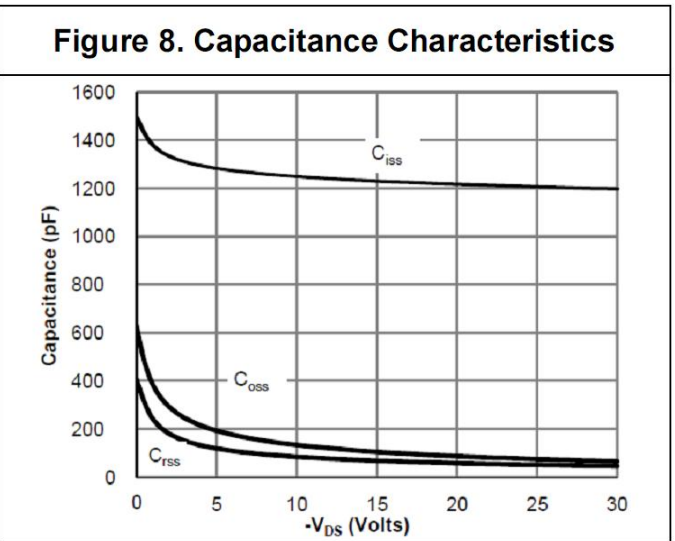
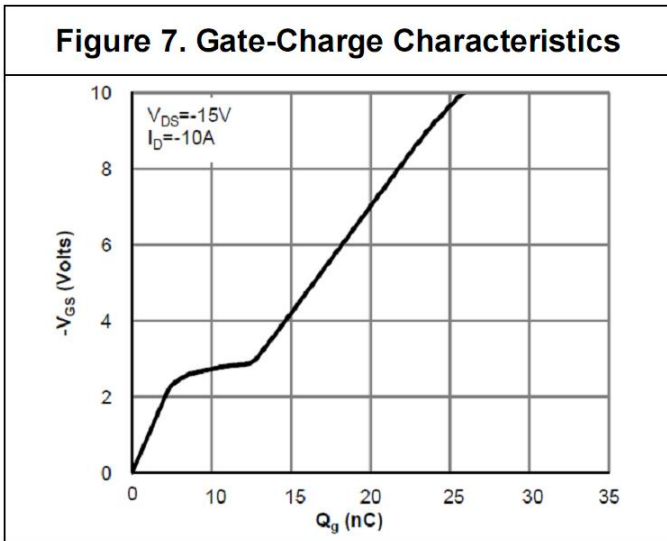
Electrical Characteristics

At TA = 25°C unless otherwise specified

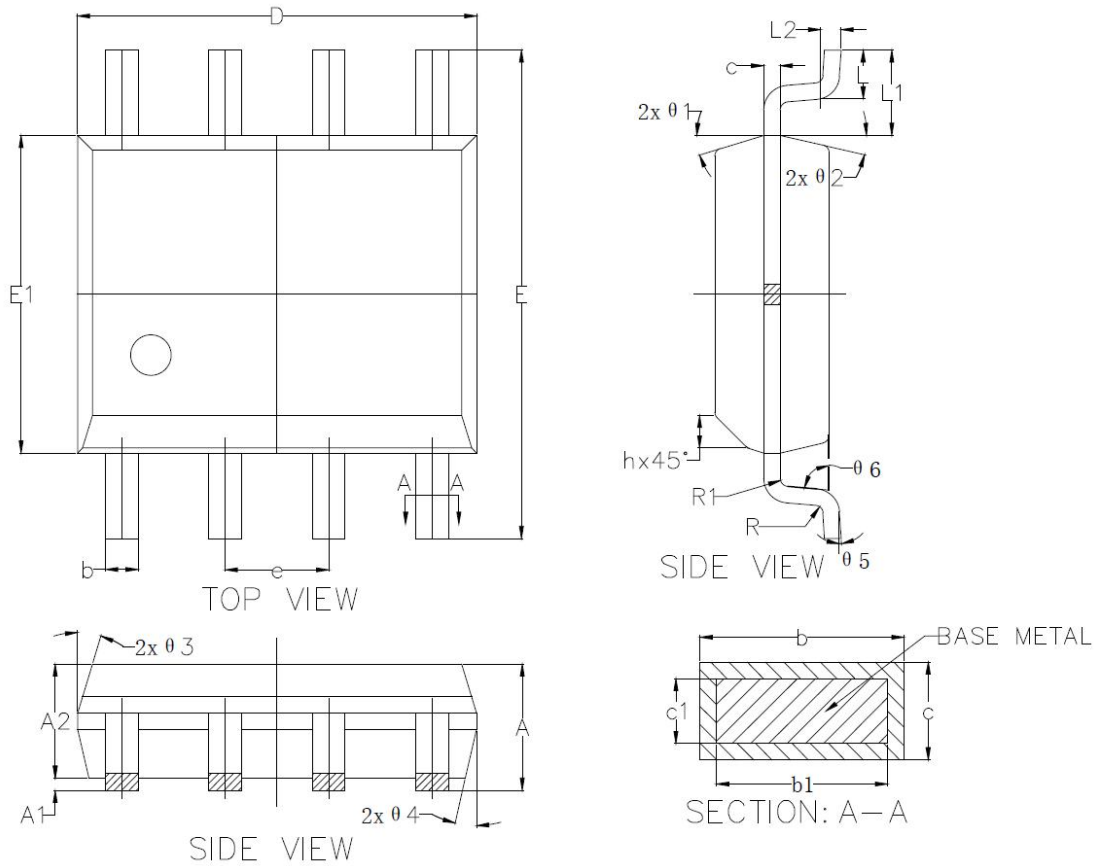
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=-30V$			-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS						
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	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$		13.5	21	m Ω
		$V_{GS}=-4.5V, I_D=-7A$		18.5	27	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS}=0V$		1230		pF
Output Capacitance	C_{OSS}	$V_{DS}=-15V$		160		
Reverse Transfer Capacitance	C_{RSS}	$f=1MHz$		145		
Gate Resistance	R_g	$f=1MHz$		10		Ω
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-10V$		26.4		nC
Gate-to-Source Charge	Q_{GS}	$V_{DS}=-15V$		6		
Gate-to-Drain Charge	Q_{GD}	$I_D=-10A$		4.3		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$		18		ns
Rise Time	t_r	$V_{DS}=-15V$		22		
Turn-Off Delay Time	$t_{d(OFF)}$	$R_L=1\Omega$		55		
Fall Time	t_f	$R_G=3\Omega$		42		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=-1.0A$		-0.75	-1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=-10A,$		32		ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=100A/\mu s$		28		nC

7. Typical Characteristic





8. Dimension and Patterns (SOP8)



COMMON DIMENSIONS: UNITS OF MEASURE=MILLIMETER

Symbol	Dimensions			Symbol	Dimensions		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	1.40	1.55	1.70	L1	0.96	1.06	1.16
A1	0.05		0.25	L2	0.25 BSC		
A2	1.30	1.40	1.50	R	0.07		
b	0.37		0.47	R1	0.07		
b1	0.35		0.45	h	0.25	0.35	0.45
c	0.17		0.27	θ 1	15°	17°	19°
c1	0.15		0.25	θ 2	11°	13°	15°
D	4.80	4.90	5.00	θ 3	15°	17°	19°
E	5.85		6.15	θ 4	11°	13°	15°
E1	3.80	3.90	4.00	θ 5	0°	3°	6°
e	1.27 BSC			θ 6	55°		85°
L	0.57		0.87	Φ	0.40	0.50	0.60

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