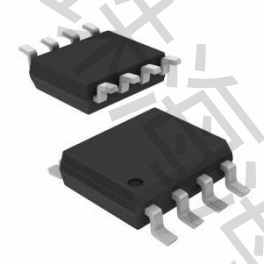
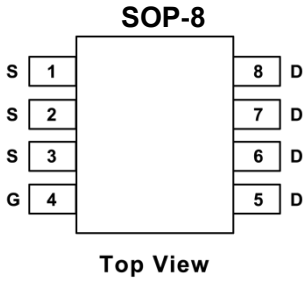
AO4419-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	Qg (Typ.)	I_D (A)
-30	0.018 at V_{GS} = - 10 V	13nC	-9.0
	0.024 at V_{GS} = - 4.5 V		-7.8





FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested

APPLICATIONS

- Load Switch
- Battery Switch

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 20	
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	-9.2	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	-7.3	
I_{DM}	Pulsed Drain Current ①	-75	
P_D @T_A = 25°C	Power Dissipation ④	2.5	W
P_D @T_A = 70°C	Power Dissipation ④	1.6	
	Linear Derating Factor	0.02	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Static @ TJ = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	-30			V	V_{GS} = 0V, I_D = -250μA
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.019		V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		15.6	19.4	mΩ	V_{GS} = -10V, I_D = -9.2A ③
			25.6	32.5		V_{GS} = -4.5V, I_D = -7.5A ③
$V_{GS(th)}$	Gate Threshold Voltage	-1.3	-1.8	-2.4	V	V_{DS} = V_{GS}, I_D = -25μA
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient		-5.7		mV/°C	
I_{DSS}	Drain-to-Source Leakage Current			-1.0	μA	V_{DS} = -24V, V_{GS} = 0V
				-150		V_{DS} = -24V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage			-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage			100		V_{GS} = 20V
gfs	Forward Transconductance	13			S	V_{DS} = -10V, I_D = -7.5A
Q_g	Total Gate Charge ⑥		14		nC	V_{DS} = -15V, V_{GS} = -4.5V, I_D = - 7.5A
Q_g	Total Gate Charge ⑥		25	38	nC	V_{GS} = -10V
Q_{gs}	Gate-to-Source Charge ⑥		3.5			V_{DS} = -15V
Q_{gd}	Gate-to-Drain Charge ⑥		6.4			I_D = -7.5A
R_G	Gate Resistance ⑥		15		Ω	
$t_{d(on)}$	Turn-On Delay Time		16		ns	V_{DD} = -15V, V_{GS} = -4.5V ③
t_r	Rise Time		44			I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time		55			R_G = 6.8Ω
t_f	Fall Time		49			See Figs. 20a &20b
C_{iss}	Input Capacitance		1110		pF	V_{GS} = 0V
C_{oss}	Output Capacitance		230			V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance		160			f = 1.0MHz

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②		100	mJ
I_{AR}	Avalanche Current ①		-7.5	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Unit	Conditions
I_S	Continuous Source Current (Body Diode)			-2.5	A	
I_{SM}	Pulsed Source Current (Body Diode) ①			-75		
V_{SD}	Diode Forward Voltage			-1.2	V	T_J = 25°C, I_S = -2.5A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time		24	36	ns	T_J = 25°C, I_F = -2.5A, V_{DD} = -24V
Q_{rr}	Reverse Recovery Charge		15	23	nC	di/dt = 100A/μs ③

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤		20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ④		50	

Notes

① Repetitive rating; pulse width limited by max. junction temperature.
② Starting TJ = 25°C, L = 3.5mH, RG = 25Ω, IAS = -7.5A.
③ Pulse width ≤ 400μs; duty cycle ≤ 2%.
④ When mounted on 1 inch square copper board.
⑤ Rθ is measured at TJ of approximately 90°C.
⑥ For DESIGN AID ONLY, not subject to production testing.

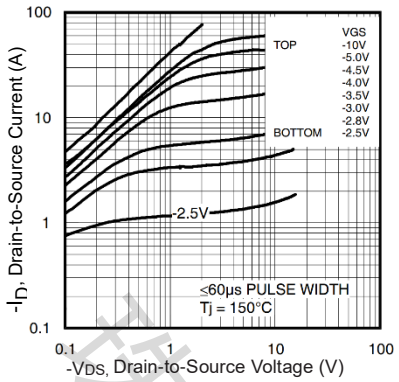


Fig 1. Typical Output Characteristics

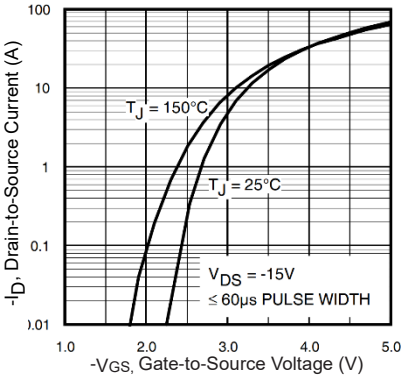


Fig 2. Typical Transfer Characteristics

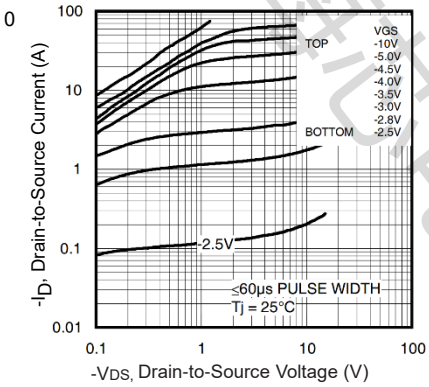


Fig 3. Typical Output Characteristics

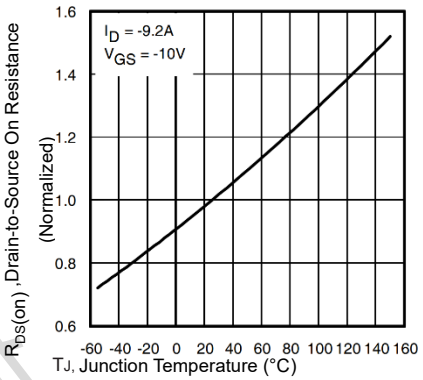


Fig 4. Normalized On-Resistance vs. Temperature

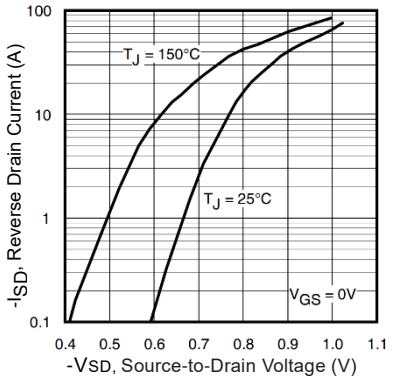


Fig 5. Typical Source-Drain Diode Forward Voltage

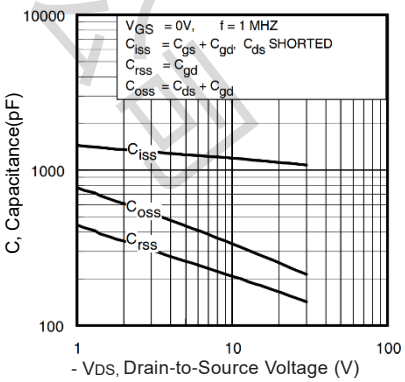


Fig 6. Typical Capacitance Vs. Drain-to-Source Voltage

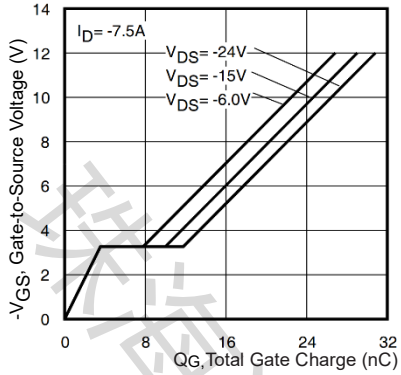


Fig 7. Typical Gate Charge vs.Gate-to-Source Voltage

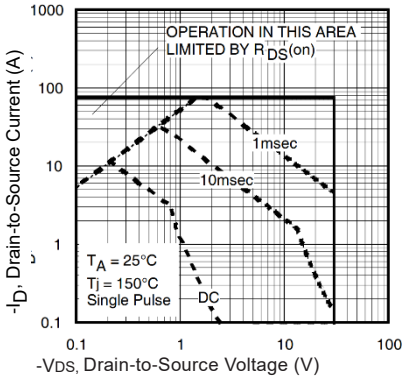


Fig 8.Maximum Safe Operating Area

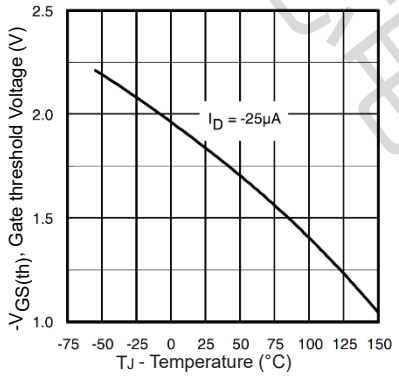


Fig 9. Threshold Voltage vs. Temperature

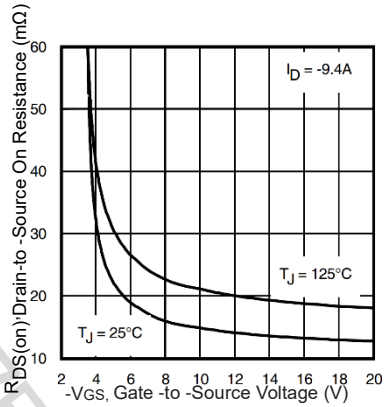


Fig 10. On-Resistance vs. Gate Voltage

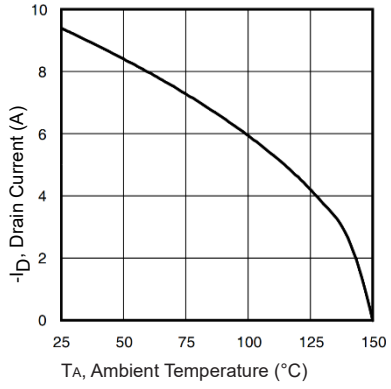


Fig 11. Maximum Drain Current Vs. Ambient Temperature

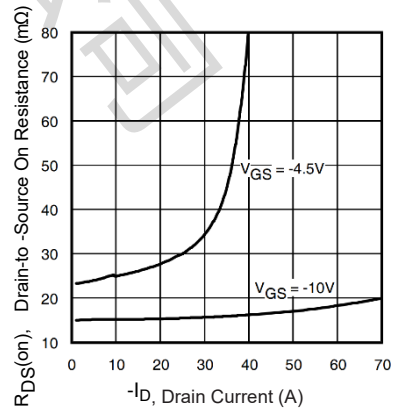


Fig 12. Typical On-Resistance Vs. Drain Current

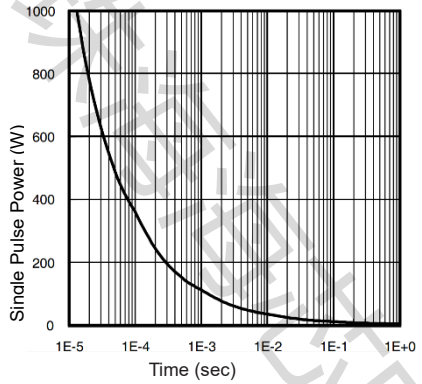


Fig 13. Typical Power Vs. Time

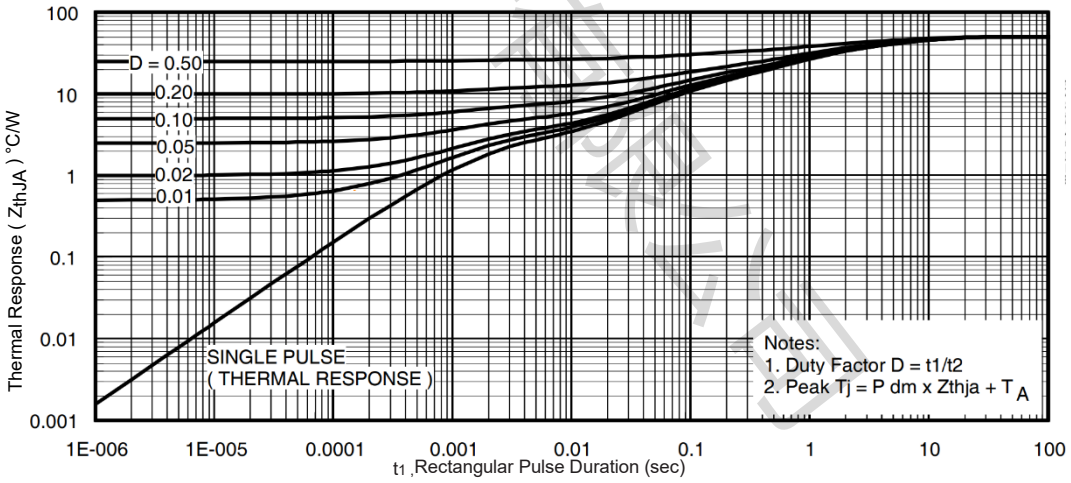
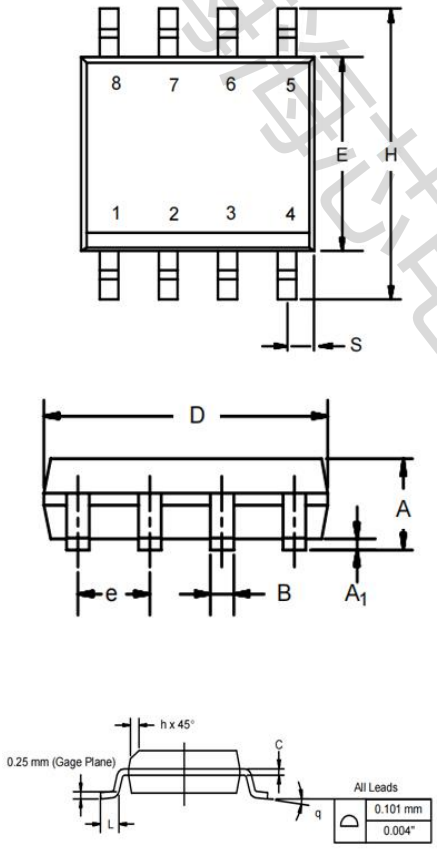


Fig 14. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

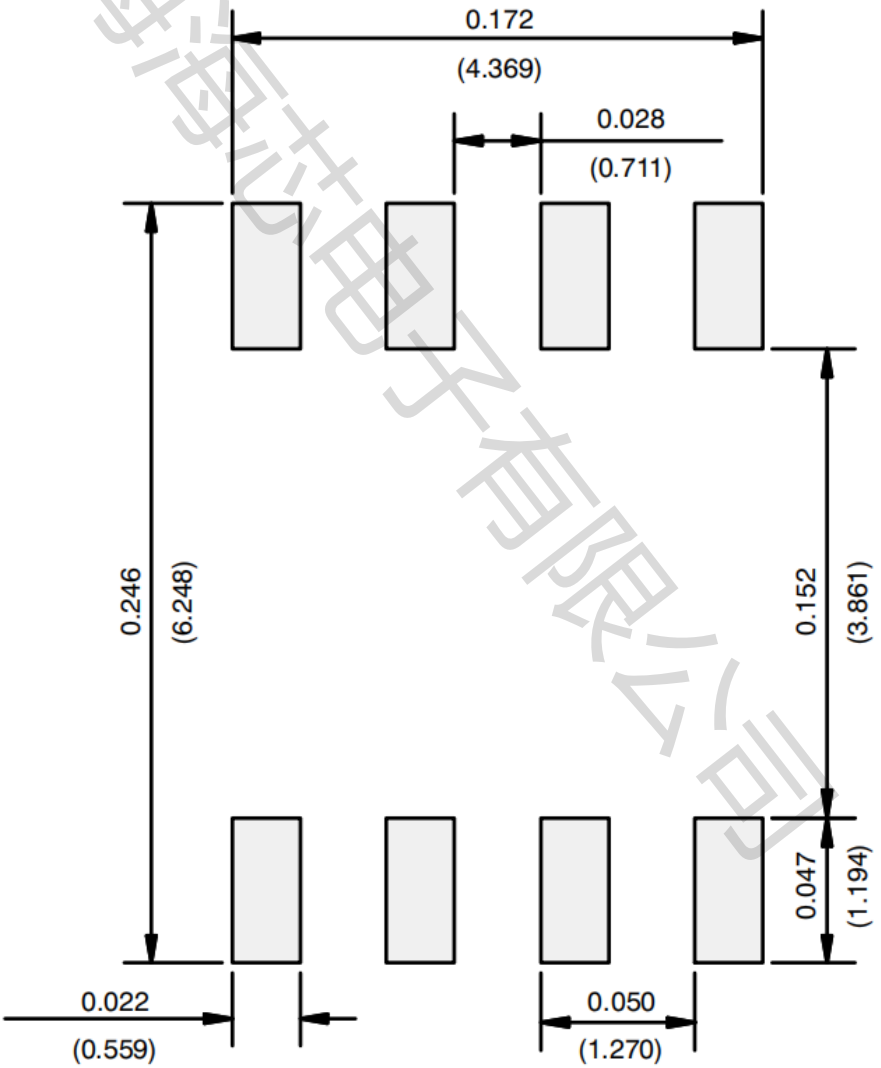
SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



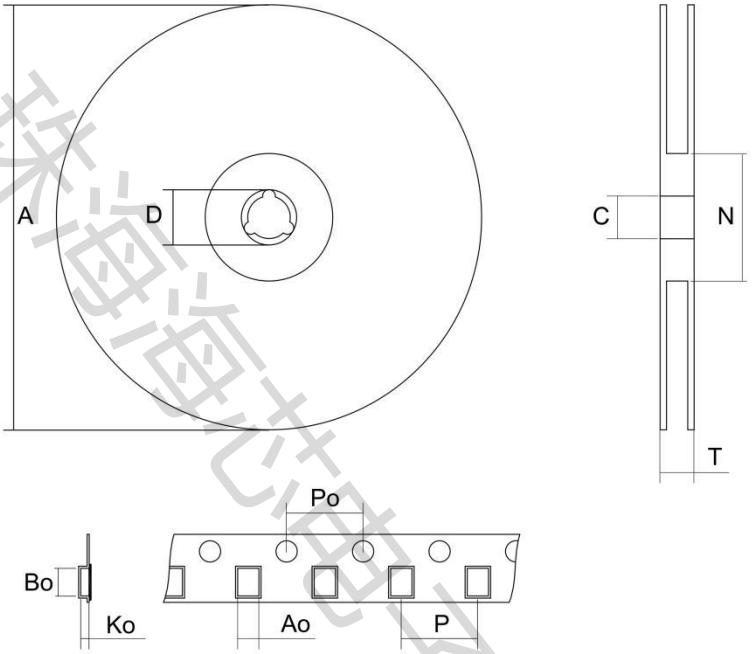
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

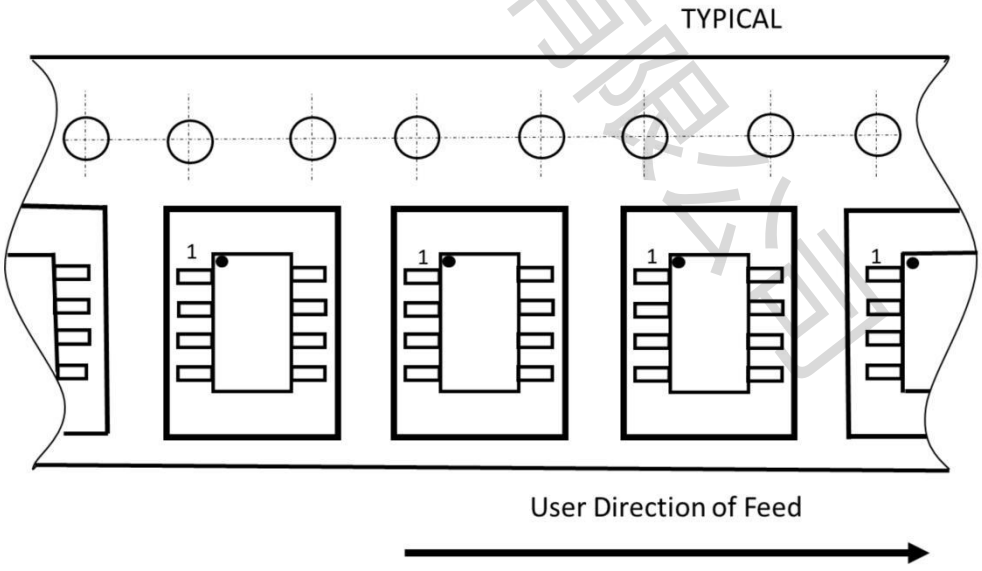


SOP-8 packing information

SO-8 tape and reel



Tape orientation



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