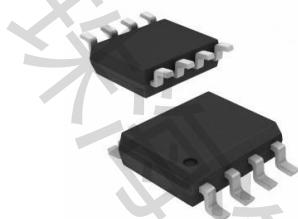


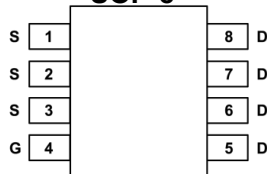
AO4413-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

VDS (V)	RDS(on)	ID
-30	< 6.2mΩ at V _{GS} = -20 V	-17A V _{GS} = -20 V
	< 7.2mΩ at V _{GS} = -10 V	



SOP-8



Top View

FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested

APPLICATIONS

- Load Switch
- Notebook Adaptor Switch

Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±25	V
Continuous Drain Current ^{AF}	I _D	-17	A
		-14	
Pulsed Drain Current ^B	I _{DM}	-182	
Power Dissipation ^A	P _D	3.1	W
		2	
Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{AF}	R _{θJA}	26	40	°C/W
Maximum Junction-to-Ambient ^A		50	75	°C/W
Maximum Junction-to-Lead ^C	R _{θJL}	14	24	°C/W

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V T _J =55°C			-1 -5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V			±1	μA
		V _{DS} =0V, V _{GS} =±25V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =-250μA	-1.5	-2.1	-2.6	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-20V, I _D =-15A T _J =125°C		5 7.2	6.2 9	mΩ
		V _{GS} =-10V, I _D =-15A		5.7	7.2	mΩ
		V _{GS} =-6V, I _D =-10A		7.4	9.5	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-15A		48		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.7	-1	V
I _S	Maximum Body-Diode Continuous Current				-4.2	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		2823	3400	pF
C _{oss}	Output Capacitance			574		pF
C _{rss}	Reverse Transfer Capacitance			424	600	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	2.1	4.0	6.4	Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-15A		54	76	nC
Q _{gs}	Gate Source Charge			9		nC
Q _{gd}	Gate Drain Charge			16		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-10V, V _{DS} =-15V, R _L =1.0Ω, R _{GEN} =3Ω		12.5		ns
t _r	Turn-On Rise Time			12.5		ns
t _{D(off)}	Turn-Off DelayTime			49		ns
t _f	Turn-Off Fall Time			109		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-15A, dI/dt=100A/μs		22.3	32	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-15A, dI/dt=100A/μs		8.8		nC

Notes

- A. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.
- B. Repetitive rating, pulse width limited by junction temperature.
- C. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient.
- D. The static characteristics in Figures 1 to 6 are obtained using
- E. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.
- F. The current rating is based on the t ≤ 10s junction to ambient thermal resistance rating.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

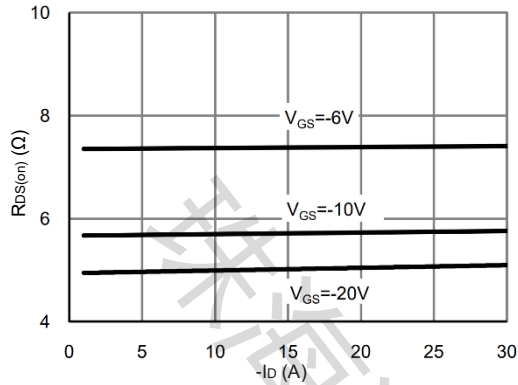


Fig 1. On-Resistance vs. Drain Current and Gate Voltage

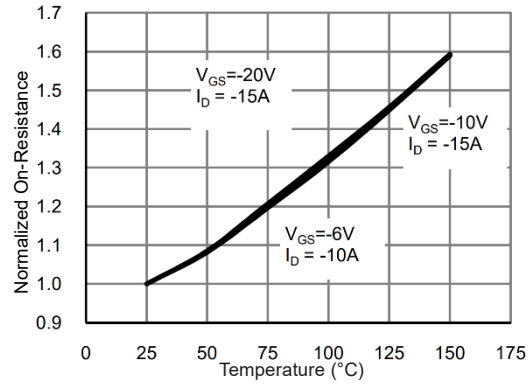


Fig 2. On-Resistance vs. Junction Temperature

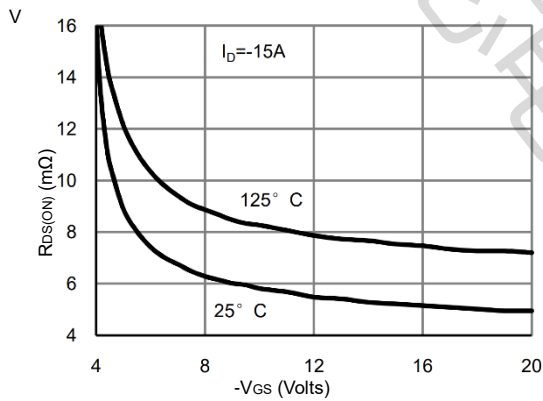


Fig 3. On-Resistance vs. Gate-Source Voltage

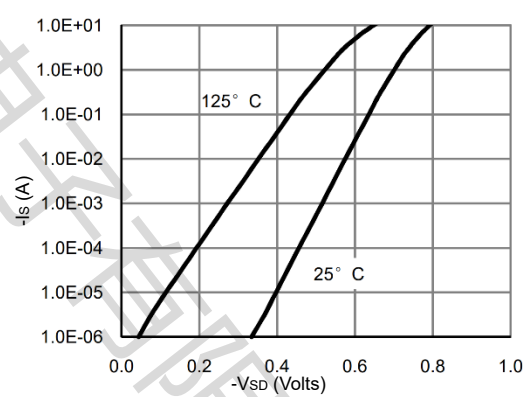


Fig 4. Body-Diode Characteristics

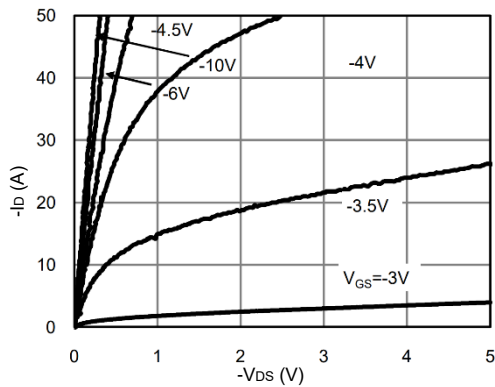


Fig 5. On-Region Characteristics

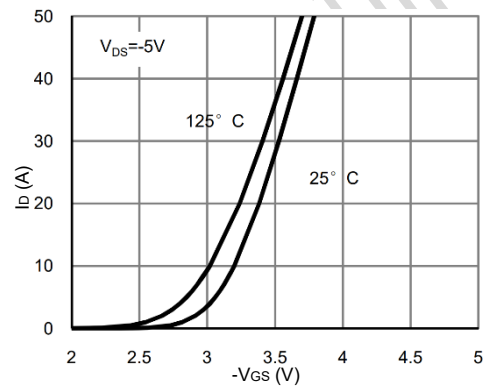


Fig 6. Transfer Characteristics

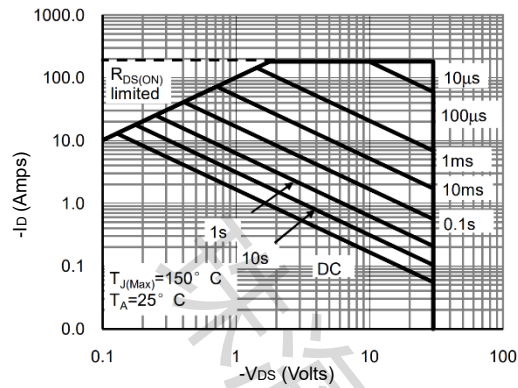


Fig 7. Maximum Forward Biased Safe

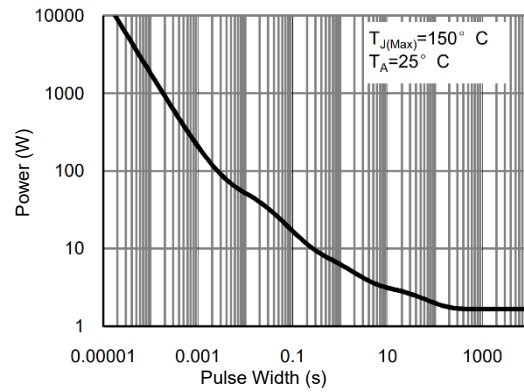


Fig 8. Single Pulse Power Rating Junction-to-Ambient (Note E)

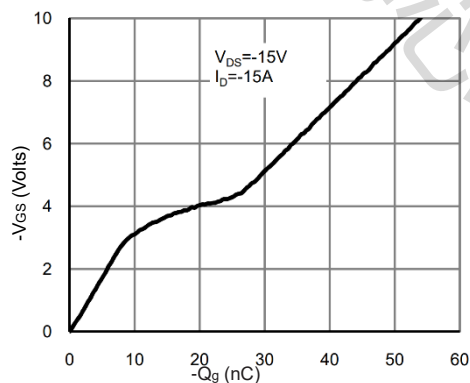


Fig 9. Gate-Charge Characteristics

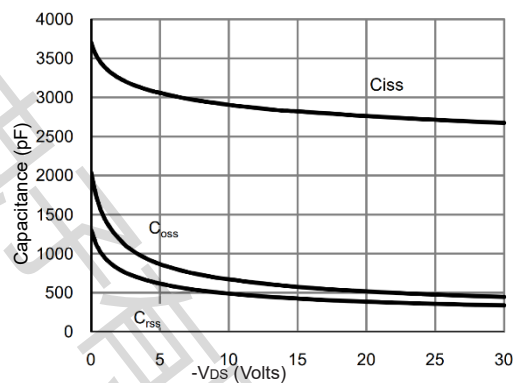


Fig 10. Capacitance Characteristics

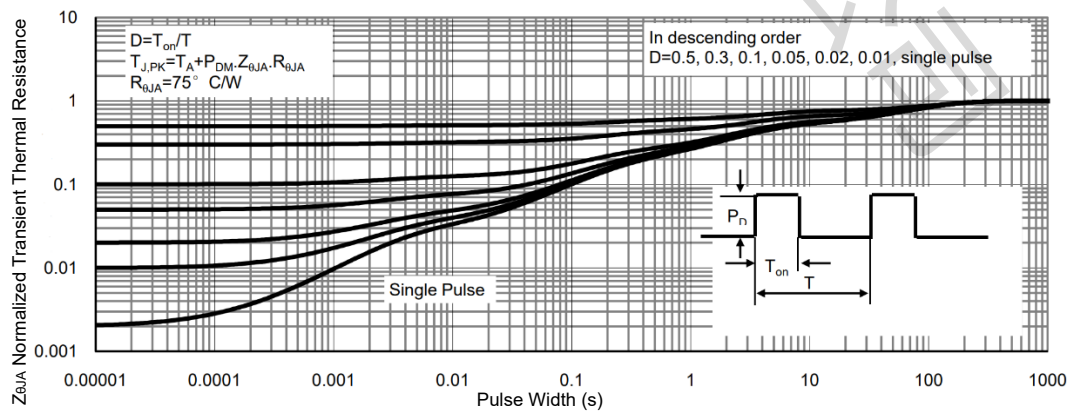
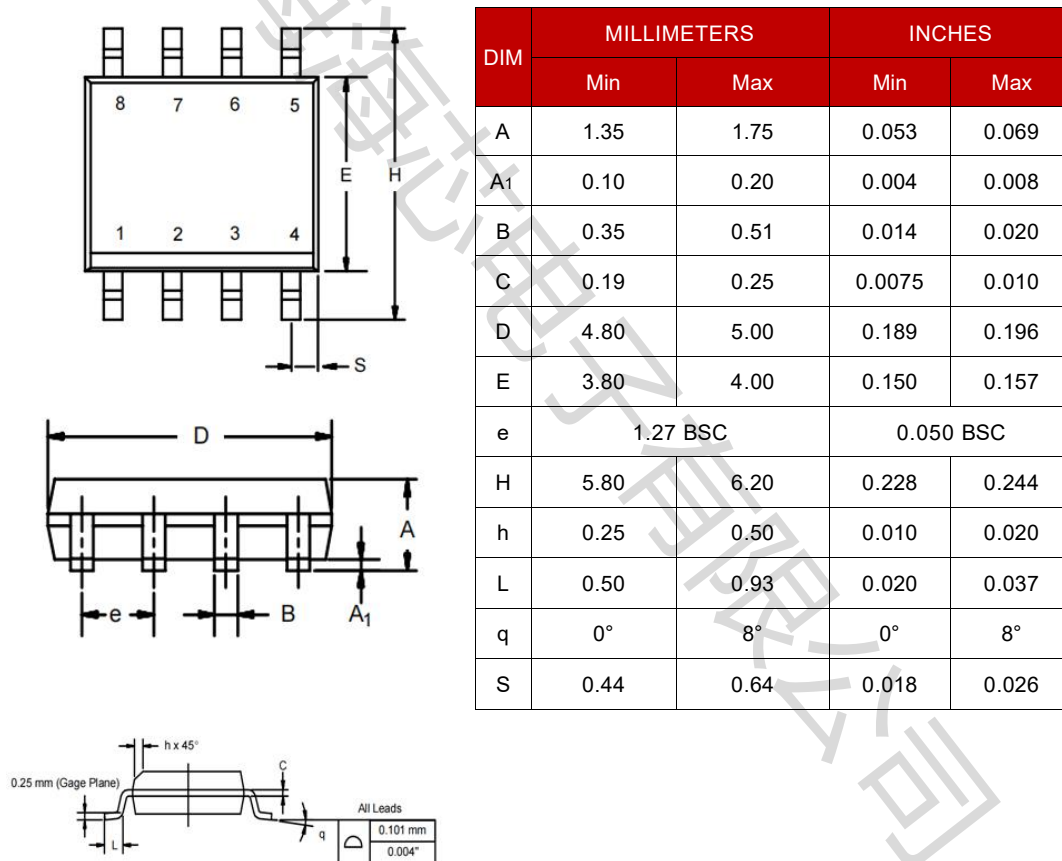


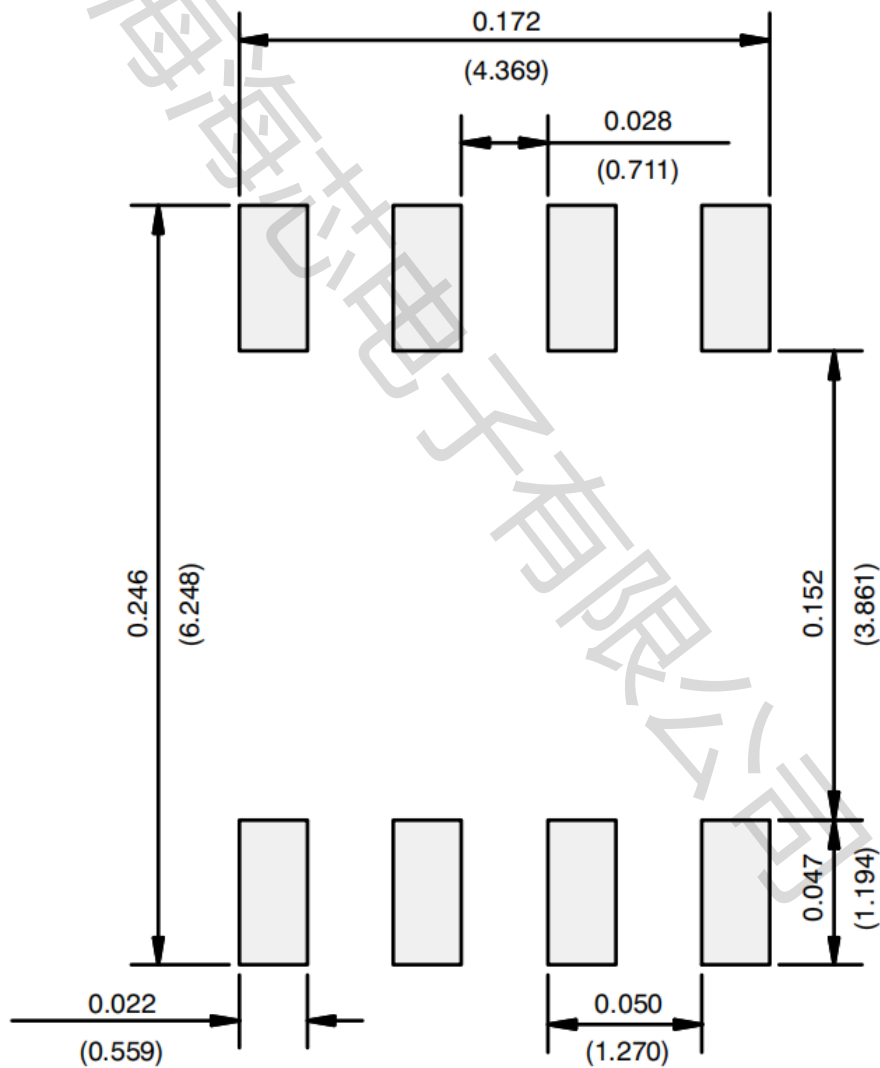
Fig 11. Normalized Maximum Transient Thermal Impedance

SOP-8 Package Outline

Dimensions are shown in millimeters (inches)

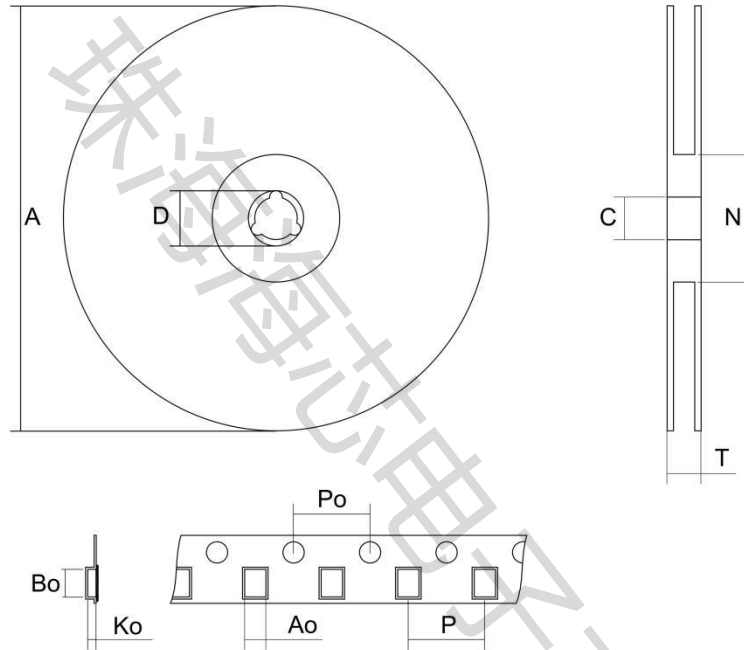


RECOMMENDED MINIMUM PADS FOR SOP-8

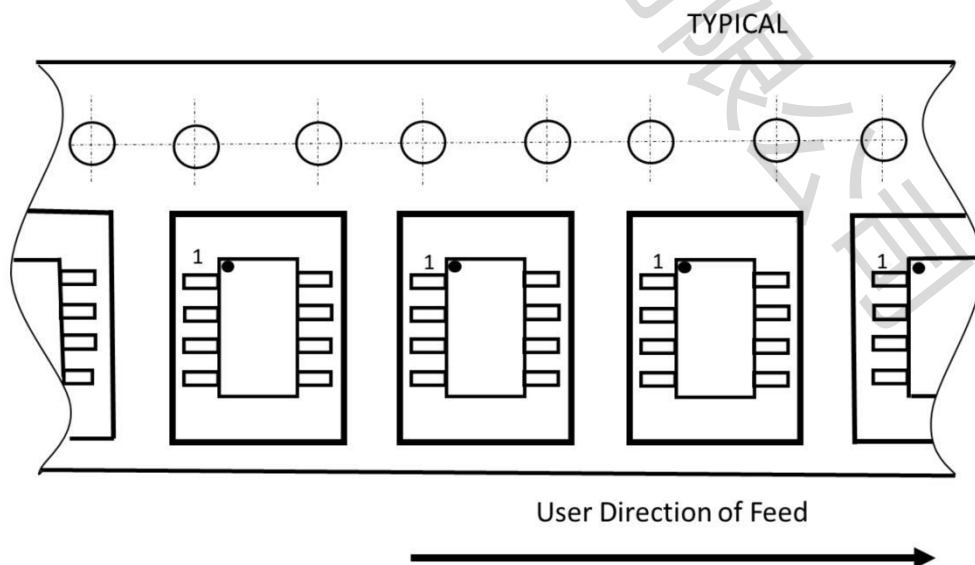


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



Disclaimer

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