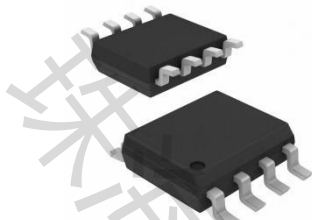


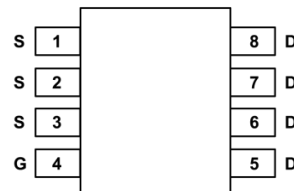
AO4405-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

V _{DS} (V)	R _{DS(on)} (Ω)	Q _g (Typ.)	I _D (A)
-30	0.042 at V _{GS} = - 10 V	7nC	-6
	0.072 at V _{GS} = - 4.5 V		- 6



SOP-8



Top View

FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested

APPLICATIONS

- Load Switch
- Notebook Adaptor Switch

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V _{DS}	- 30	V
Gate-Source Voltage		V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C)	T _C = 25 °C	I _D	- 6 ^e	A
	T _C = 70 °C		- 6 ^e	
	T _A = 25 °C		- 5.9 ^{b, c}	
	T _A = 70 °C		- 4.7 ^{b, c}	
Pulsed Drain Current		I _{DM}	- 25	
Continuous Source-Drain Diode Current	T _C = 25 °C	I _S	- 4.2	
	T _A = 25 °C		- 2 ^{b, c}	
Maximum Power Dissipation	T _C = 25 °C	P _D	5	W
	T _C = 70 °C		3.2	
	T _A = 25 °C		2.4 ^{b, c}	
	T _A = 70 °C		1.5 ^{b, c}	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	t ≤ 10 s	R _{thJA}	42	53	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	19	25	

Notes

- a. Based on T_C = 25 °C.
b. Surface Mounted on 1" x 1" FR4 board.
c. t = 10 s.
d. Maximum under Steady State conditions is 85 °C/W.
e. Package Limited.

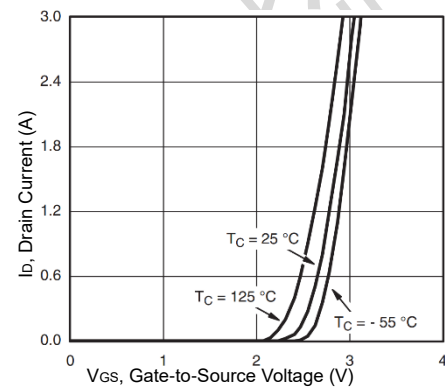
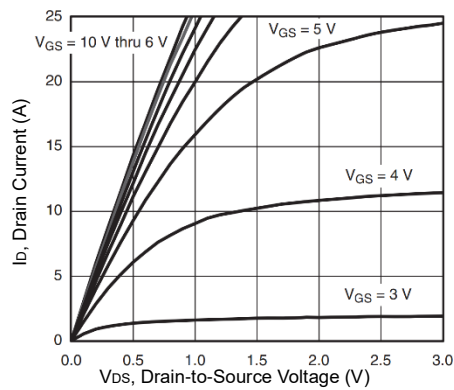
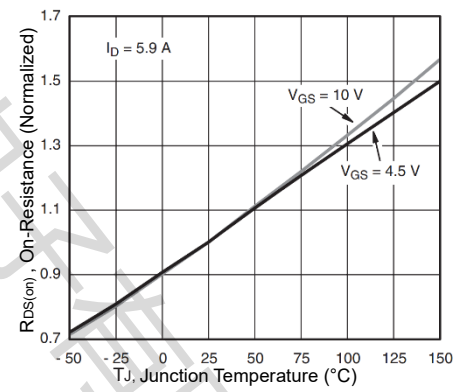
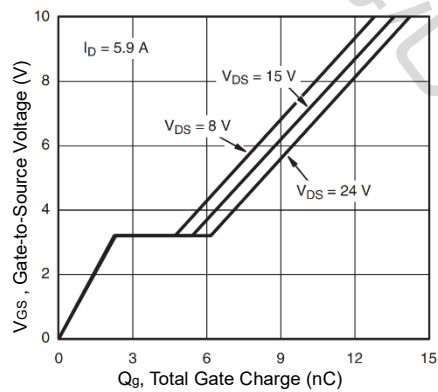
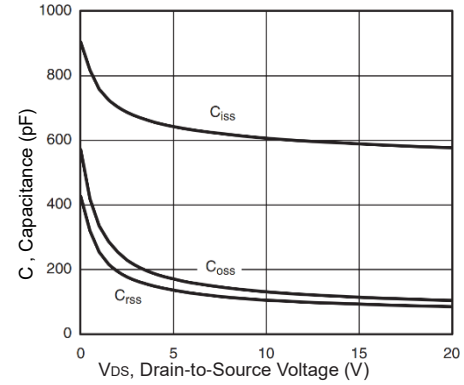
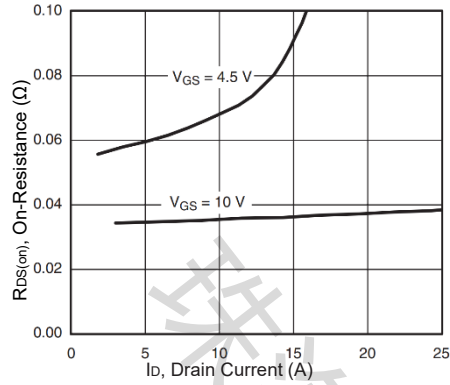
SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

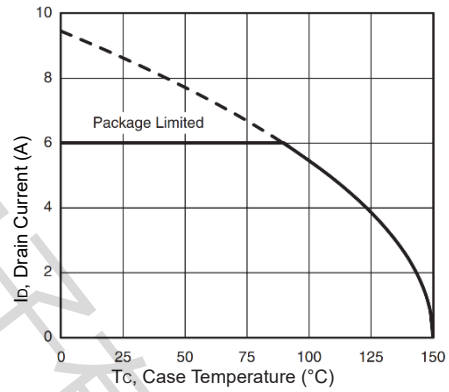
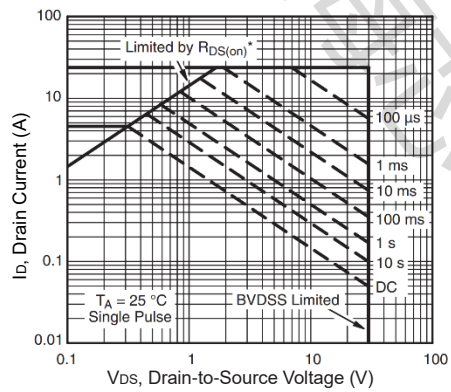
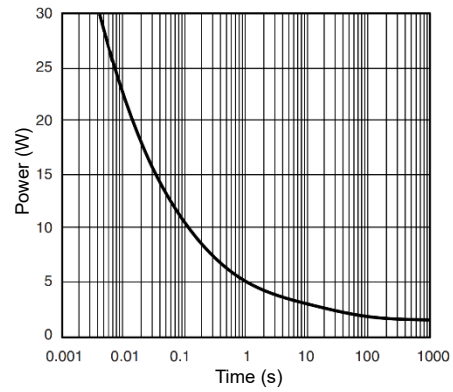
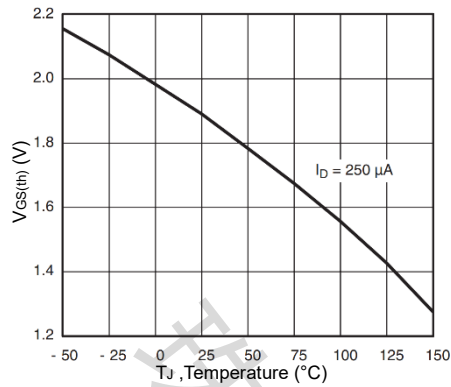
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = - 250 μA	- 30			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = - 250 μA		- 19		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			4.4		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = - 250 μA	- 1.2		- 2.5	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 30 V, V _{GS} = 0 V			- 1	μA
		V _{DS} = - 30 V, V _{GS} = 0 V, T _J = 55 °C			- 5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ - 5 V, V _{GS} = - 10 V	- 25			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 10 V, I _D = - 5.9 A		0.035	0.042	Ω
		V _{GS} = - 4.5 V, I _D = - 4.5 A		0.060	0.072	
Forward Transconductance ^a	g _{fs}	V _{DS} = - 15 V, I _D = - 5.9 A		10		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = - 15 V, V _{GS} = 0 V, f = 1 MHz		590		pF
Output Capacitance	C _{oss}			115		
Reverse Transfer Capacitance	C _{rss}			93		
Total Gate Charge	Q _g	V _{DS} = - 15 V, V _{GS} = - 10 V, I _D = - 5.9		13.6	21	nC
Gate-Source Charge	Q _{gs}	V _{DS} = - 15 V, V _{GS} = - 4.5 V,		7	11	
Gate-Drain Charge	Q _{gd}	I _D = - 5.9 A		2.3		
Gate Resistance	R _g	f = 1 MHz		3.2		
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 15 V, R _L = 3.2 Ω I _D ≅ - 4.7 A, V _{GEN} = - 4.5 V, R _g = 1 Ω	1	5	10	Ω
Rise Time	t _r					
Turn-Off Delay Time	t _{d(off)}					
Fall Time	t _f					
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 15 V, R _L = 3.2 Ω I _D ≅ - 4.7 A, V _{GEN} = - 10 V, R _g = 1 Ω		30	45	ns
Rise Time	t _r			25	38	
Turn-Off Delay Time	t _{d(off)}			16	24	
Fall Time	t _f			8	16	
Turn-On Delay Time	t _{d(on)}			8	16	
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			18	27	
Fall Time	t _f			8	16	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode	I _S	T _C = 25 °C			- 4.2	A
Pulse Diode Forward Current	I _{SM}				- 25	
Body Diode Voltage	V _{SD}	I _S = - 4.7 A, V _{GS} = 0 V		- 0.8	- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = - 4.7 A, di/dt = 100 A/μs, T _J = 25 °C		17	26	ns
Body Diode Reverse Recovery	Q _{rr}			9	18	nC
Reverse Recovery Fall Time	t _a			10		ns
Reverse Recovery Rise Time	t _b			7		

Notes

a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

b. Guaranteed by design, not subject to production testing.

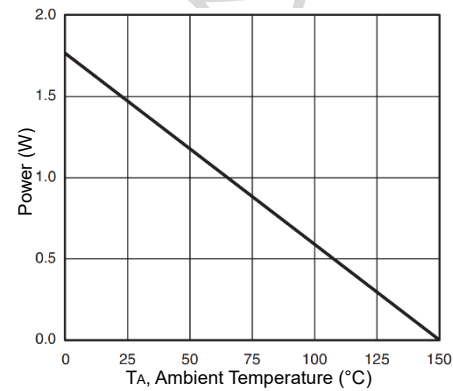
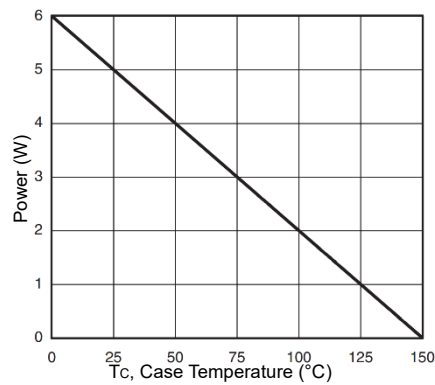




$V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Fig 9. Safe Operating Area, Junction-to-Ambient

Fig 10. Current Derating



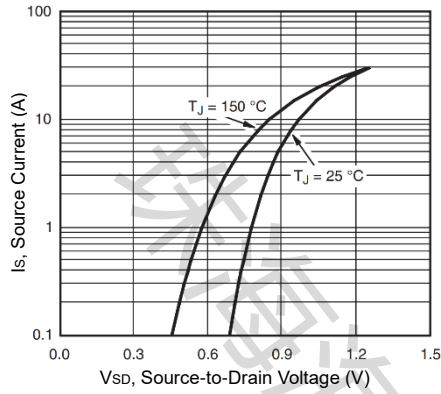


Fig 13. Source-Drain Diode Forward Voltage

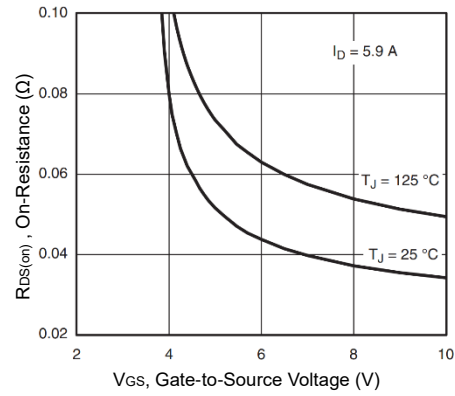


Fig 14. On-Resistance vs. Gate-to-Source Voltage

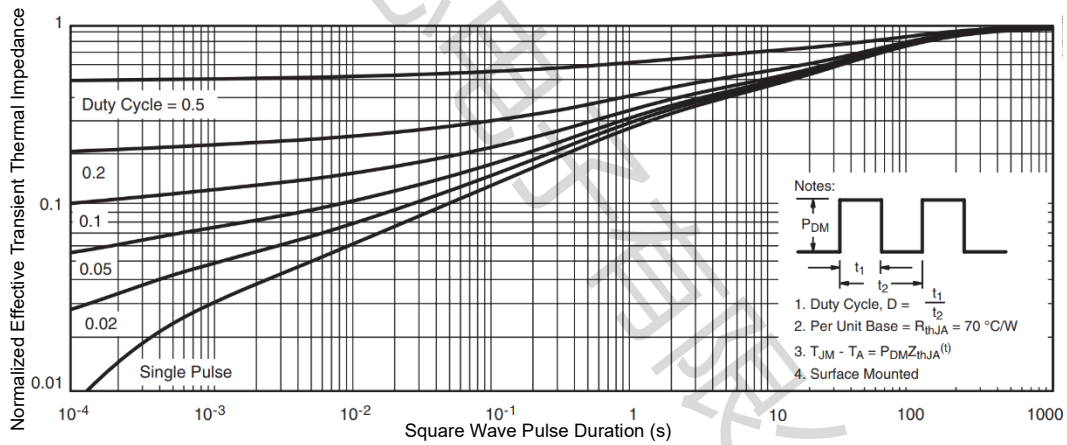


Fig 15. Normalized Thermal Transient Impedance, Junction-to-Ambient

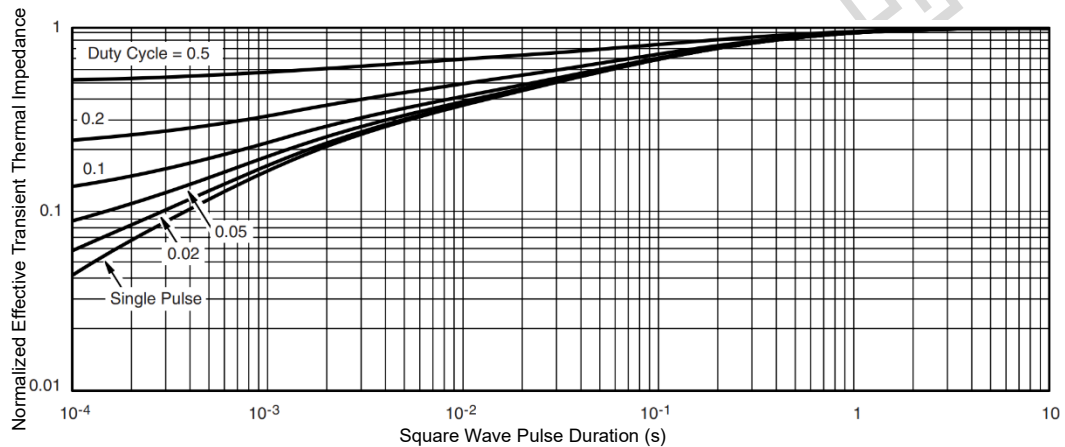
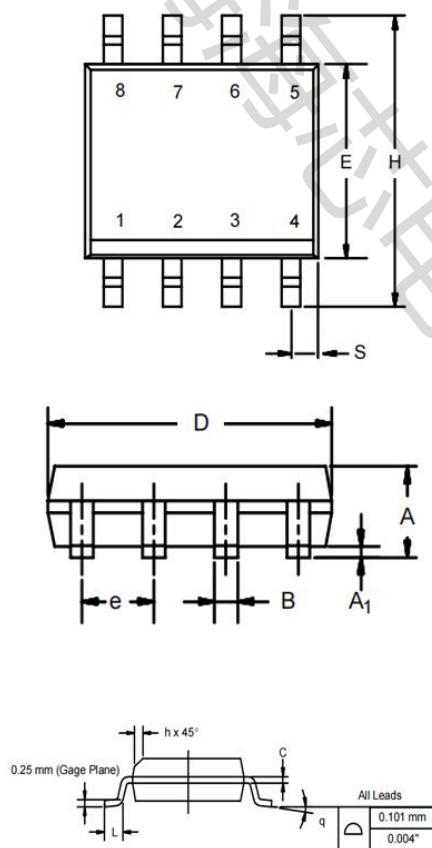


Fig 16. Normalized Thermal Transient Impedance, Junction-to-Foot

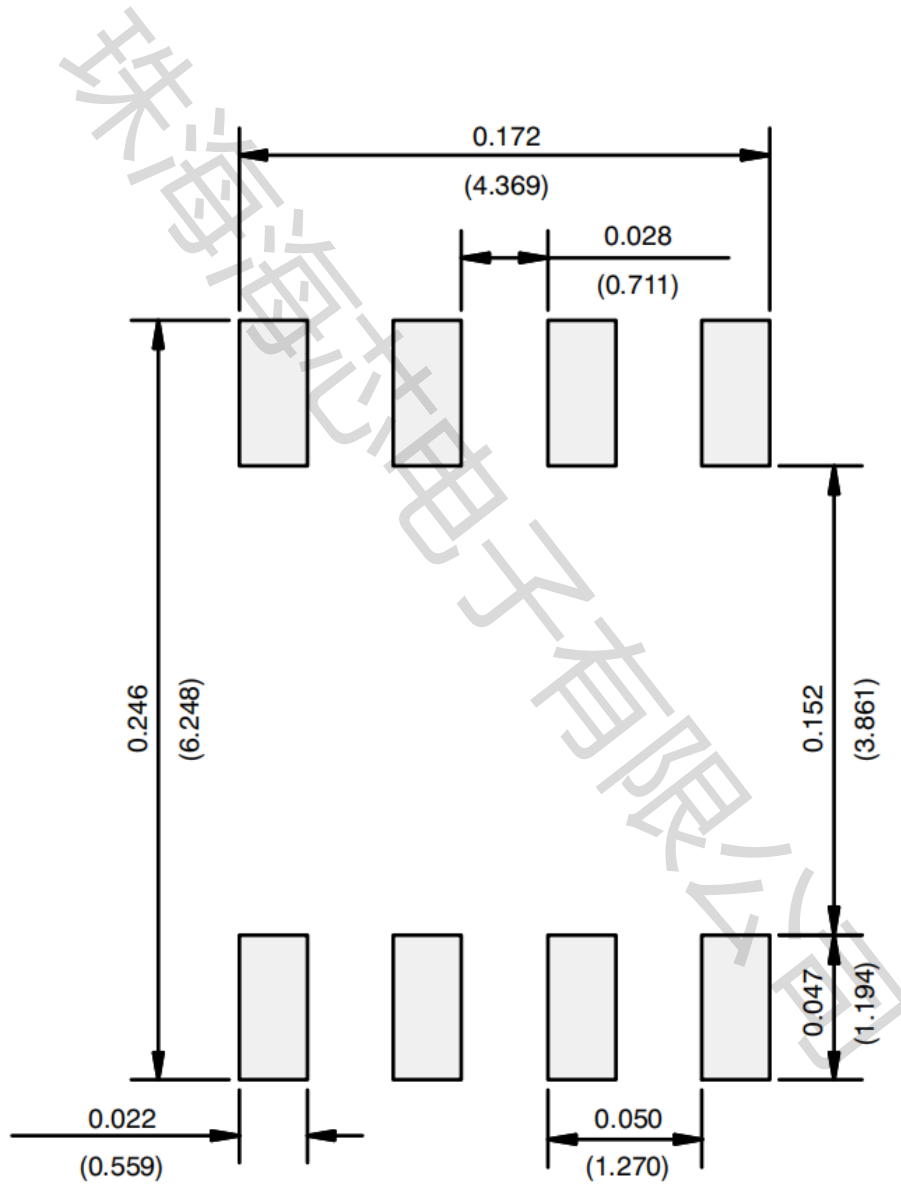
SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



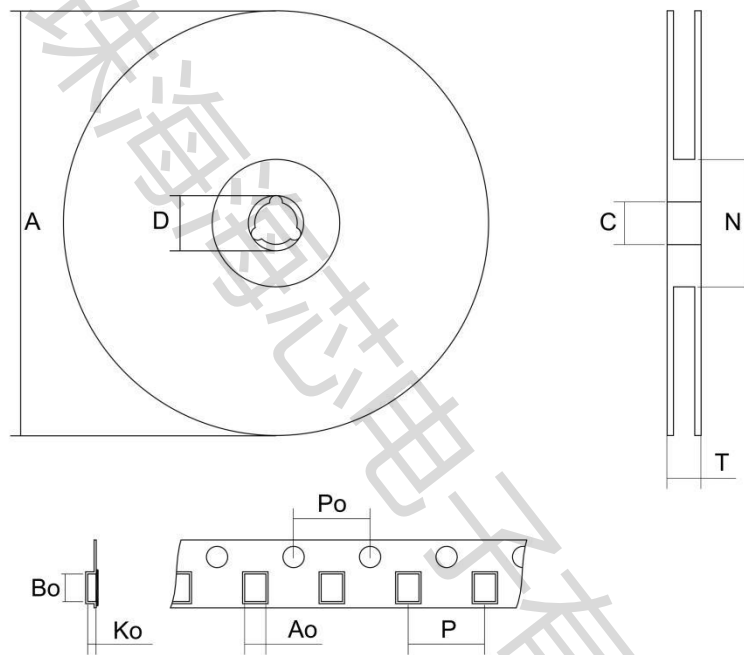
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

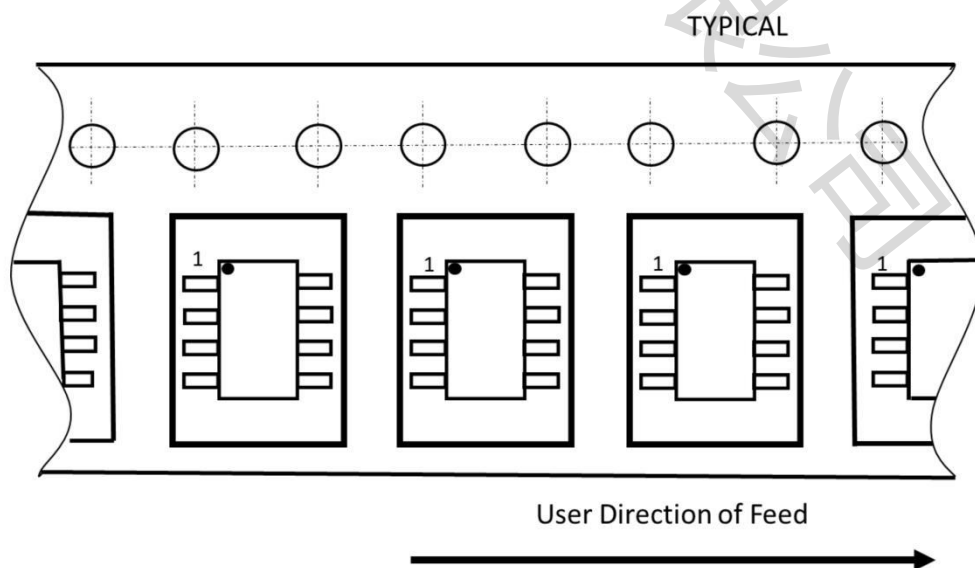


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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