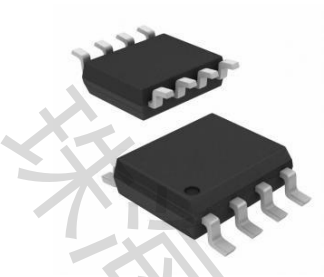
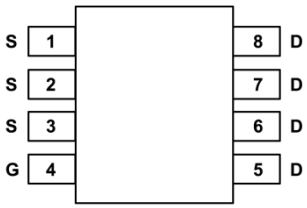
ZXMP6A18DN8TA-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
VDS (V)	RDS(on) (Ω)	ID (A)d, e	Qg (Typ.)
- 60	0.059 at VGS = - 10 V	- 5.3	17 nC
	0.069 at VGS = - 4.5 V	- 5.0	



SOP-8



Top View

FEATURES

- TrenchFET® Power MOSFET
- 100 % UIS Tested

APPLICATIONS

- Load Switches

ABSOLUTE MAXIMUM RATINGS TA = 25 °C, unless otherwise noted				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		VDS	- 60	V
Gate-Source Voltage		VGS	± 20	
Continuous Drain Current (TJ = 150 °C)	TC = 25 °C	ID	- 5.3e	A
	TC = 70 °C		- 5.0e	
	TA = 25 °C		- 5.3a, b	
	TA = 70 °C		- 5.0a, b	
Pulsed Drain Current		IDM	- 32e	
Continuous Source-Drain Diode Current	TC = 25 °C	IS	- 4.1	
	TA = 25 °C		- 2.0a, b	
Avalanche Current	L = 0.1 mH	IAS	- 20	
Single-Pulse Avalanche Energy		EAS	20	mJ
Maximum Power Dissipation	TC = 25 °C	PD	4.0	W
	TC = 70 °C		2.5	
	TA = 25 °C		2.0a, b	
	TA = 70 °C		1.4a, b	
Operating Junction and Storage Temperature Range		TJ , Tstg	- 55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambienta, c	t ≤ 10 s	RthJA	38	50	°C/W
Maximum Junction-to-Foot	Steady State	RthJF	20	25	

Notes:

a. Surface mounted on 1" x 1" FR4 board.
b. t = 10 s.
c. Maximum under Steady State conditions is 85 °C/W.
d. Based on TC = 25 °C.

e. Limited by package.

SPECIFICATIONS TJ = 25 °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	- 60			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = - 250 µA		- 31		mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			4.5		
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS} , I_D = - 250 µA	- 1.0		- 3.0	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 Currenta	$I_{D(on)}$	V_{DS} ≥ - 10 V, V_{GS} = - 10 V	- 30			A
Drain-Source On-State Resistancea	$R_{DS(on)}$	V_{GS} = - 10 V, I_D = - 6.3 A		0.054		Ω
		V_{GS} = - 4.5 V, I_D = - 6.2 A		0.060		
Forward Transconductancea	gfs	V_{DS} = - 10 V, I_D = - 6.1 A		23		S
Dynamic[b]						
Input Capacitance	Ciss	V_{DS} = - 15 V, V_{GS} = 0 V, f = 1 MHz		1345		pF
Output Capacitance	Coss			210		
Reverse Transfer Capacitance	Crss			180		
Total Gate Charge	Qg	V_{DS} = - 15 V, V_{GS} = - 10 V, I_D = - 6.1 A		32	50	nC
		V_{DS} = - 15 V, V_{GS}= - 4.5 V, I_D = - 6.1 A		15	25	
Gate-Source Charge	Qgs			4		
Gate-Drain Charge	Qgd			7.5		
Gate Resistance	Rg	f=1MHz		5.8		Ω
Turn-On Delay Time	td(on)	V_{DD} = - 15 V, RL = 15 Ω, I_D ≅ - 1 A, V_{GEN} = - 10 V, Rg = 1 Ω		10	15	ns
Rise Time	tr			8	15	
Turn-Off DelayTime	td(off)			45	70	
Fall Time	tf			12	25	
Turn-On Delay Time	td(on)	V_{DD} = - 15 V, RL = 15 Ω, I_D ≅ - 1 A, V_{GEN} = - 4.5 V, Rg = 1 Ω		42	70	
Rise Time	tr			35	60	
Turn-Off DelayTime	td(off)			40	70	
Fall Time	tf			16	30	
Drain- Source Body Diode Characteristics						
Continous Source-Drain Diode Current	I_S	T_C = 25 °C			- 4.1	A
Pulse Diode Forward Current	I_{SM}				- 32	
Body Diode Voltage	V_{SD}	I_S= - 2 A, V_{GS} = 0 V		- 0.75	- 1.2	V
Body Diode Reverse Recovery Time	trr	IF = - 2 A, dI/dt = 100 A/µs, T_J = 25 °C		34	60	ns
Body Diode Reverse Recovery Charge	Qrr			22	40	nC
Reverse Recovery Fall Time	ta			11		ns
Reverse Recovery Rise Time	tb			23		

Notes:

a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

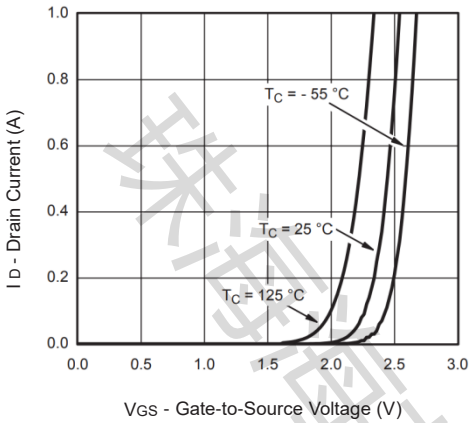


Fig 1. Transfer Characteristics

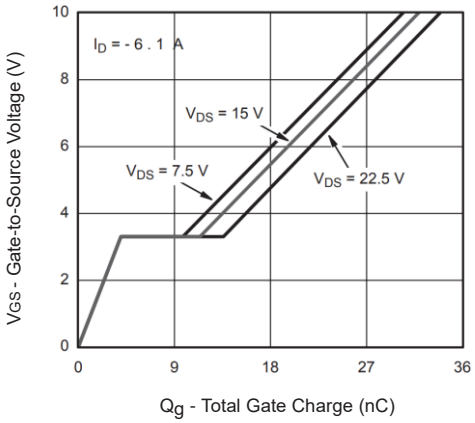


Fig 2. Gate Charge

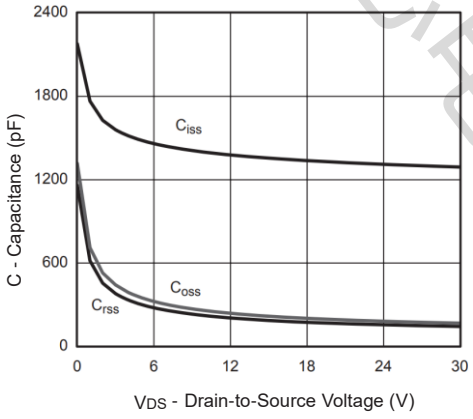


Fig 3. Capacitance

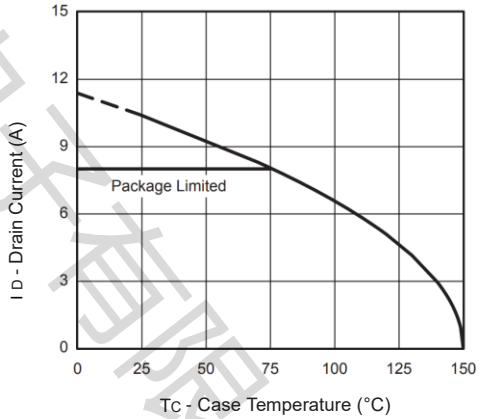


Fig 4. Current Derating*

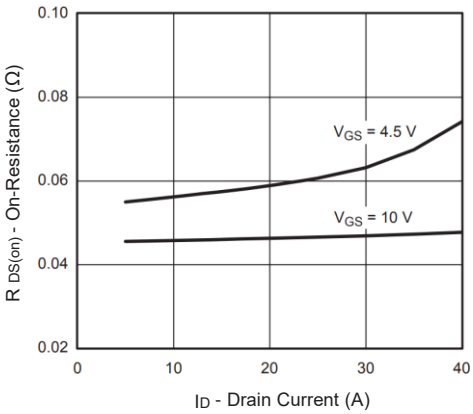


Fig 5. On-Resistance vs. Drain Current

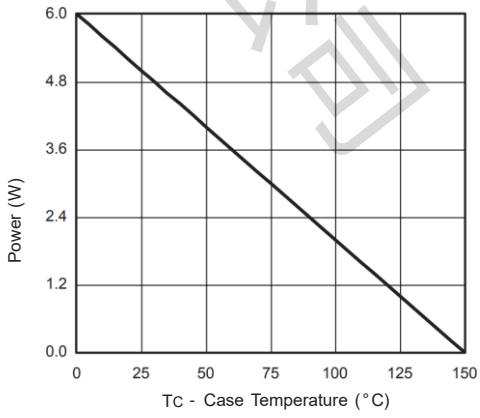


Fig 6. Power, Junction-to-Foot

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

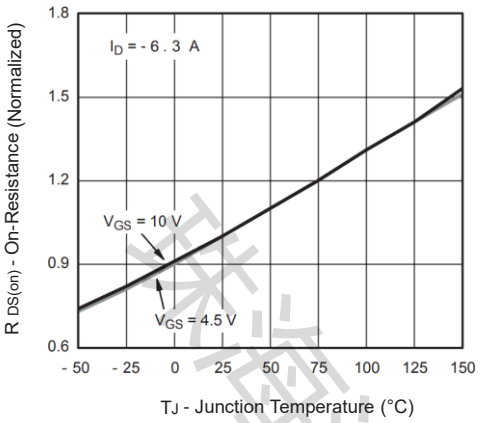


Fig 7. On-Resistance vs. Junction Temperature

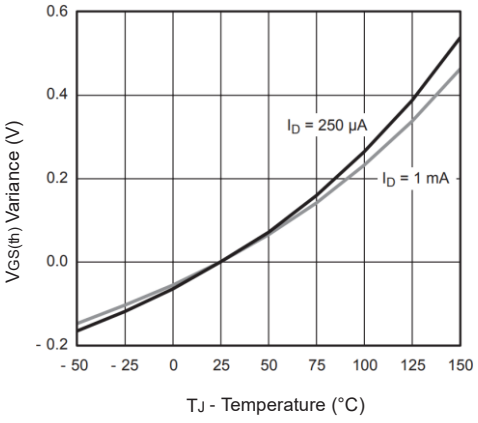


Fig 8. Threshold Voltage

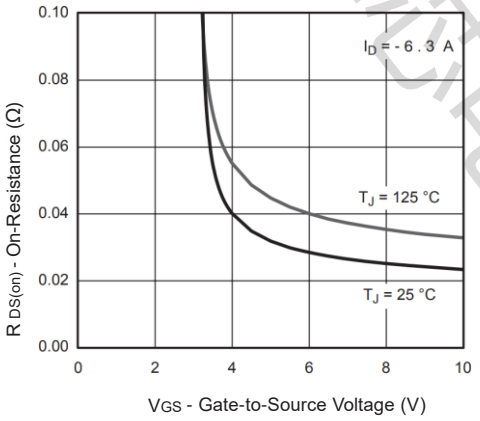


Fig 9.On-Resistance vs. Gate-to-Source Voltage

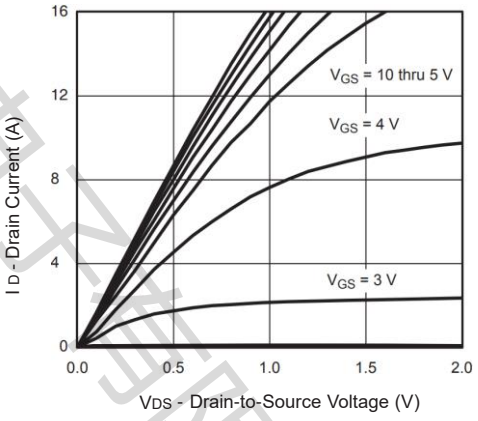


Fig 10. Output Characteristics

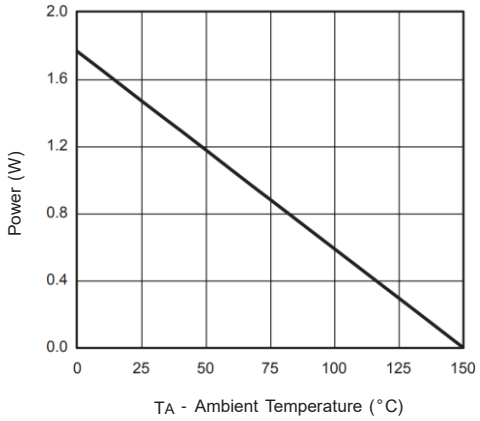


Fig 11. Power Derating, Junction-to-Ambient

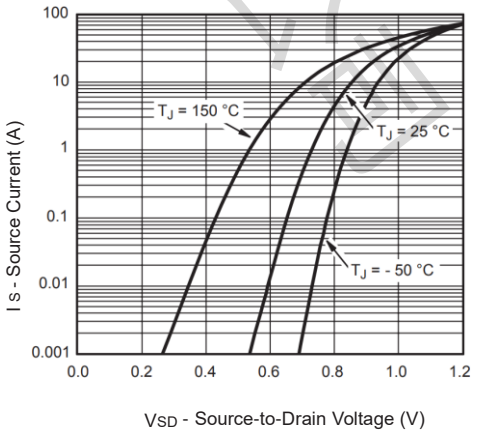


Fig 12. Source-Drain Diode Forward Voltage

TYPICAL CHARACTERISTICS 2 5 °C, unless otherwise noted

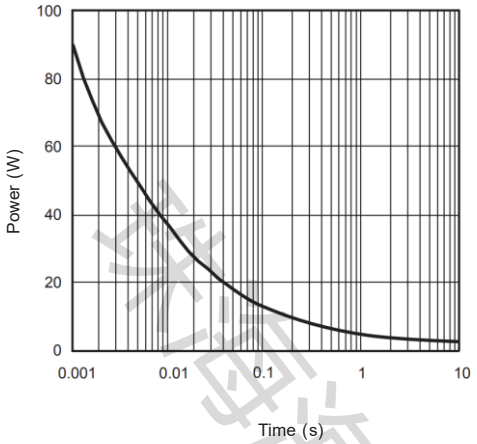
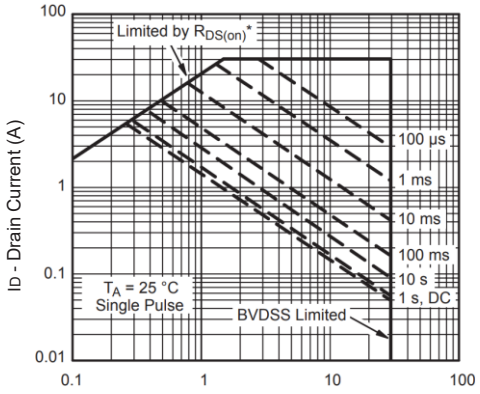


Fig 13. Single Pulse Power, Junction-to-Ambient



* VGS > minimum VGS at which RDS(on) is specified

Fig 14.Safe Operating Area

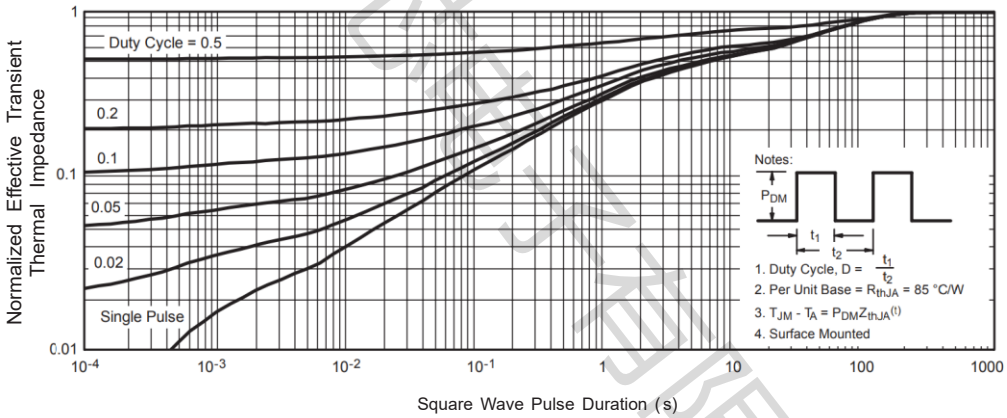


Fig 15. Normalized Thermal Transient Impedance, Junction-to-Ambient

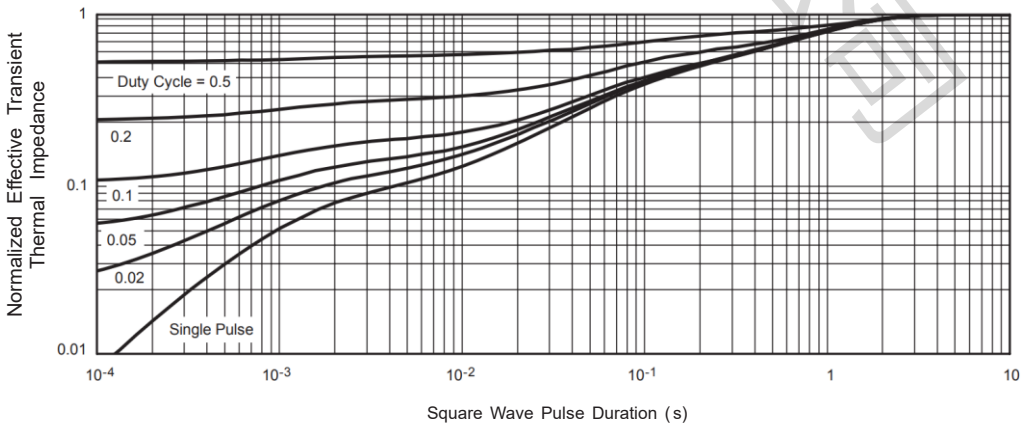
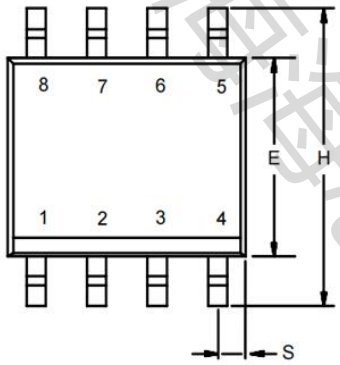
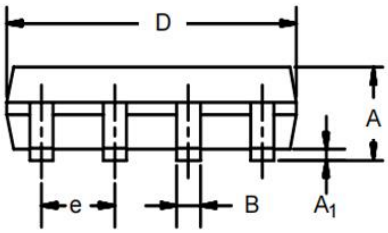


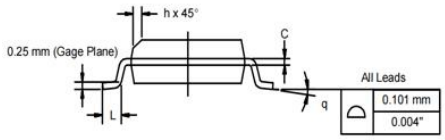
Fig 16. Normalized Thermal Transient Impedance, Junction-to-Foot

SOP-8 Package Outline

Dimensions are shown in millimeters (inches)

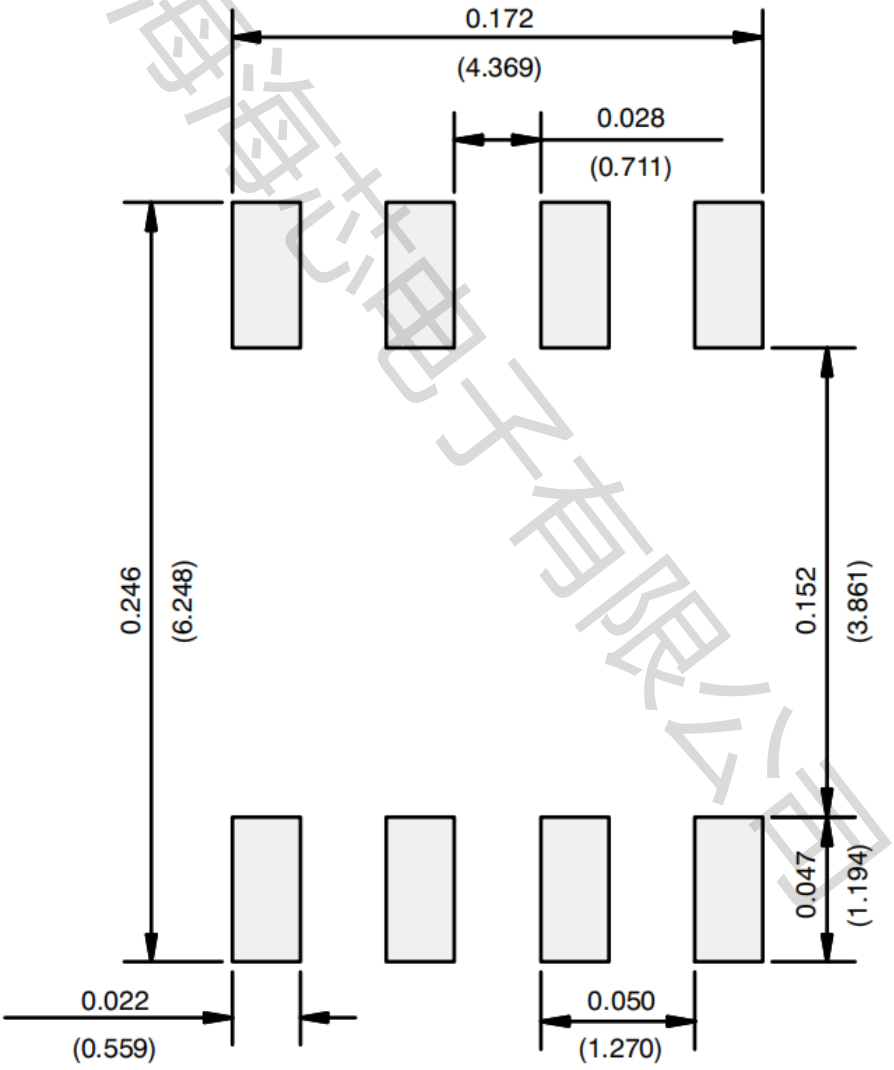






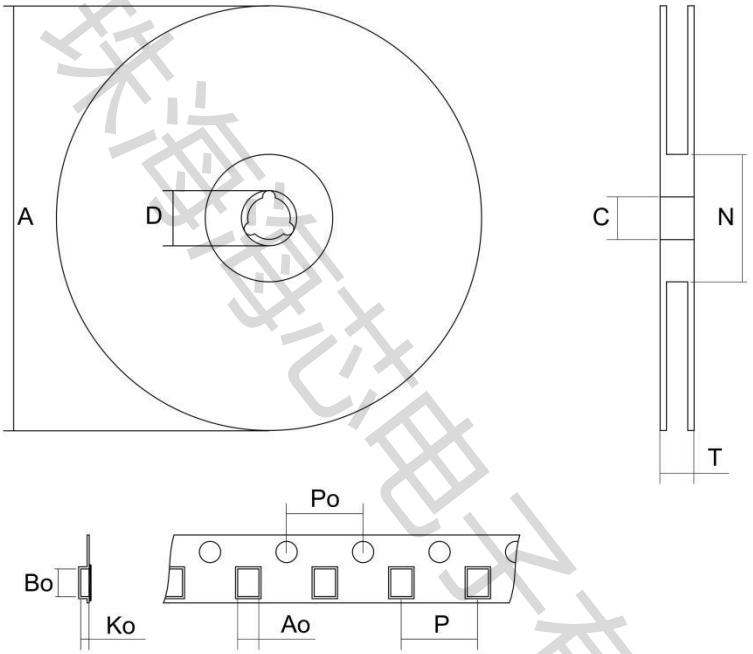
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44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

RECOMMENDED MINIMUM PADS FOR SOP-8

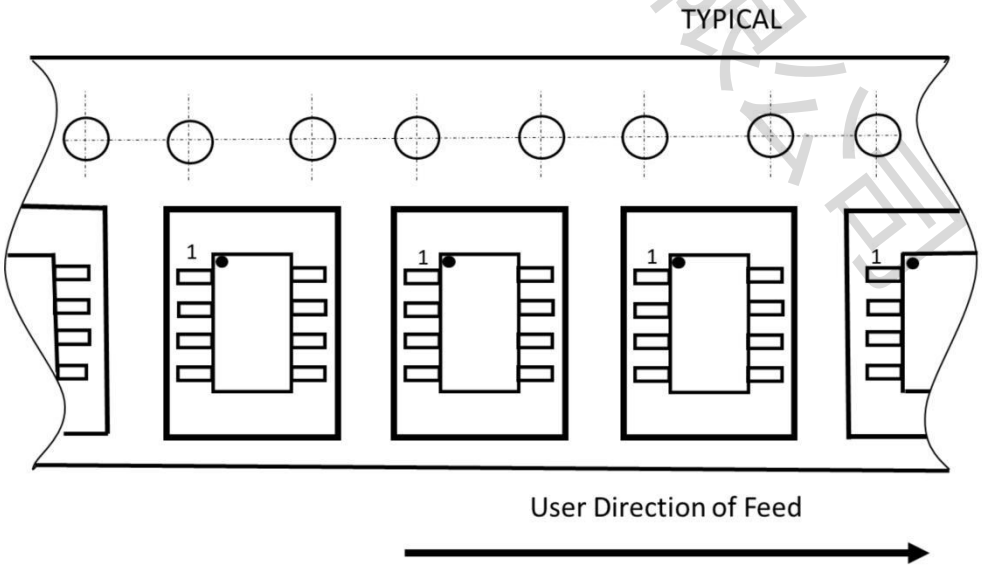


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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