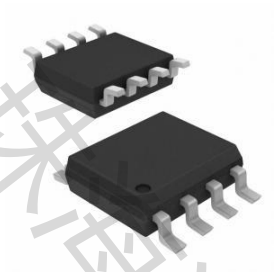
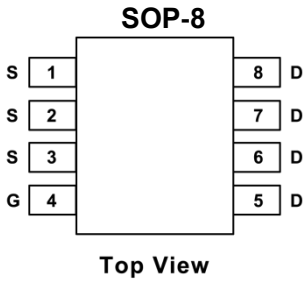
SI9926CDY-T1-E3-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
20	0.025 at VGS = 4.5 V	7.1
	0.035 at VGS = 2.5 V	6.0





FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested

Applications

- Battery protection
- Load switch
- Power management

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current (T_J = 150 °C)a	TA = 25 °C	I_D	7.1	A
	TA = 70 °C		5.7	
Pulsed Drain Current (10 µs Pulse Width)		I_{DM}	40	
Continuous Source Current (Diode Conduction) a		I_S	1.7	
Maximum Power Dissipationa	TA = 25 °C	P_D	2	W
	TA = 70 °C		1.3	
Operating Junction and Storage Temperature Range		T_J , Tstg	- 55 to 150	°C

THERMAL RESISTANCE RATINGS			
Parameter	**Symbol**	**Limit**	**Unit**
Maximum Junction-to-Ambienta	RthJA	62.5	°C/W

Notes:

Surface Mounted on FR4 board, t ≤ 10 s.

SPECIFICATIONS TJ = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS} , I_D = 250 μA	0.6		1.5	V
Gate-Body Leakage	I_{GSS}	V_{DS}= 0 V, V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	μA
		V_{DS}= 20 V, V_{GS}= 0 V, T_J = 55 °C			5	
On-State Drain Currenta	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 4.5 V	20			A
Drain-Source On-State Resistancea	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 7.1 A		0.019	0.025	Ω
		V_{GS} = 2.5 V, I_D = 6.0 A		0.026	0.035	
Forward Transconductancea	gfs	V_{DS} = 10 V, I_D = 7.1 A		27		S
Diode Forward Voltagea	V_{SD}	I_S = 1.7 A, V_{GS} = 0 V			1.2	V
Dynamicb						
Total Gate Charge	Qg	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 7.1 A		9.5		nC
Gate-Source Charge	Qgs			1.5		
Gate-Drain Charge	Qgd			2.5		
Gate Resistance	Rg	f= 1MHz		1.6	2.7	Ω
Turn-On Delay Time	td(on)	V_{DD} = 10 V, R_L = 10 Ω I_D ≅1 A, V_{GEN} = 4.5 V, R_g = 10 Ω		10		ns
Rise Time	tr			15		
Turn-Off Delay Time	td(off)			38		
Fall Time	tf			25		
Source-Drain Reverse Recovery Time	trr	IF = 1.7 A, dI/dt = 100 A/μs		26		

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

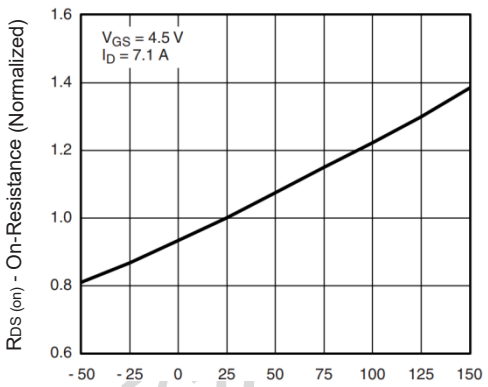


Fig 1. On-Resistance vs. Junction Temperature

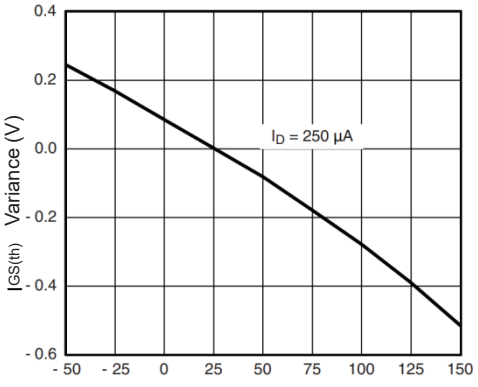


Fig 2. Threshold Voltage

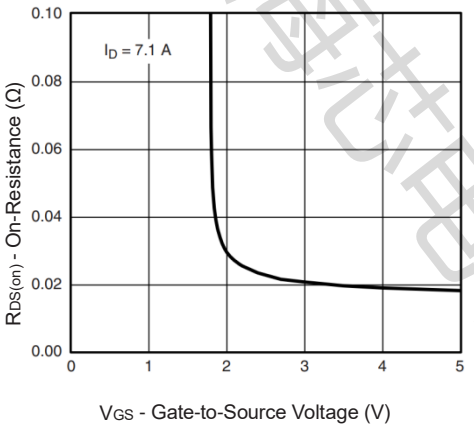


Fig 3. On-Resistance vs. Gate-to-Source Voltage

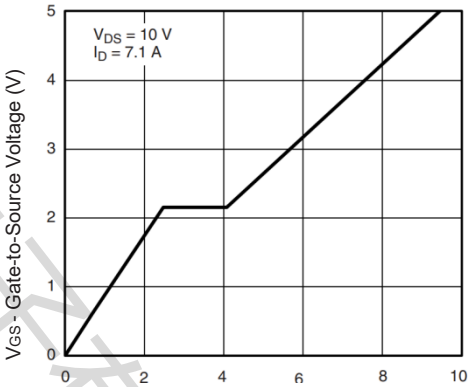


Fig 4. Gate Charge

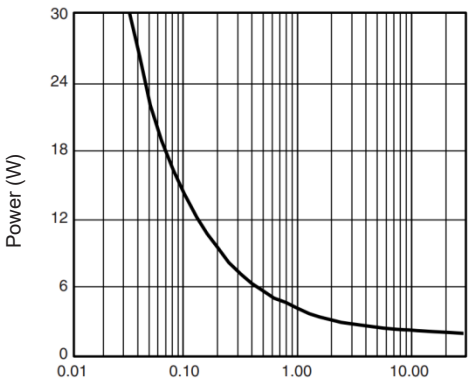


Fig 5. Single Pulse Power

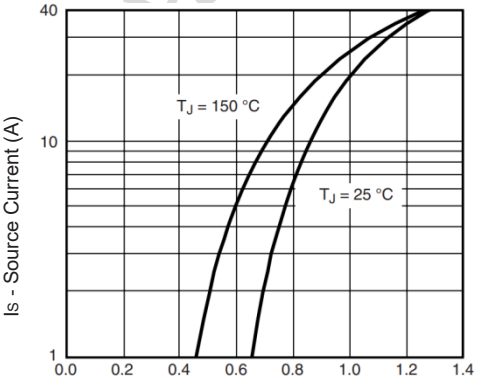


Fig 6. Source-Drain Diode Forward Voltage

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

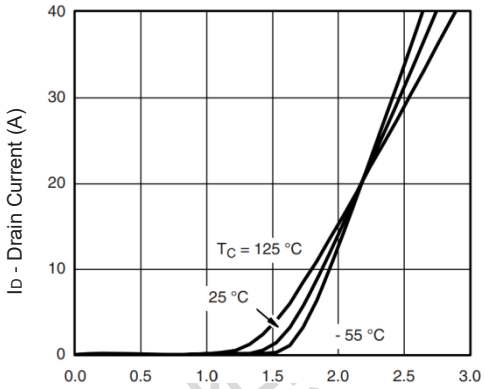


Fig 7. Transfer Characteristics

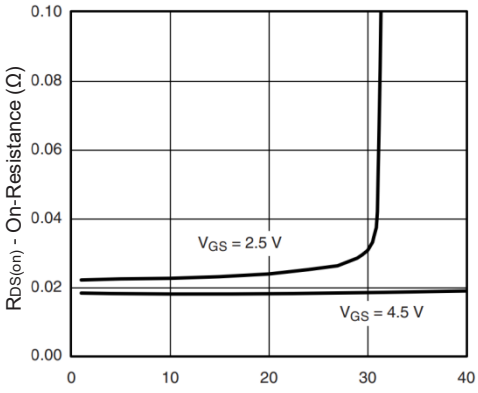


Fig 8. On-Resistance vs. Drain Current

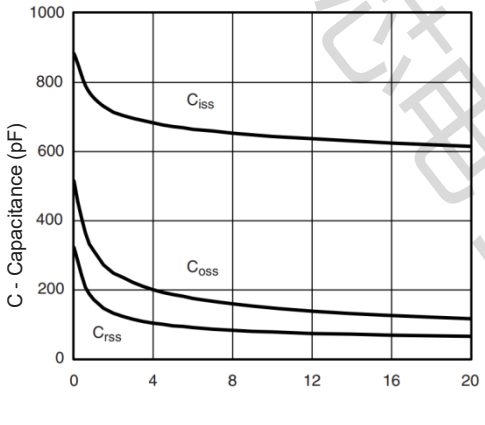


Fig 9. Capacitance

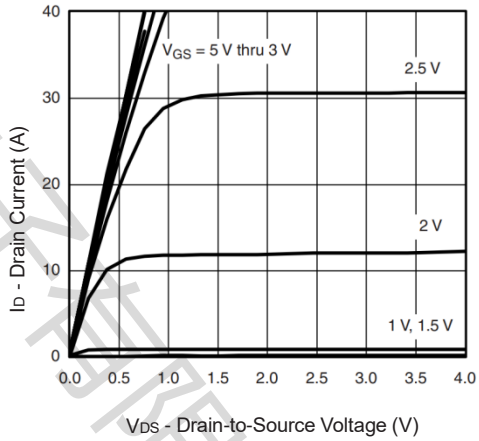


Fig 10. Output Characteristics

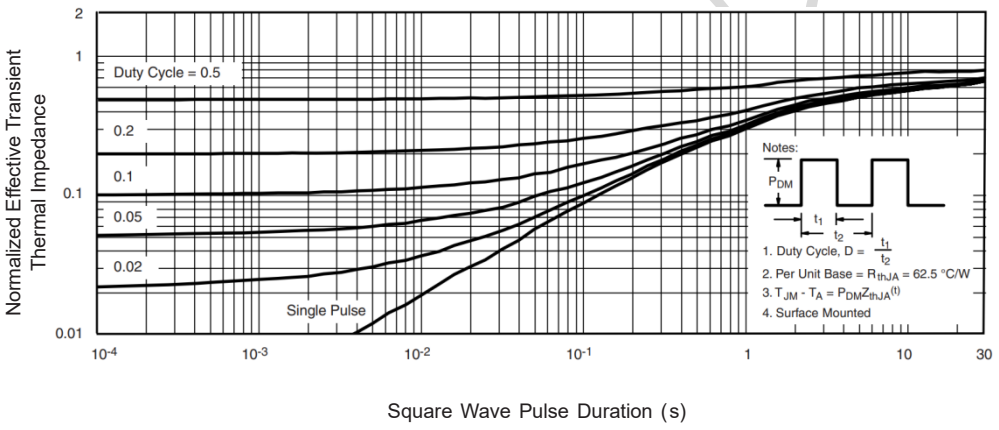
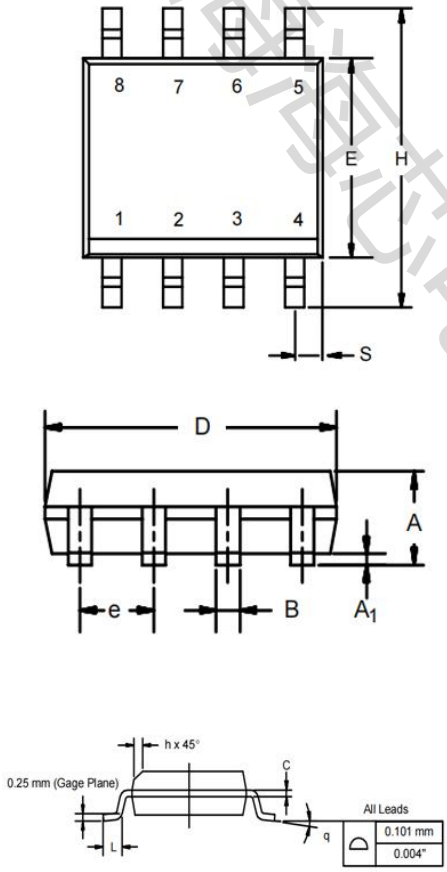


Fig 11. Normalized Thermal Transient Impedance, Junction-to-Ambient

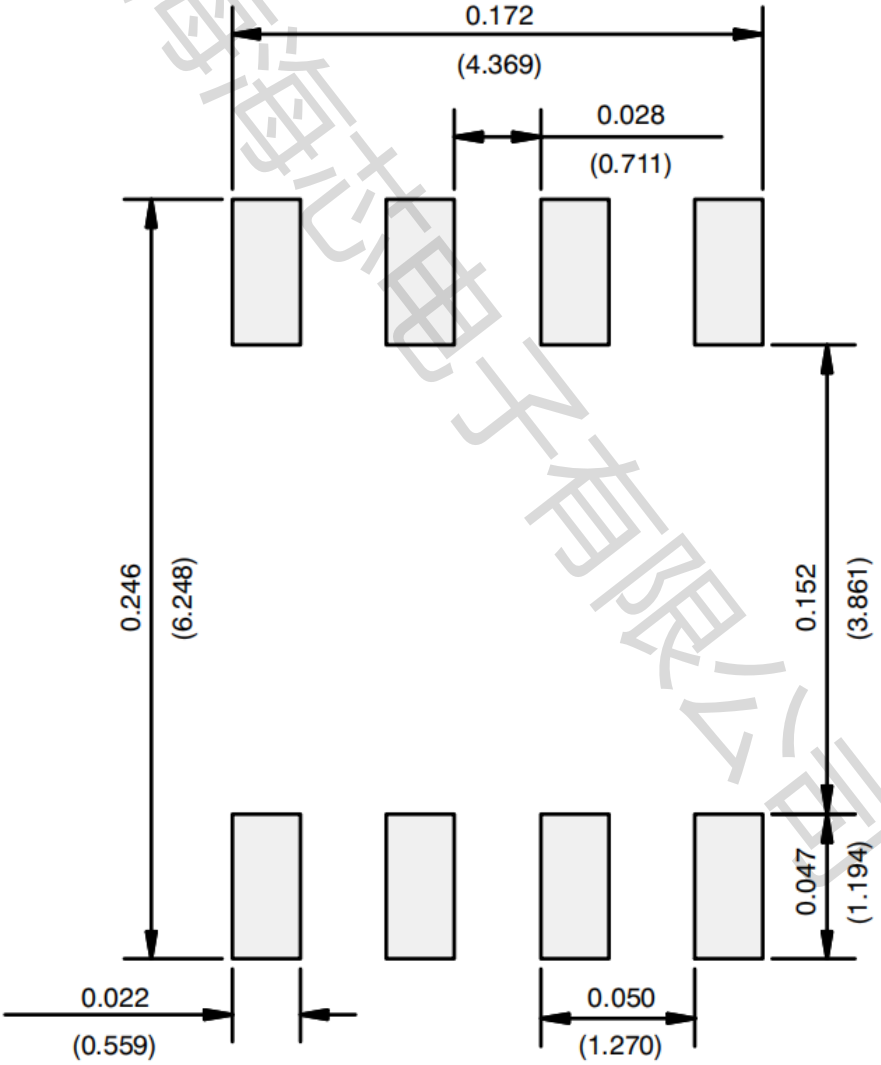
SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



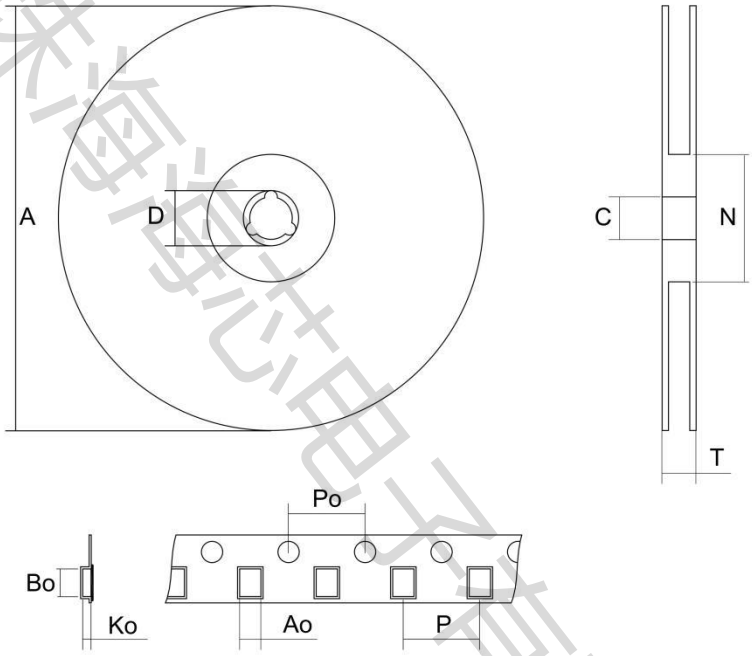
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44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

RECOMMENDED MINIMUM PADS FOR SOP-8

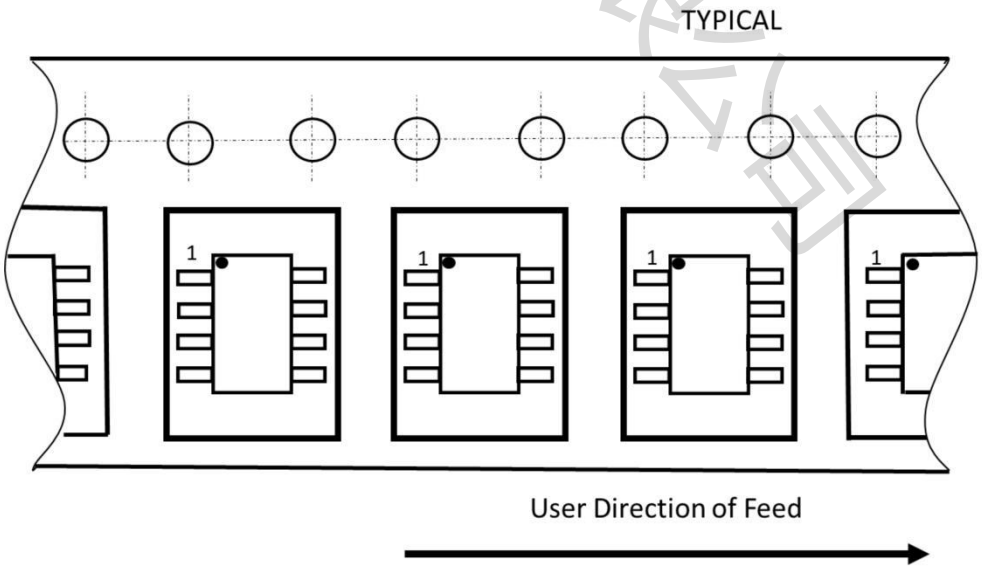


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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