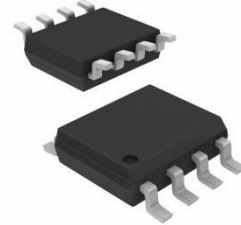
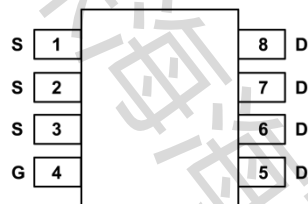


## SI4425DY-T1-E3-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
-30	0.014 at V <sub>GS</sub> = - 10 V	-11
	0.023 at V <sub>GS</sub> = - 4.5 V	-8.5



SOP-8



Top View

## FEATURES

- TrenchFET® Power MOSFET

ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>	-30		V
Gate-Source Voltage		V <sub>GS</sub>	20		
Continuous Drain Current (T <sub>J</sub> = 150C) <sup>a</sup>	T <sub>A</sub> = 25C	I <sub>D</sub>	-11	-8	A
	T <sub>A</sub> = 70C		-8.7	-6.5	
Pulsed Drain Current		I <sub>DM</sub>	-50		A
continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	-2.7	-1.36	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25C	P <sub>D</sub>	3.0	1.5	W
	T <sub>A</sub> = 70C		1.9	0.95	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		C

## THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	t = 10 sec	R <sub>thJA</sub>	33	42	C/W
	Steady State		70	84	
Maximum Junction-to-Foot (Drain)	Steady State	R <sub>thJF</sub>	16	21	

## Notes

a. Surface Mounted on 1" x 1" FR4 Board.

SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = -250\text{ A}$	-1.0	-1.9	-3.0	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}$ , $V_{GS} = 20\text{ V}$			100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{ V}$ , $V_{GS} = 0\text{ V}$			-1	A
		$V_{DS} = -30\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_J = 70^\circ\text{C}$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5\text{ V}$ , $V_{GS} = -10\text{ V}$	-30			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10\text{ V}$ , $I_D = -11\text{ A}$		0.010	0.014	
		$V_{GS} = -4.5\text{ V}$ , $I_D = 8.5\text{ A}$		0.017	0.023	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15\text{ V}$ , $I_D = -11\text{ A}$		23		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -2.7\text{ A}$ , $V_{GS} = 0\text{ V}$		-0.75	-1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15\text{ V}$ , $V_{GS} = -4.5\text{ V}$ , $I_D = -11\text{ A}$		33	50	nC
Gate-Source Charge	$Q_{gs}$			10		
Gate-Drain Charge	$Q_{gd}$			13		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}$ , $R_L = 10\ \Omega$ , $I_D = -1\text{ A}$ , $V_{GEN} = -10\text{ V}$ , $R_g = 6\ \Omega$		20	30	ns
Rise Time	$t_r$			15	25	
Turn-Off Delay Time	$t_{d(off)}$			95	150	
Fall Time	$t_f$			44	65	
Gate Resistance	$R_g$			3.2		$\Omega$
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = -2.1\text{ A}$ , $di/dt = 100\text{ A/s}$		50	80	ns

## Notes

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

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

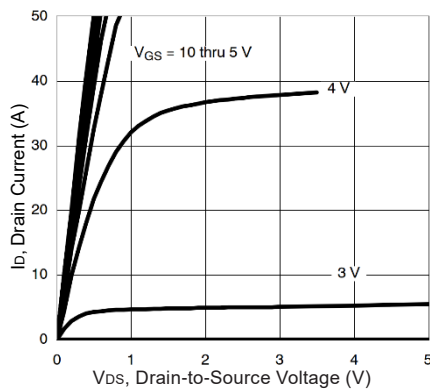


Fig 1. Output Characteristics

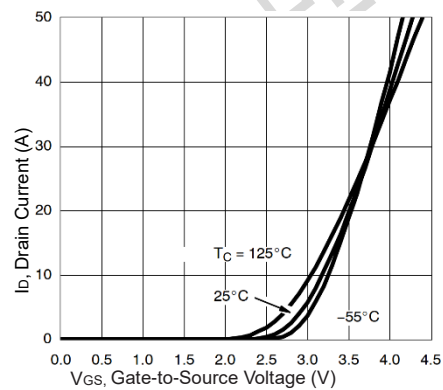


Fig 2. Transfer Characteristics

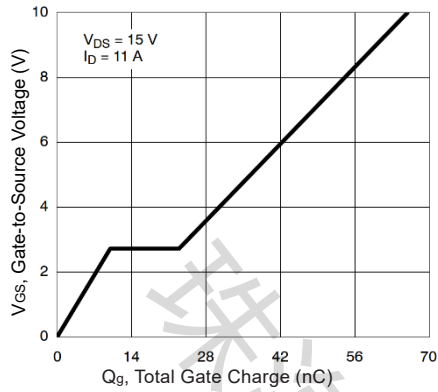


Fig 3. Gate Charge

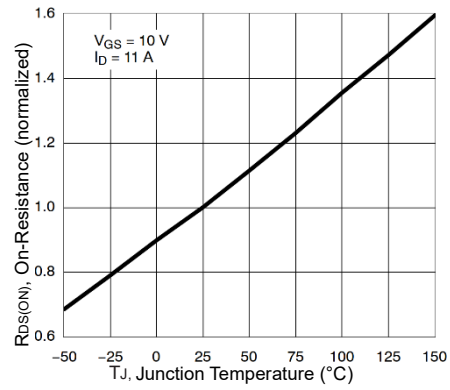


Fig 4. On-Resistance vs. Junction Temperature

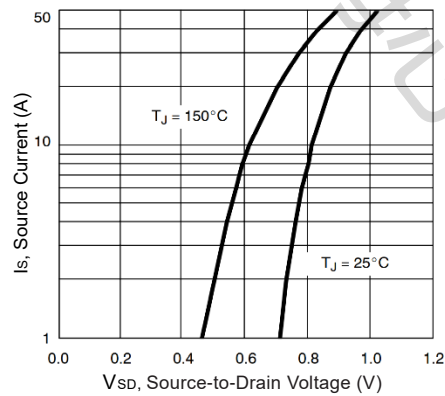


Fig 5. Source-Drain Diode Forward Voltage

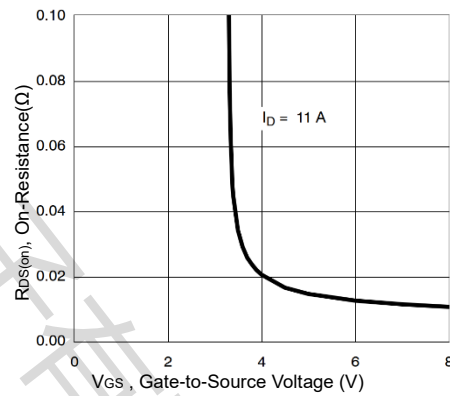


Fig 6. On-Resistance vs. Gate-to-Source Voltage

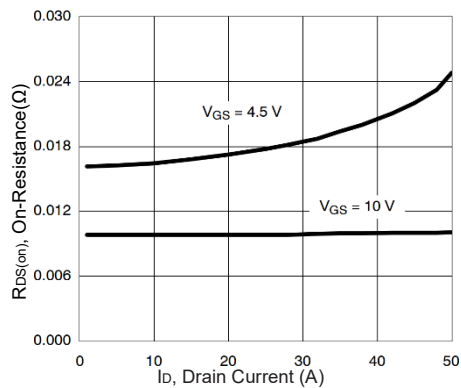


Fig 7. On-Resistance vs. Drain Current

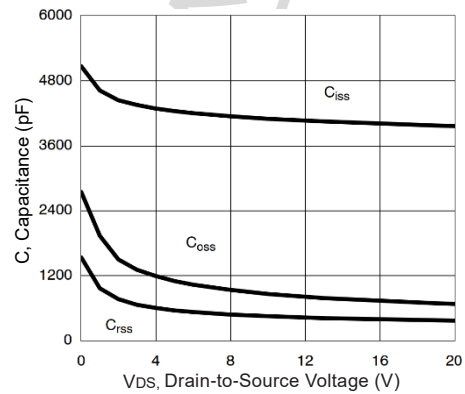


Fig 8. Capacitance

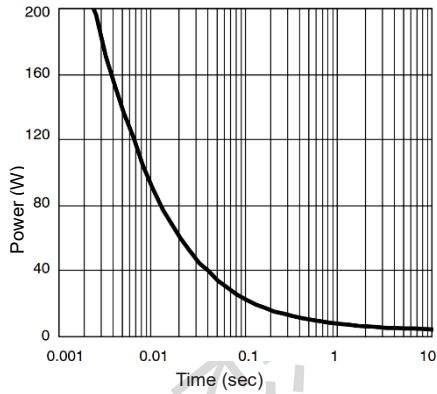


Fig 9. Single Pulse Power, Junction-to-Ambient

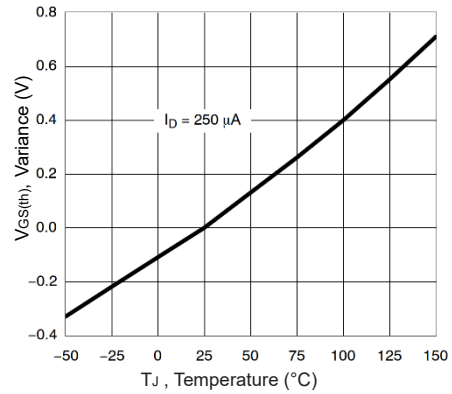


Fig 10. Threshold Voltage

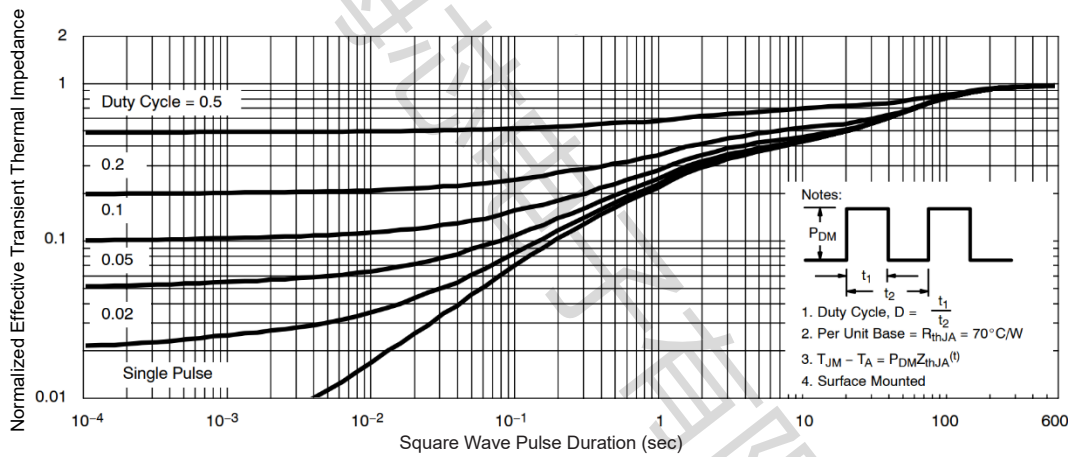


Fig 11. Normalized Thermal Transient Impedance, Junction-to-Ambient

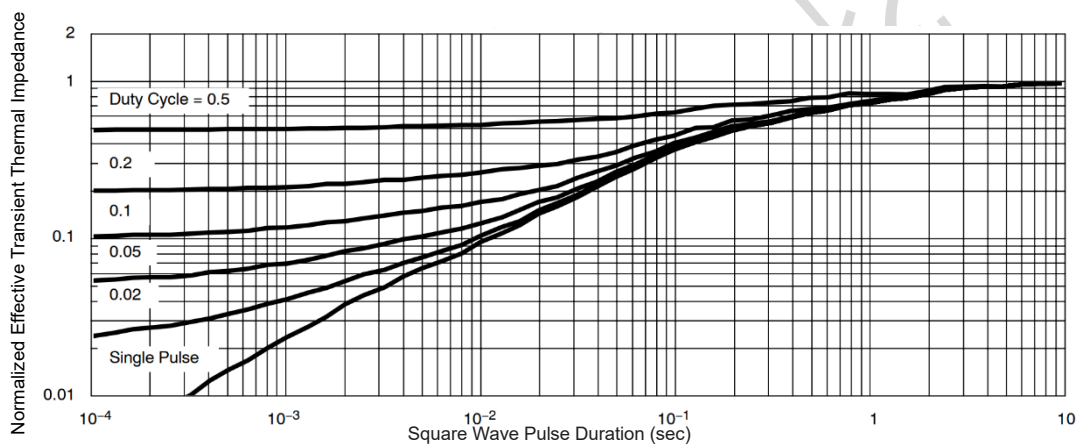
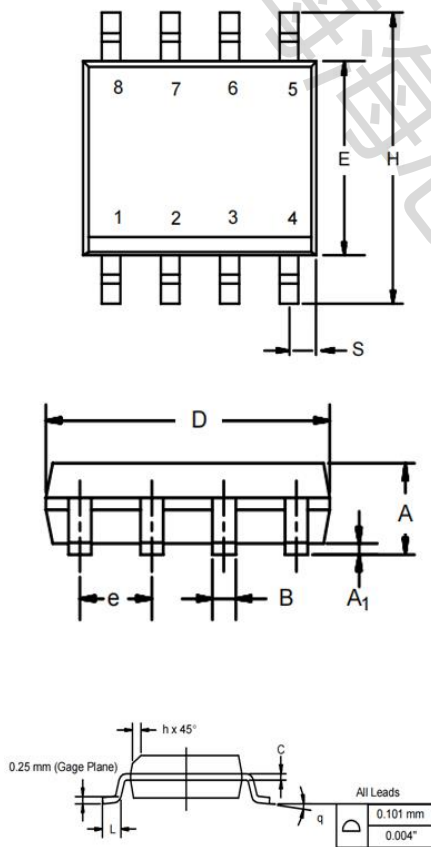


Fig 12. Normalized Thermal Transient Impedance, Junction-to-Foot

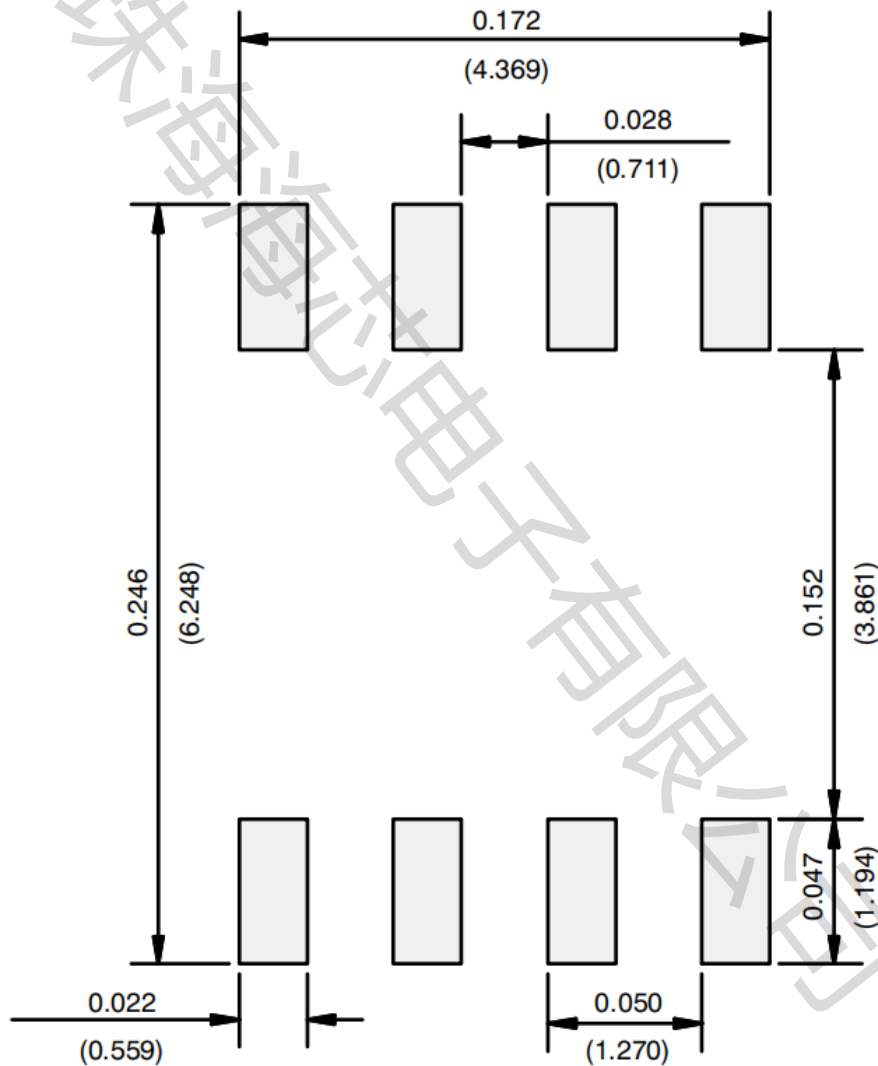
## SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



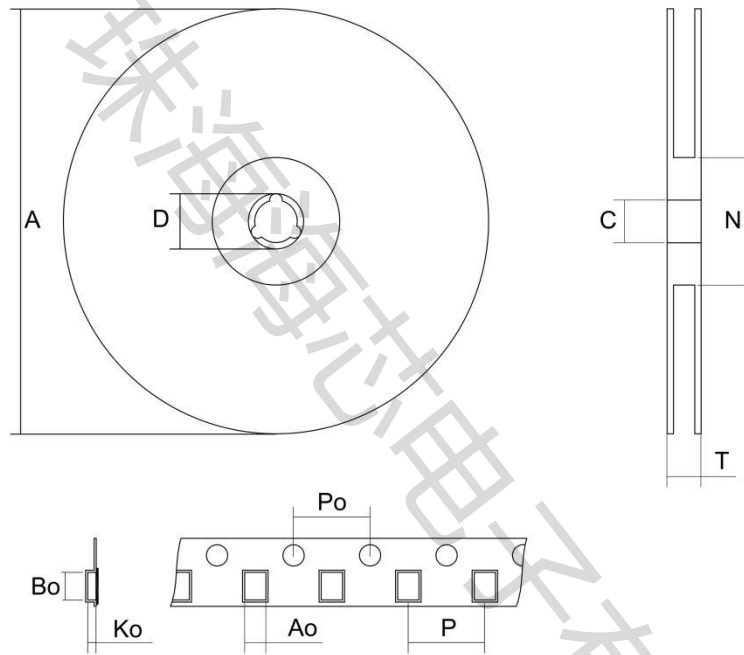
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A <sub>1</sub>	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.007 5	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

**RECOMMENDED MINIMUM PADS FOR SOP-8**

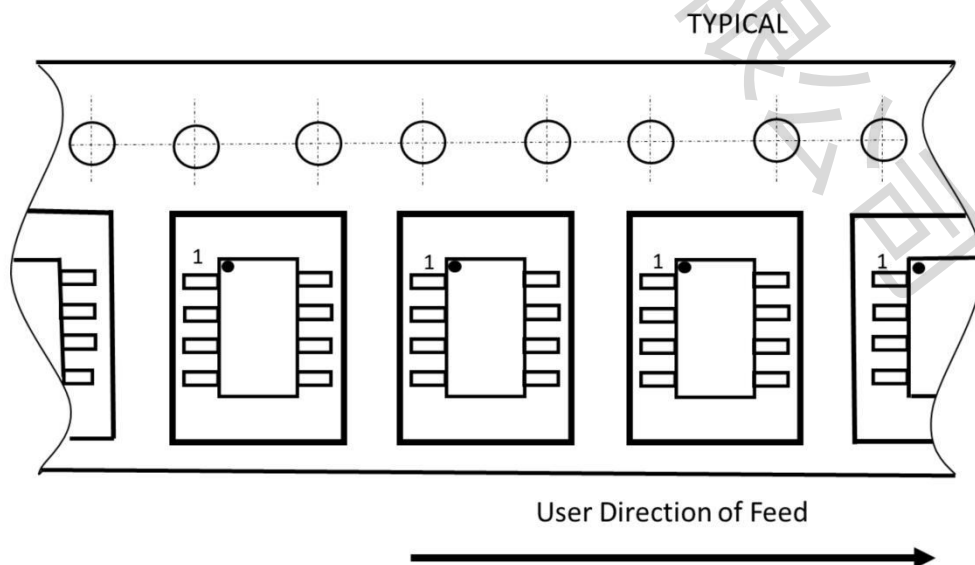


## SOP-8 packing information

### SO-8 tape and reel



### Tape orientation



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