

SI4435BDY-T1-GE3-HX P-Channel 30-V(D-S)MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	Q _g (Typ.)	I _D (A)
-30	0.018 at V _{GS} =-10 V	13nC	-9.0
	0.024 at V _{GS} =-4.5 V		-7.8



FEATURES

- TrenchFET[®] Power MOSFET
- 100 % R_G Tested

APPLICATIONS

- Load Switch
- Battery Switch

Maximum ratings, at T_j=25° C, unless otherwise specified

Parameter	Symbol	Conditions	Value		Unit
			≤10 secs	steady state	
Continuous drain current ^①	I _D	T _A =25°C	-9.1	-7.2	A
		T _A =70°C	-7.1	-5.8	
		T _A =25°C	-8.9	-7.2	A
		T _A =70°C	-7.1	-5.8	
Pulsed drain current ^②	I _{D,pulse}	T _A =25°C ^②	-36		
Avalanche energy, single pulse	E _{AS}	I _D =-9.1 A, R _{GS} =25φt	97		mJ
Gate source voltage	V _{GS}		±20		V
Power dissipation	P _{tot}	T _A =25°C ^①	2.50	1.56	W
Operating and storage temperature	T _j , T _{stg}		-55...150		°C
ESD class		JESD22-A114 HBM	1B(500V-1 kV)		
Soldering temperature			260°C		
IEC climatic category; DIN IEC 68-1			55/150/56		

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction-soldering point	R _{thJS}				35	K/W
Thermal resistance, junction-ambient	R _{thJA}	minimal footprint, t _p ≤ 10s			110	
		Minimal footprint, steady state			150	
		6cm ² cooling area①, t _p ≤ 10s			50	
		6cm ² cooling area①, steady state			80	
Electrical characteristics, at T_j = 25°C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	V _{(BR)DS}	V _{GS} = 0 V, I _D = -250μA	-30			V
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -100μA	-1	-1.5	-2	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -30 V, V _{GS} = 0 V, T _j = 25°C		-0.1	-1	μA
		V _{DS} = -30V, V _{GS} = 0V, T _j = 150°C		-10	-100	μA
Gate-source leakage current	I _{GSS}	V _{GS} = -20V, V _{DS} = 0V			-100	nA
Drain-source on-state resistance	R _{DS(on)}	V _{GS} = -4.5V,		22	31	m
Drain-source on-state resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -9.1A		15	21	m
Transconductance	g _{fs}	V _{DS} > 2 I _D R _{DS(on)max} , I _D = -7.3A	12	19		S
Dynamic characteristics						
Input capacitance	C _{iss}	V _{GS} = 0V,		1750	2330	pF
Output capacitance	C _{oss}	V _{DS} = -25 V, f = 1 MHz		470	625	
Reverse transfer capacitance	C _{rss}			390	580	
Turn-on delay time	t _{d(on)}	V _{DD} = -15V,		10	15	ns
Rise time	t _r	V _{GS} = -10V,		11	17	
Turn-off delay time	t _{d(off)}	I _D = -1 A, R _G = 6Ω		42	63	
Fall time	t _f			33	50	
Gate Charge Characteristics③						
Gate to source charge	Q _{gs}	V _{DD} = -24V,		-4.8	-6.4	nC
Gate charge at threshold	Q _{g(th)}	I _D = 9.1A,		-2.6	-3.5	
Gate to drain charge	Q _{gd}	V _{GS} = 0 to -10V		-14	-21	
Switching charge	Q _{sw}			-16	-24	
Gate charge total	Q _g			-40	-54	
Gate plateau voltage	V			-2.7	-	
Output charge	Q _{oss}	V _{DD} = -15V, V _{GS} = 0V		-14	-19	
Reverse Diode						
Diode continuous forward current	I _S	T _A = 25°C			-2.1	A
Diode pulse current	I _{S,pulse}				-36.5	
Diode forward voltage	V _{SD}	V _{GS} = 0V, I _F = -9.1A,		-0.88	-1.2	V
Reverse recovery time	t _{rr}	V _R = 15V, I _F = -9.1A,		19	24	ns
Reverse recovery charge	Q _{rr}	di _F /dt = 100 A/μs		9	11	nC

Notes:

① Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical in still air.

② See figure 3

③ See figure 16 for gate charge parameter definition

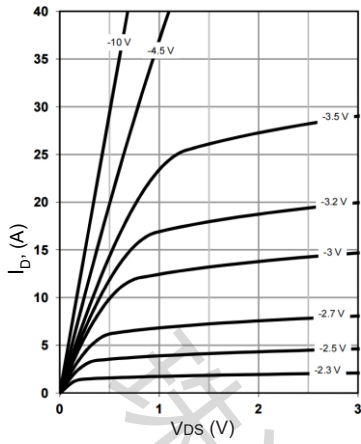


Fig 1. Typical Output Characteristics

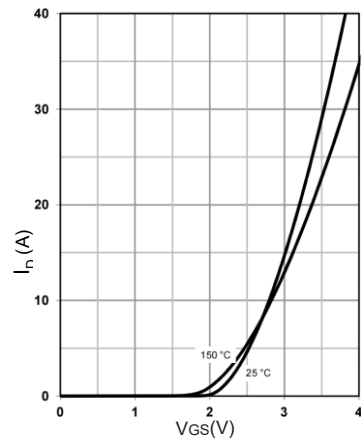


Fig 2. Typical Transfer Characteristics

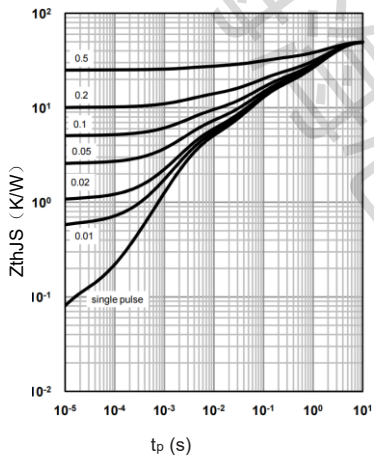


Fig 3. Max. transient thermal impedance

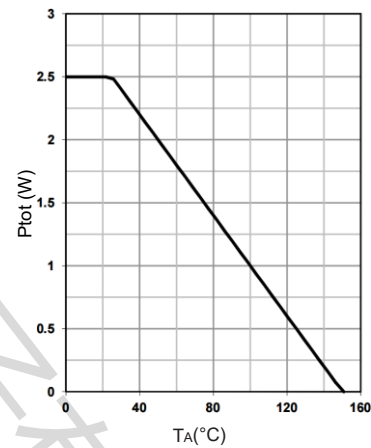


Fig 4. Power dissipation

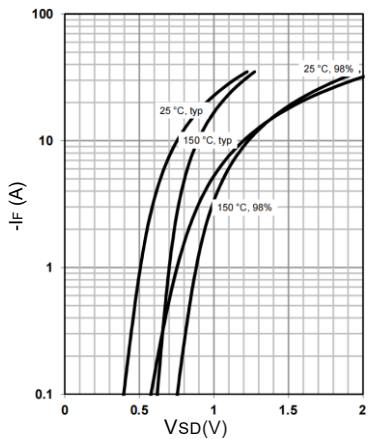


Fig 5. Forward characteristics of reverse diode

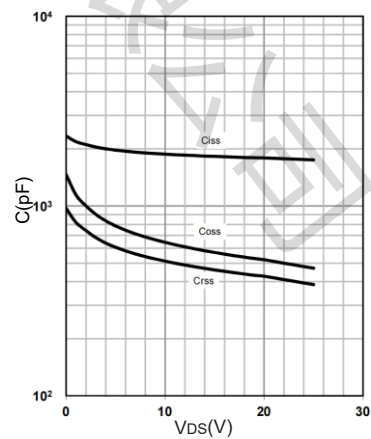


Fig 6. Typical Capacitances

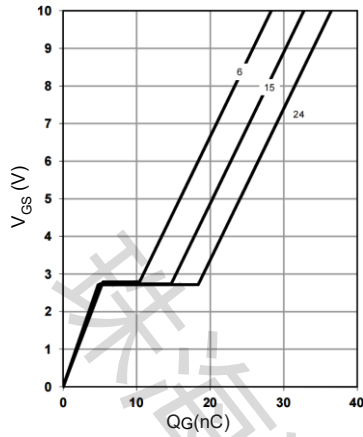


Fig 7. Typical Gate Charge

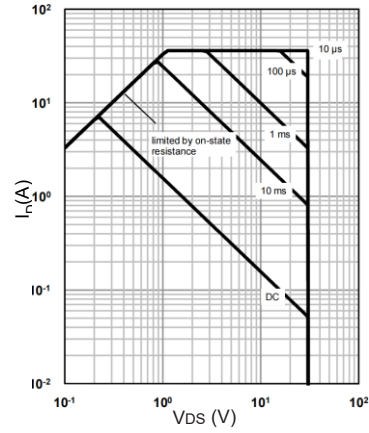


Fig 8. Safe Operating Area

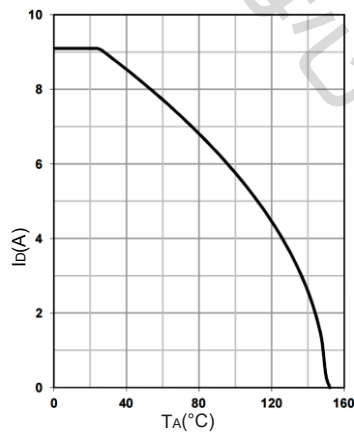


Fig 9. Drain current

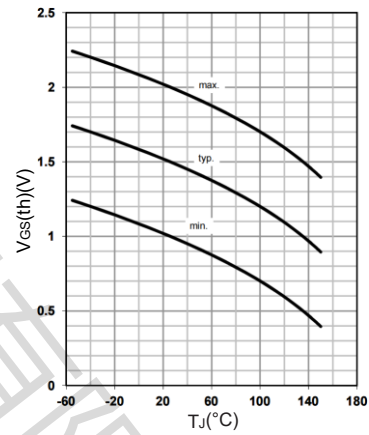


Fig 10. Typical gate threshold voltage

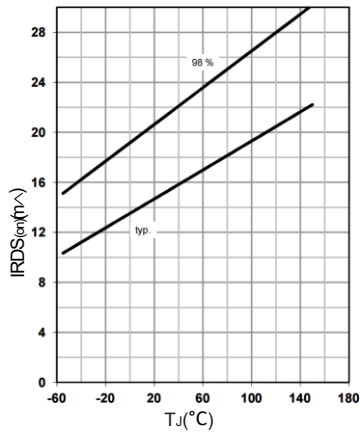


Fig 11. Drain-source on-state resistance

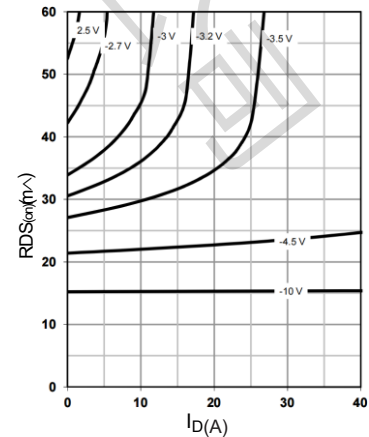


Fig 12. Typical drain-source on resistance

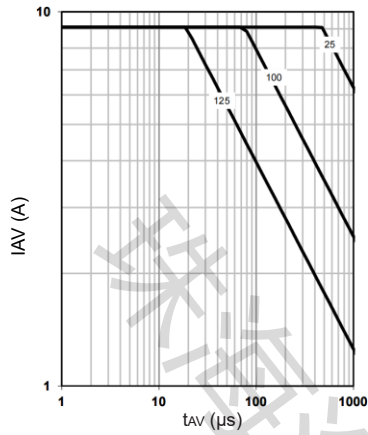


Fig 13. Avalanche characteristics

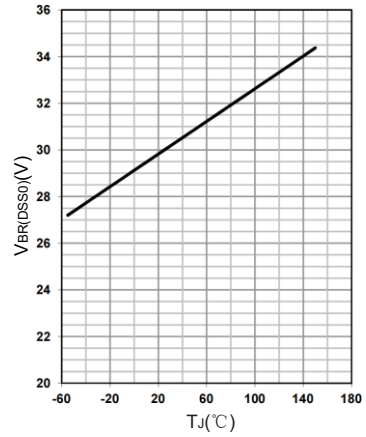
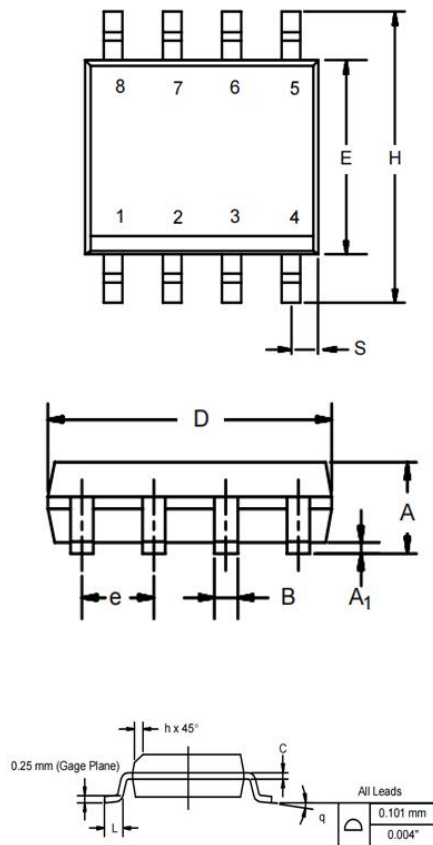


Fig 14. Drain-source breakdown voltage

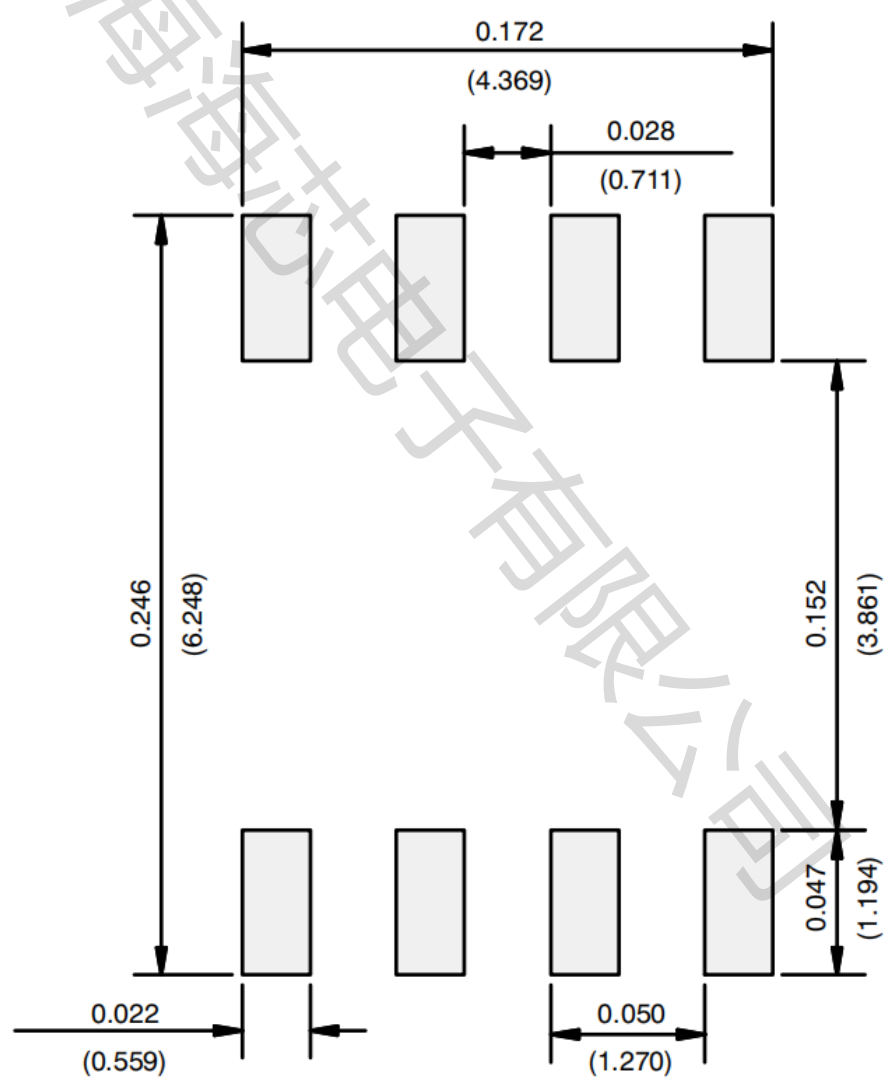
SOP-8 Package Outline

Dimensions are shown in millimeters(inches)



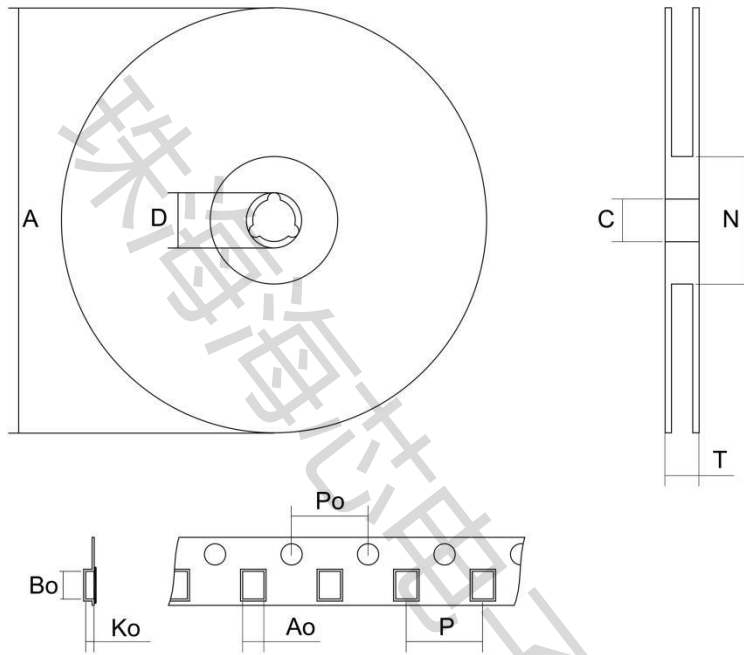
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

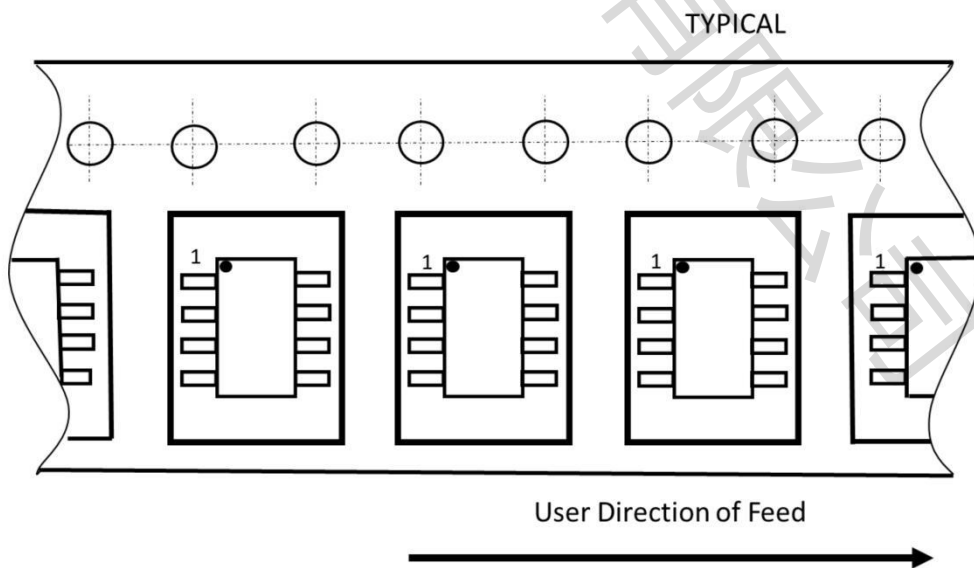


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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