

Features

- Uses PingWei advanced PerfectMOS technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- Excellent Low Ciss
- Qualified according to JEDEC criteria

Benefits

- High robustness and reliability
- Increases maximum current capability
- Low power loss, high power density
- Easy paralleling

Applications

- Synchronous Rectification for AC/DC Quick Charger
- Battery management
- UPS (Uninterruptible Power Supplies)

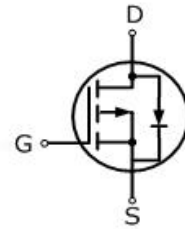
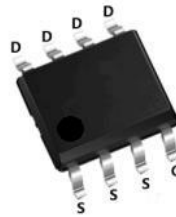


100% DVDS Tested
100% Avalanche Tested

Product Summary

V_{DS}	-40V
$R_{DS(on)}@10V$ typ	10.5mΩ
$R_{DS(on)}@4.5V$ typ	14.2mΩ
I_D	-11A

SOP-8



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PW150P04PL	150P04PL	SOP-8	Tape&Reel	13 inches	12mm	3000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-40	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	-11 -43 -7	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, $t_p = 100\mu\text{s}$)	$I_{D\ pulse}$	-44	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $V_{ds}=-32\text{V}$)	E_{AS}	83	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation $T_C = 25^\circ\text{C}$	P_{tot}	3	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	$^\circ\text{C}$
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	T_{sold}	260	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	-	41	°C/W	-

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

Drain-source breakdown voltage	BV_{DSS}	-40	-	-	V	$V_{GS}=0V, I_D=-250\mu A$
Gate threshold voltage	$V_{GS(th)}$	-1.0	-	-2.5	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Zero gate voltage drain current	I_{DSS}	-	-	-1	μA	$V_{DS}=-40V, V_{GS}=0V$ $T_j=25^\circ C$ $T_j=150^\circ C$
Gate-source leakage current	I_{GSS}	-	± 10	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	10.5	15	mΩ	$V_{GS}=-10V, I_D=-8A$ $V_{GS}=-4.5V, I_D=-8A$
Transconductance	g_{fs}	-	28	-	S	$V_{DS}=-5V, I_D=-8A$

Dynamic Characteristic

Input Capacitance	C_{iss}	-	3144	-	pF	$V_{GS}=0V, V_{DS}=-20V,$ $f=1MHz$
Output Capacitance	C_{oss}	-	285	-		
Reverse Transfer Capacitance	C_{rss}	-	244	-		
Gate Total Charge	Q_G	-	28	-	nC	$V_{DS}=-20V, I_D=-8A,$ $V_{GS}=-10V$
Gate-Source charge	Q_{gs}	-	8	-		
Gate-Drain charge	Q_{gd}	-	8.5	-		
Turn-on delay time	$t_{d(on)}$	-	38	-	ns	$V_{GS}=-10V, V_{DD}=-15V,$ $R_{G_ext}=3\Omega, I_D=-8A$
Rise time	t_r	-	31.0	-		
Turn-off delay time	$t_{d(off)}$	-	90	-		
Fall time	t_f	-	9.2	-		
Gate resistance	R_G	-	9.2	-	Ω	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$



Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	-0.88	-1.2	V	$V_{GS}=0V, I_{SD}=-20A$
Body Diode Continuous Forward Current	I_S	-	-	-11	A	TC = 25°C
Body Diode Pulsed Current	I_S pulse	-	-	-44	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	-	-	ns	-
Body Diode Reverse Recovery Charge	Q_{rr}	-	-	-	nC	



Typical Performance Characteristics

Fig 1: Output Characteristics

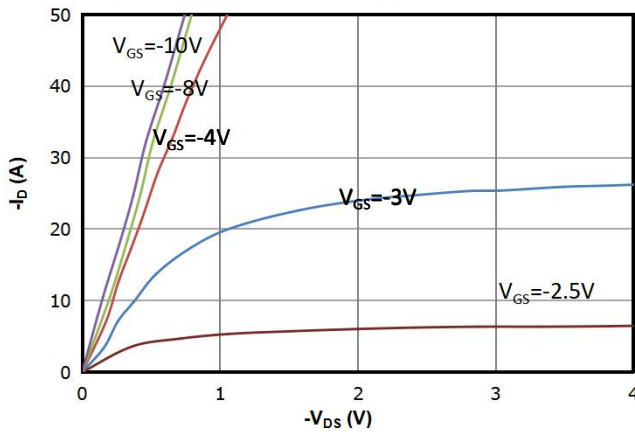


Fig 2: Transfer Characteristics

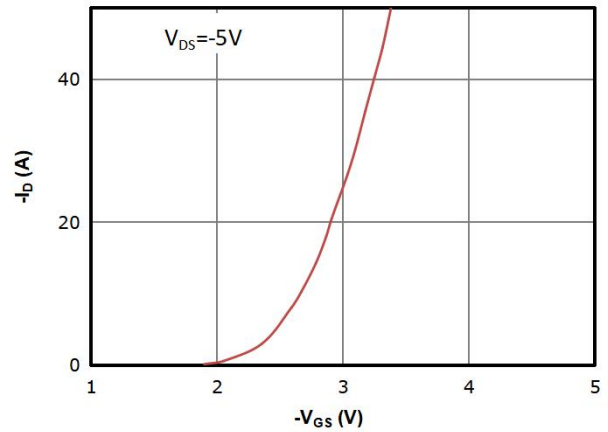


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

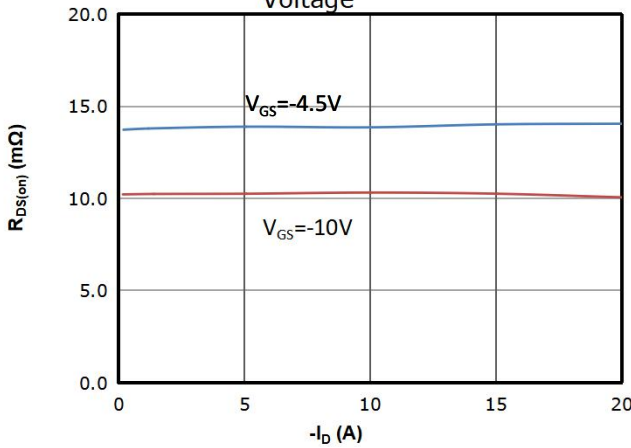


Fig 4: $R_{DS(on)}$ vs Gate Voltage

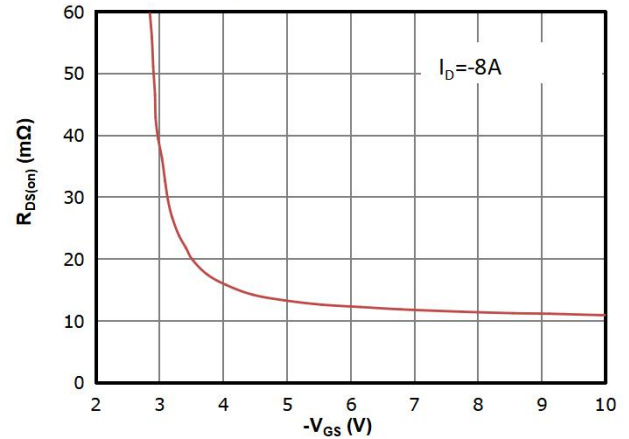


Fig 5: $R_{DS(on)}$ vs. Temperature

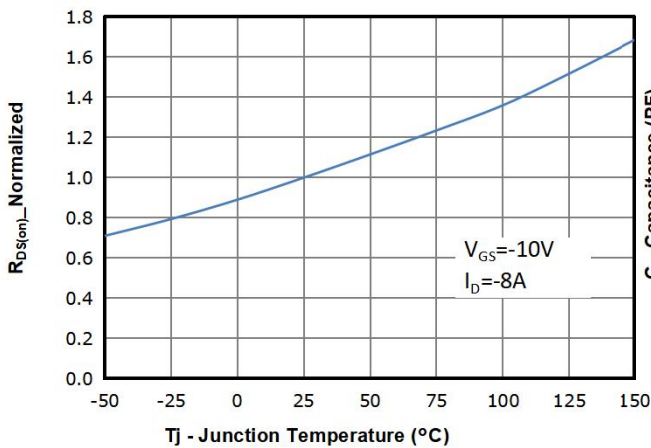


Fig 6: Capacitance Characteristics

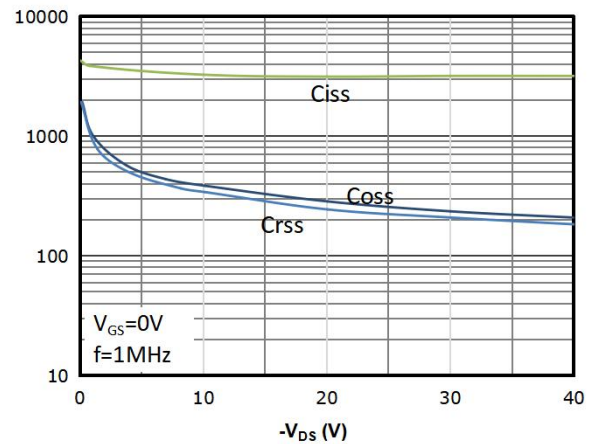




Fig7: Gate Charge Characteristics

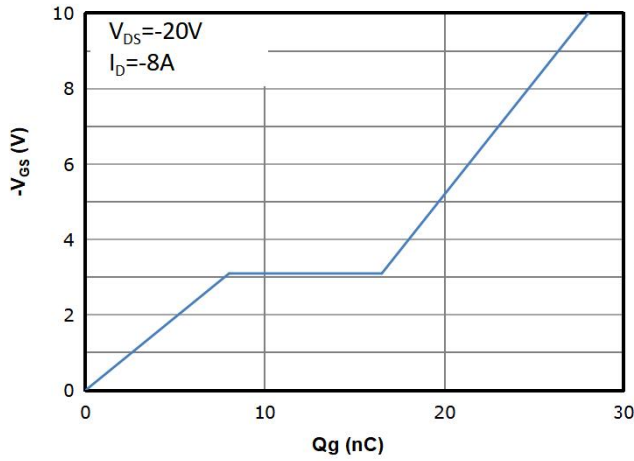


Fig 8: Body-diode Forward Characteristics

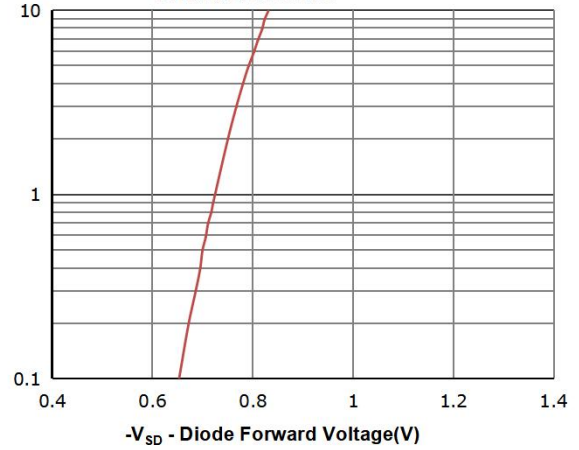


Fig 9: Power Dissipation

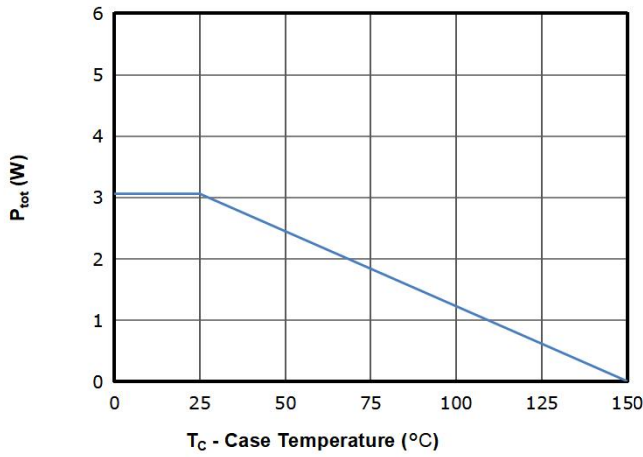


Fig 10: Drain Current Derating

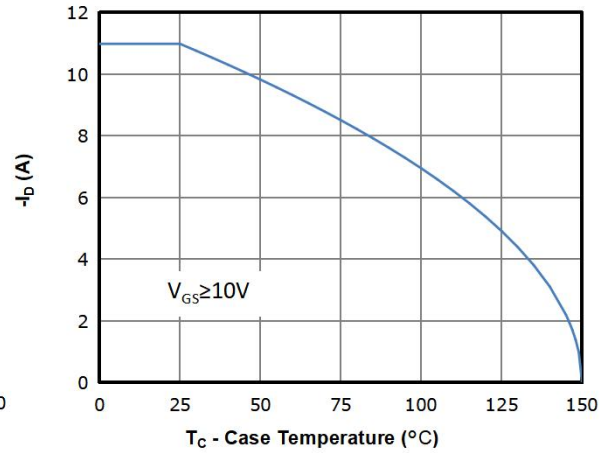


Fig 11: Safe Operating Area

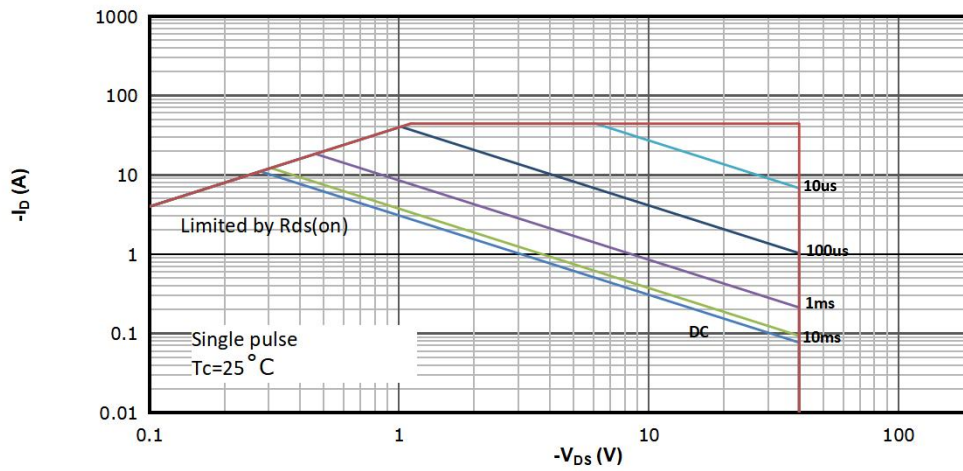
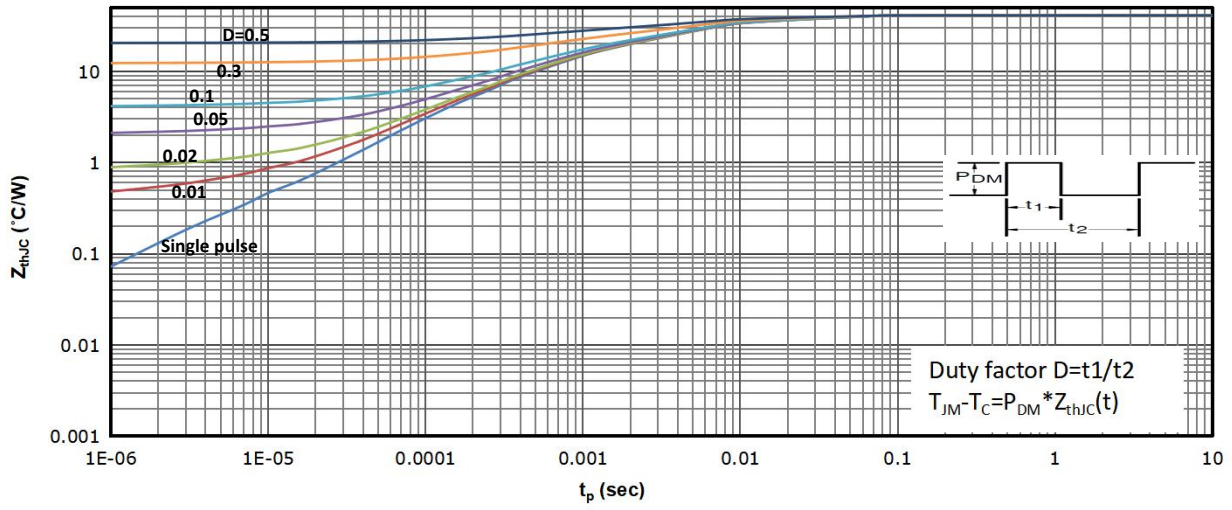


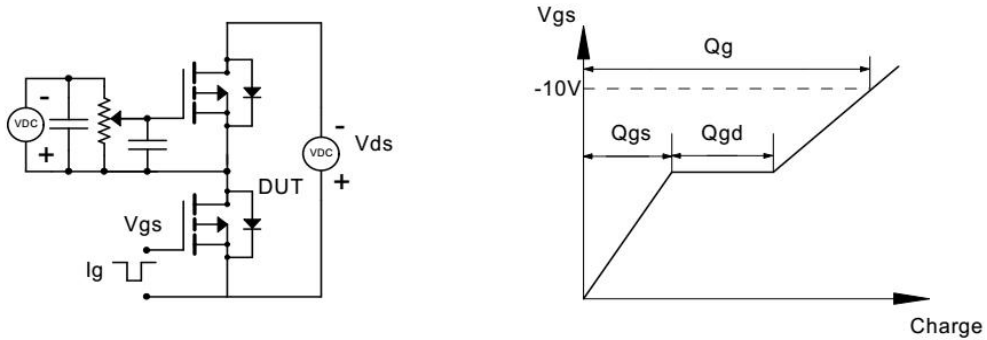


Fig 12: Max. Transient Thermal Impedance

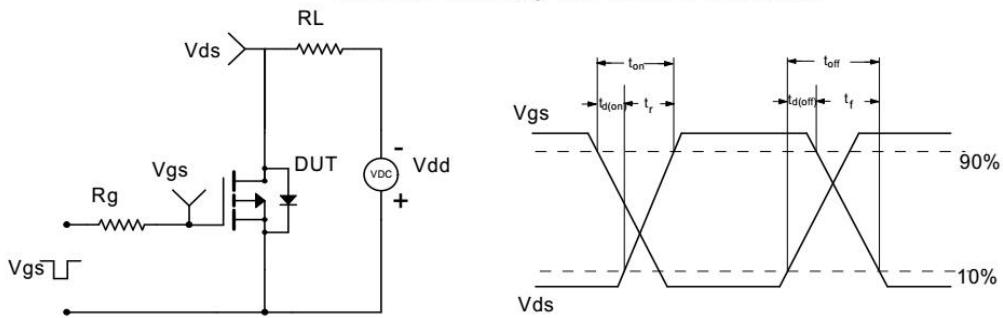


Test Circuit & Waveform

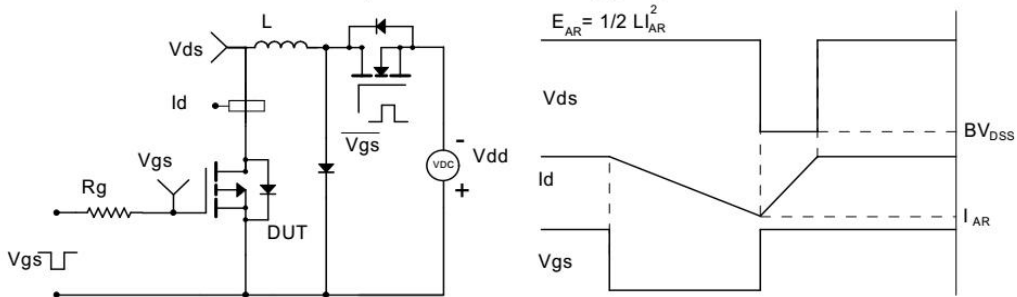
Gate Charge Test Circuit & Waveform



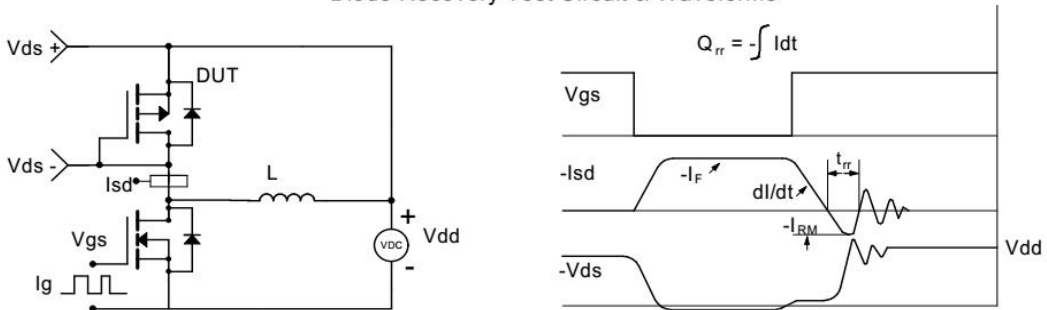
Resistive Switching Test Circuit & Waveforms



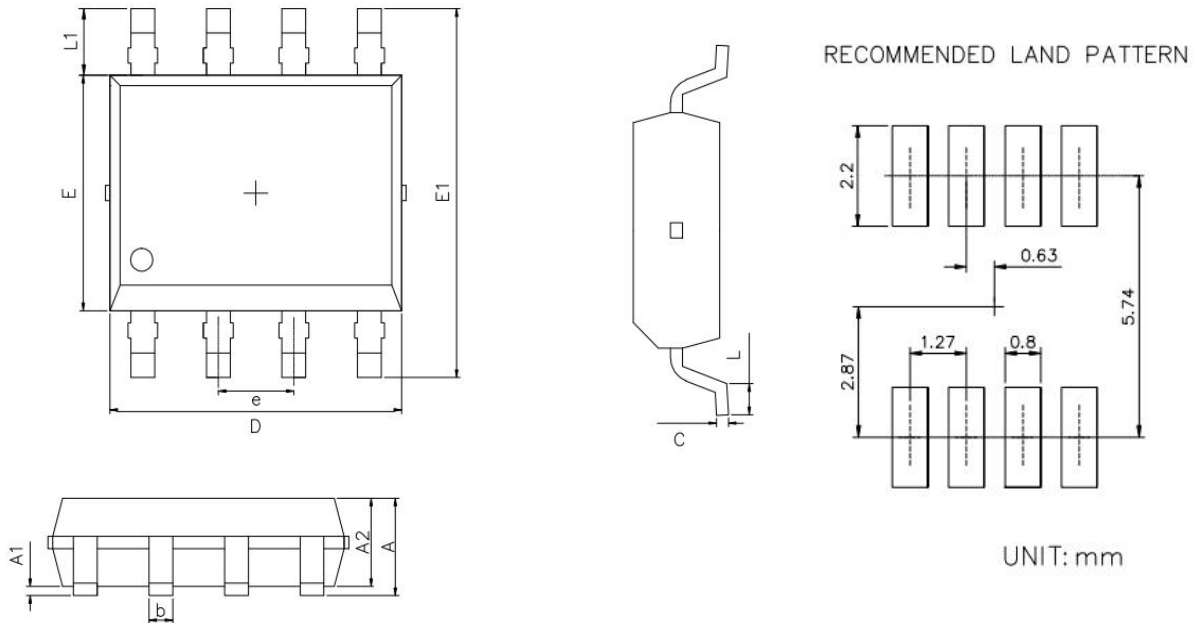
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: SOP-8



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	1.65	0.049	0.065
b	0.30	0.50	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.10	0.189	0.201
E	3.72	4.02	0.146	0.158
E1	5.95	6.25	0.234	0.246
e	1.27		0.050	
L	0.40	0.90	0.016	0.035
L1	0.92	1.22	0.036	0.048



Revision History

Revision	Date	Major changes
1.0	2023/3/7	Release of Formal Version.

Disclaimer

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