PW028N06CBSL

Perfect MOS4 N-MOSFET 60V, 2.1mΩ, 120A

重庆平伟实业股份有限公司

Features

- Uses PingWei advanced PerfectMOS4 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g x R_{DS(on)}$ 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 paralleing

Applications

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

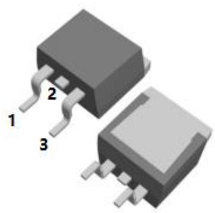
100% DVDS Tested

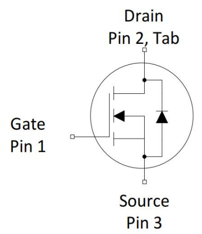
100% AvalancheTested

Product Summary

V_{DS}	60V
$R_{DS(on)@10V\ typ}$	2.1mΩ
$R_{DS(on)@4.5V\ typ}$	2.8mΩ
I_D	120A

TO-263CB-2L





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PW028N06CBSL	PW028N06CBSL	TO-263CB-2L	Tape&Reel	13 inches	24mm	800pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 25°C (Package limit) T_C = 100°C (Silicon limit) Ta = 25°C	I_D	 177 120 112 20	A
Pulsed drain current (T_C = 25°C, t_p =100uS)	$I_{D\ pulse}$	480	A
Avalanche energy, single pulse (L=0.5mH，Vds=48V)	E_{AS}	127	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation T_C = 25°C Ta = 25°C	P_{tot}	 125 1.6	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	-	1.0	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	-	77	°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}	60	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	1.0	-	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	0.03 -	1 100	μA	V_{DS}=60V,V_{GS}=0V T_j=25°C T_j=150°C
Gate-source leakage current	I_{GSS}	-	±10	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	2.1	2.8	mΩ	Vgs=10V,Id=20A
		-	2.8	3.5		Vgs=4.5V,Id=20A
Transconductance	g_{fs}	-	55	-	S	V_{DS}=5V,I_D=20A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	3942	-	pF	V_{GS}=0V, V_{DS}=30V, f=1MHz
Output Capacitance	C_{oss}	-	3105	-		
Reverse Transfer Capacitance	C_{rss}	-	344	-		
Gate Total Charge	Q_G	-	73	-	nC	Vds=30V,Id=20A ,Vgs=10V
Gate-Source charge	Q_{gs}	-	14	-		
Gate-Drain charge	Q_{gd}	-	15	-		
Turn-on delay time	$t_{d(on)}$	-	18	-	ns	V_{GS}=10V, V_{DD}=30V, R_{G_ext}=10Ω,ID=30A
Rise time	t_r	-	4	-		
Turn-off delay time	$t_{d(off)}$	-	90	-		
Fall time	t_f	-	127	-		
Gate resistance	R_G	-	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}	-	0.8	1.2	V	V_{GS}=0V,I_{SD}=20A
Body Diode Continuous Forward Current	Is	-	-	120	A	TC = 25°C
Body Diode Pulsed Current	Is pulse	-	-	480	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	96	-	ns	I_F=30A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	242	-	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

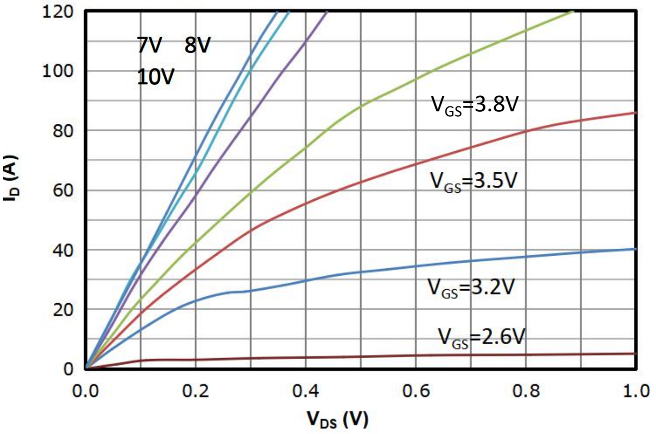


Fig 2: Transfer Characteristics

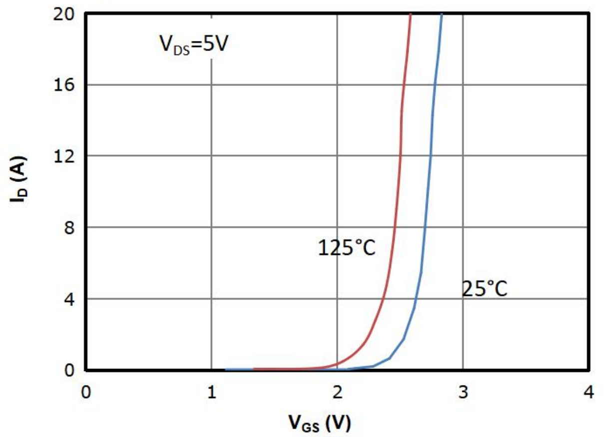


Fig 3: Rds(on) vs Drain Current and Gate Voltage

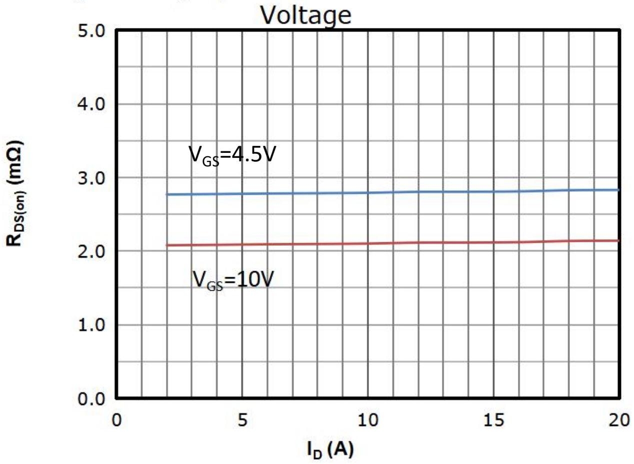


Fig 4: Rds(on) vs Gate Voltage

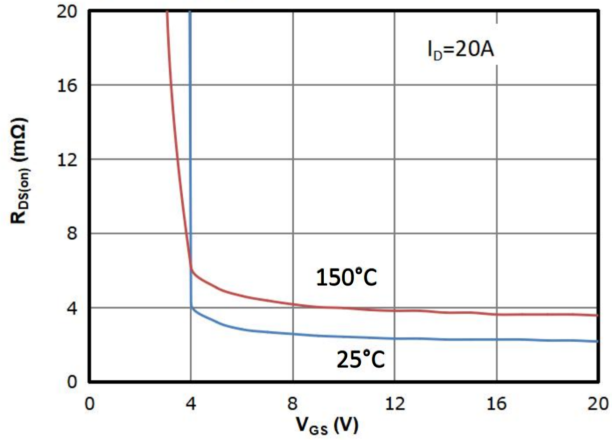


Fig 5: Rds(on) vs. Temperature

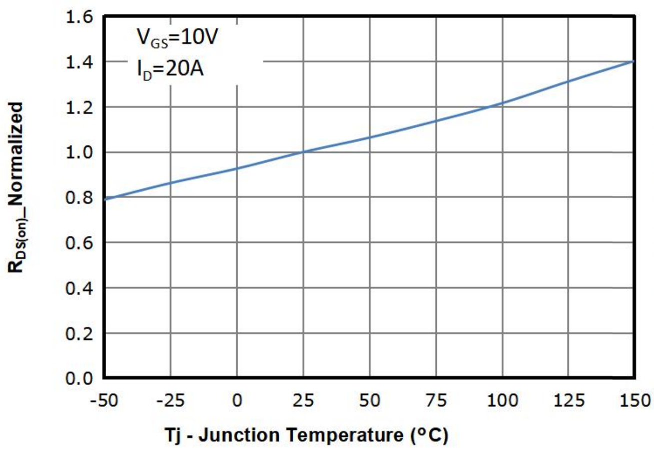


Fig 6: Vgs(th) vs. Temperature

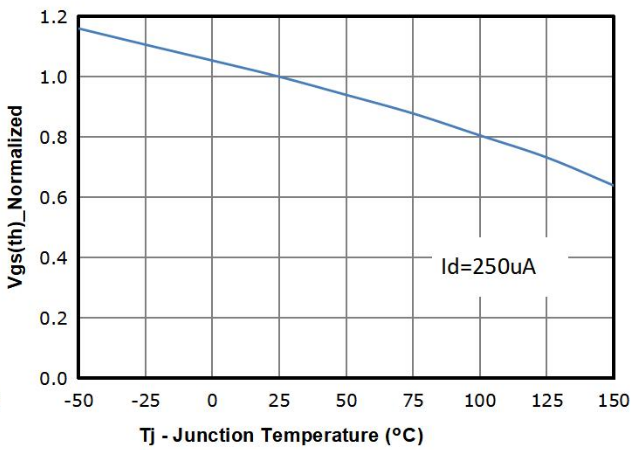


Fig 7: BVdss vs. Temperature

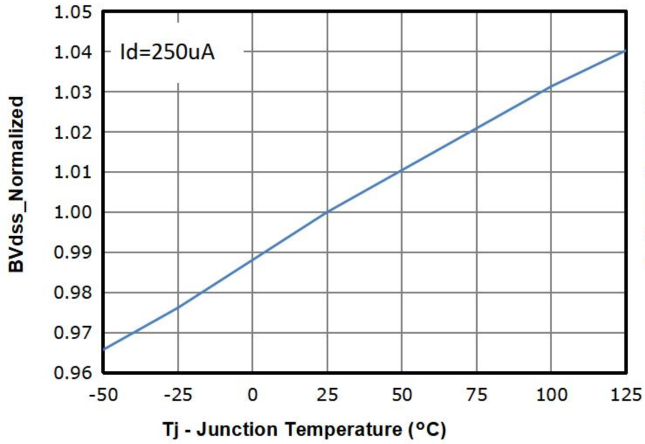


Fig 8: Capacitance Characteristics

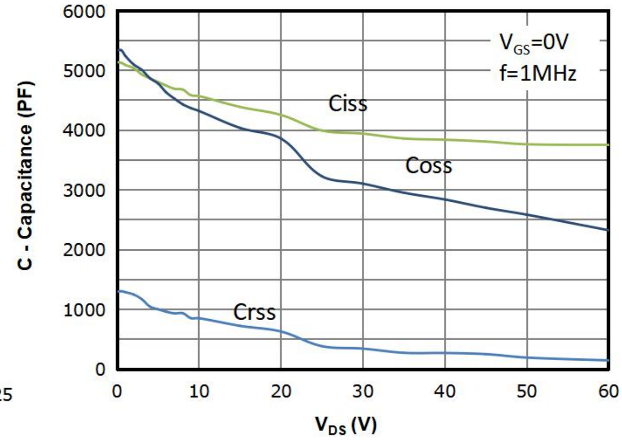


Fig 9: Gate ChargeCharacteristics

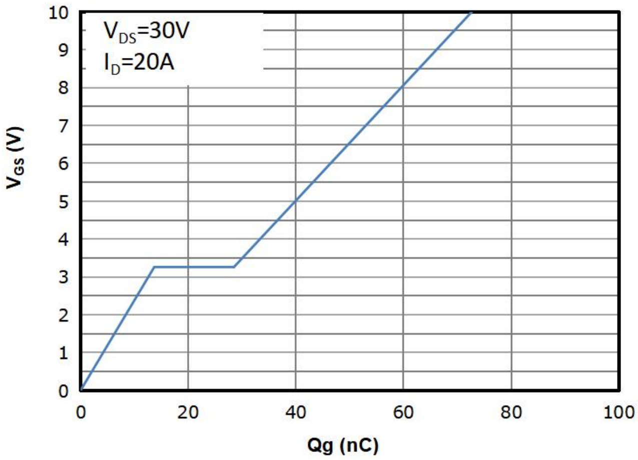


Fig 10: Body-diode Forward Characteristics

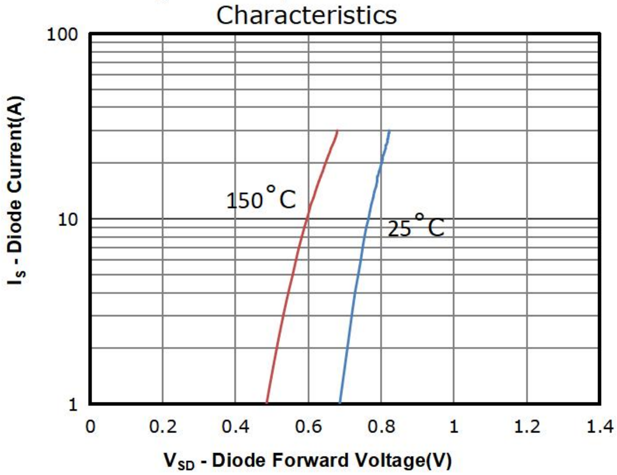


Fig 11: Power Dissipation

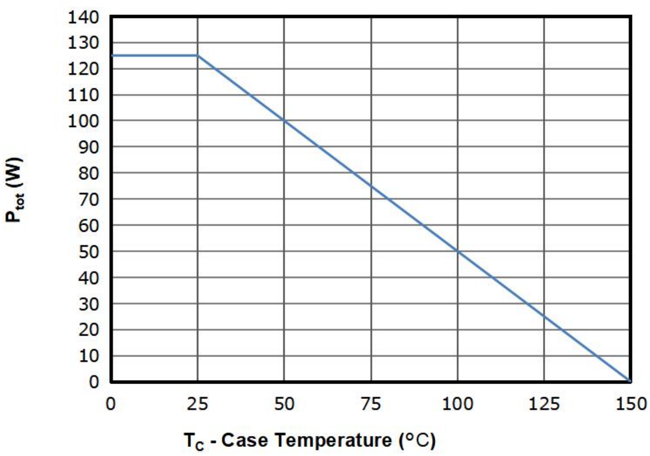


Fig 12: Drain Current Derating

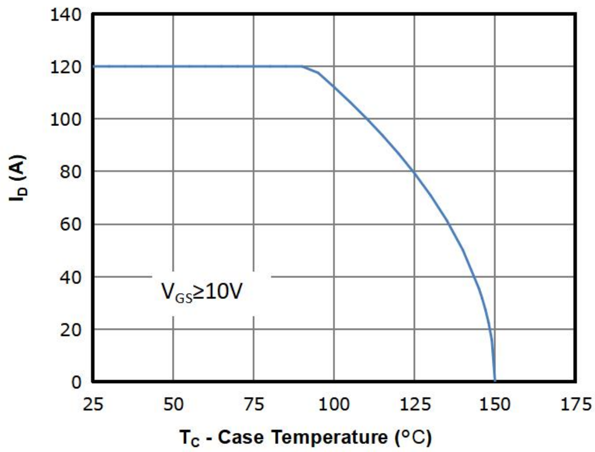


Fig 13: Safe Operating Area

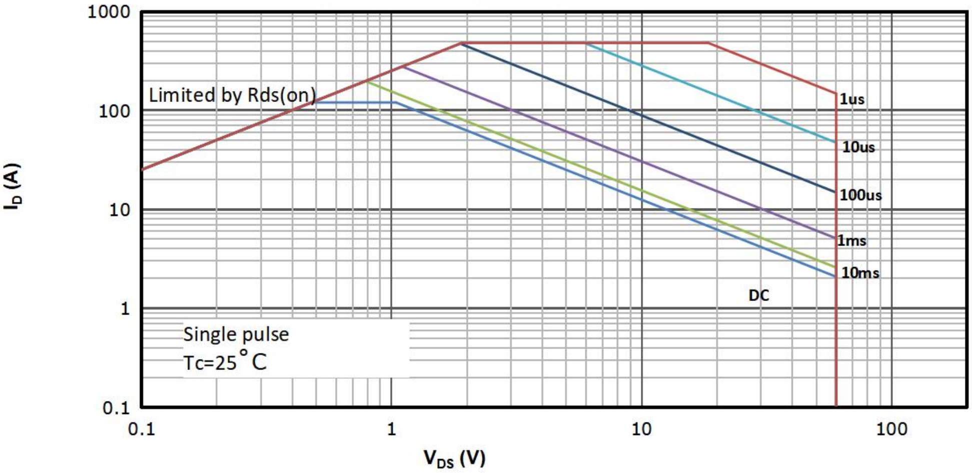
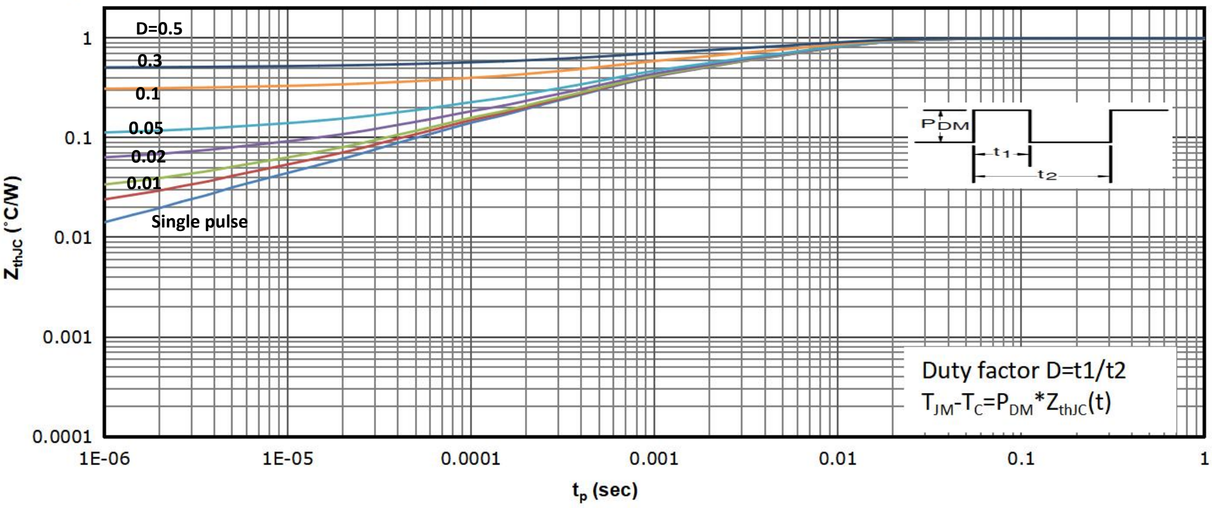
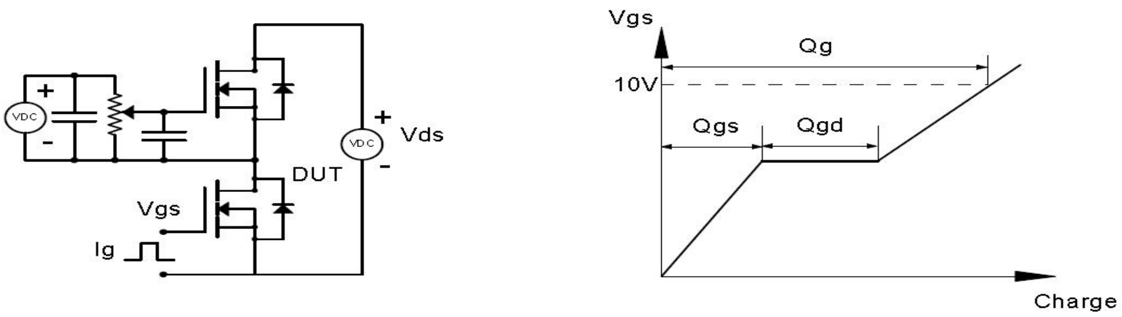


Fig 14: Max. Transient Thermal Impedance

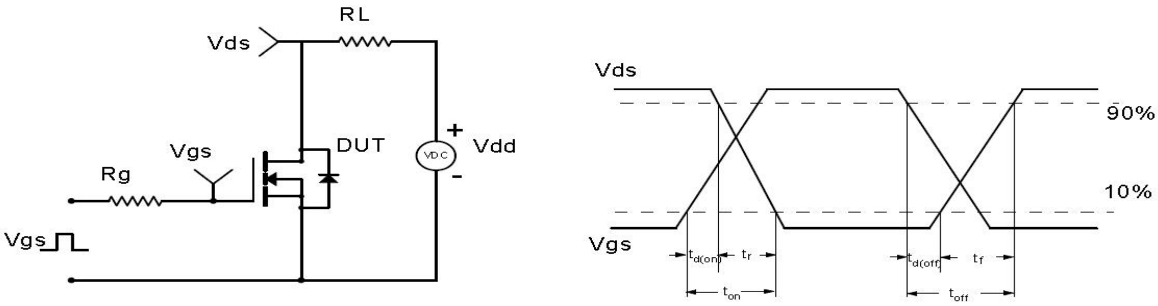


Test Circuit & Waveform

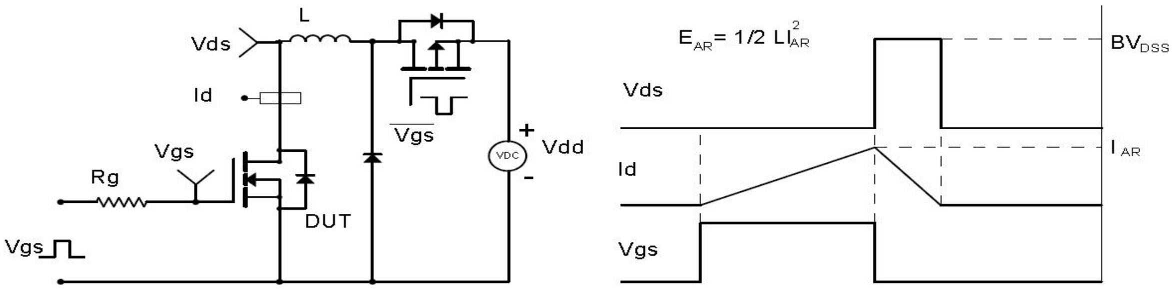
Gate Charge Test Circuit & Waveform



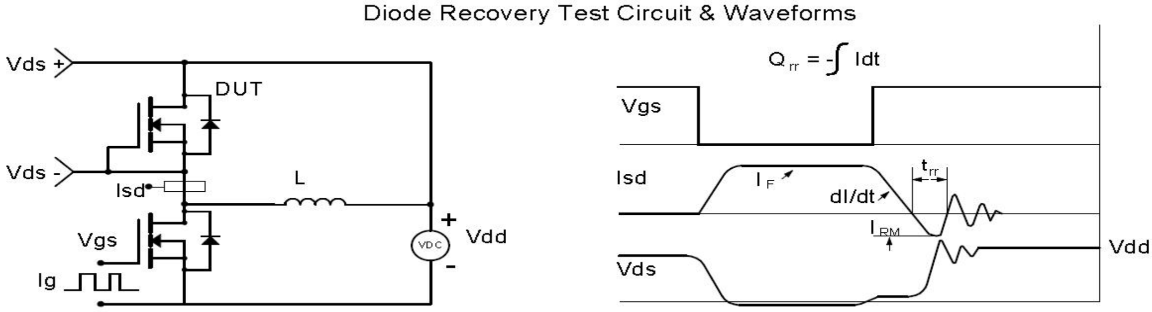
Resistive Switching Test Circuit & Waveforms



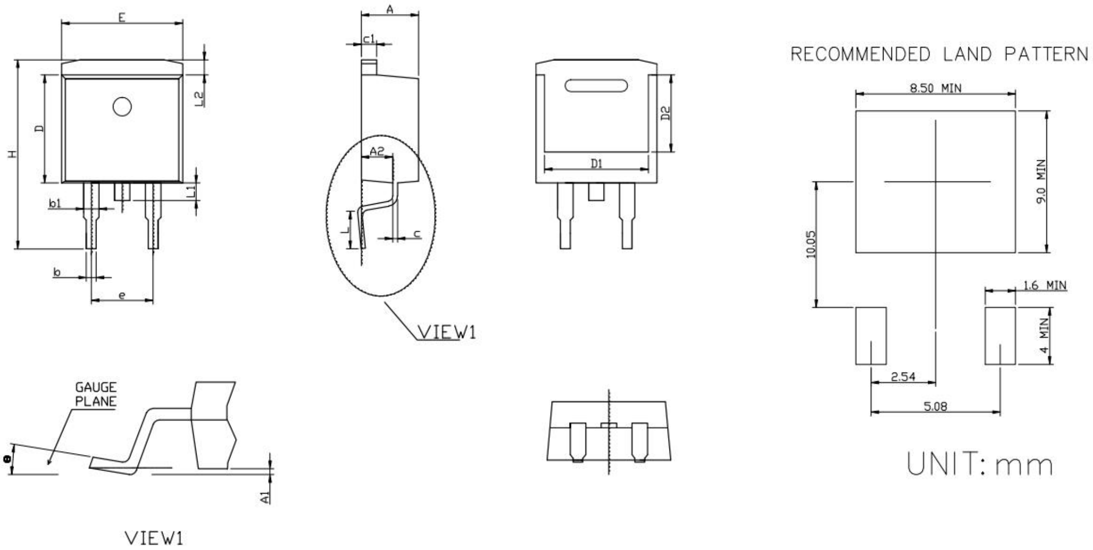
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TO-263CB-2L



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.40	4.80	0.173	0.189
A1	0.05	0.30	0.002	0.012
A2	2.25	2.55	0.089	0.100
b	0.72	0.92	0.028	0.036
b1	1.12	1.42	0.044	0.056
c	0.40	0.60	0.016	0.024
c1	1.20	1.40	0.047	0.055
D	8.80	9.40	0.346	0.370
D1	7.75	8.15	0.305	0.321
D2	6.55	6.95	0.258	0.274
E	9.65	10.35	0.380	0.407
e	5.08		0.200	
H	14.70	15.60	0.579	0.614
L	2.30	2.60	0.091	0.102
L1	1.20	1.60	0.047	0.063
L2	0.95	1.30	0.037	0.051
θ	0°	8°	0°	8°

Revision History

Revison	Date	Major changes
1.0	2022/11/16	Release of Formal Version.

Disclaimer

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