CRSD110N06L2Q

SkyMOS2 N-MOSFET 60V, 10mΩ, 60A

Features

- Uses CRM(CQ) advanced SkyMOS2 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- AEC-Q101 Qualified
- MSL1 up to 260°C peak reflow

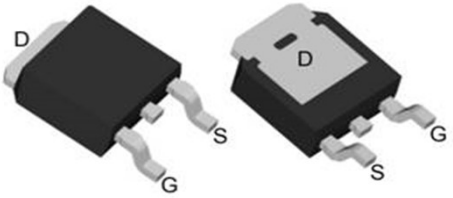
Applications

- DCDC Converter
- Switching applications
- UPS (Uninterrupible Power Supplies)

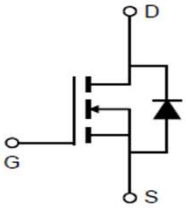
Product Summary

V_{DS}	60V
$R_{DS(on).typ}$	10mΩ
I_D	60A

100% DVDS Tested
100% Avalanche Tested



CRSD110N06L2Q



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSD110N06L2Q	110N06L2Q	TO-252	Tape&reel	N/A	N/A	2500pcs

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)	I_D	 60 60 43	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	240	A
Avalanche energy, single pulse (IAS = 20A, Rg=25Ω)[1]	E_{AS}	60	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	82	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+175	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

※. Notes:
EAS is tested at starting Tj = 25℃, L = 0.3mH, IAS =20A, VGS = 10V.

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Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case (junction-heat spreader)	R_{thJC}	1.8	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	62	
Thermal resistance, junction – plastic case	$R_{thJ\text{-}pc}$	36	

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
		60	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=60V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	10	12.5	mΩ	VGS=10V, ID=20A
		-	13.5	17.5		VGS=4.5V, ID=16A
Transconductance	g_{fs}	30	60	120	S	VDS=5V,ID=25A
Dynamic Characteristic						
Input Capacitance	C_{iss}	510	1016	2030	pF	V_{GS}=0V, V_{DS}=30V, f=1MHz
Output Capacitance	C_{oss}	120	240	480		
Reverse Transfer Capacitance	C_{rss}	-	13	100		
Gate Total Charge	Q_G	12	18	26	nC	V_{GS}=10V, V_{DS}=30V, I_D=25A,,f=1MHz
Gate-Source charge	Q_{gs}	-	5	10		
Gate-Drain charge	Q_{gd}	-	2.5	5		
Turn-on delay time	$t_{d(on)}$	-	10	19	ns	V_{GS}=10V, V_{DD}=30V, R_{G_ext}=2.7Ω
Rise time	t_r	40	60	90		
Turn-off delay time	$t_{d(off)}$	-	22	44		
Fall time	t_f	24	48	96		
Gate resistance	R_G	-	1.8	3	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

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Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.9	1.4	V	V_{GS}=0V,I_{SD}=25A
Body Diode Reverse Recovery Time	t_{rr}	10	19	40	ns	I_F=25A,dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	15	30	60	nC	

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Typical Performance Characteristics

Fig 1: Output Characteristics

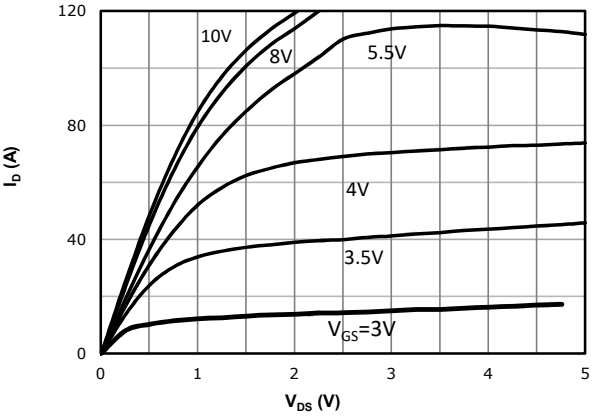


Fig 2: Transfer Characteristics

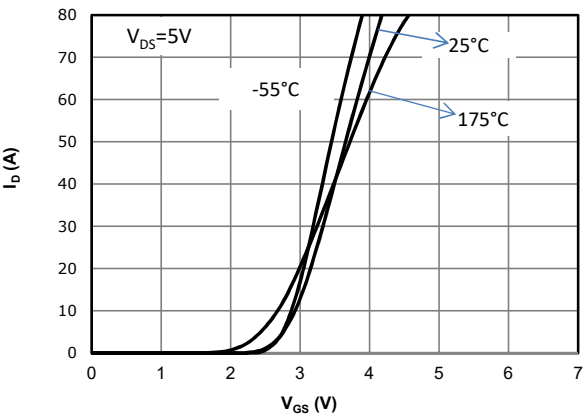


Fig 3: Rds(on) vs Drain Current and Gate Voltage

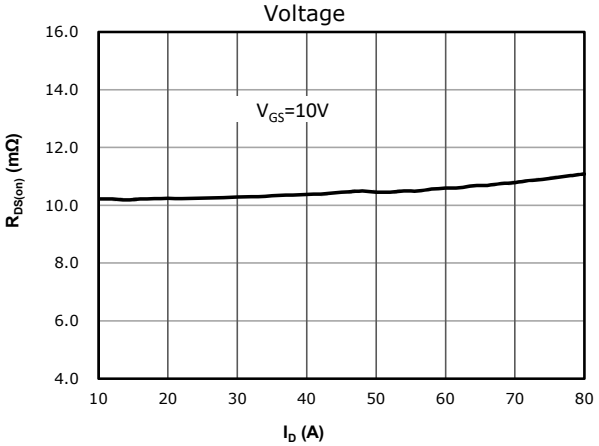


Fig 4: Rds(on) vs Gate Voltage

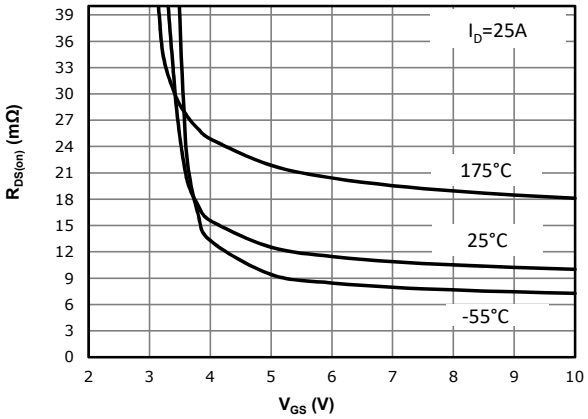


Fig 5: Rds(on) vs. Temperature

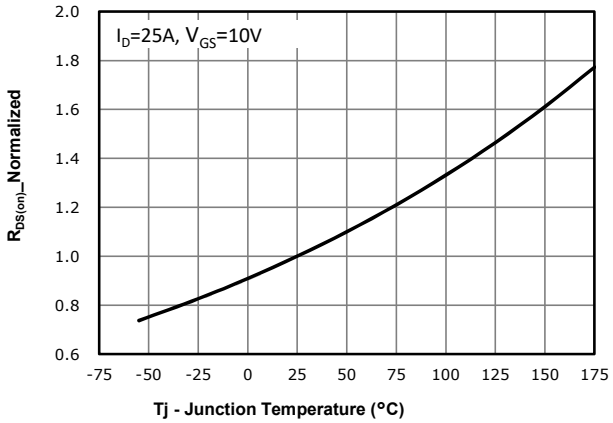
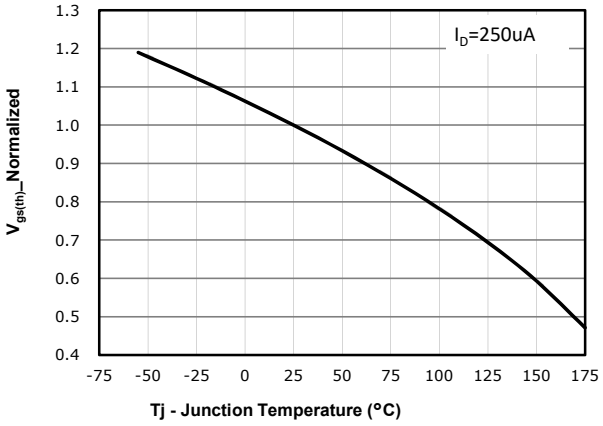


Fig 6: Vgs(th) vs. Temperature



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Fig 7: BVdss vs. Temperature

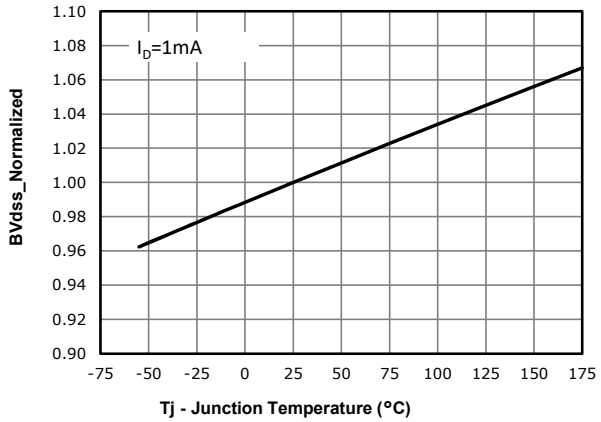


Fig 8: Capacitance Characteristics

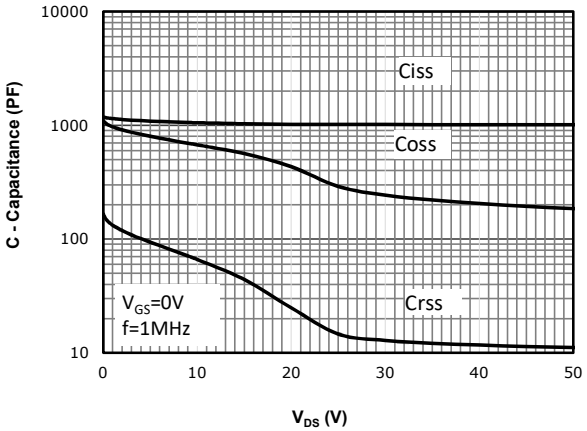


Fig 9: Gate Charge Characteristics

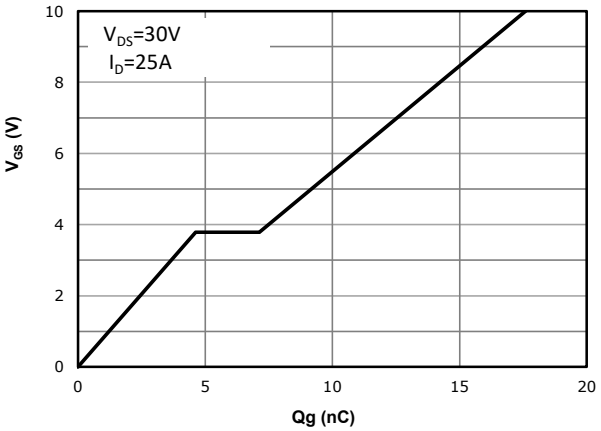


Fig 10: Body-diode Forward Characteristics

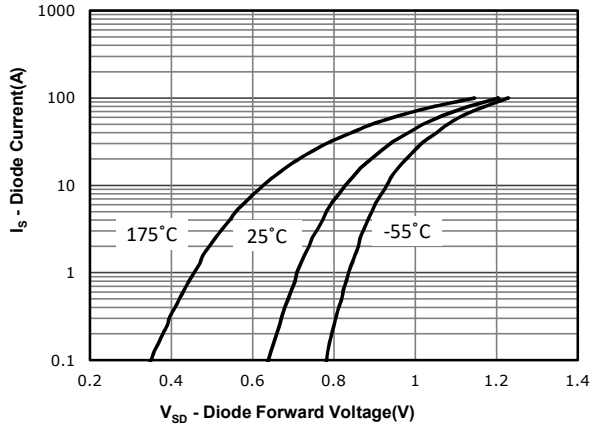


Fig 11: Power Dissipation

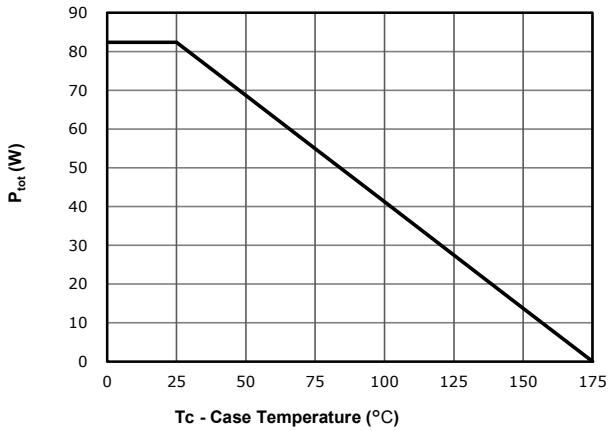
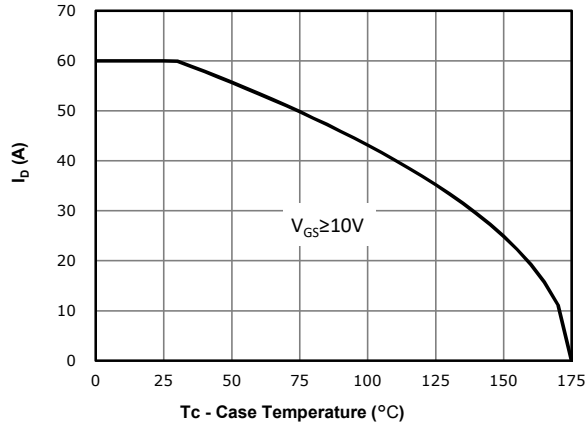


Fig 12: Drain Current Derating



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Fig 13: Safe Operating Area

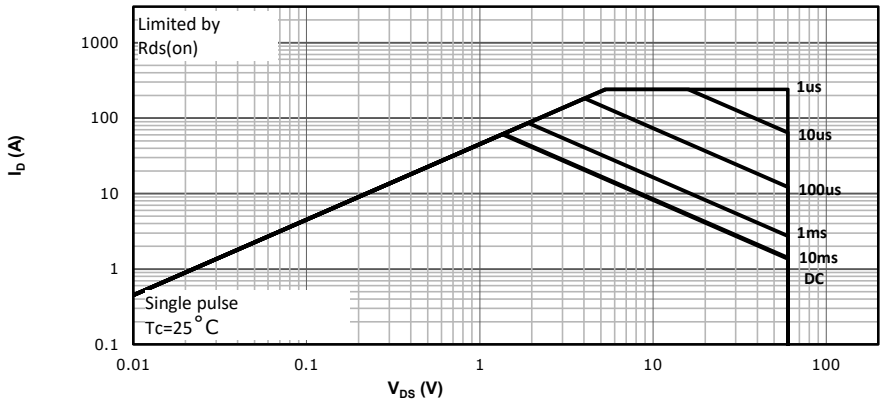
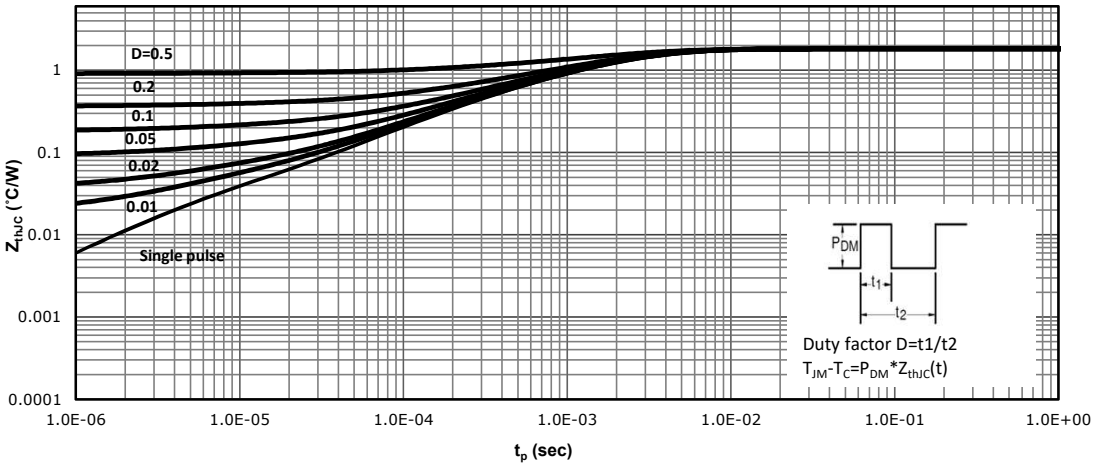


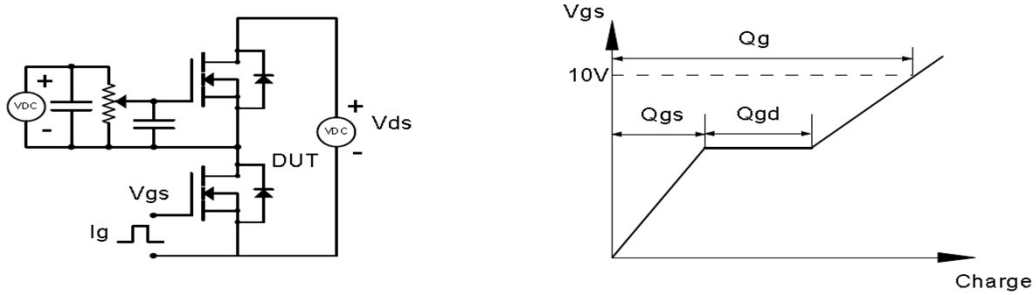
Fig 14: Max. Transient Thermal Impedance



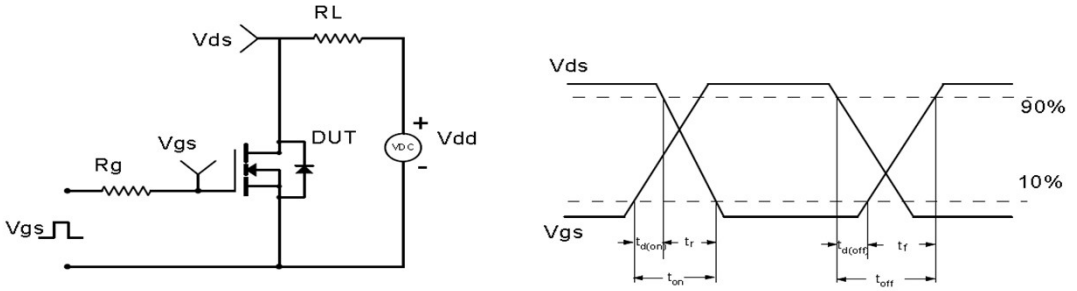
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Test Circuit & Waveform

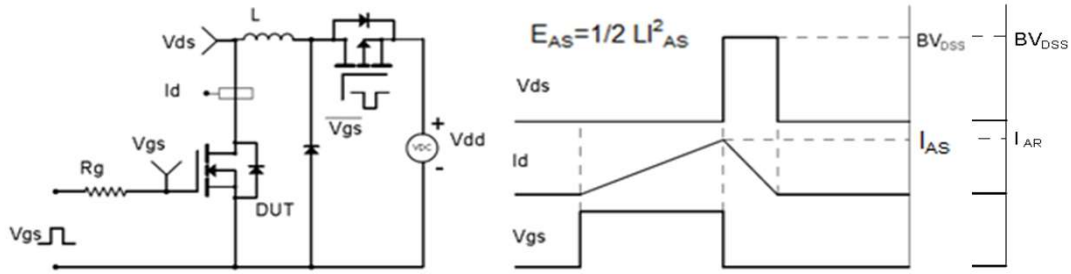
Gate Charge Test Circuit & Waveform



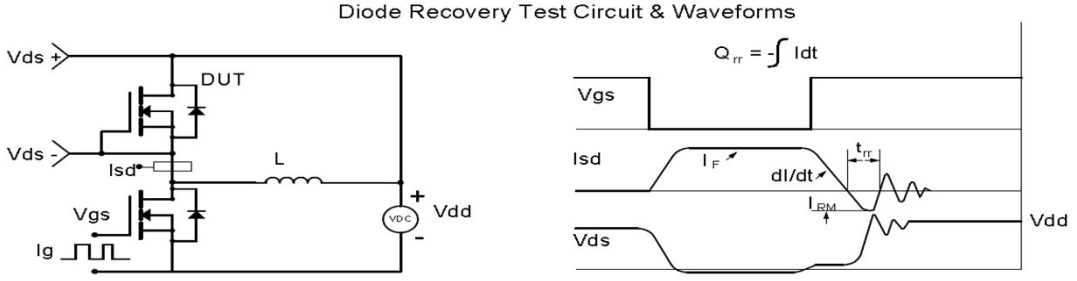
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

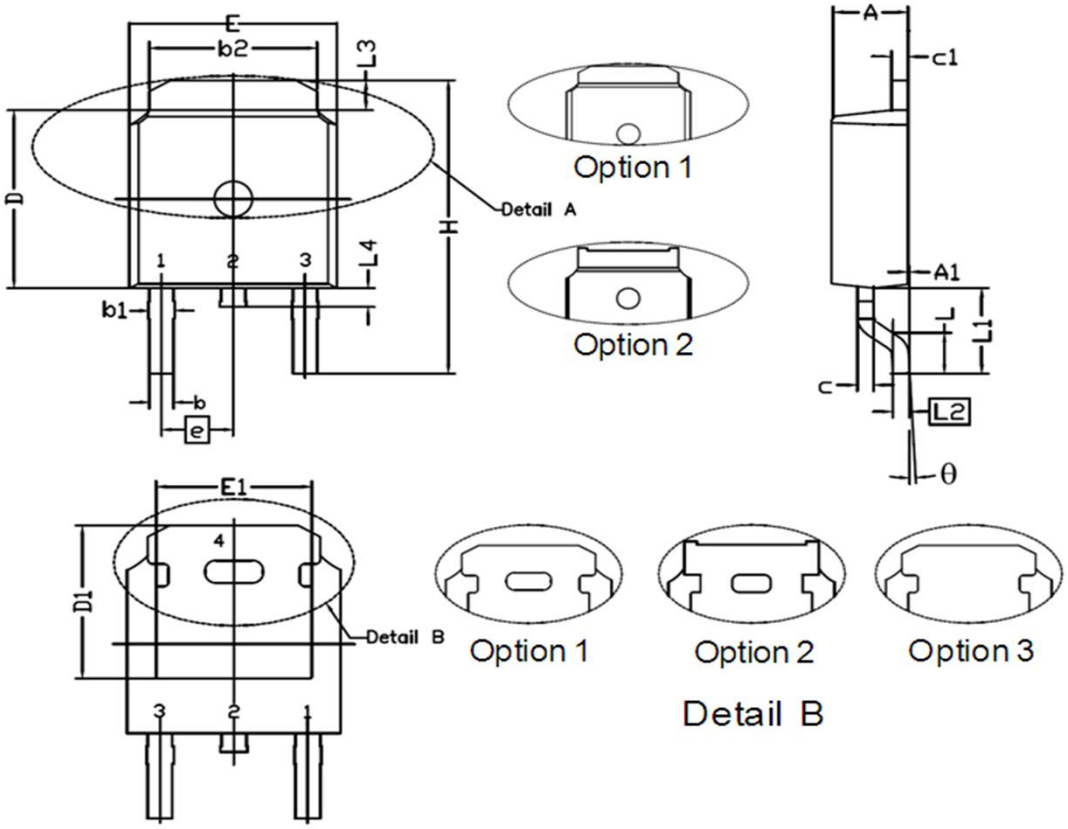


Diode Recovery Test Circuit & Waveforms



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Package Outline: TO-252



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.15	2.30	2.38
A1	0.00	0.07	0.15
b	0.60	0.76	0.91
b1	0.65	--	1.15
b2	5.00	5.33	5.50
c	0.45	0.50	0.61
c1	0.36	0.50	0.66
D	5.80	6.10	6.22
D1	5.21	--	5.72
e	2.29 BSC.		
E	6.30	6.50	6.73
E1	4.75	5.10	5.45
H	9.40	9.90	10.40
L	1.38	1.52	1.78
L1	2.92 REF		
L2	0.508 BSC.		
L3	0.72	1.01	1.35
L4	0.60	0.75	1.20
θ	0°	--	8°

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Marking



NOTE:
XAAAAAAA-Y

X	—Assembly location code
AAAAAAA	—Assembly lot NO. last 7digits
Y	—Bin code

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Revision History

Revision	Date	Major changes
1.0	2023/8/21	Release of preliminary version.

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