华润微电子（重庆）有限公司

CRSE095N06L2A

SkyMOS2 N-MOSFET 60V, 8mΩ, 12A

Features

- Uses CRM(CQ) advanced SkyMOS2 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria
- Typical ESD (HBM): 400 V
- MSL3 rated

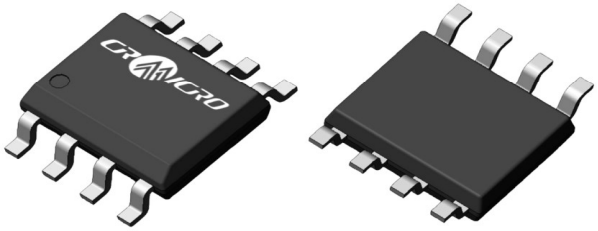
Product Summary

V_{DS}	60V
$R_{DS(on)@10V\ typ}$	8mΩ
$R_{DS(on)@4.5V\ typ}$	11.1mΩ
I_D	12A

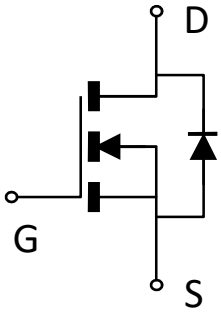
Applications

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

100% Avalanche Tested



CRSE095N06L2A



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSE095N06L2A	S095N06A	SOP-8	Tape&Reel	N/A	N/A	4000pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	60	V
Continuous drain current T_A = 25°C T_A = 75°C	I_D	 12 9	A
Pulsed drain current (T_A = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	48	A
Avalanche energy, single pulse (L=0.3mH, Rg=25Ω)	E_{AS}	31	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_A = 25°C)	P_{tot}	2.8	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C

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Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – lead.	R_{thJL}	21.8	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	45	

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	66	-	V	V_{GS}=0V, I_D=250μA
Gate threshold voltage	$V_{GS(th)}$	1.4	1.7	2	V	V_{DS}=V_{GS},I_D=250μA
Zero gate voltage drain current	I_{DSS}	- -	0.03 -	1 10	μA	V_{DS}=60V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	-	10	100	nA	V_{GS}=20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	8.0	9.6	mΩ	V_{GS}=10V, I_D=12A
		-	11.1	13.3		V_{GS}=4.5V, I_D=10A
Transconductance	g_{fs}	-	42.9	-	S	V_{DS}=5V,I_D=12A
Dynamic Characteristic						
Input Capacitance	C_{iss}	531	1062	2124	pF	V_{GS}=0V, V_{DS}=30V, f=1MHz
Output Capacitance	C_{oss}	154	308	616		
Reverse Transfer Capacitance	C_{rss}	10	20	40		
Gate Total Charge	$Q_{G(10V)}$	-	18	36	nC	Vds=30V Id=12A Vgs=10V f=1MHz
	$Q_{G(4.5V)}$	-	8.9	17.8		
Gate-Source charge	Q_{gs}	-	3.7	7.4		
Gate-Drain charge	Q_{gd}	-	2.9	5.8		
Turn-on delay time	$t_{d(on)}$	-	8.8	17.6	ns	V_{GS}=10V, V_{DD}=30V, R_{G_ext}=2.7Ω
Rise time	t_r	-	42	84		
Turn-off delay time	$t_{d(off)}$	-	21.5	43		
Fall time	t_f	-	5.4	10.8		
Gate resistance	R_G	-	1.64	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}	-	0.7	1	V	V_{GS}=0V,I_{SD}=10A
Body Diode Reverse Recovery Time	t_{rr}	-	78	156	ns	I_F=12A, dI/dt=300A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	192	384	nC	

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Typical Performance Characteristics

Fig 1: Output Characteristics

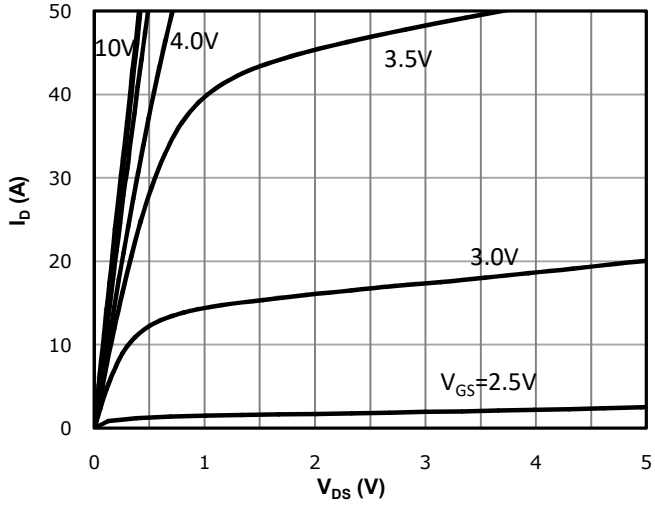


Fig 2: Transfer Characteristics

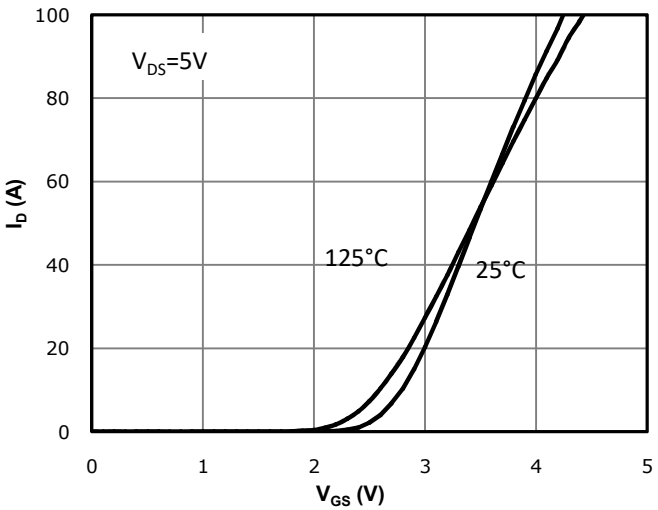


Fig 3: Rds(on) vs Drain Current and Gate Voltage

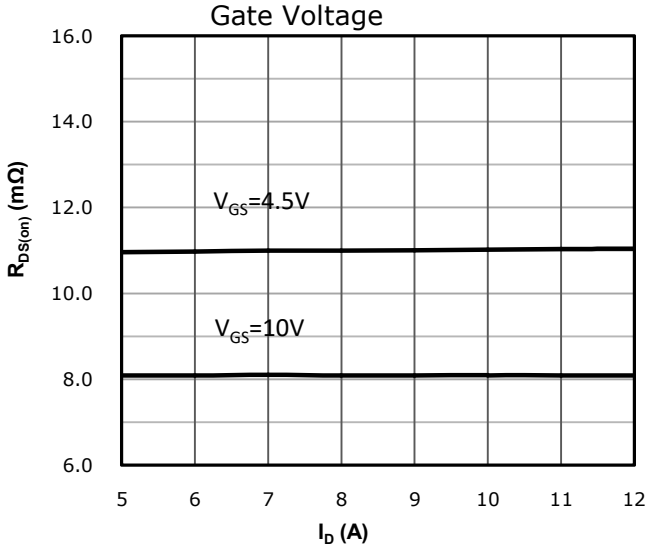


Fig 4: Rds(on) vs Gate Voltage

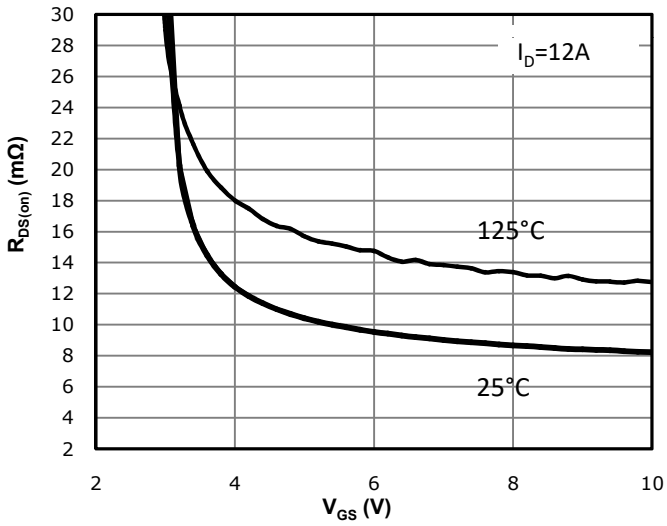


Fig 5: Rds(on) vs. Temperature

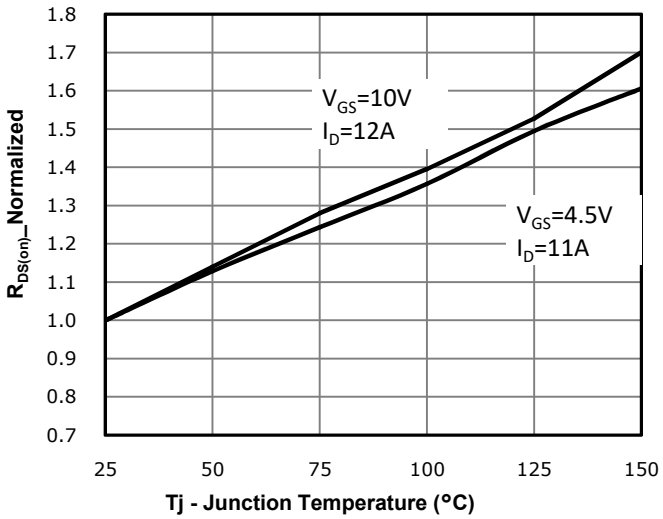
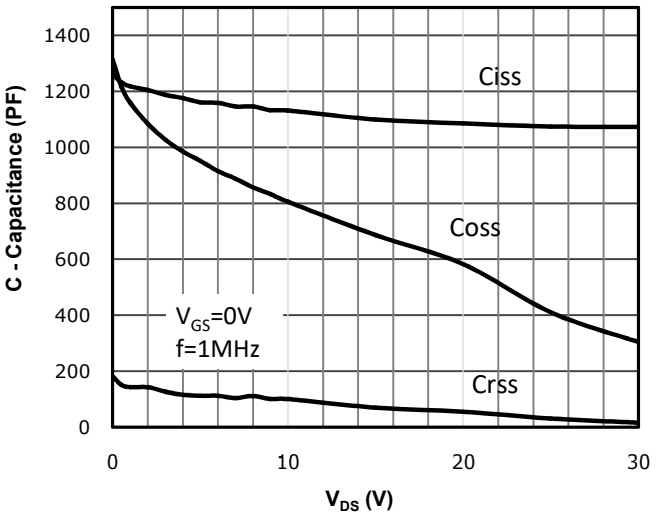


Fig 6: Capacitance Characteristics



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Fig 7: Gate Charge Characteristics

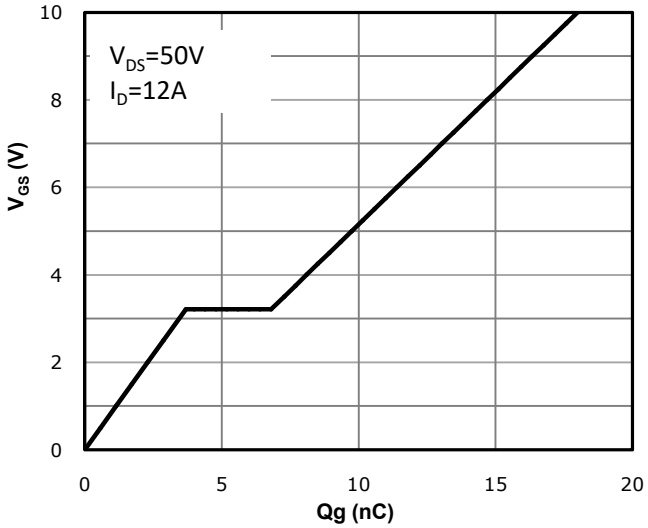


Fig 8: Body-diode Forward Characteristics

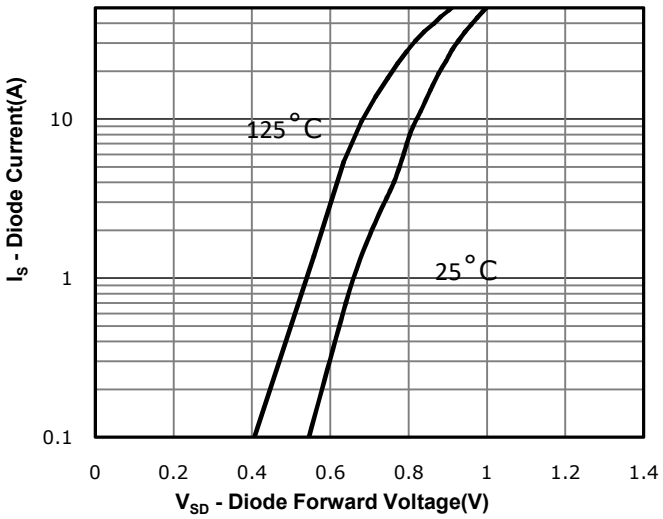


Fig 9: Power Dissipation

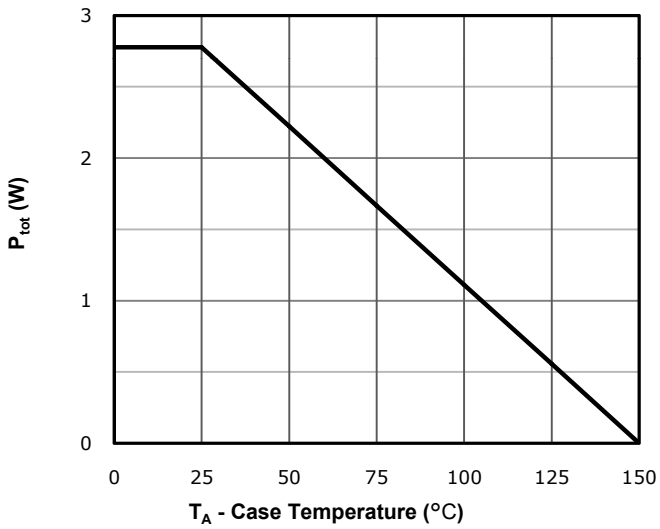


Fig 10: Drain Current Derating

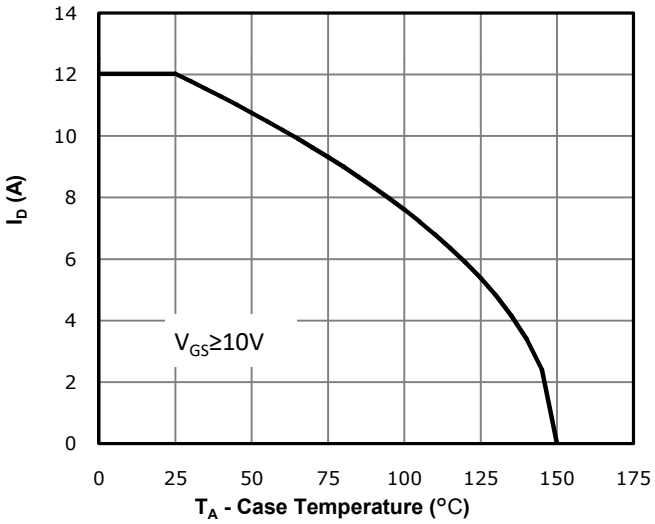
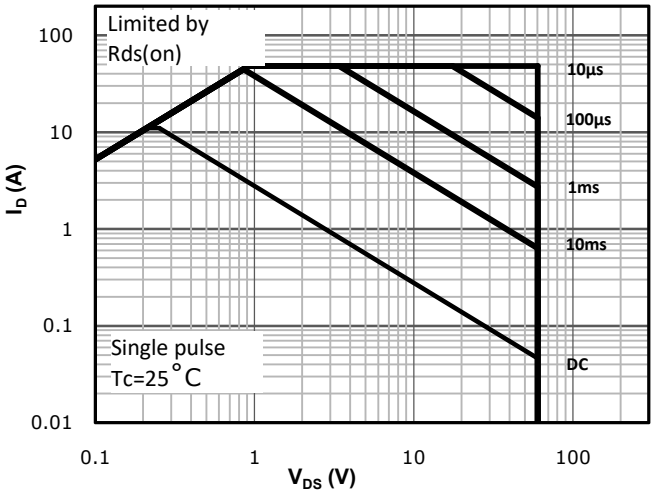
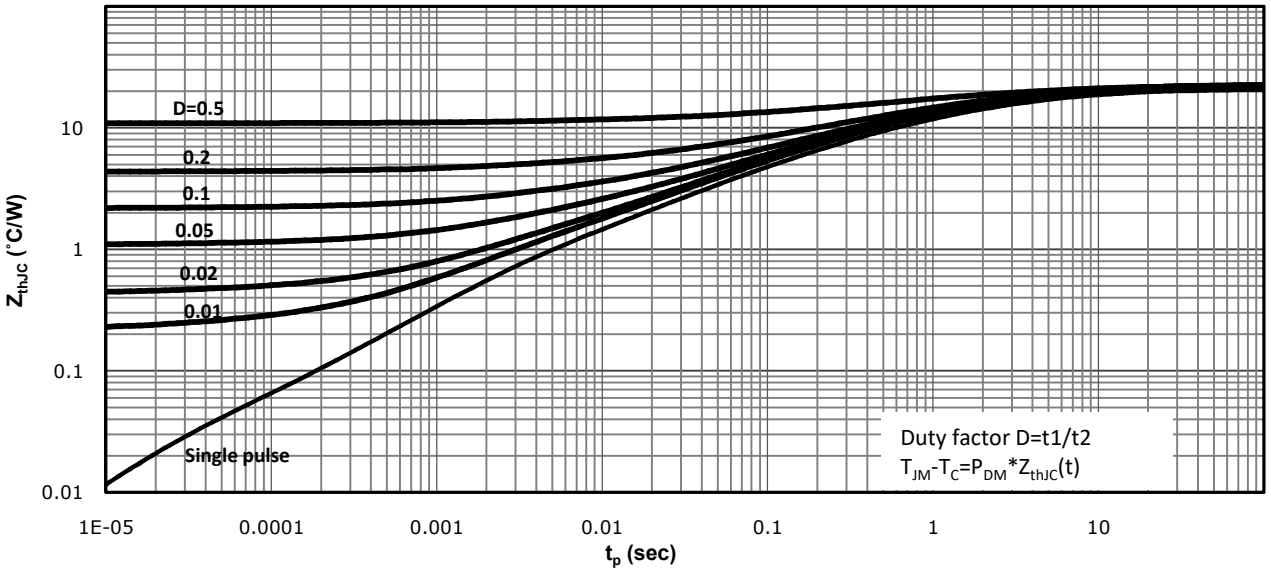


Fig 11: Safe Operating Area



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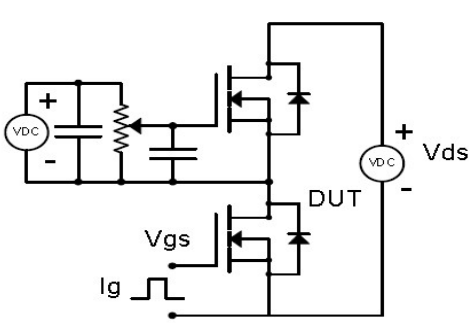
Fig 12: Max. Transient Thermal Impedance

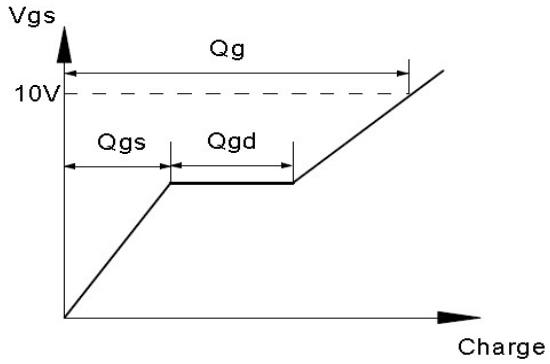


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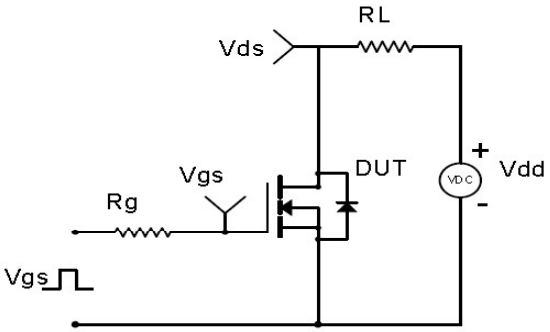
Test Circuit & Waveform

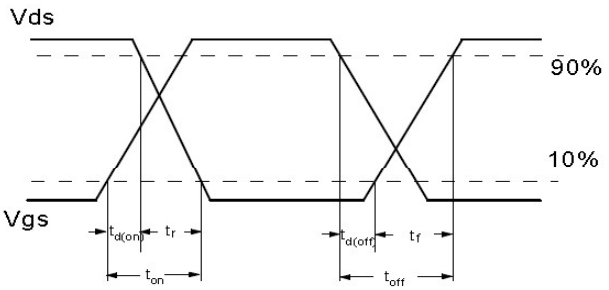
Gate Charge Test Circuit & Waveform



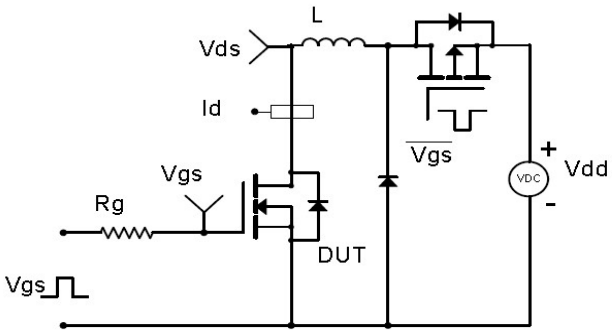


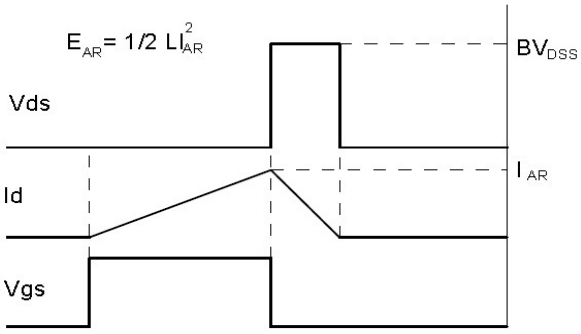
Resistive Switching Test Circuit & Waveforms



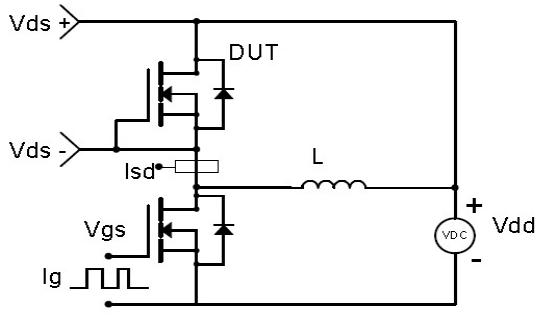


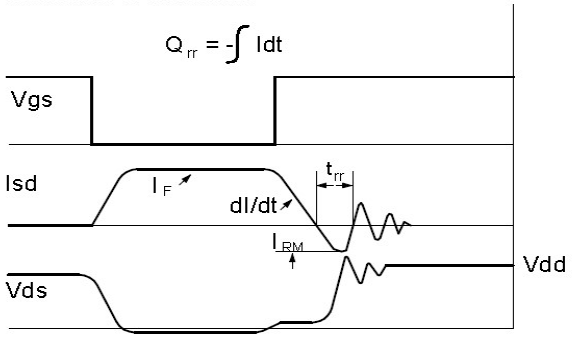
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





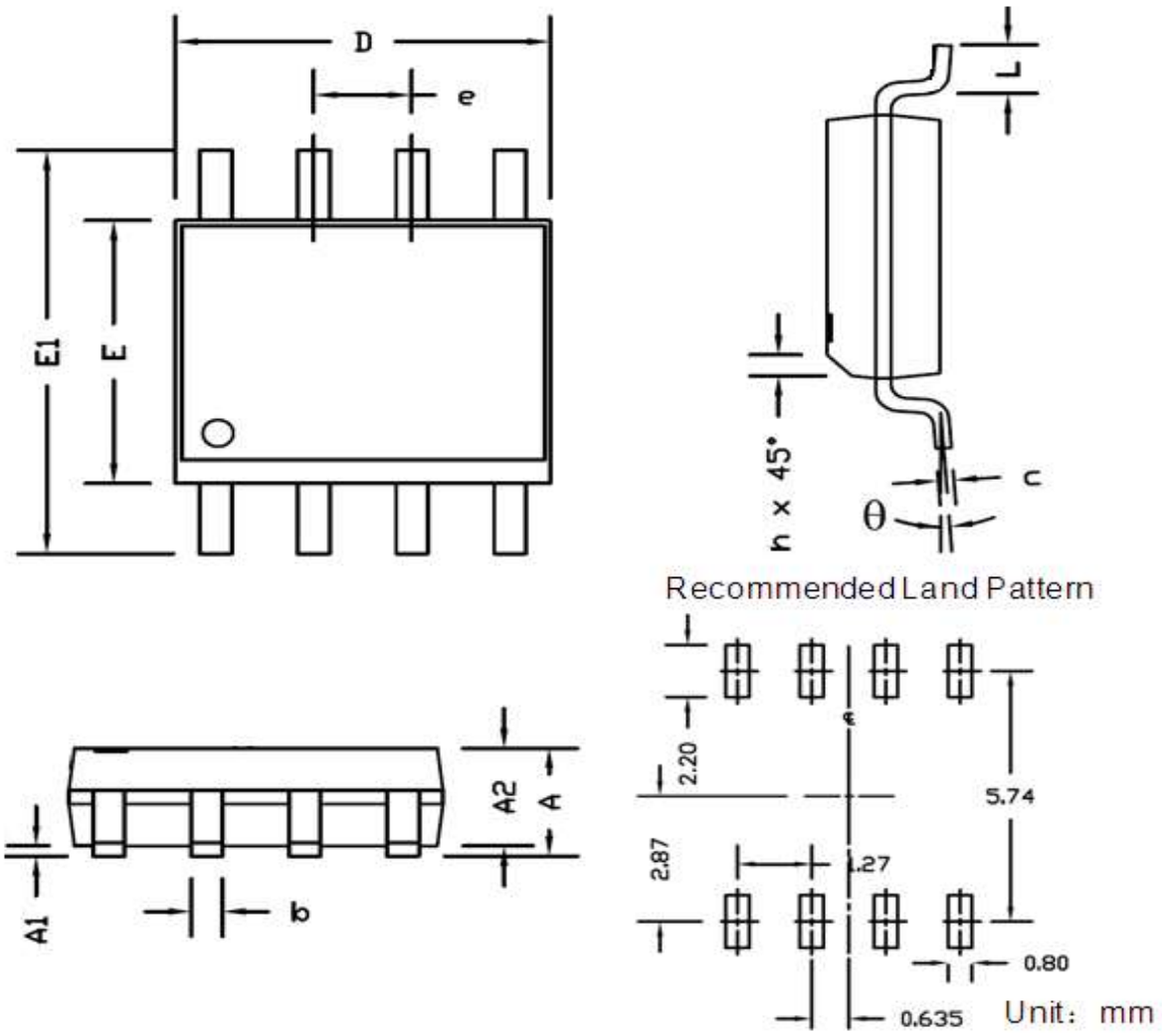
Diode Recovery Test Circuit & Waveforms





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Package Outline: SOP-8



Symbol	Dimensions In Millimeters		Dimensions In 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	0.33	0.51	0.013	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
e	1.27 BSC.		0.050 BSC.	
E	3.80	4.00	0.150	0.157
E1	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

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Revision History

Revison	Date	Major changes
1.1	2019/10/21	Release of formal version.
1.2	2024/4/2	Add Marking.

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

CRM(CQ) reserves the right to improve product design, function and reliability without notice.

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