CRSK068N08N4

SkyMOS4 N-MOSFET 80V, 6mΩ, 66A

Features

- Uses CRM(CQ) advanced SkyMOS4 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

Applications

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

Product Summary

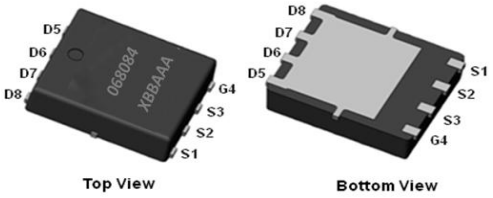
V_{DS}	80V
$R_{DS(on)@10V\ typ}$	6mΩ
I_D	66A

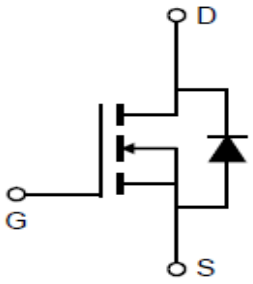
100% Avalanche Tested

100% DVDS Tested

RoHS HF

DFN3X3 Cu Clip Bond





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSK068N08N4	068084	DFN3333	Tape&Reel	N/A	N/A	5000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	80	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 25°C (Package limit) T_C = 100°C (Silicon limit)	I_D	 66 100 42	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	265	A
Avalanche energy, single pulse (L=0.3mH, Rg=25Ω)	E_{AS}	57	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	57	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

※. Notes:1.EAS is tested at starting Tj = 25°C, L = 0.3mH, IAS = 17A, VGS = 10V.

©China Resources Microelectronics (Chongqing) Limited

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	1.7	2.2	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	35.2	53	°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}	80	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	2.2	3	3.8	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=80V,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	$R_{DS(on)}$	-	6.0	7.2	mΩ	VGS=10V,I_D=50A
		-	6.6	9.9	mΩ	VGS=8V,I_D=40A
Transconductance	g_{fs}	-	90	-	S	V_{DS}=5V,I_D=50A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	2093	4186	pF	V_{GS}=0V, V_{DS}=40V, f=1MHz
Output Capacitance	C_{oss}	-	539	1078		
Reverse Transfer Capacitance	C_{rss}	-	32	100		
Gate Total Charge	Q_G	-	30	45	nC	V_{GS}=10V, V_{DS}=40V, I_D=50A, f=1MHz
Gate-Source charge	Q_{gs}	-	11	20.0		
Gate-Drain charge	Q_{gd}	-	6.5	15		
Turn-on delay time	$t_{d(on)}$	-	13.6	-	ns	V_{GS}=10V, V_{DD}=40V, R_{G_ext}=2.7Ω
Rise time	t_r	-	79.2	-		
Turn-off delay time	$t_{d(off)}$	-	19.4	-		
Fall time	t_f	-	30	-		
Gate resistance	R_G	-	0.5	2	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

©China Resources Microelectronics (Chongqing) Limited

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}=50A
Body Diode Continuous Forward Current	Is	-	-	66	A	TC = 25°C
Body Diode Pulsed Current	Is pulse	-	-	265	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	45.8	91.6	ns	I_F=50A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	67.8	135.6	nC	

©China Resources Microelectronics (Chongqing) Limited

Typical Performance Characteristics

Fig 1: Output Characteristics

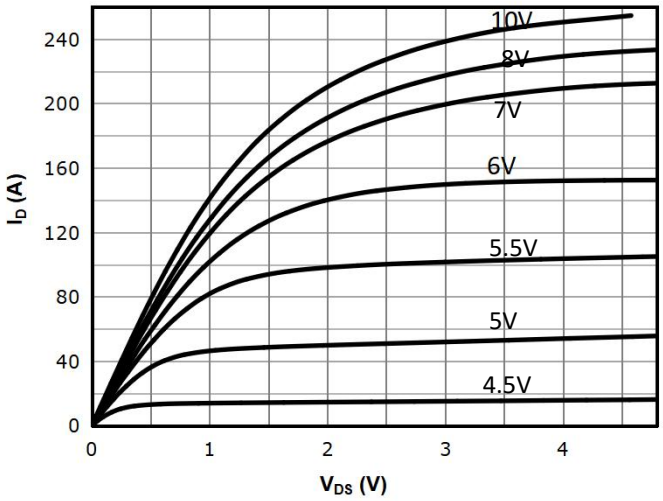
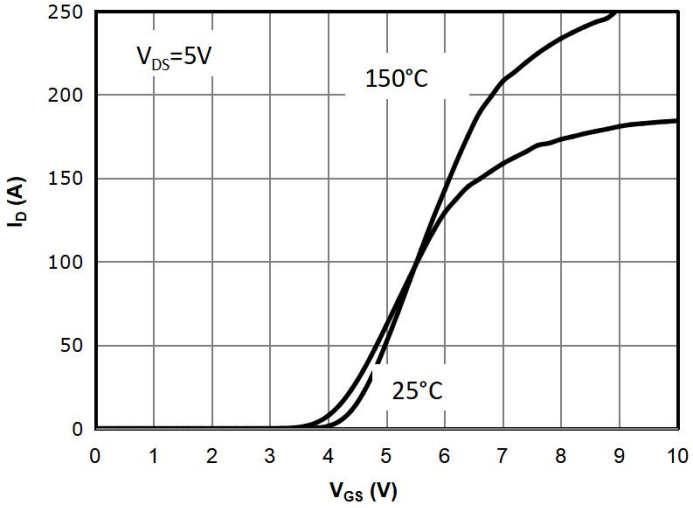


Fig 2: Transfer Characteristics



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

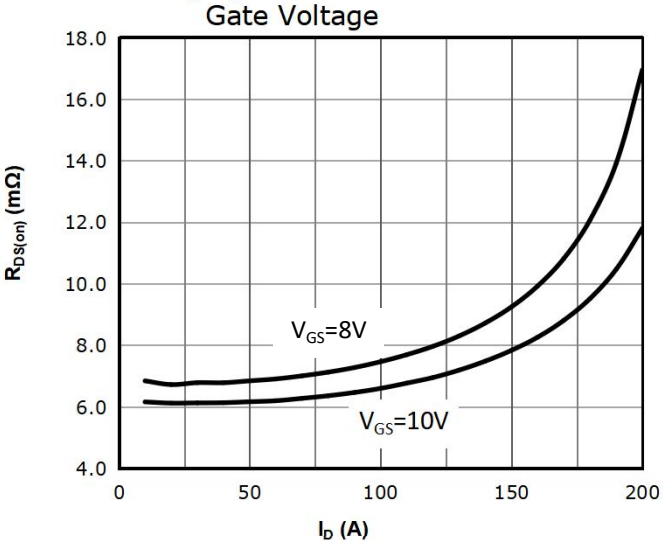


Fig 4: Rds(on) vs Gate Voltage

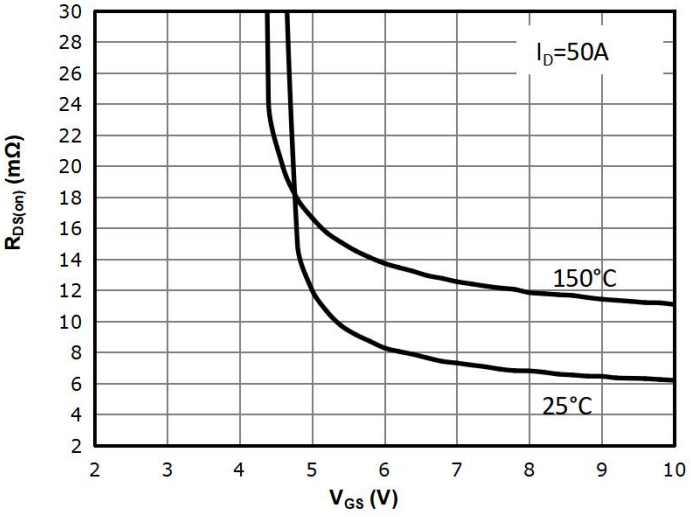


Fig 5: Rds(on) vs. Temperature

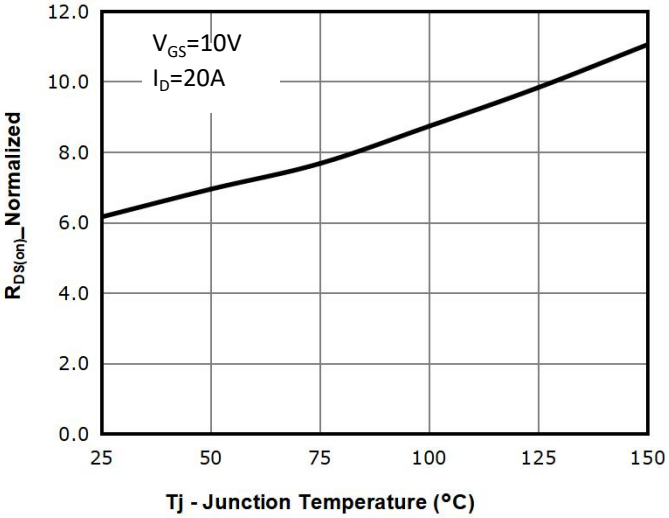
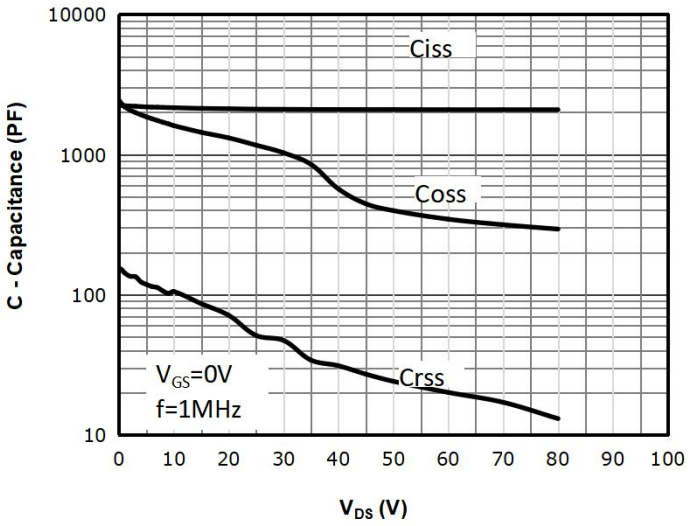


Fig 6: Capacitance Characteristics



©China Resources Microelectronics (Chongqing) Limited

Fig 7: Gate Charge Characteristics

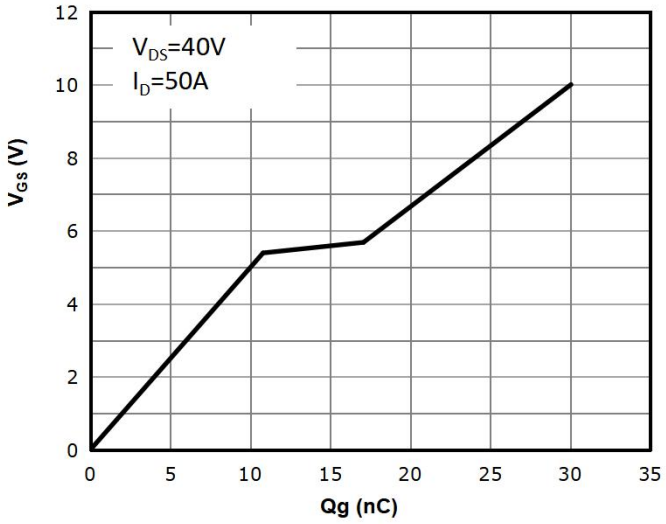


Fig 8: Body-diode Forward Characteristics

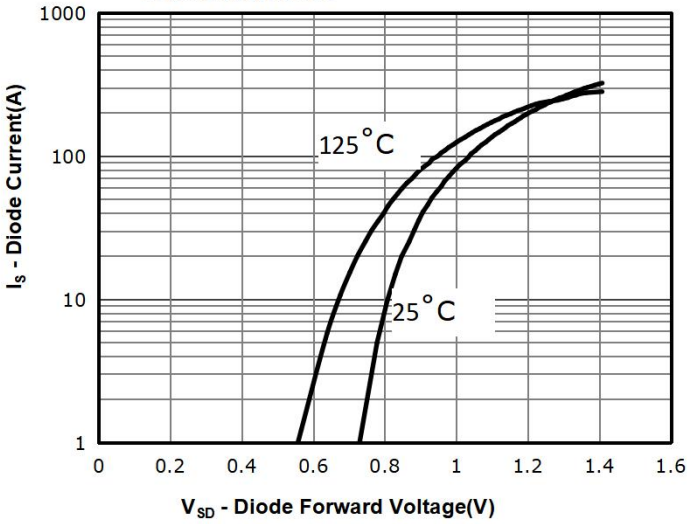


Fig 9: Power Dissipation

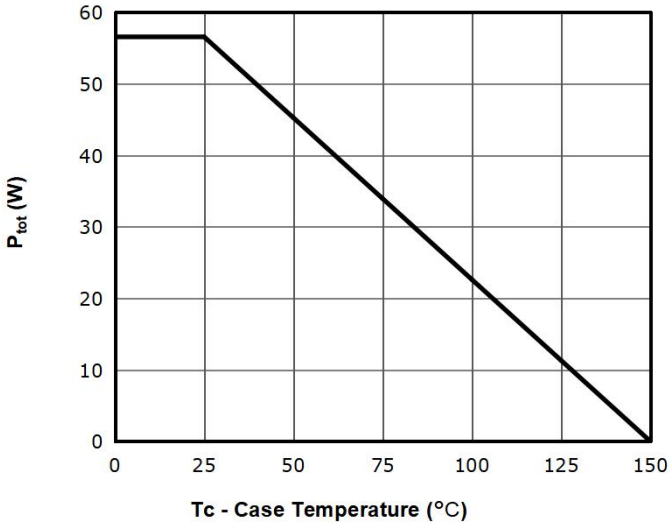


Fig 10: Drain Current Derating

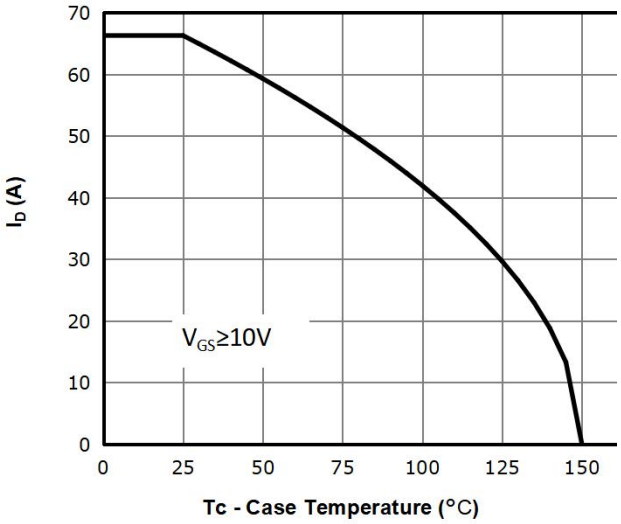
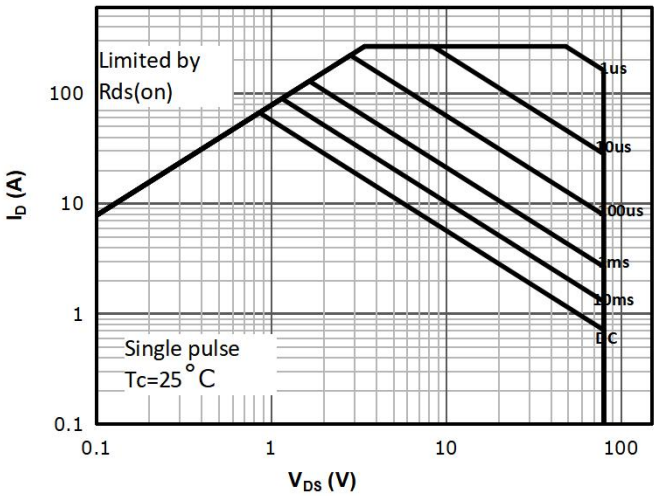
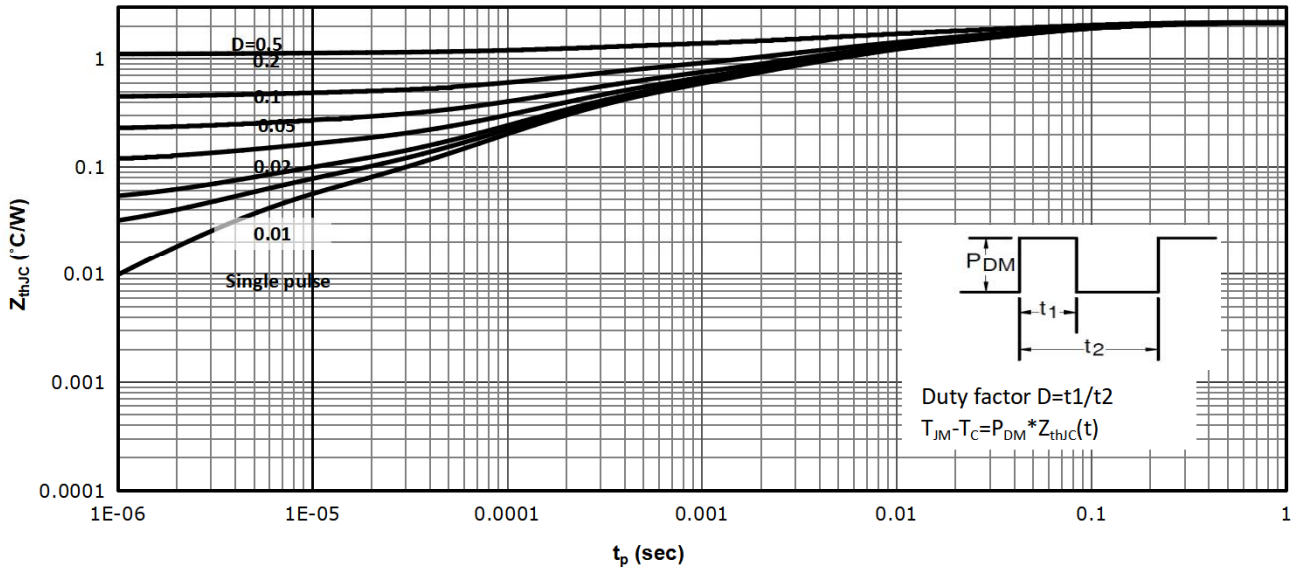


Fig 11: Safe Operating Area



©China Resources Microelectronics (Chongqing) Limited

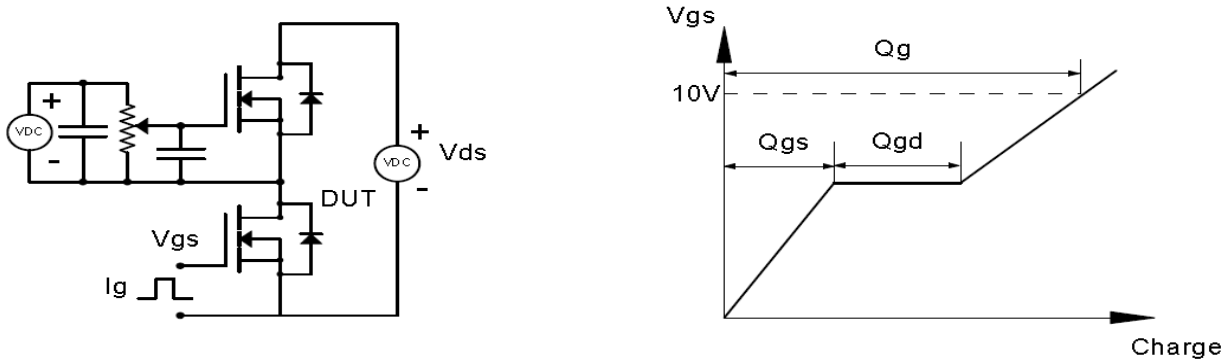
Fig 12: Max. Transient Thermal Impedance



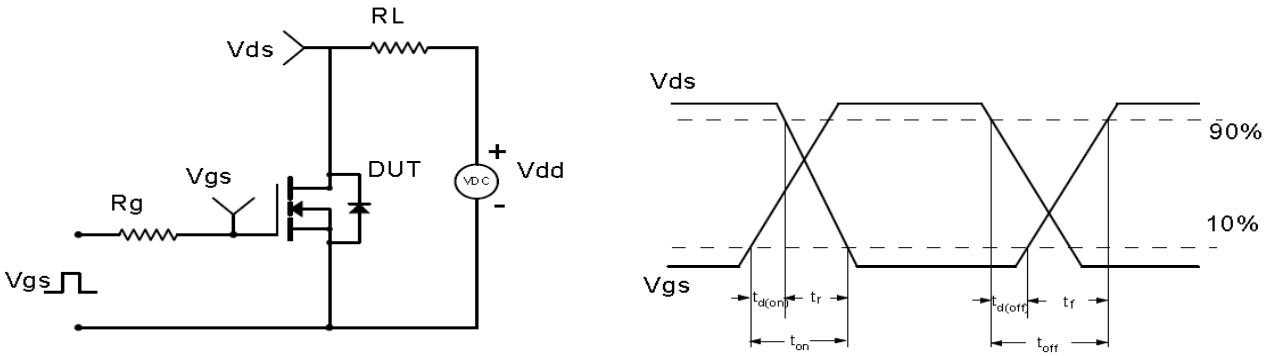
©China Resources Microelectronics (Chongqing) Limited

Test Circuit & Waveform

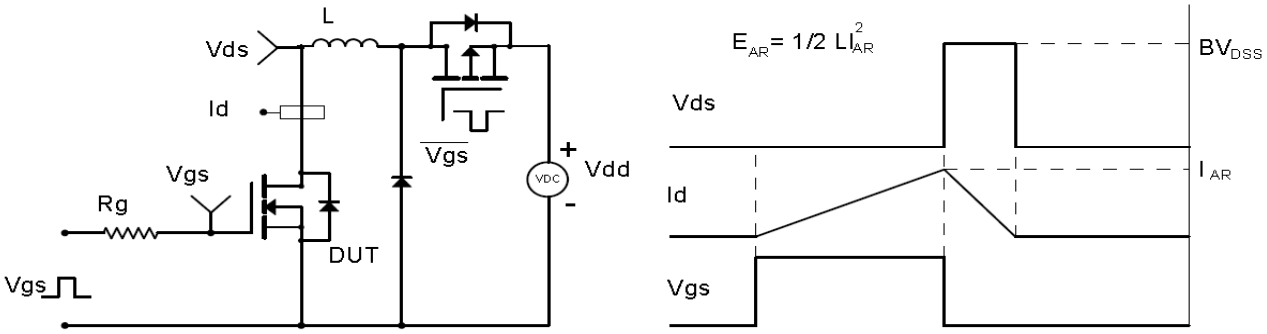
Gate Charge Test Circuit & Waveform



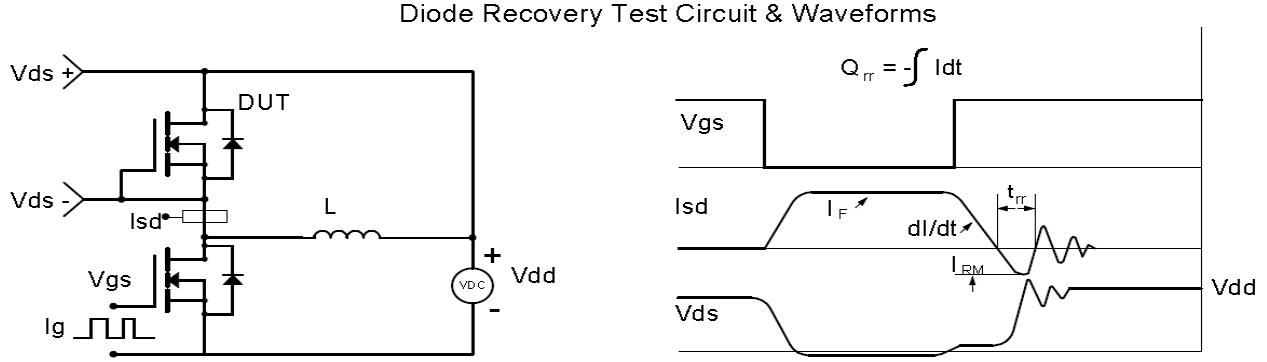
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

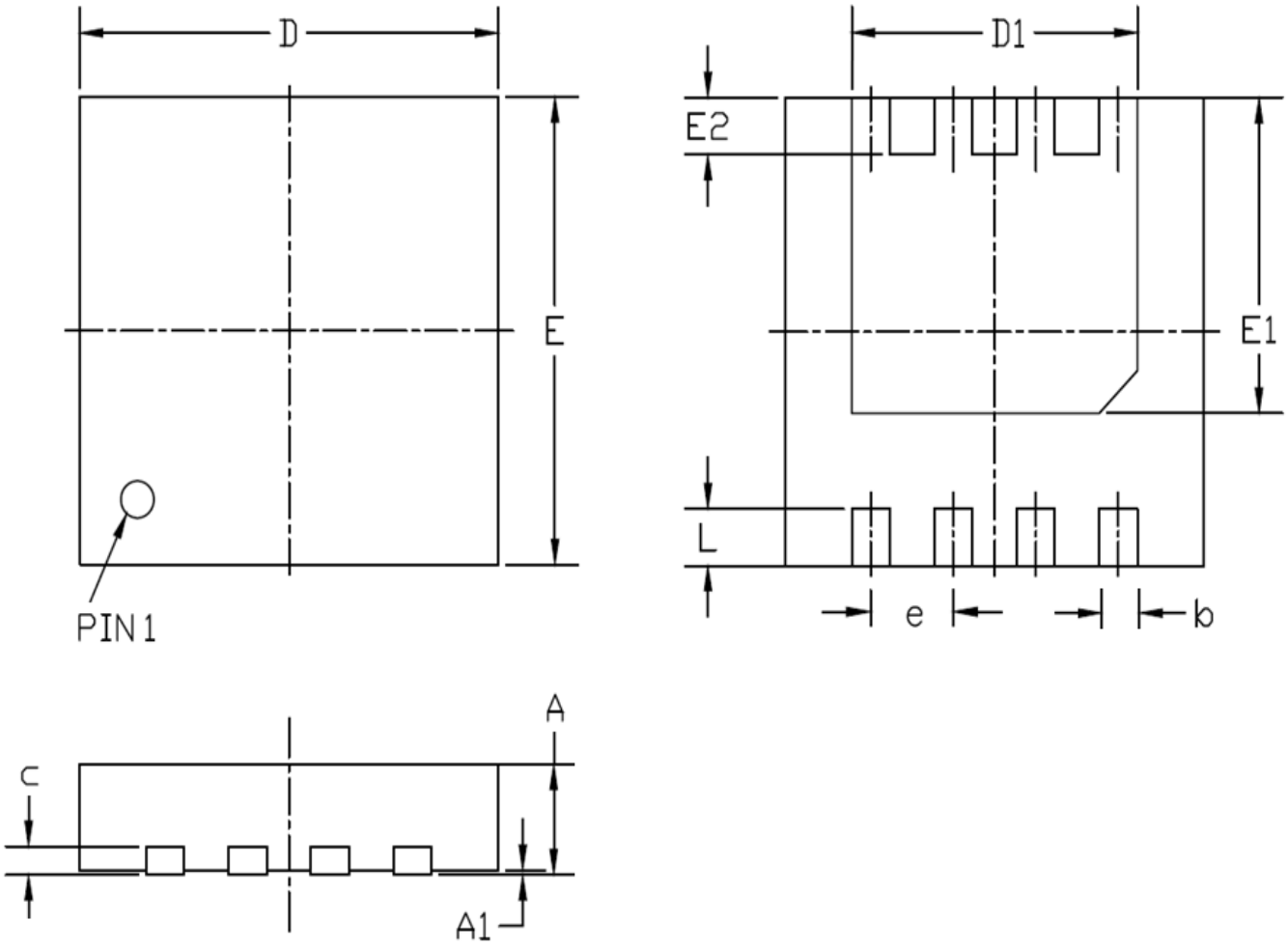


Diode Recovery Test Circuit & Waveforms



©China Resources Microelectronics (Chongqing) Limited

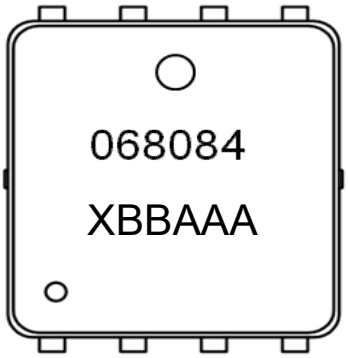
Package Outline: DFN3X3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.70	0.85	0.028	0.033
A1	0.00	0.05	0.000	0.002
b	0.24	0.39	0.009	0.015
c	0.10	0.25	0.004	0.010
D	3.20	3.40	0.126	0.134
D1	2.15	2.39	0.085	0.094
E	3.20	3.40	0.126	0.134
E1	1.85	2.33	0.073	0.092
E2	0.25	0.50	0.010	0.020
e	0.65 BSC		0.026 BSC	
L	0.30	0.55	0.012	0.022

Marking

©China Resources Microelectronics (Chongqing) Limited



NOTE:
XBBAAA

X —Assembly location code
BB —Fab code
AAA —Lot code

©China Resources Microelectronics (Chongqing) Limited

Revision History

Revison	Date	Major changes
1.0	2021/4/20	Release of Preliminary version.

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qulified 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 semicondutor 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.

©China Resources Microelectronics (Chongqing) Limited