Features

- Uses CRM(CQ) advanced SkyMOS6 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

Product Summary

V_{DS}	40V
$R_{DS(on).typ}$	0.85mΩ
I_D	310A

100% DVDS Tested

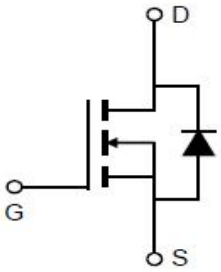
100% Avalanche Tested

Applications

- Motor control and drive
- UPS (Uninterrupible Power Supplies)



CRSZ011N04N6Z



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSZ011N04N6Z	CRSZ011N04N6Z	TOLL	Tape&Reel	N/A	N/A	2000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	40	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 100°C (Silicon limit)	I_D	 310 195	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	1240	A
Avalanche energy, single pulse (I_D = 58A, Rg=25Ω)[1]	E_{AS}	837	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	162	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℃, L = 0.5mH, IAS =58A, VGS = 10V.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	0.77	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	62	

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=250uA
		40	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	2.0	3.0	4.0	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=40V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	0	-	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	0.85	1.1	mΩ	VGS=10V, ID=20A
Transconductance	g_{fs}	-	514.6	-	S	V_{DS}=5V, I_D=100A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	5776	-	pF	V_{GS}=0V, V_{DS}=20V, f=1MHz
Output Capacitance	C_{oss}	-	1582	-		
Reverse Transfer Capacitance	C_{rss}	-	90	-		
Gate Total Charge	Q_G	-	87.5	-	nC	V_{GS}=10V, V_{DS}=20V, I_D=100A
Gate-Source charge	Q_{gs}	-	33.9	-		
Gate-Drain charge	Q_{gd}	-	18.1	-		
Turn-on delay time	$t_{d(on)}$	-	21.0	-	ns	V_{GS}=10V, V_{DD}=20V, R_{G_ext}=2.7Ω
Rise time	t_r	-	29.4	-		
Turn-off delay time	$t_{d(off)}$	-	62.3	-		
Fall time	t_f	-	26.8	-		
Gate resistance	R_G	-	3.1	-	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}	-	0.77	1.2	V	V_{GS}=0V,I_{SD}=20A
Body Diode Reverse Recovery Time	t_{rr}	-	51.6	-	ns	I_F=20A,dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	44.5	-	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

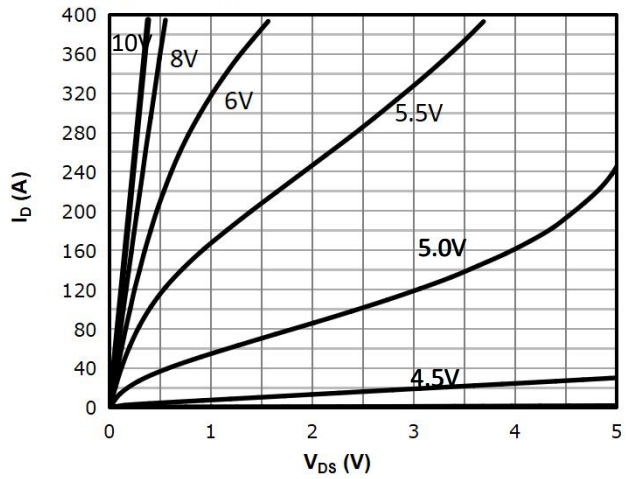


Fig 2: Transfer Characteristics

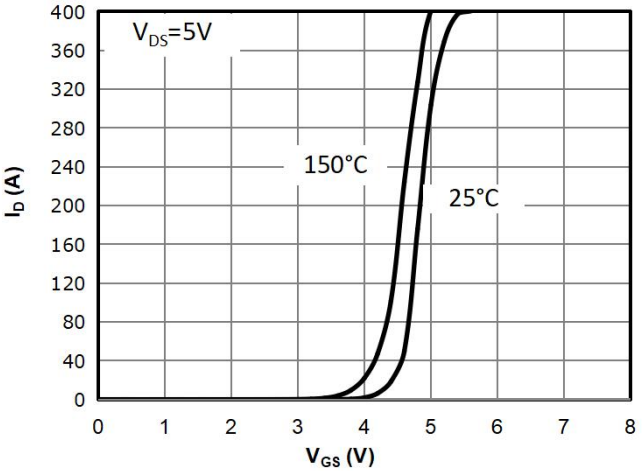


Fig 3: Rds(on) vs Drain Current and Gate Voltage

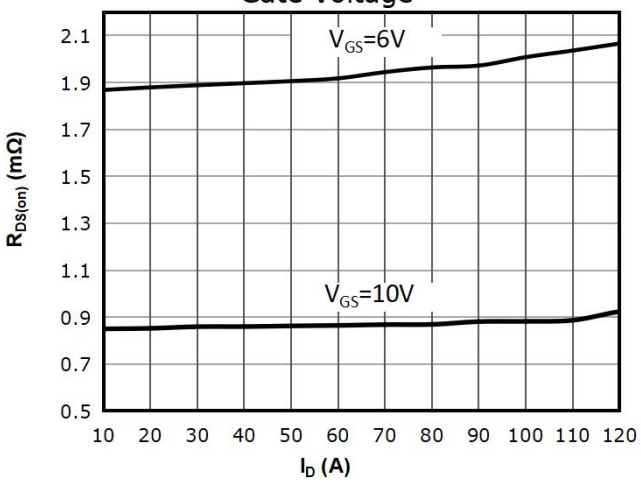


Fig 4: Rds(on) vs Gate Voltage

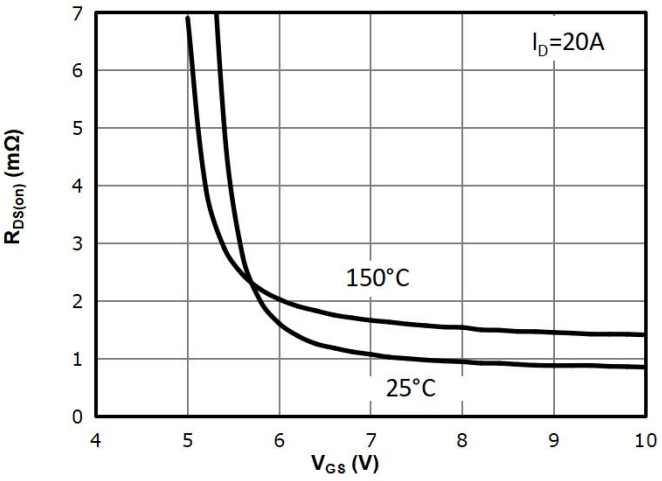


Fig 5: Rds(on) vs. Temperature

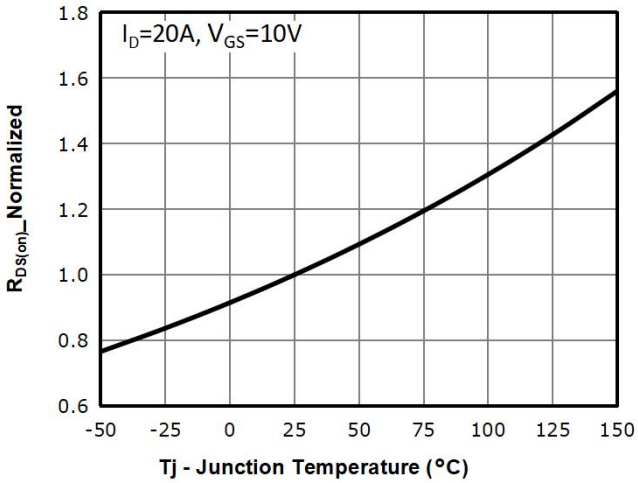


Fig 6: Vgs(th) vs. Temperature

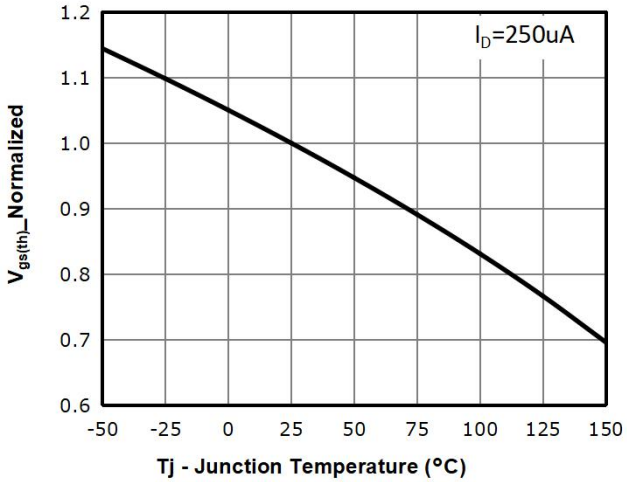


Fig 7: BVdss vs. Temperature

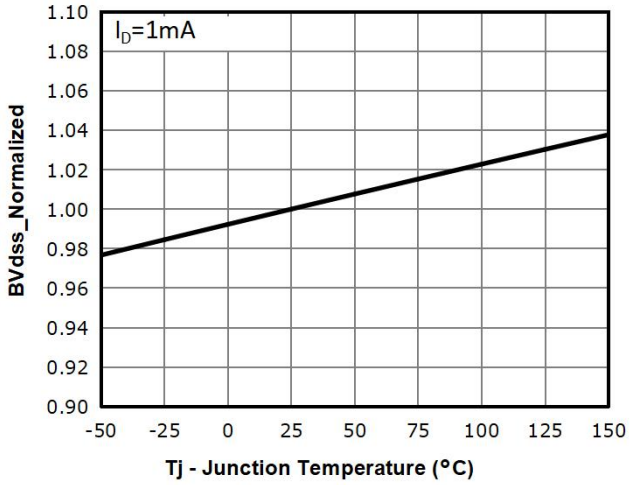


Fig 8: Capacitance Characteristics

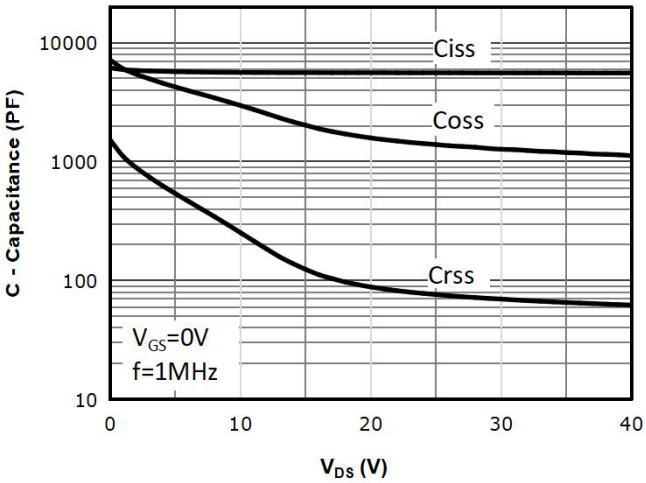


Fig 9: Gate Charge Characteristics

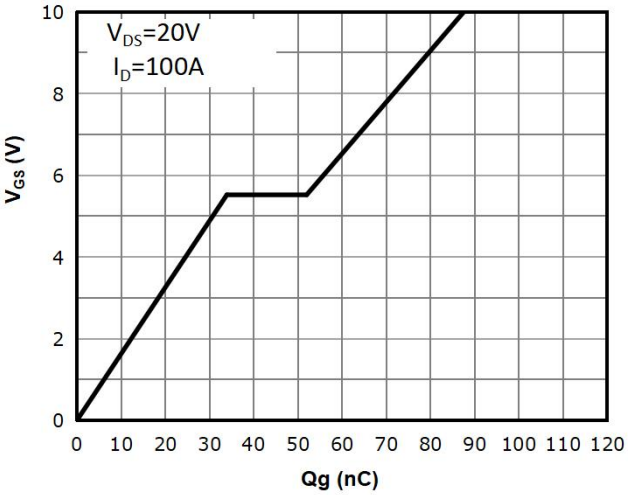


Fig 10: Body-diode Forward Characteristics

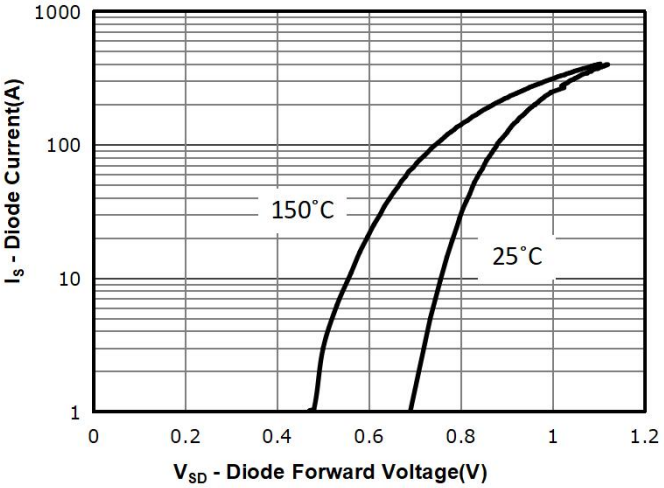


Fig 11: Power Dissipation

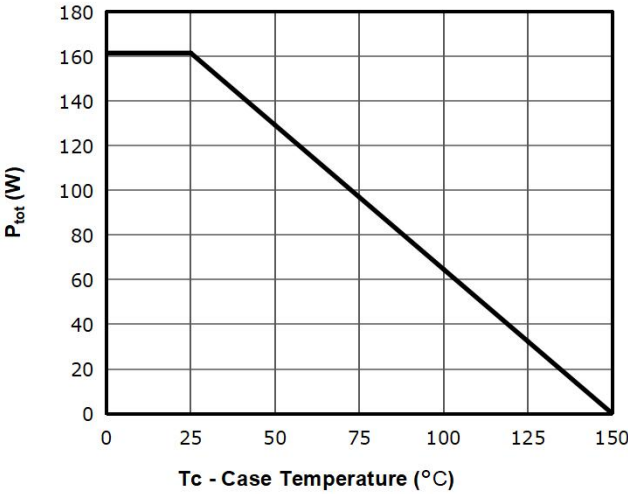


Fig 12: Drain Current Derating

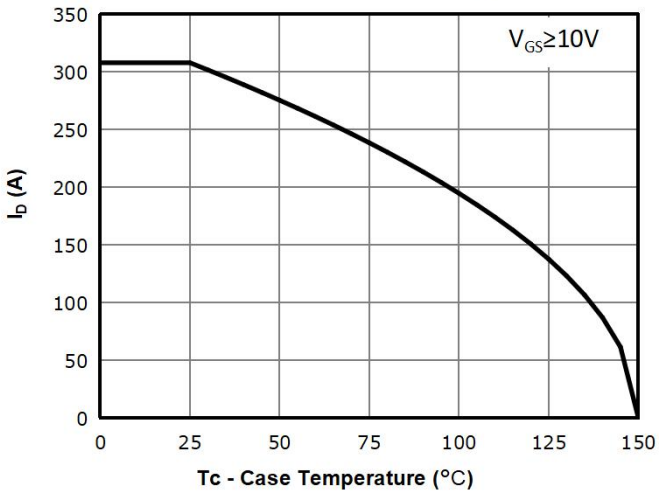


Fig 13: Safe Operating Area

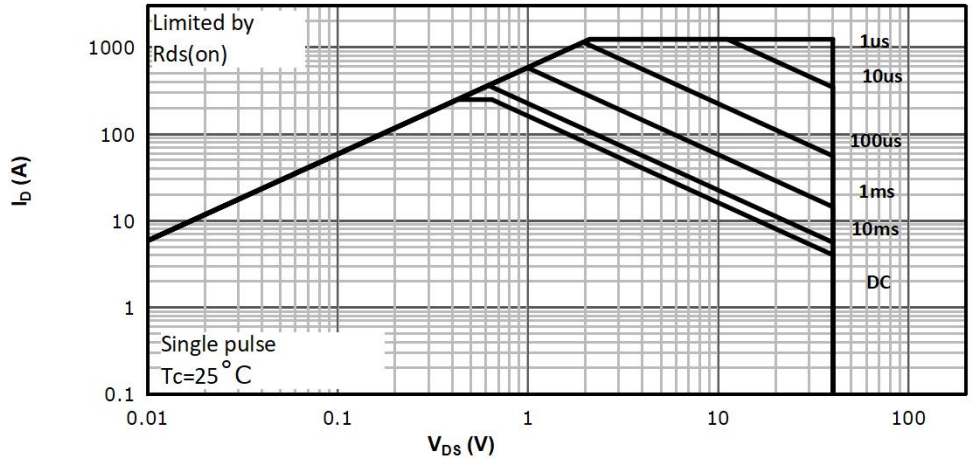
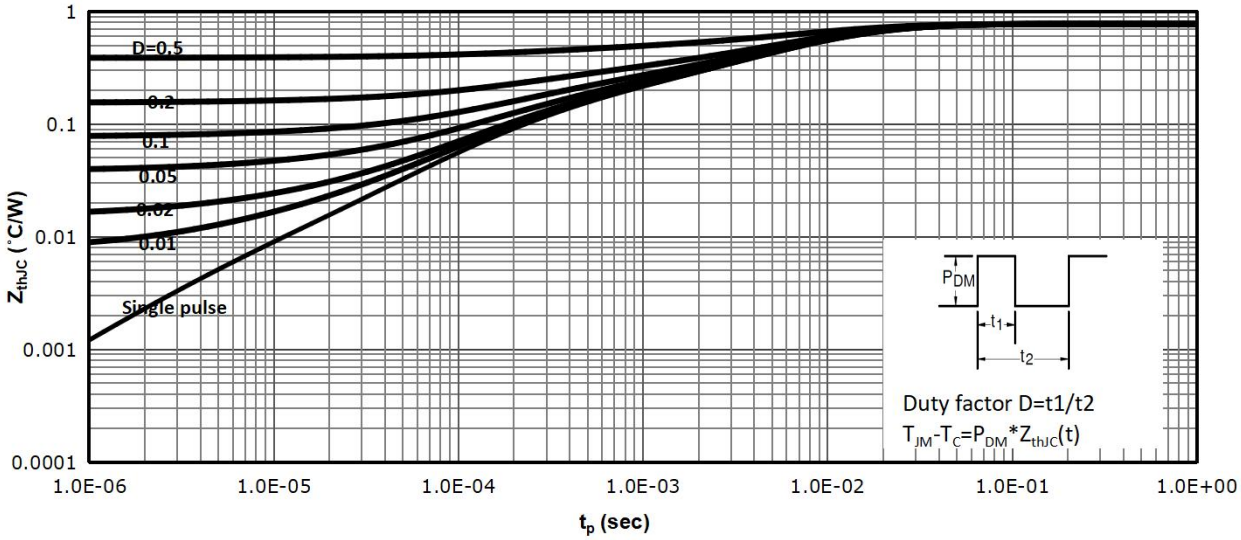
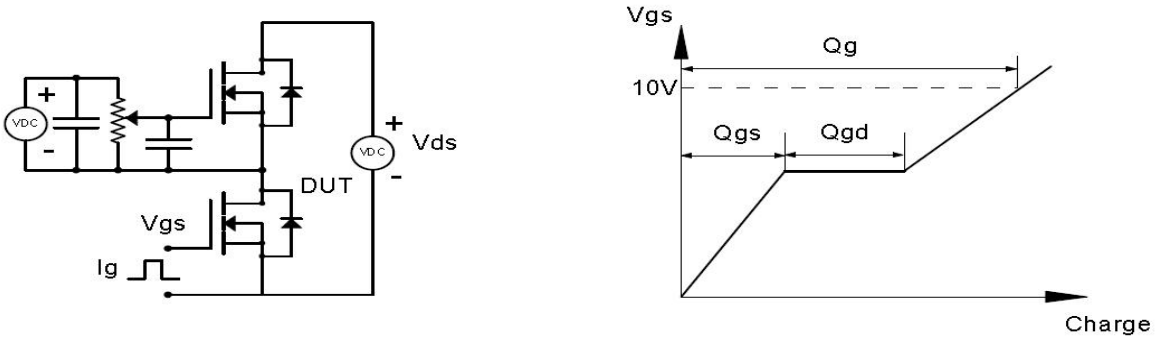


Fig 14: Max. Transient Thermal Impedance

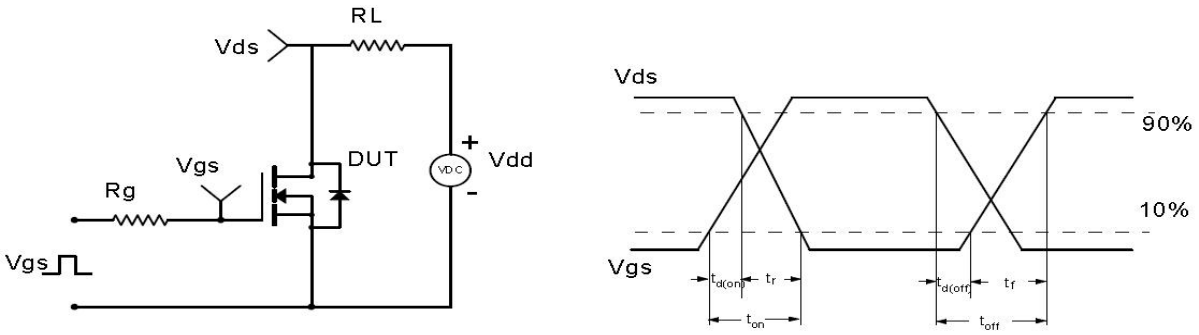


Test Circuit & Waveform

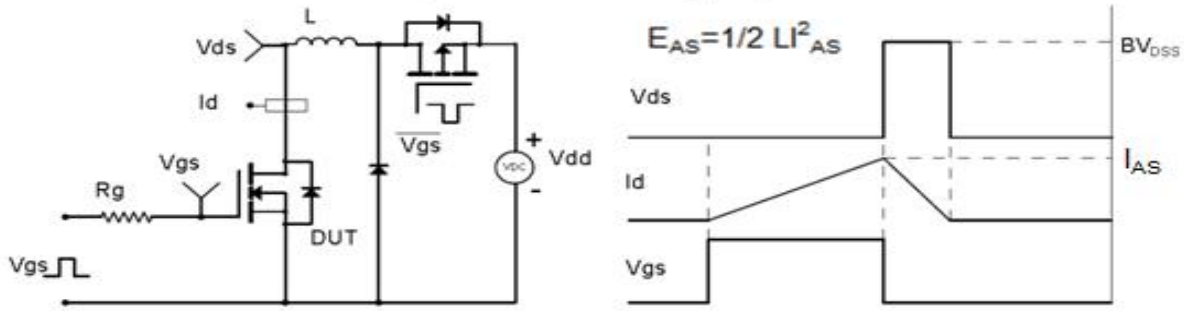
Gate Charge Test Circuit & Waveform



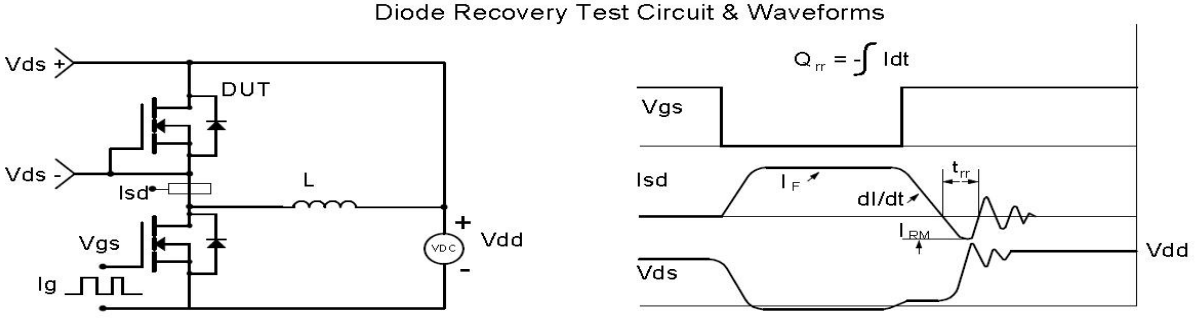
Resistive Switching Test Circuit & Waveforms



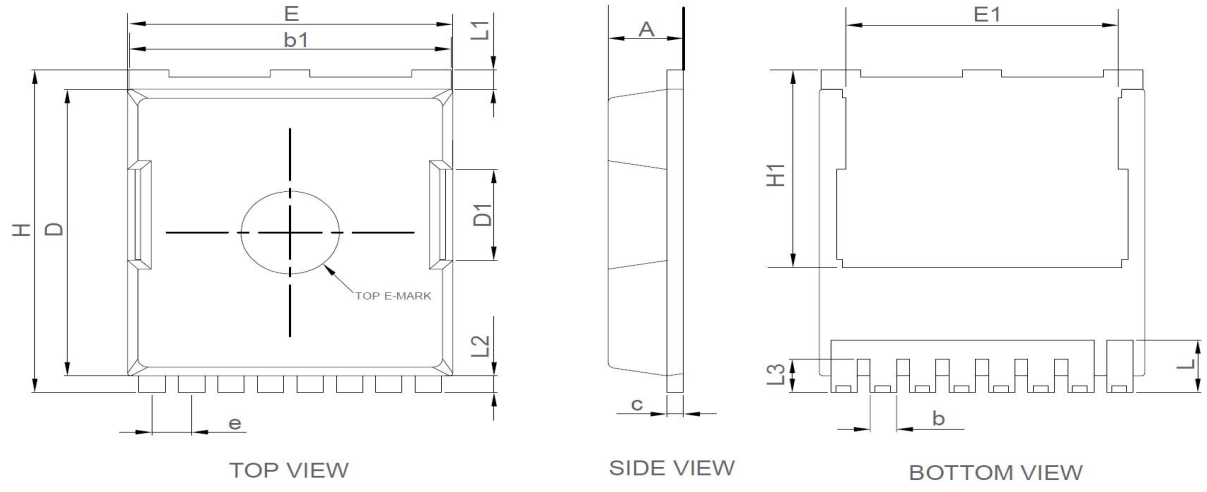
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TOLL





SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.15	2.45	0.085	0.096
b	0.60	0.90	0.024	0.035
b1	9.65	9.95	0.380	0.392
c	0.35	0.65	0.014	0.026
D	10.18	10.70	0.401	0.421
D1	3.15	3.45	0.124	0.136
E	9.70	10.10	0.382	0.398
E1	7.35	8.45	0.289	0.333
e	1.10	1.30	0.043	0.051
H	11.45	11.95	0.451	0.470
H1	6.55	7.50	0.258	0.295
L	1.35	2.10	0.053	0.083
L1	0.50	0.90	0.020	0.035
L2	0.40	0.80	0.016	0.031
L3	0.95	1.35	0.037	0.053

Marking



NOTE:
NXBBAAAA-Y

N	—Wire Bond code
X	—Assembly location code
BB	—Fab code
AAAA	—Lot code
Y	—Bin code

Revision History

Revision	Date	Major changes
1.0	2025/4/9	Release of Preliminary version.

Disclaimer

CRM reserves the right to change any product or information in this Specification at any time without prior notice.

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