Features

- Uses CRM(CQ) advanced SkyMOS3 technology
- Extremely low on-resistance $R_{DS(on)}$ and FOM(Q_gx$R_{DS(on)}$)
- Superior thermal resistance, Direct Heatsink on Top Plate
- High Power Density and PCB Area Saving
- Qualified according to JEDEC criteria

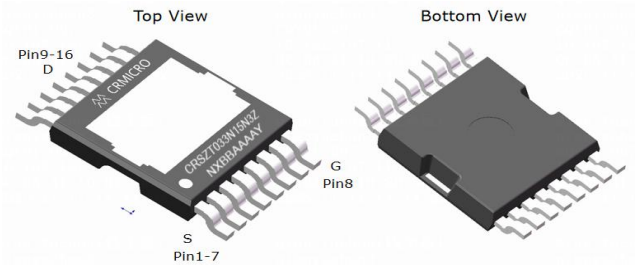
Applications

- Motor control and drive
- Battery management System
- Suit For High Power density applications

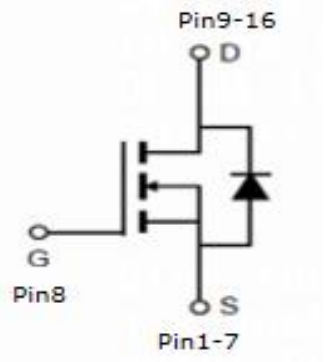
Product Summary

V_{DS}	150V
$R_{DS(on).typ}$	2.8mΩ
I_D	240A

100% DVDS Tested
100% Avalanche Tested



CRSZT033N15N3Z



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSZT033N15N3Z	CRSZT033N15N3Z	TOLT	Tape&Reel	N/A	N/A	1800pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	150	V
Continuous drain current			
T_C = 25° C (Silicon limit)	I_D	240	A
T_C = 100° C (Silicon limit)		153	
Pulsed drain current (T_C = 25° C, t_p limited by T_{jmax})	$I_{D\,pulse}$	960	A
Avalanche energy, single pulse (I_D = 83A, Rg=25Ω)[1]	E_{AS}	1711	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25° C)	P_{tot}	441	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	° C

※. Notes:
1.EAS is tested at starting Tj = 25℃, L = 0.5mH, IAS =83A, VGS = 10V.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction - case.	R_{thJC}	0.28	°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}	150	-	-	V	V_{GS}=0V, I_D=250uA
		150	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	2.3	3.3	4.3	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=150V,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	$R_{DS(on)}$	-	2.8	3.3	mΩ	VGS=10V, ID=90A
Transconductance	g_{fs}	-	255.7	-	S	V_{DS}=5V, I_D=90A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	11333	-	pF	V_{GS}=0V, V_{DS}=75V, f=1MHz
Output Capacitance	C_{oss}	-	828	-		
Reverse Transfer Capacitance	C_{rss}	-	34	-		
Gate Total Charge	Q_G	-	168.0	-	nC	V_{GS}=10V, V_{DS}=75V, I_D=90A
Gate-Source charge	Q_{gs}	-	66.6	-		
Gate-Drain charge	Q_{gd}	-	35.9	-		
Turn-on delay time	$t_{d(on)}$	-	44.7	-	ns	V_{GS}=10V, V_{DD}=75V, R_{G_ext}=2.7Ω
Rise time	t_r	-	113.2	-		
Turn-off delay time	$t_{d(off)}$	-	98.2	-		
Fall time	t_f	-	53.6	-		
Gate resistance	R_G	-	2.2	-	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}	-	0.84	1.4	V	V_{GS}=0V,I_{SD}=90A
Body Diode Reverse Recovery Time	t_{rr}	-	113.9	-	ns	I_F=90A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	464.4	-	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

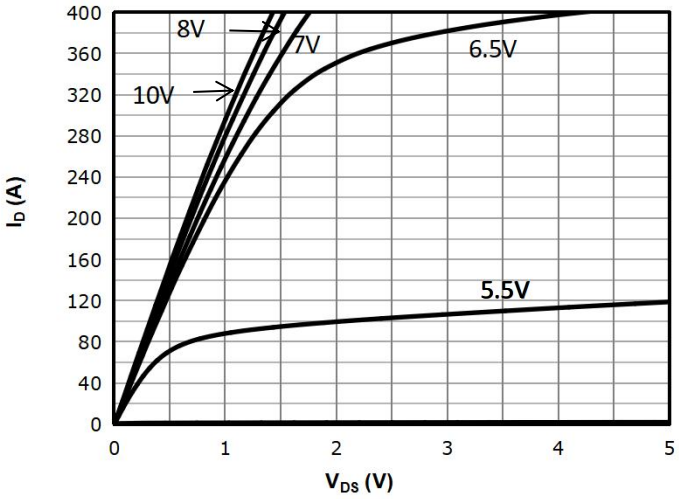


Fig 2: Transfer Characteristics

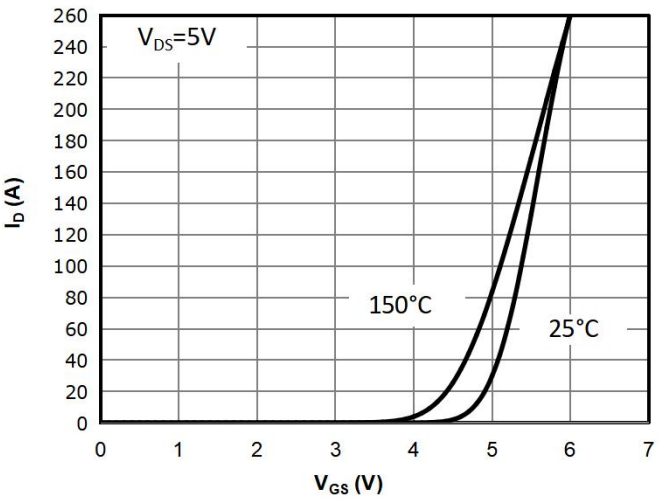


Fig 3: Rds(on) vs Drain Current and Gate Voltage

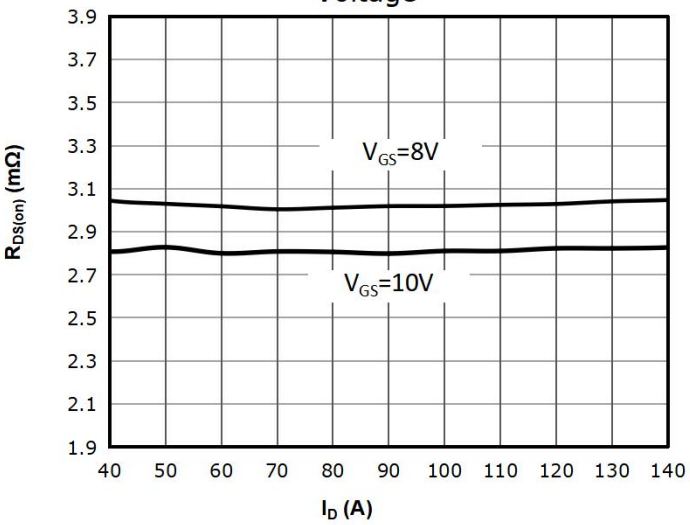


Fig 4: Rds(on) vs Gate Voltage

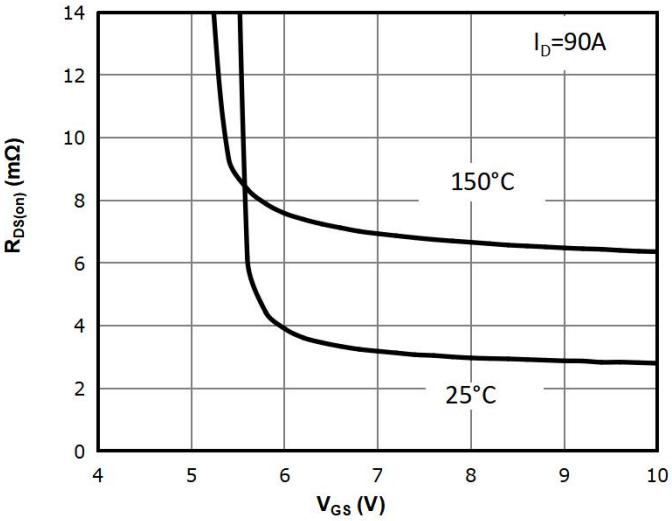


Fig 5: Rds(on) vs. Temperature

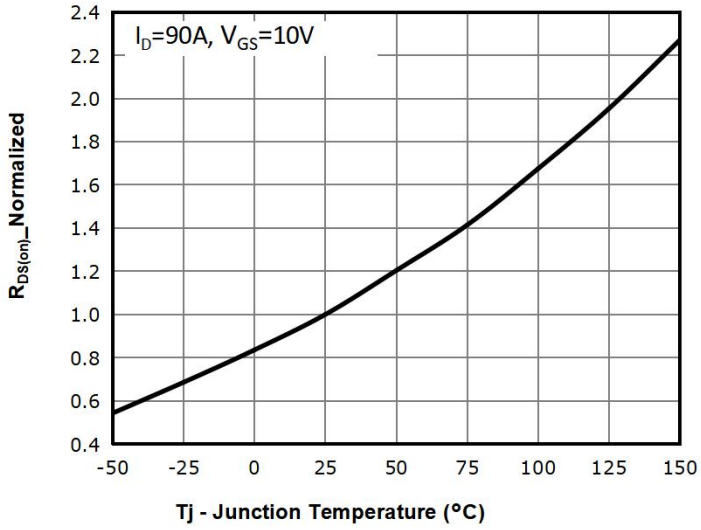


Fig 6: Vgs(th) vs. Temperature

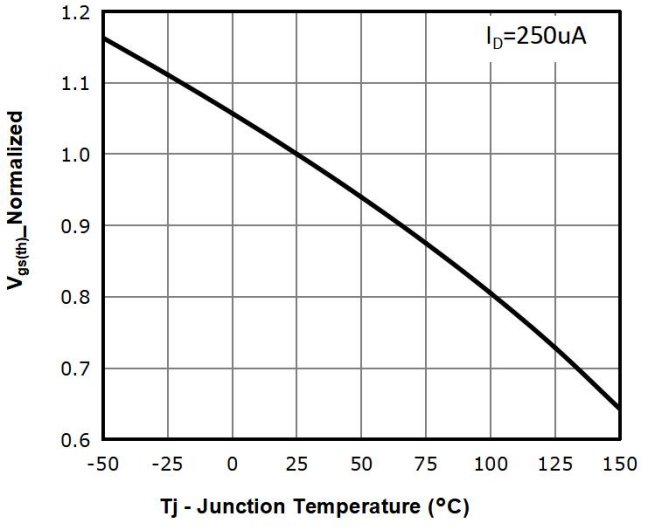


Fig 7: BVdss vs. Temperature

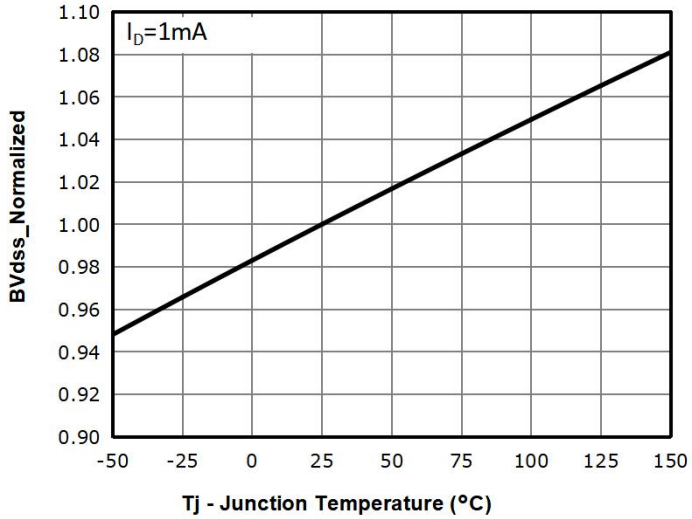


Fig 8: Capacitance Characteristics

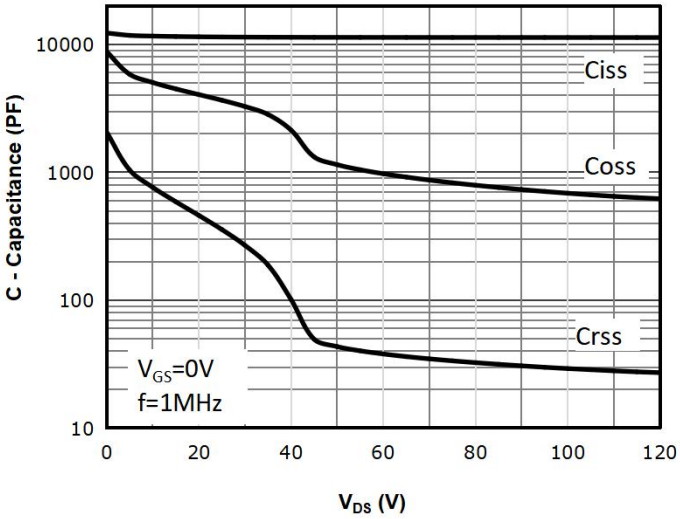


Fig 9: Gate Charge Characteristics

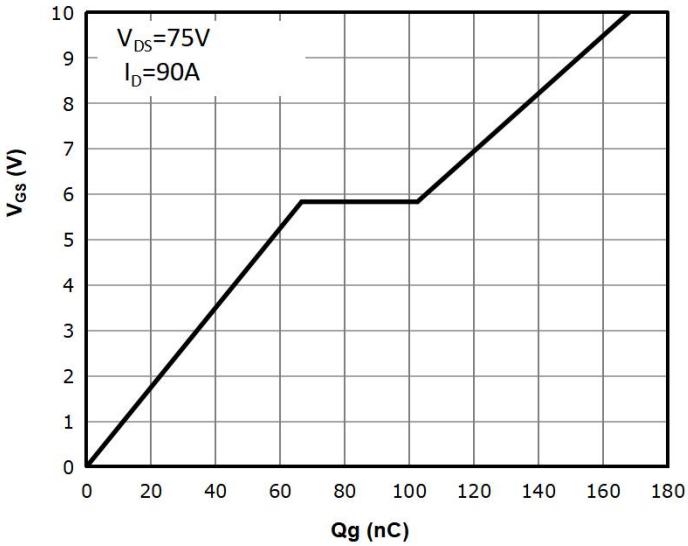


Fig 10: Body-diode Forward Characteristics

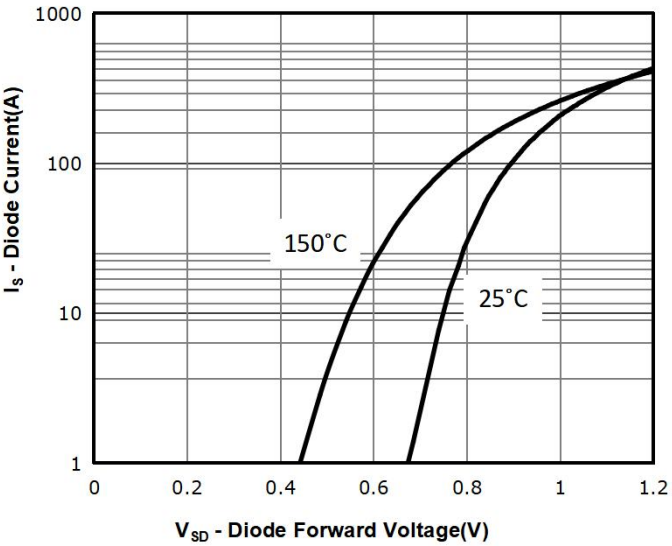


Fig 11: Power Dissipation

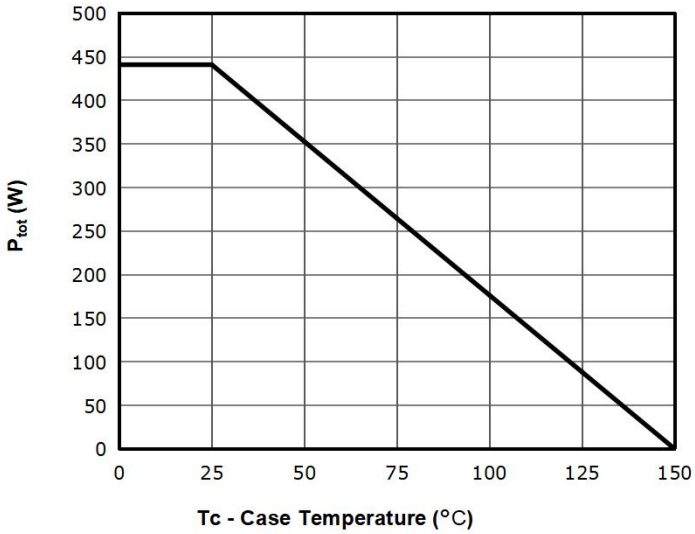


Fig 12: Drain Current Derating

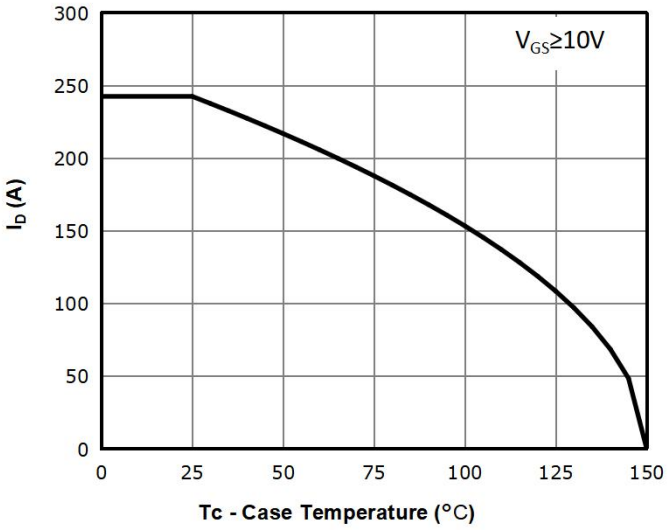


Fig 13: Safe Operating Area

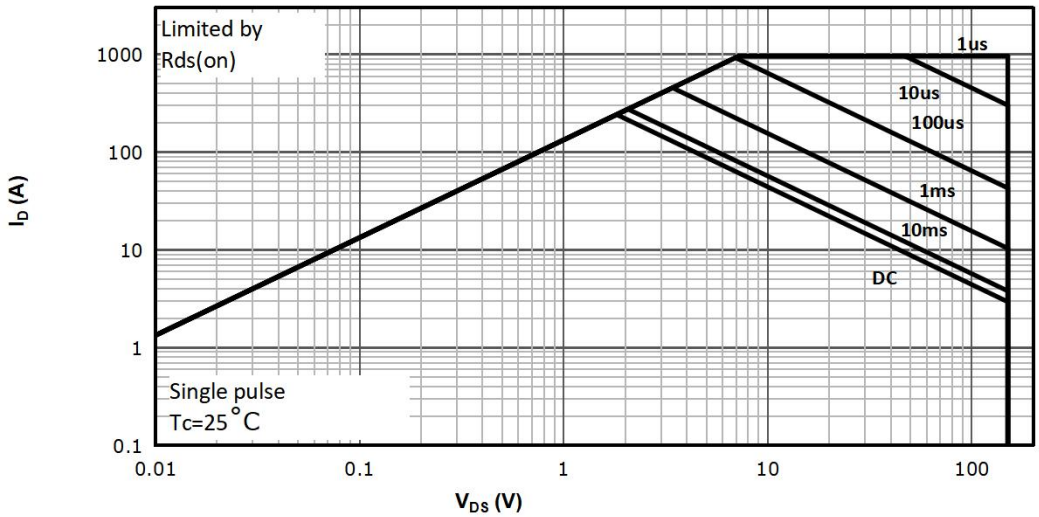
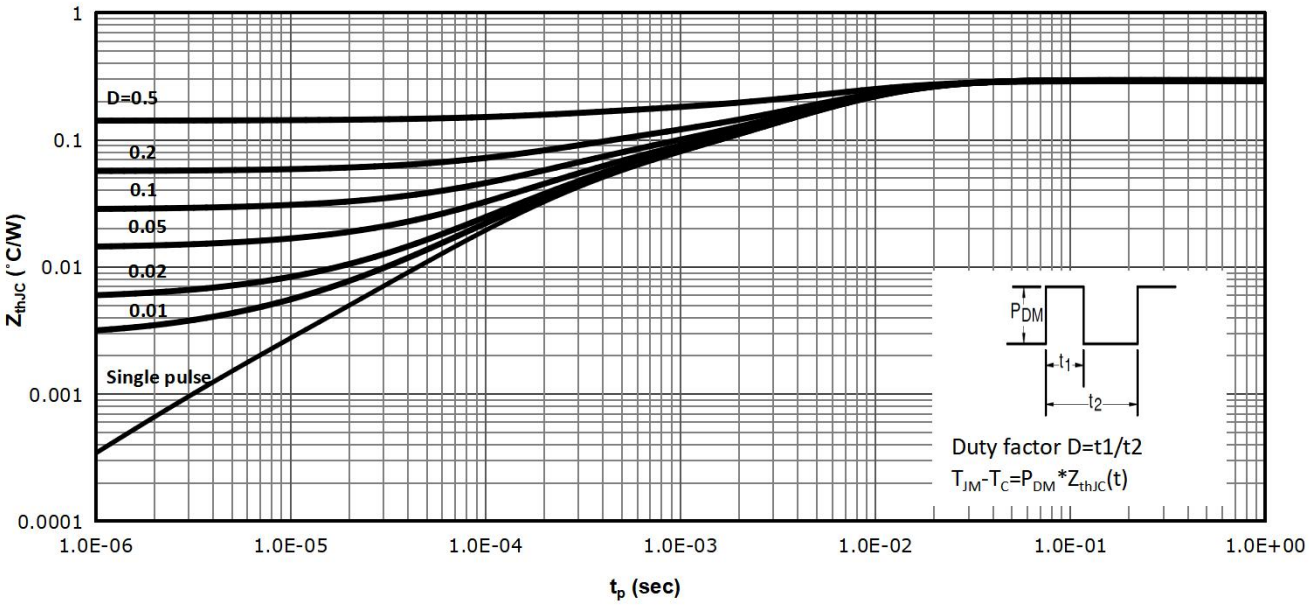
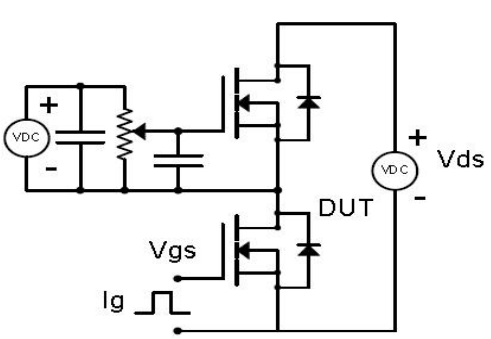


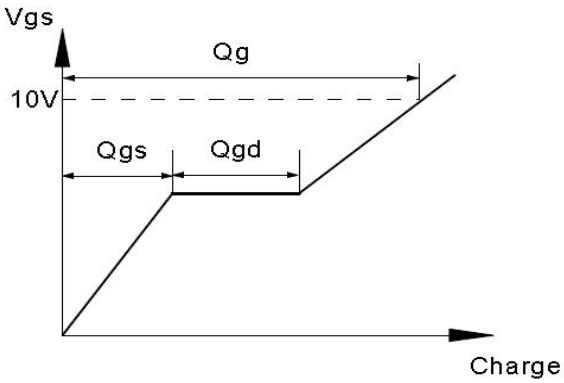
Fig 14: Max. Transient Thermal Impedance



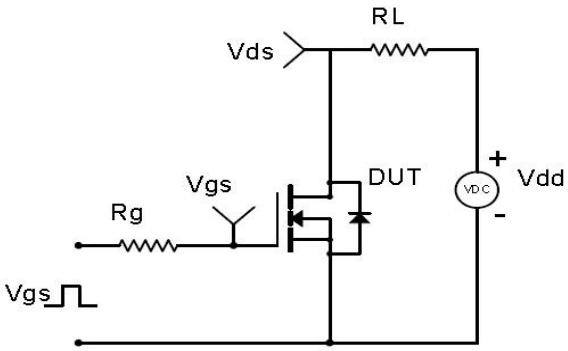
Test Circuit & Waveform

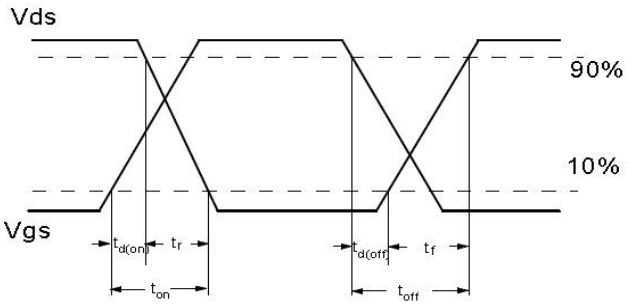
Gate Charge Test Circuit & Waveform



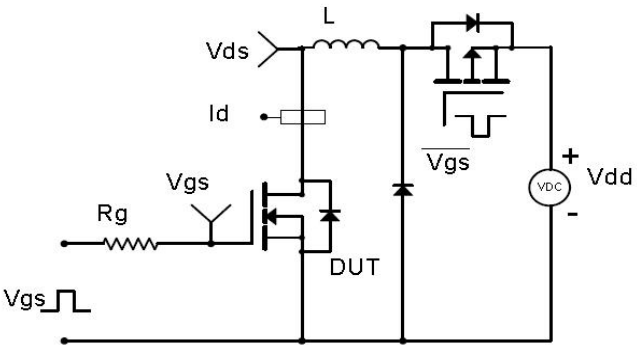


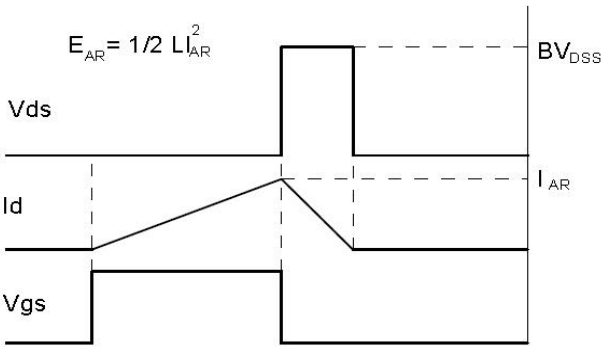
Resistive Switching Test Circuit & Waveforms



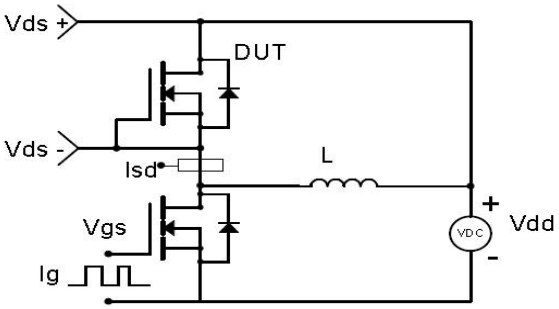


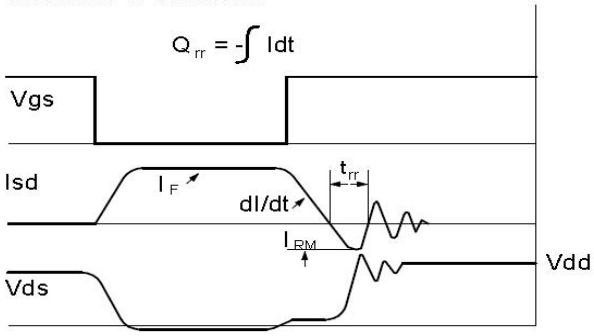
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



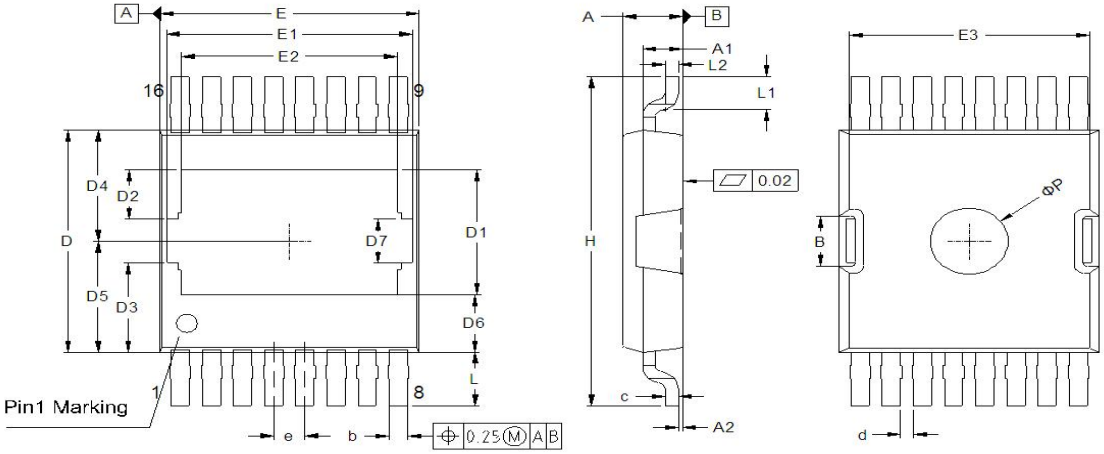


Diode Recovery Test Circuit & Waveforms



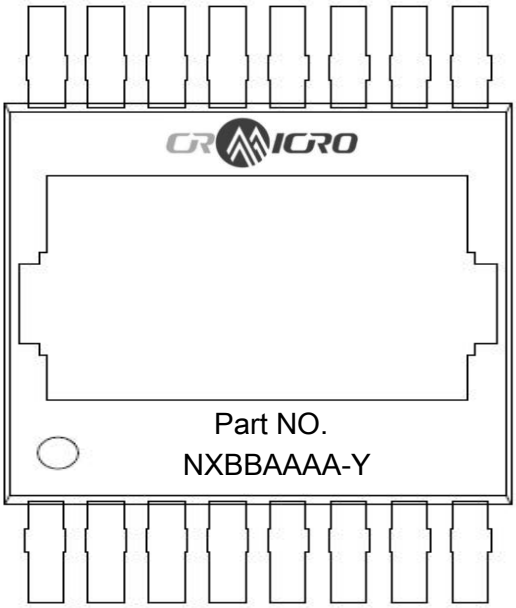


Package Outline: TOLT



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.087	0.094
A1	1.34	1.74	0.053	0.069
A2	0.01	0.16	0.000	0.006
b	0.60	0.80	0.024	0.031
c	0.40	0.60	0.016	0.024
d	0.40	0.60	0.016	0.024
e	1.20 BSC		0.047 BSC	
D	10.00	10.30	0.394	0.406
D1	5.47	5.87	0.215	0.231
D2	2.04	2.44	0.080	0.096
D3	4.05 REF		0.159 REF	
D4	5.05 REF		0.199 REF	
D5	5.05 REF		0.199 REF	
D6	2.62 REF		0.103 REF	
D7	2.00 REF		0.079 REF	
E	9.70	10.20	0.382	0.402
E1	9.46 REF		0.372 REF	
E2	8.10	8.50	0.319	0.335
E3	9.07	9.47	0.357	0.373
H	14.80	15.20	0.583	0.598
L	2.25	2.65	0.089	0.104
L1	1.35	1.65	0.053	0.065
L2	0.50 BSC		0.02 BSC	
P	2.90	3.10	0.114	0.122
B	2.18	2.38	0.086	0.094

Marking



NOTE:
NXBBAAAAY

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	2025/7/13	Release of Preliminary version.
2.0	2025/11/11	Update Pin Number.

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 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.