华润微电子(重庆)有限公司

CRJZ74N60G2BF

SJMOS N-MOSFET 600V, 70mΩ, 34A

Features

- CRM(CQ) Super_Junction technology
- Much lower Ron*A performance for On-state efficiency
- Better efficiency due to very low FOM
- Ultra-fast body diode

Product Summary

$V_{DS,min}$	600V
$R_{DS(on),typ}$	70mΩ
I_D	34A

Applications

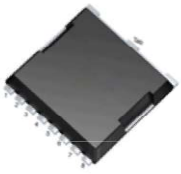
- LED/LCD/PDP TV and monitor Lighting
- Solar/Renewable/UPS-Micro Inverter System
- Charger
- Power Supply

100% DVDS Tested

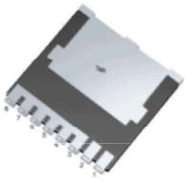
100% Avalanche Tested

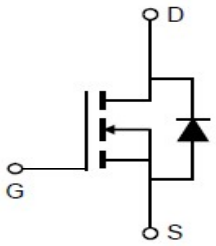
RoHS HF

Top view



Bottom view





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRJZ74N60G2BF	JZ74N60G2BF	TOLL	Tape&Reel	N/A	N/A	2000pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	600	V
Continuous drain current [1)] T_C = 25°C T_C = 100°C	I_D	 34 21	A
Pulsed drain current [2)] (T_C = 25°C, t_p limited by $T_{j,max}$)	$I_{D,pulse}$	101	A
Avalanche energy, single pulse (L=30mH)	E_{AS}	520	mJ
MOSFET dv/dt ruggedness	dv/dt	50	V/ns
Gate-Source voltage	V_{GS}	±30	V
Power dissipation (T_C = 25°C)	P_{tot}	237	W
Continuous diode forward current(T_C = 25°C)	I_S	34	A
Diode pulse current [2)] (T_C = 25°C)	$I_{S,pulse}$	101	A
Recovery diode dv/dt [3)]	dv/dt	50	V/ns
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C

1) Limited by $T_{j,max}$. Maximum Duty Cycle D = 0.50

2) Pulse width t_p limited by $T_{j,max}$

3) Identical low side and high side switch with identical R_g

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Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case	R_{thJC}	-	0.38	0.53	°C/W	
Thermal resistance, junction – ambient	R_{thJA}	-	-	53	°C/W	

Electrical Characteristic (at T_j = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	600	-	-	V	V_{GS}=0V, I_D=250μA
Gate threshold voltage	$V_{GS(th)}$	3.2	-	4.6	V	V_{DS}=V_{GS},I_D=250μA
Zero gate voltage drain current	I_{DSS}	- -	- 500	5 -	μA	V_{DS}=600V,V_{GS}=0V T_j=25°C T_j=150°C
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±30V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	70 180	77 -	mΩ	V_{GS}=10V, I_D=23A, T_j=25°C T_j=150°C
Transconductance	g_{fs}	-	30	-	S	V_{DS}=20V,I_D=23A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	2200	-	pF	V_{GS}=0V, V_{DS}=100V, f=1MHz
Output Capacitance	C_{oss}	-	137	-		
Reverse Transfer Capacitance	C_{rss}	-	3.2	-		
Gate Total Charge	Q_g	-	84	-	nC	V_{GS}=10V, V_{DS}=480V, I_D=23A
Gate-Source charge	Q_{gs}	-	19	-		
Gate-Drain charge	Q_{gd}	-	53	-		
Gate plateau voltage	$V_{plateau}$	-	7.5	-	V	
Turn-on delay time	$t_{d(on)}$	-	63	-	ns	V_{GS}=10V, I_D=23A, V_{DS}=400V, R_g=27Ω
Rise time	t_r	-	107	-		
Turn-off delay time	$t_{d(off)}$	-	244	-		
Fall time	t_f	-	103	-		
Gate resistance	$R_{g,int}$	-	1.2	-	Ω	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	0.91	1.1	V	V_{GS}=0V,I_{SD}=23A
Body Diode Reverse Recovery Time	t_{rr}	-	125	-	ns	I_{SD}=23A di_F/dt=100A/μs V_{DS}=400V
Body Diode Reverse Recovery Charge	Q_{rr}	-	0.9	-	μC	

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Typical Performance Characteristics

Fig 1. Output Characteristics (T_j=25℃)

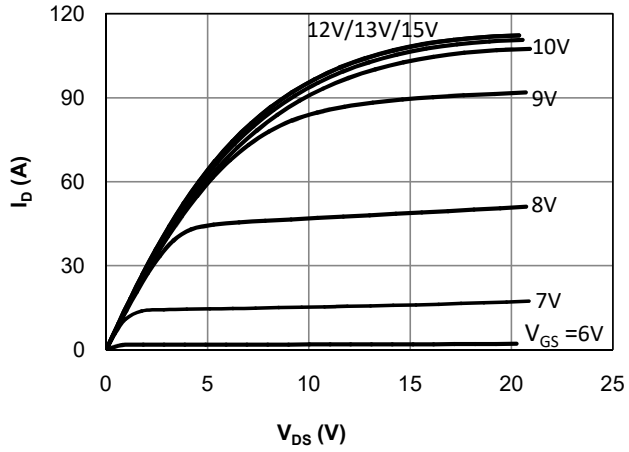


Fig 2. Output Characteristics (T_j=150℃)

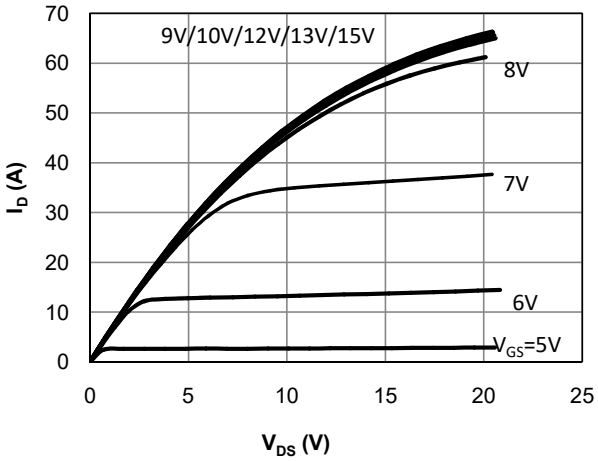


Fig 3: Transfer Characteristics

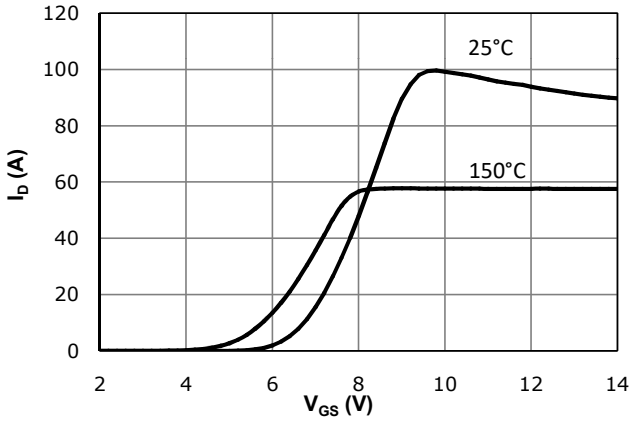


Fig 4: V_{TH} vs. T_j Temperature Characteristics

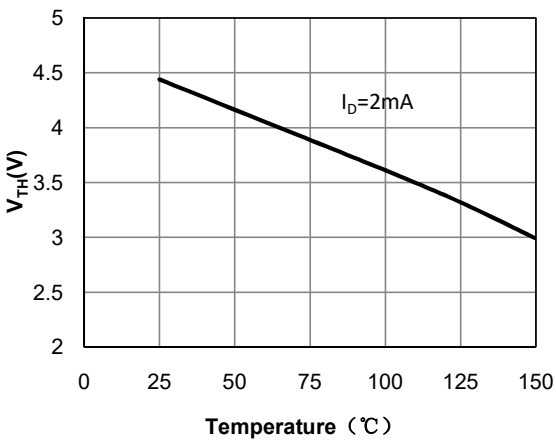


Fig 5: $R_{DS(on)}$ vs. I_{DS} Characteristics(T_j=25℃)

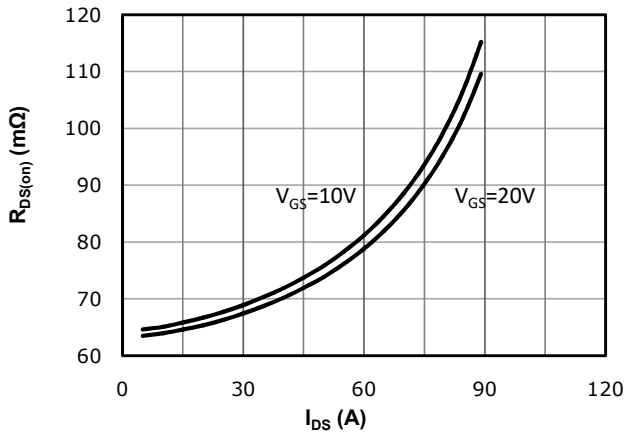
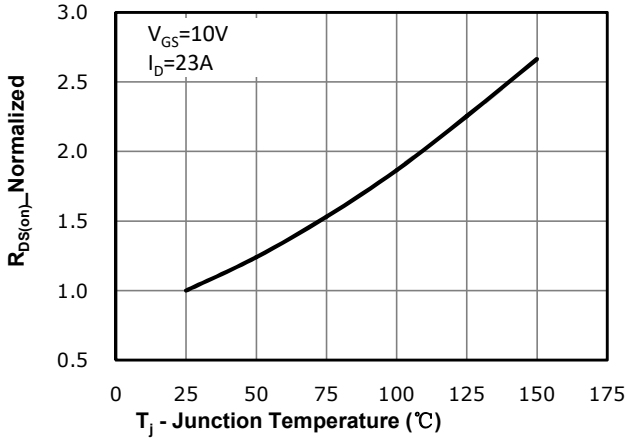


Fig 6: $R_{DS(on)}$ vs. Temperature



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Fig 7: BV_{DSS} vs. Temperature

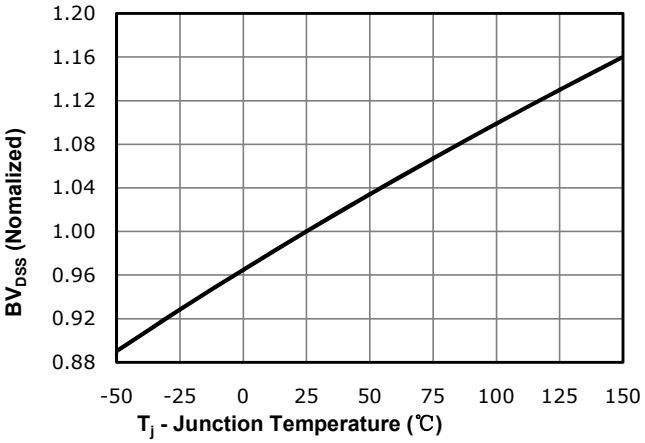


Fig 8: $R_{DS(on)}$ vs. Gate Voltage

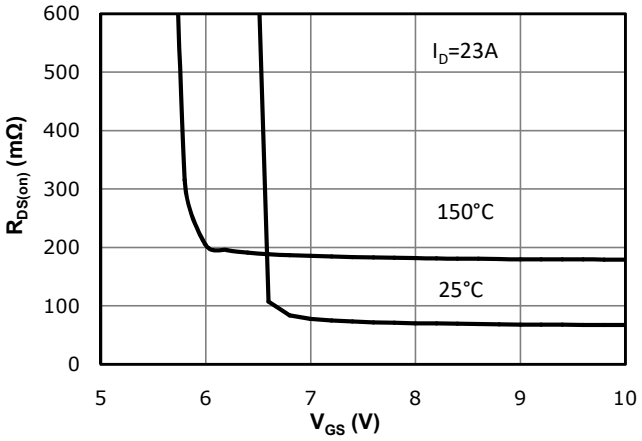


Fig 9: Body-diode Forward Characteristics

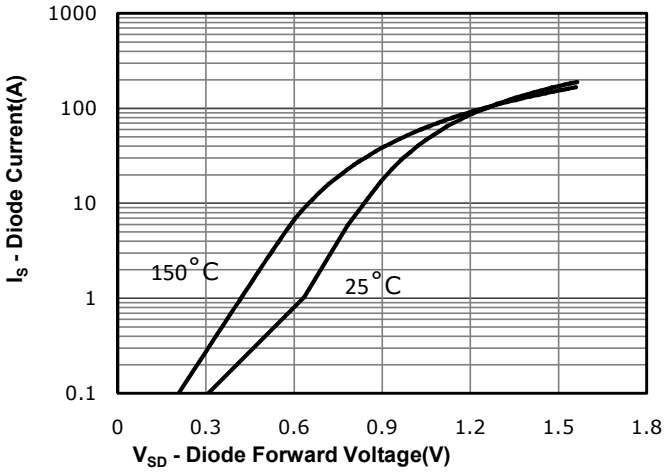


Fig 10: Gate Charge Characteristics

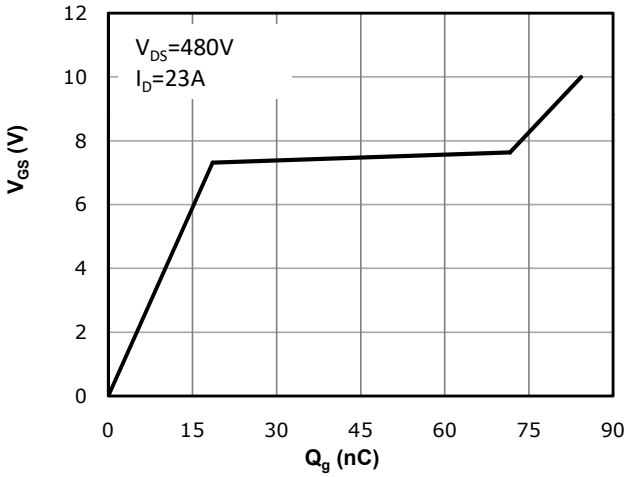


Fig 11: Capacitance Characteristics

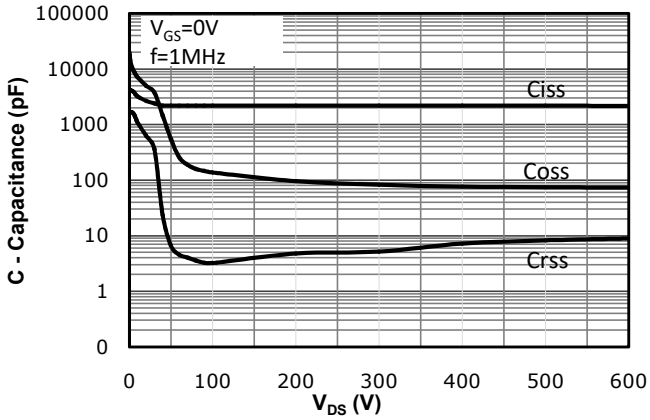
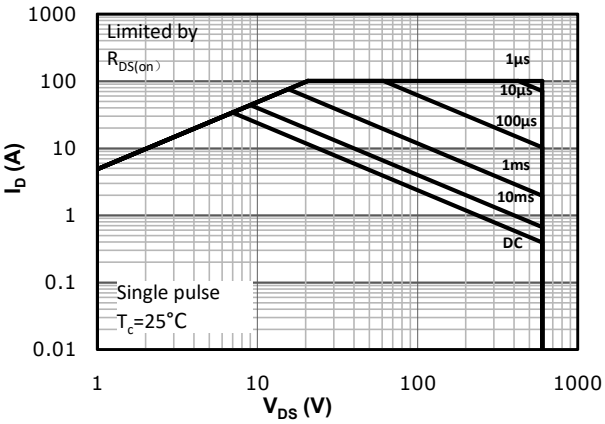
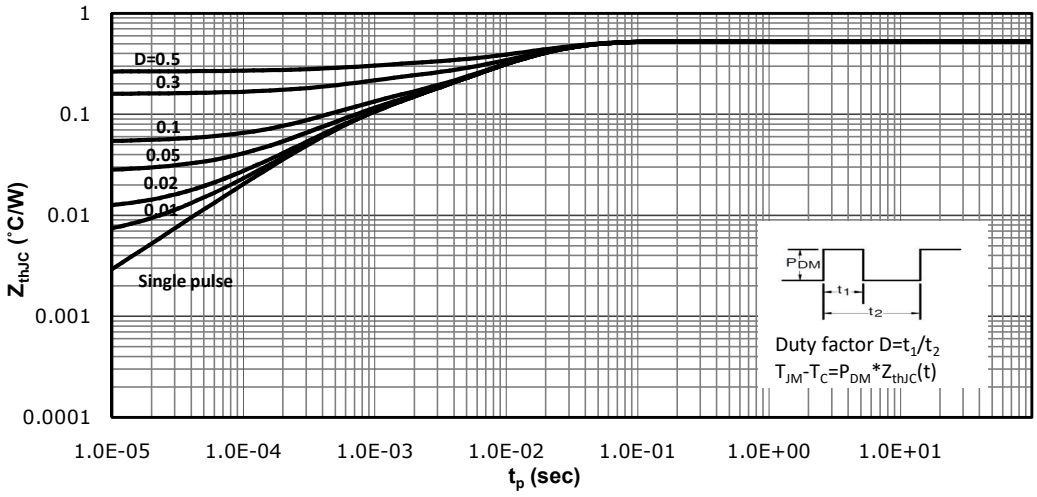


Fig 12: Safe Operating Area



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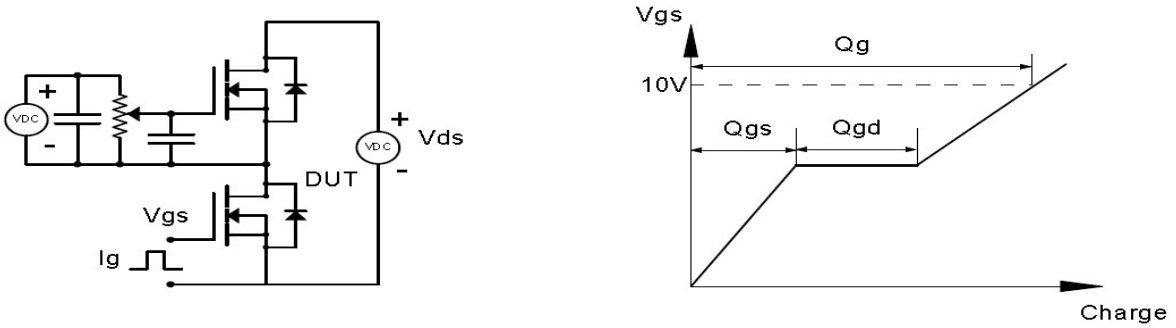
Fig 13: Max. Transient Thermal Impedance



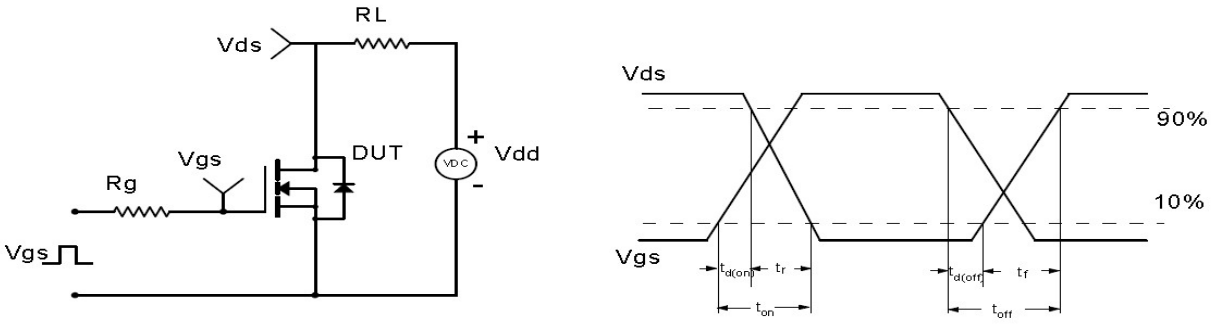
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Test Circuit & Waveform

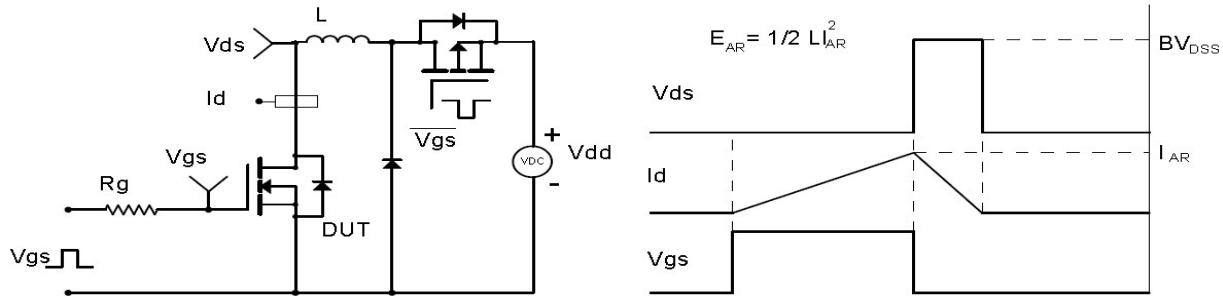
Gate Charge Test Circuit & Waveform



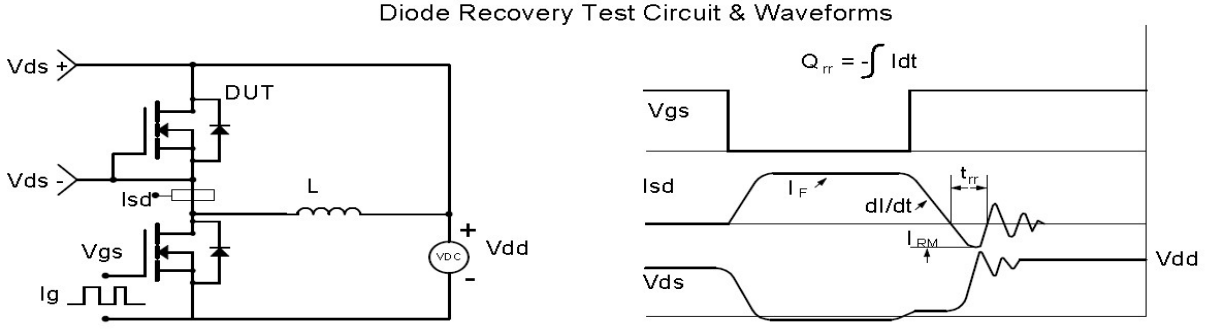
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

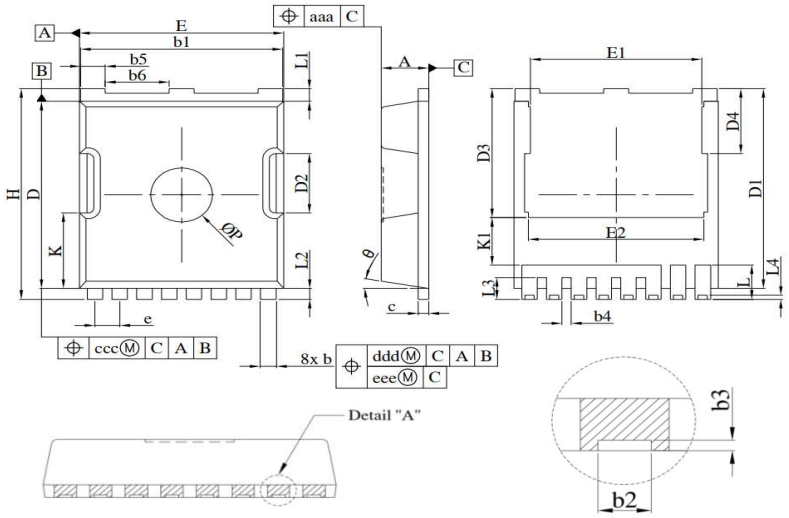


Diode Recovery Test Circuit & Waveforms



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Package Outline: TOLL



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.087	0.094
b	0.70	0.90	0.028	0.035
b1	9.70	9.90	0.382	0.390
b2	0.36	0.55	0.014	0.022
b3	0.05	0.35	0.002	0.014
b4	0.30	0.50	0.012	0.020
b5	1.10	1.30	0.043	0.051
b6	3.00	3.20	0.118	0.126
c	0.40	0.60	0.016	0.024
D	10.28	10.55	0.405	0.415
D1	10.98	11.18	0.432	0.440
D2	3.20	3.40	0.126	0.134
D3	7.00	7.30	0.276	0.287
D4	3.44	3.74	0.135	0.147
e	1.10	1.30	0.043	0.051
E	9.80	10.00	0.386	0.394
E1	8.20	8.40	0.323	0.331
E2	8.35	8.65	0.329	0.341
H	11.50	11.85	0.453	0.467
K	4.08	4.28	0.161	0.169
K1	2.45	---	0.096	---
L	1.60	2.10	0.063	0.083
L1	0.50	0.90	0.020	0.035
L2	0.50	0.70	0.020	0.028
L3	1.00	1.30	0.039	0.051
L4	0.13	0.33	0.005	0.013
P	2.85	3.15	0.112	0.124
θ	10°REF			
aaa	0.20		0.008	
ccc	0.20		0.008	
ddd	0.25		0.010	
eee	0.20		0.008	

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NOTE:
NXBBAAAA

N	—WB code (Usually omitted)
X	—Assembly location code
BB	—Fab code
AAAA	—Lot code

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Revision History

Revison	Date	Major changes
1.0	2023/12/25	First 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.

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