Features

- Dual N-channel Logic Level - Enhancement mode
- Uses CRM(CQ) advanced SkyMOS1 technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g x R_{DS(on)}$ product(FOM)
- AEC-Q101 Qualified

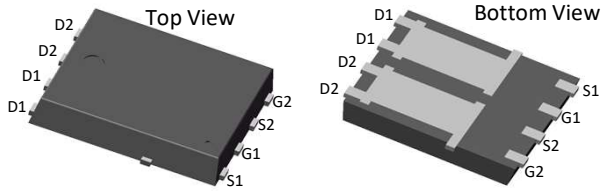
Applications

- DCDC Converter
- Switching applications
- UPS (Uninterrupible Power Supplies)

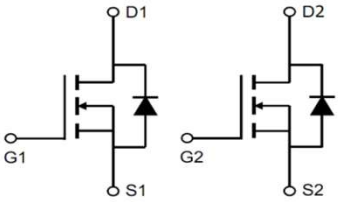
Product Summary

V_{DS}	60V
$R_{DS(on).typ}$	22mΩ
I_D	20A

100% DVDS Tested
100% Avalanche Tested



CRSM260N06LDQ



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRSM260N06LDQ	260N06LDQ	PDFN5x6	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_C = 25°C (Silicon limit) T_C = 100°C (Silicon limit)	I_D	 30 20	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	80	A
Avalanche energy, single pulse (IAS = 11A, Rg=25Ω)[1]	E_{AS}	30	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	33	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+175	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

※. Notes:
EAS is tested at starting Tj = 25℃, L = 0.5mH, IAS =11A, VGS = 10V.

©China Resources Microelectronics (Chongqing) Limited

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case (junction-heat spreader)	R_{thJC}	4.5	°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}	60	-	-	V	V_{GS}=0V, I_D=250uA
		60	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	1.5	2.0	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=60V,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	$R_{DS(on)}$	-	22	26	mΩ	VGS=10V, ID=10A
		-	33	46		VGS=4.5V, ID=8A
Transconductance	g_{fs}	-	11	-	S	VDS=5V,ID=10A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	660	-	pF	V_{GS}=0V, V_{DS}=30V, f=1MHz
Output Capacitance	C_{oss}	-	160	-		
Reverse Transfer Capacitance	C_{rss}	-	7.5	-		
Gate Total Charge	Q_G	-	10	-	nC	V_{GS}=10V, V_{DS}=30V, I_D=10A,,f=1MHz
Gate-Source charge	Q_{gs}	-	2.5	-		
Gate-Drain charge	Q_{gd}	-	2.0	-		
Turn-on delay time	$t_{d(on)}$	-	12.5	-	ns	V_{GS}=10V, V_{DD}=30V, R_{G_ext}=3Ω
Rise time	t_r	-	4	-		
Turn-off delay time	$t_{d(off)}$	-	25	-		
Fall time	t_f	-	3.5	-		
Gate resistance	R_G	-	1.5	-	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.		
Diode continous forward current	Is	-	-	20	A	Tc = 25°C
Diode pulse current	Is pulse	-	-	80	A	Tc = 25°C
Body Diode Forward Voltage	V_{SD}	-	0.9	1.4	V	V_{GS}=0V,I_{SD}=10A
Body Diode Reverse Recovery Time	t_{rr}	-	30	-	ns	I_F=10A,dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	29	-	nC	

©China Resources Microelectronics (Chongqing) Limited

Typical Performance Characteristics

Fig 1: Output Characteristics

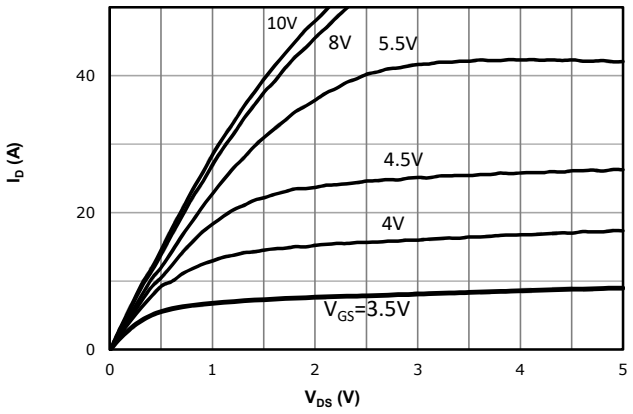


Fig 2: Transfer Characteristics

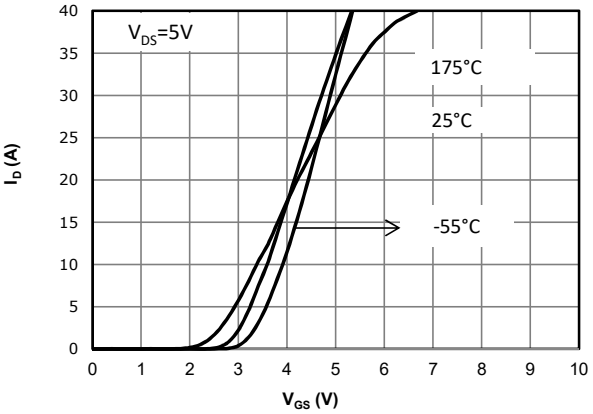


Fig 3: Rds(on) vs Drain Current and Gate Voltage

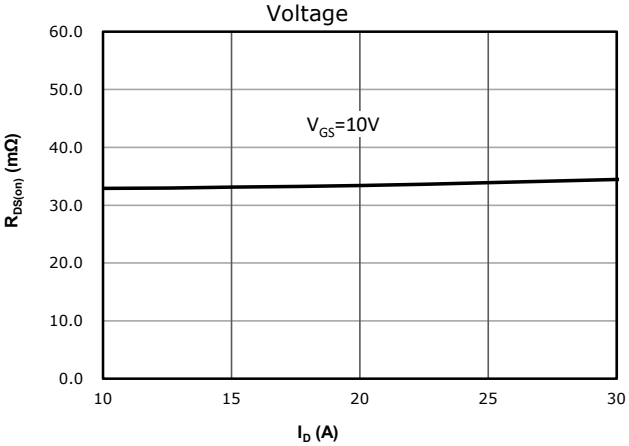


Fig 4: Rds(on) vs Gate Voltage

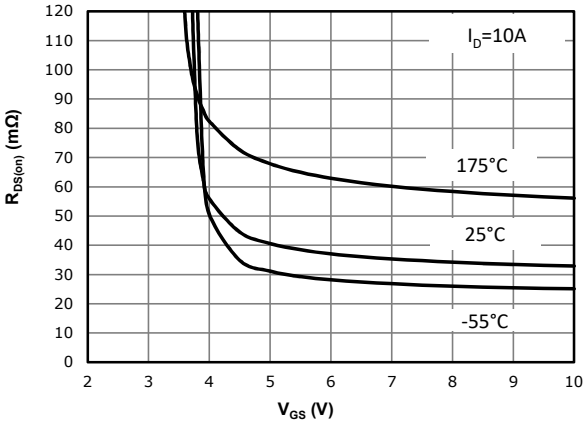


Fig 5: Rds(on) vs. Temperature

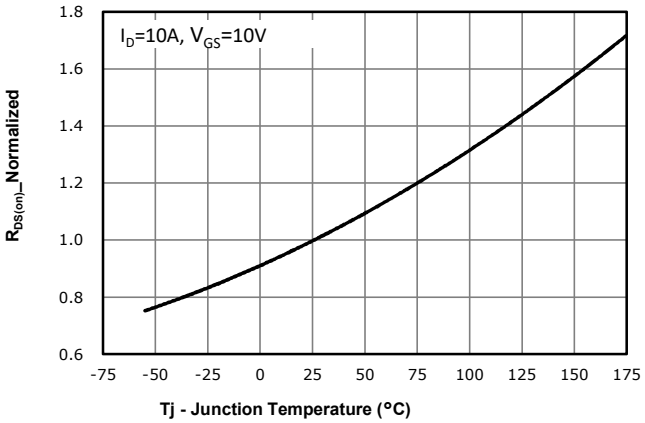
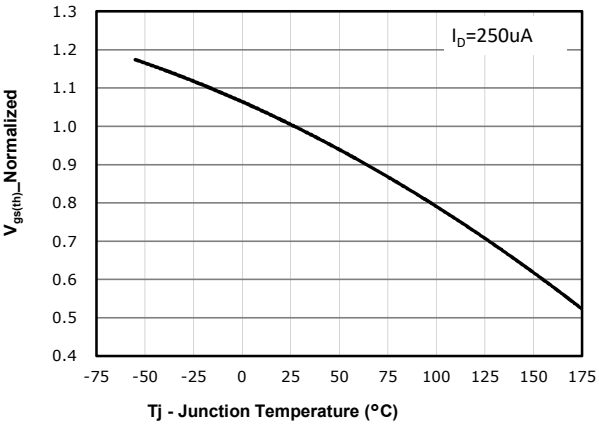


Fig 6: Vgs(th) vs. Temperature



©China Resources Microelectronics (Chongqing) Limited

Fig 7: BVdss vs. Temperature

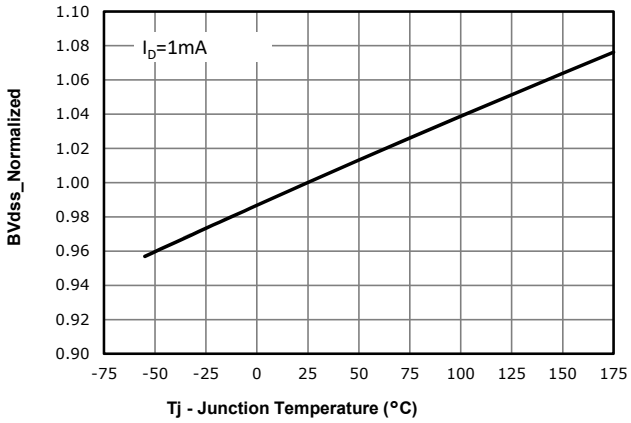


Fig 8: Capacitance Characteristics

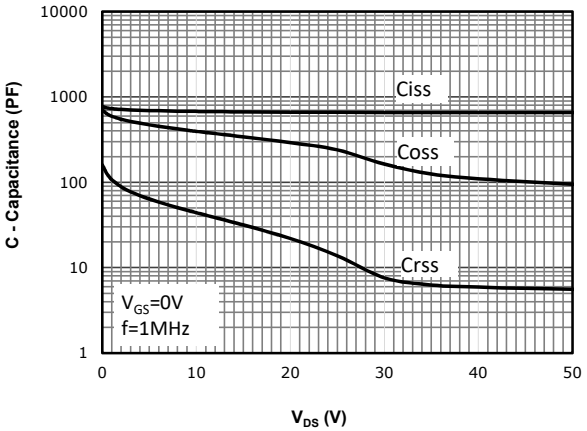


Fig 9: Gate Charge Characteristics

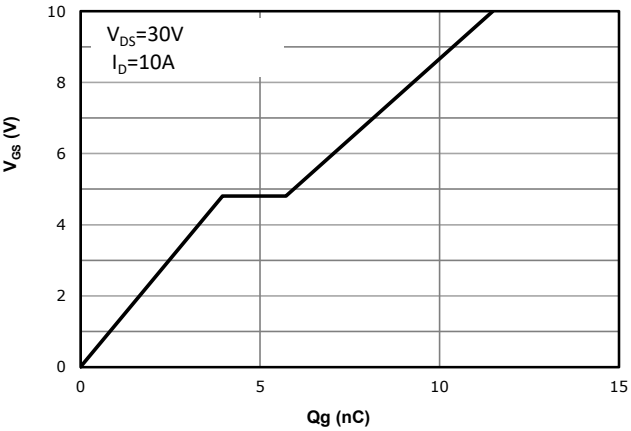


Fig 10: Body-diode Forward Characteristics

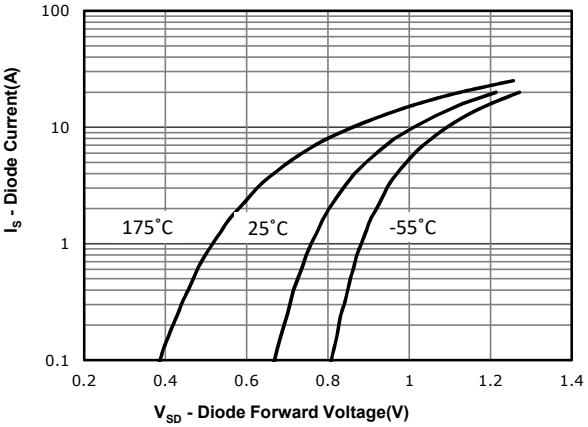


Fig 11: Power Dissipation

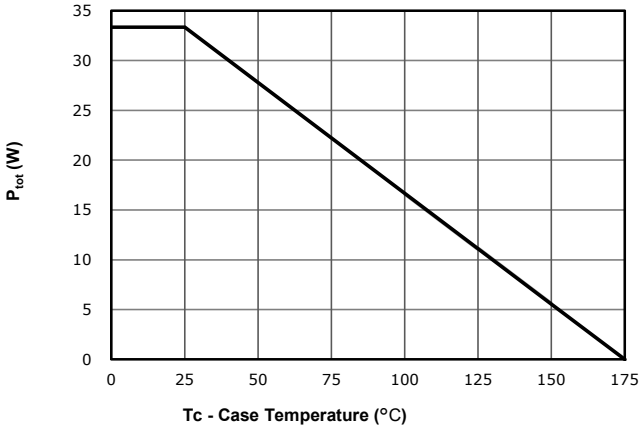
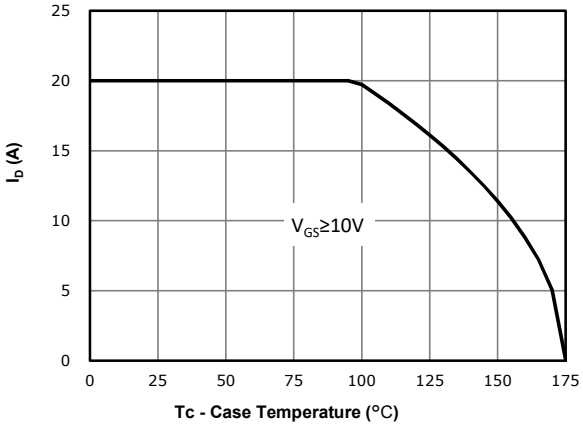


Fig 12: Drain Current Derating



©China Resources Microelectronics (Chongqing) Limited

Fig 13: Safe Operating Area

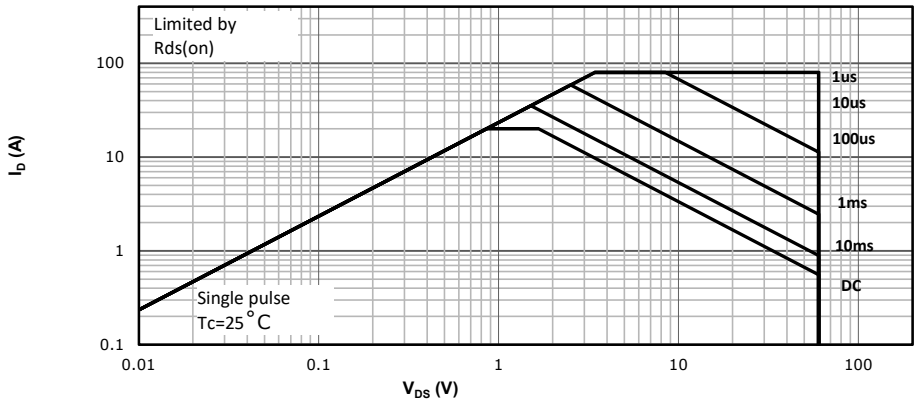
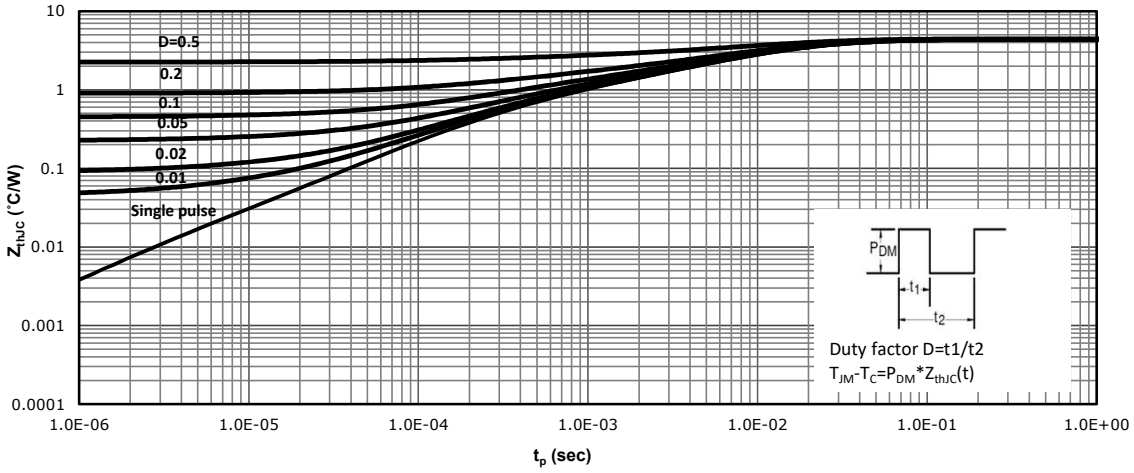


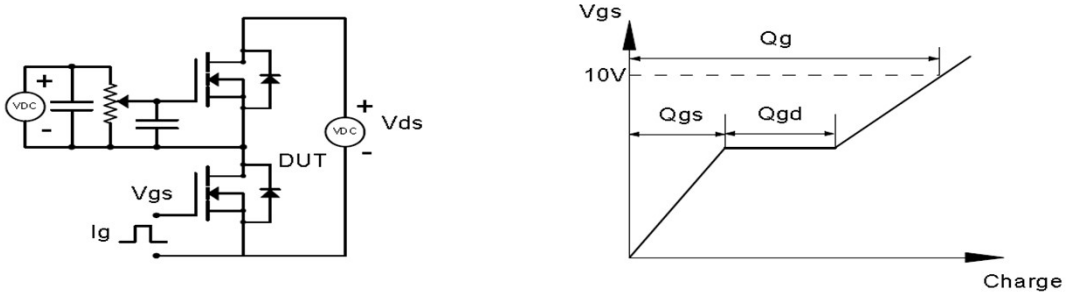
Fig 14: Max. Transient Thermal Impedance



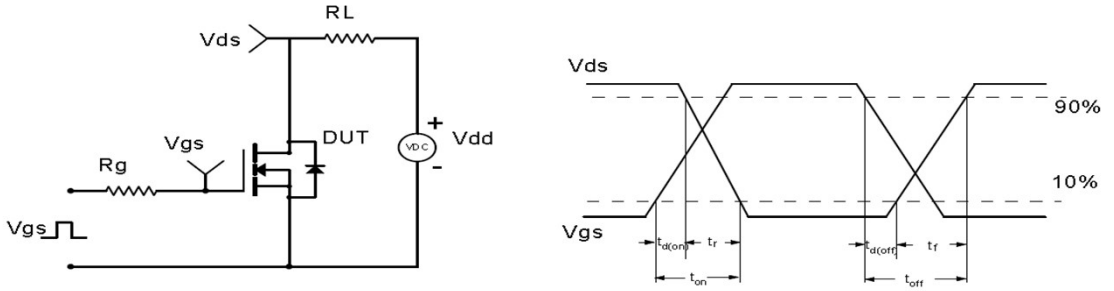
©China Resources Microelectronics (Chongqing) Limited

Test Circuit & Waveform

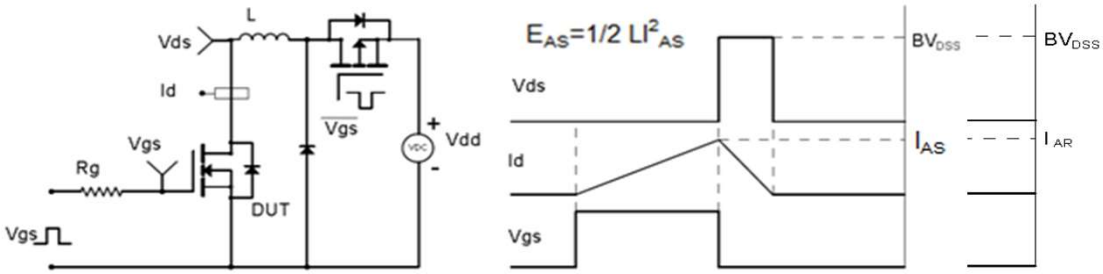
Gate Charge Test Circuit & Waveform



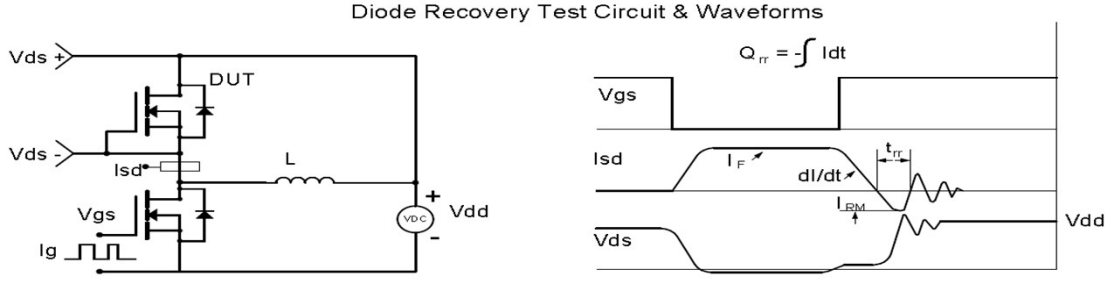
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

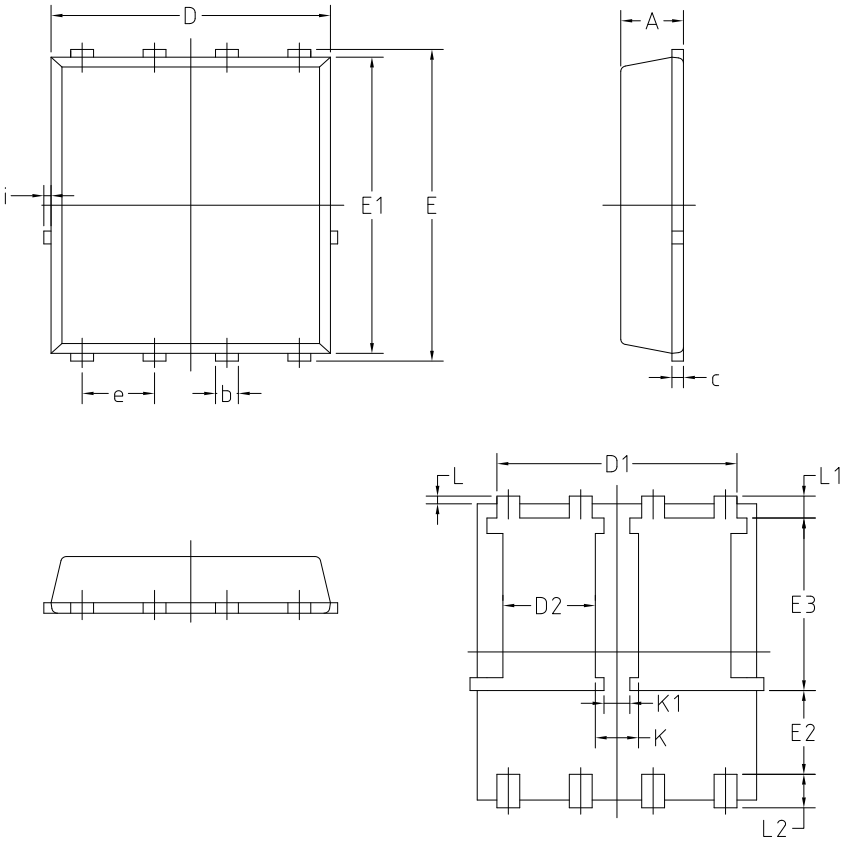


Diode Recovery Test Circuit & Waveforms



©China Resources Microelectronics (Chongqing) Limited

Package Outline: PDFN5x6 Dual Pad Type 6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047
b	0.30	0.50	0.012	0.020
c	0.203 BSC		0.008 BSC	
D	4.80	5.00	0.189	0.197
D1	4.06	4.36	0.160	0.172
D2	1.47	1.77	0.058	0.070
E	5.90	6.20	0.232	0.244
E1	5.65	5.85	0.222	0.230
E2	1.45	-	0.057	-
E3	3.20	3.50	0.126	0.138
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.002	0.010
L1	0.325	0.525	0.013	0.021
L2	0.50	0.80	0.020	0.031
i	-	0.20	-	0.008
K	0.61	0.91	0.024	0.036
K1	0.31	0.60	0.012	0.024

©China Resources Microelectronics (Chongqing) Limited

Marking



NOTE:
XAAAAAAA-Y

X	—Assembly location code
AAAAAAA	—Assembly lot NO. last 7digits
Y	—Bin code

©China Resources Microelectronics (Chongqing) Limited

Revision History

Revision	Date	Major changes
1.0	2023/8/20	Release of preliminary version.
1.1	2025/2/28	1. Update Package Name； 2. Add Is and Is pulse. 3. Update Fig5.

Disclaimer

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

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics .The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

The product is not intended for use in applications that require extraordinary levels of quality and reliability, such as 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.

©China Resources Microelectronics (Chongqing) Limited