

### Description

#### Features

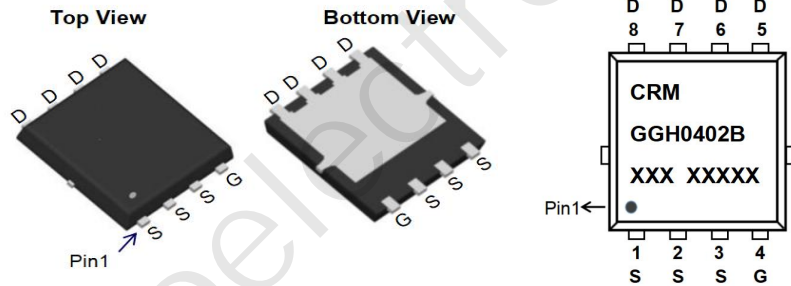
- 40V, 130A  
 $R_{DS(ON)}$  Typ = 1.8mΩ @  $V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- 100% UIS TESTED!
- 100%  $\Delta V_d$ s TESTED!



Schematic Diagram

#### Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

#### Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMGGH0402B	CRMGGH0402B	PDFN5x6-8L	TAPING	13"	5000	50000

#### Absolute Maximum Ratings (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Units	
V <sub>DS</sub>	Drain-to-Source Voltage	40	V	
V <sub>GS</sub>	Gate-to-Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	130	A
		T <sub>C</sub> = 100°C	78	A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>	520	A	
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>(2)</sup>	240	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	69	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.8	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Junction & Storage Temperature Range	-55 to 150	°C	

### Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
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#### Off Characteristics

V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	40	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V	-	-	1.0	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA

#### On Characteristics

V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2.4	2.8	3.6	V
R <sub>DS(ON)</sub>	Static Drain-Source ON-Resistance <sup>(3)</sup>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A	-	1.8	2.3	mΩ

#### Dynamic Characteristics

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 20V, f = 1MHz	-	2803	-	pF
C <sub>oss</sub>	Output Capacitance		-	948	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	70	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 0 to 10V V <sub>DS</sub> = 20V, I <sub>D</sub> = 20A	-	45	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	9.8	-	nC
Q <sub>gd</sub>	Gate Drain("Miller") Charge		-	8.5	-	nC

#### Switching Characteristics

t <sub>d(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 20V I <sub>D</sub> = 20A, R <sub>GEN</sub> = 3Ω	-	16	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	25.5	-	ns
t <sub>d(off)</sub>	Turn-Off DelayTime		-	32	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	12	-	ns

#### Drain-Source Diode Characteristics and Max Ratings

I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current	V <sub>GS</sub> = 0V, I <sub>S</sub> = 30A	-	-	130	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	520	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage		-	-	1.2	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time		-	40	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		-	35	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E<sub>AS</sub> condition: Starting T<sub>J</sub>=25°C, V<sub>DD</sub>=20V, V<sub>G</sub>=10V, R<sub>G</sub>=25ohm, L=0.5mH, I<sub>AS</sub>=31A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

## Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

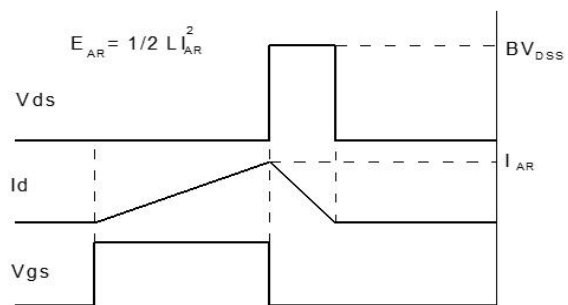
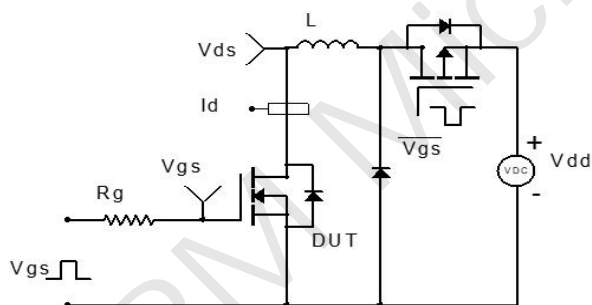
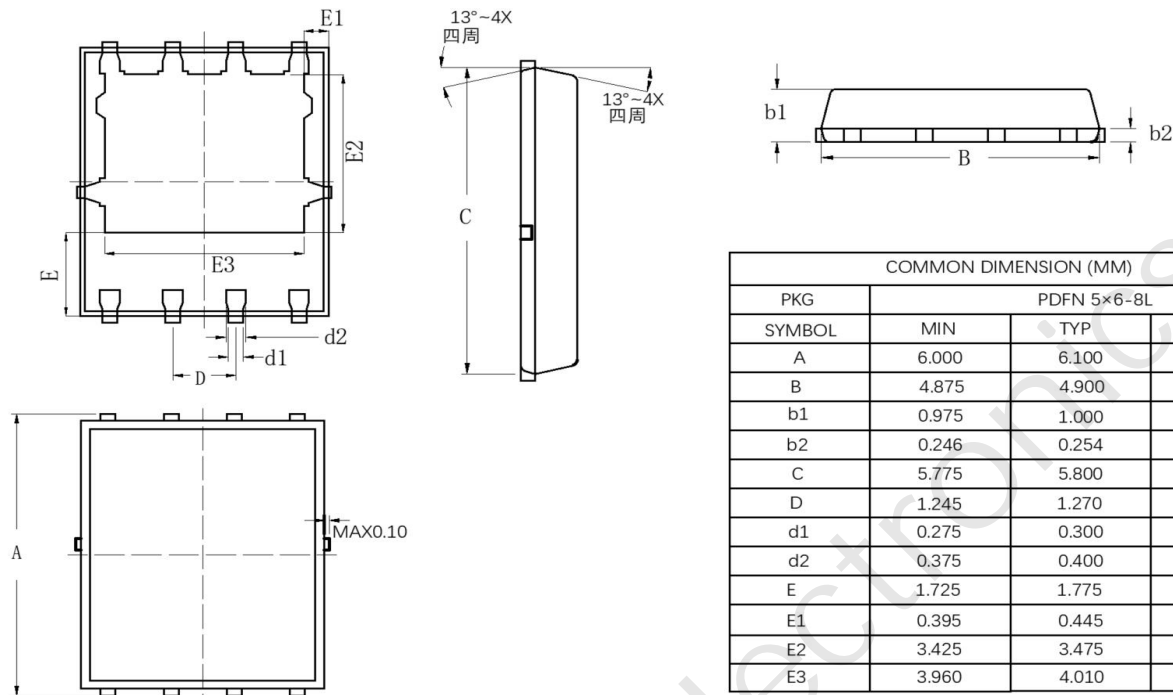


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

### Package Mechanical Data(PDFN5x6-8L)




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