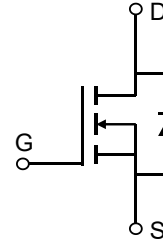


### Description

#### Features

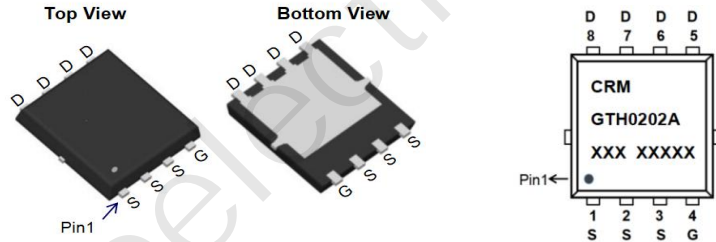
- 22V, 130A  
 $R_{DS(ON)}$  Typ = 1.7mΩ @  $V_{GS} = 10V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead Free
- 100% UIS TESTED!
- 100%  $\Delta V_{ds}$  TESTED!



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)
CRMGTH0202A	CRMGTH0202A	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	22	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>	196	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	62.5	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	2	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Junction & Storage Temperature Range	-55 to 150	°C	

### Electrical Characteristics ( $T_J = 25^\circ\text{C}$ unless otherwise specified)

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

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	22	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 22\text{V}$ , $V_{GS} = 0\text{V}$	-	-	1.0	$\mu\text{A}$
$I_{GSS}$	Gate-Body Leakage Current	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA

#### On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1.7	2.2	2.7	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance <sup>(3)</sup>	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$	-	1.7	2.2	mΩ

#### Dynamic Characteristics

$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{V}$ , $V_{DS} = 10\text{V}$ , $f = 1\text{MHz}$	-	3578	-	pF
$C_{oss}$	Output Capacitance		-	717	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	487	-	pF
$Q_g$	Total Gate Charge	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 10\text{V}$ , $I_D = 30\text{A}$	-	43	-	nC
$Q_{gs}$	Gate Source Charge		-	8	-	nC
$Q_{gd}$	Gate Drain("Miller") Charge		-	13	-	nC

#### Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}$ , $V_{DD} = 10\text{V}$ $I_D = 30\text{A}$ , $R_{GEN} = 3\Omega$	-	14	-	ns
$t_r$	Turn-On Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	78	-	ns
$t_f$	Turn-Off Fall Time		-	80	-	ns

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

$I_S$	Maximum Continuous Drain to Source Diode Forward Current	$V_{GS} = 0\text{V}$ , $I_S = 20\text{A}$	-	-	130	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	520	A
$V_{SD}$	Drain to Source Diode Forward Voltage		-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time		-	15	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	8	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2.  $E_{AS}$  condition: Starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 10\text{V}$ ,  $V_G = 10\text{V}$ ,  $R_G = 25\Omega$ ,  $L = 0.5\text{mH}$ ,  $I_{AS} = 28\text{A}$
3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .

## Test Circuit

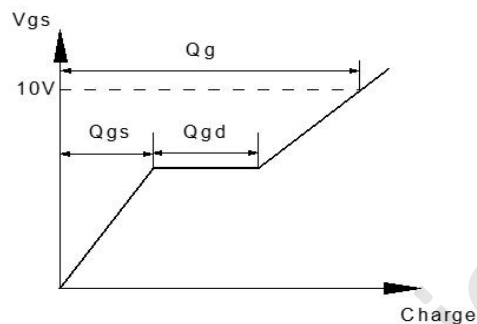
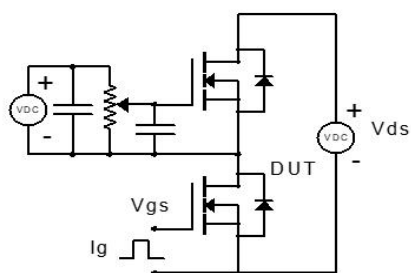


Figure 1: Gate Charge Test Circuit & Waveform

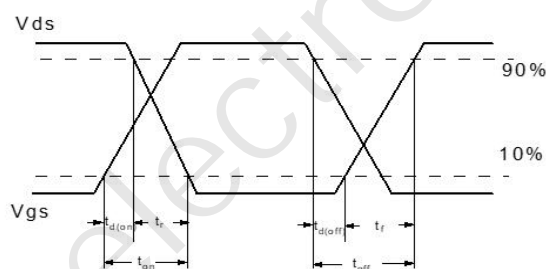
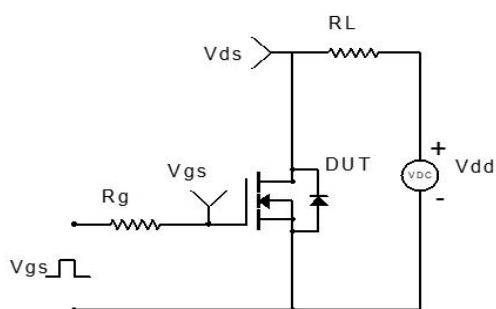


Figure 2: Resistive Switching Test Circuit & Waveform

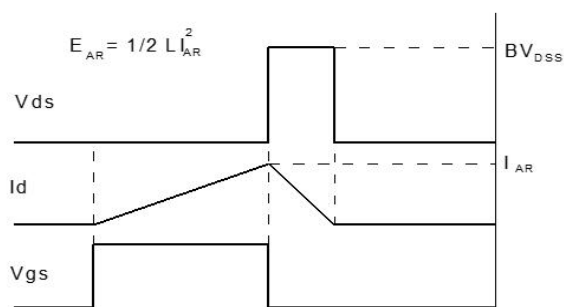
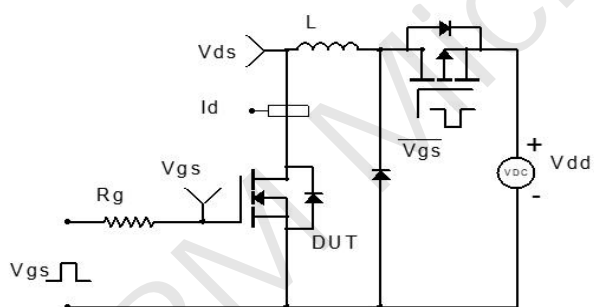


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

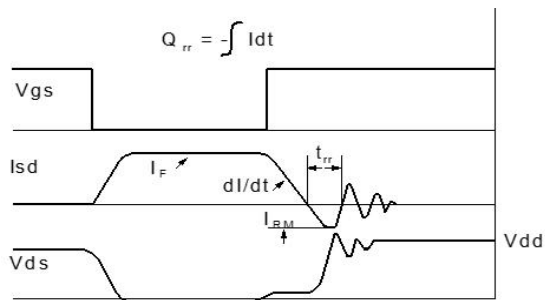
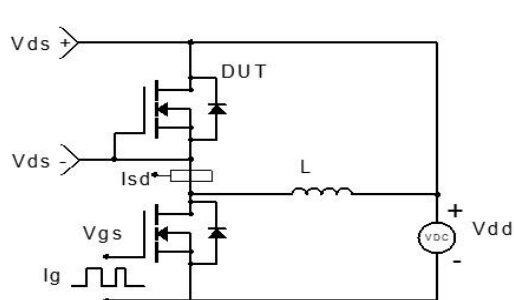
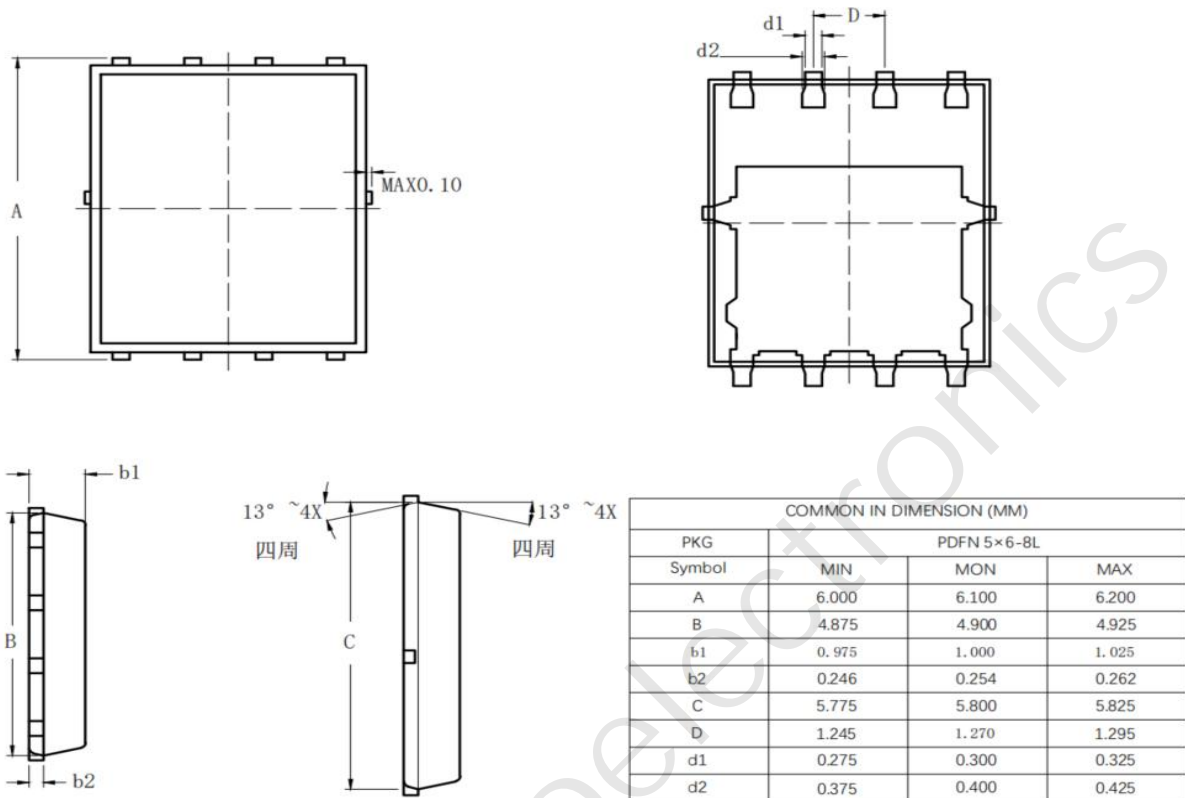


Figure 4: Diode Recovery Test Circuit & Waveform

## Package Mechanical Data(PDFN5x6-8L)



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