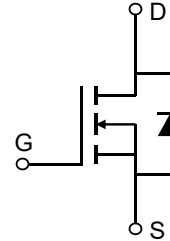


### Description

#### Features

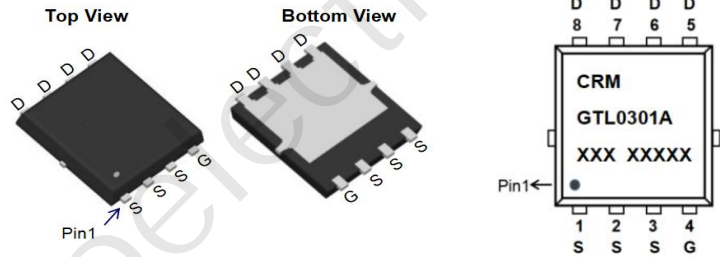
- 30V, 160A
- $R_{DS(ON)}$  Typ = 1.4mΩ @  $V_{GS} = 10V$
- $R_{DS(ON)}$  Typ = 2.3mΩ @  $V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- 100% UIS TESTED!
- 100%  $\Delta V_{ds}$  TESTED!



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)
CRMGTL0301A	CRMGTL0301A	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	30	V	
V <sub>GS</sub>	Gate-to-Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	160	A
		T <sub>C</sub> = 100°C	96	A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>	640	A	
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>(2)</sup>	400	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	89	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.4	°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	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 30\text{V}$ , $V_{GS} = 0\text{V}$	-	-	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	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1.2	1.6	2.4	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance <sup>(3)</sup>	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$	-	1.4	2	mΩ
		$V_{GS} = 4.5\text{V}$ , $I_D = 15\text{A}$	-	2.3	3	mΩ

#### Dynamic Characteristics

$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{V}$ , $V_{DS} = 15\text{V}$ , $f = 1\text{MHz}$	-	6424	-	pF
$C_{oss}$	Output Capacitance		-	841	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	445	-	pF
$Q_g$	Total Gate Charge	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 15\text{V}$ , $I_D = 30\text{A}$	-	108	-	nC
$Q_{gs}$	Gate Source Charge		-	20	-	nC
$Q_{gd}$	Gate Drain("Miller") Charge		-	20	-	nC

#### Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}$ , $V_{DD} = 15\text{V}$ $I_D = 30\text{A}$ , $R_{GEN} = 3\Omega$	-	13	-	ns
$t_r$	Turn-On Rise Time		-	29	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	85	-	ns
$t_f$	Turn-Off Fall Time		-	50	-	ns

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

$I_S$	Maximum Continuous Drain to Source Diode Forward Current	$V_{GS} = 0\text{V}$ , $I_S = 20\text{A}$	-	-	160	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	640	A
$V_{SD}$	Drain to Source Diode Forward Voltage		-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time		-	28	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	16	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2.  $E_{AS}$  condition: Starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 15\text{V}$ ,  $V_G = 10\text{V}$ ,  $R_G = 25\Omega$ ,  $L = 0.5\text{mH}$ ,  $I_{AS} = 40\text{A}$
  3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .

## Test Circuit

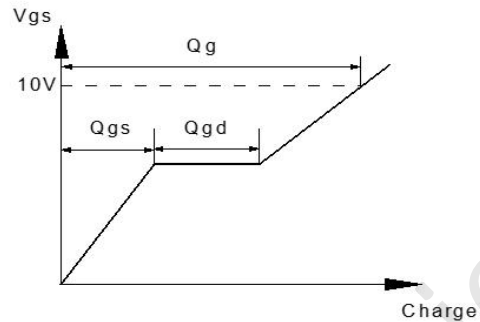


Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

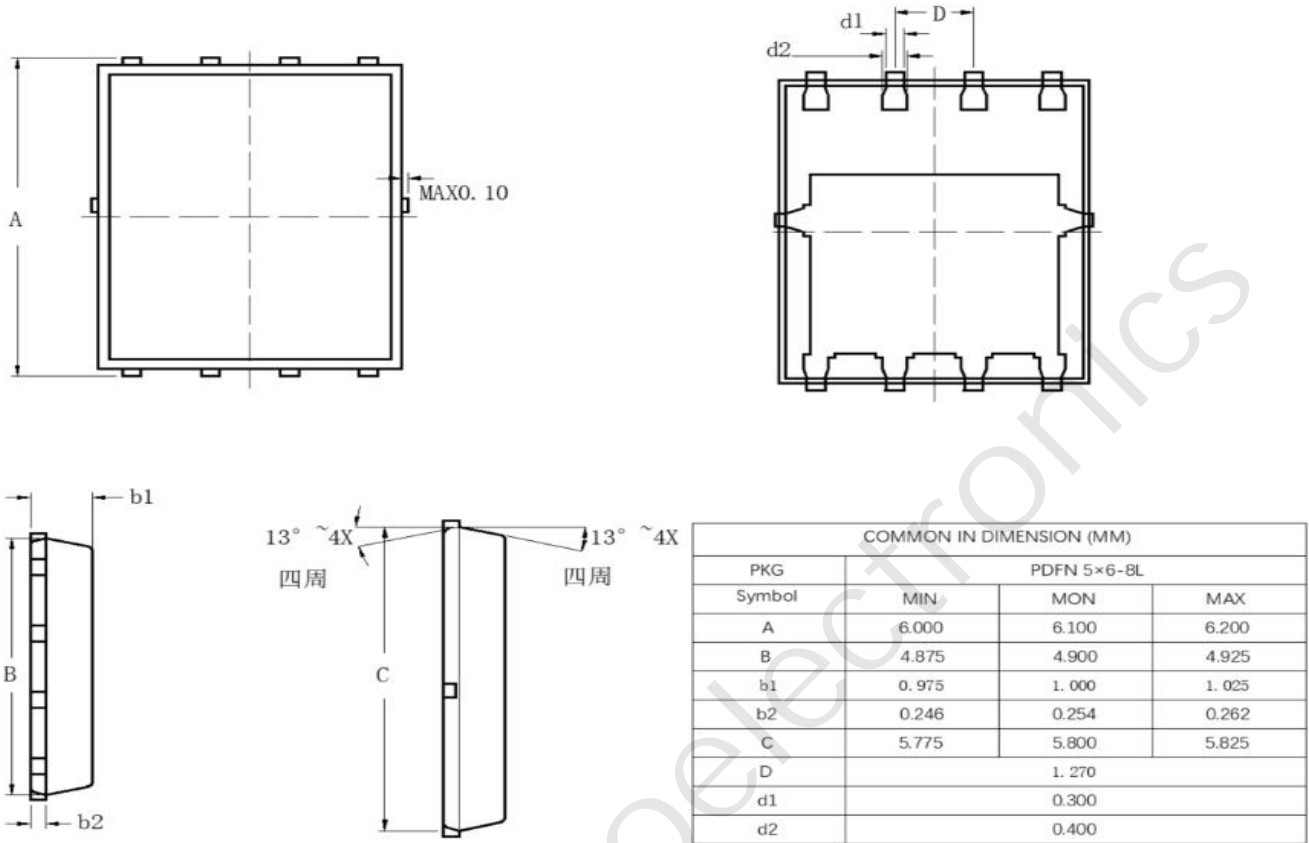


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

## Package Mechanical Data(PDFN5x6-8L)



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