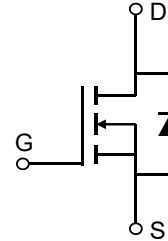


Description

Features

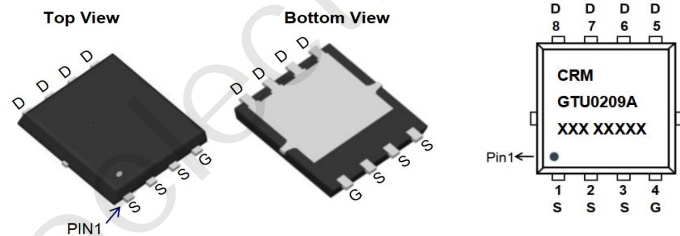
- 20V, 40A
- $R_{DS(ON)}$ Typ = 6.4mΩ @ $V_{GS} = 4.5V$
- $R_{DS(ON)}$ Typ = 9.0mΩ @ $V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CRMGTU0209A	CRMGTU0209A	PDFN5x6-8L	TAPING	13"	5000	50000

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

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	±12	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	40
		$T_C = 100^\circ\text{C}$	24
I_{DM}	Pulsed Drain Current ⁽¹⁾	160	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	30	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	19.2
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6.5	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	°C

Electrical Characteristics (T_J = 25°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 = 250μA, V _{GS} = 0V	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 20V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±12V	-	-	±100	nA

On Characteristics

V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1.2	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 4.5V, I _D = 15A	-	6.4	8.3	mΩ
		V _{GS} = 2.5V, I _D = 10A	-	9.0	11.7	mΩ

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz	-	1055	-	pF
C _{oss}	Output Capacitance		-	160	-	pF
C _{rss}	Reverse Transfer Capacitance		-	140	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 4.5V V _{DS} = 10V, I _D = 15A	-	13	-	nC
Q _{gs}	Gate Source Charge		-	2.5	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	3.5	-	nC

Switching Characteristics

t _{d(on)}	Turn-On DelayTime	V _{GS} = 4.5V, V _{DD} = 10V I _D = 15A, R _{GEN} = 3Ω	-	8	-	ns
t _r	Turn-On Rise Time		-	19	-	ns
t _{d(off)}	Turn-Off DelayTime		-	30	-	ns
t _f	Turn-Off Fall Time		-	11	-	ns

Drain-Source Diode Characteristics and Max Ratings

I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 10A	-	-	40	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	160	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time		-	7.5	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	1.5	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25°C, V_{DD}=10V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=11A
 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

Test Circuit

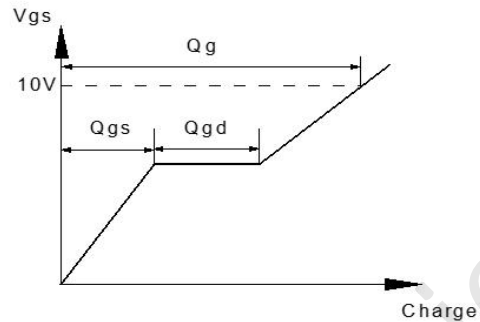


Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

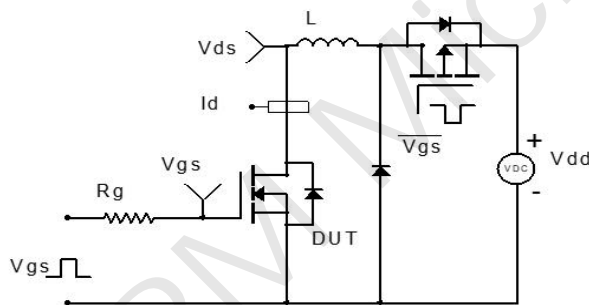
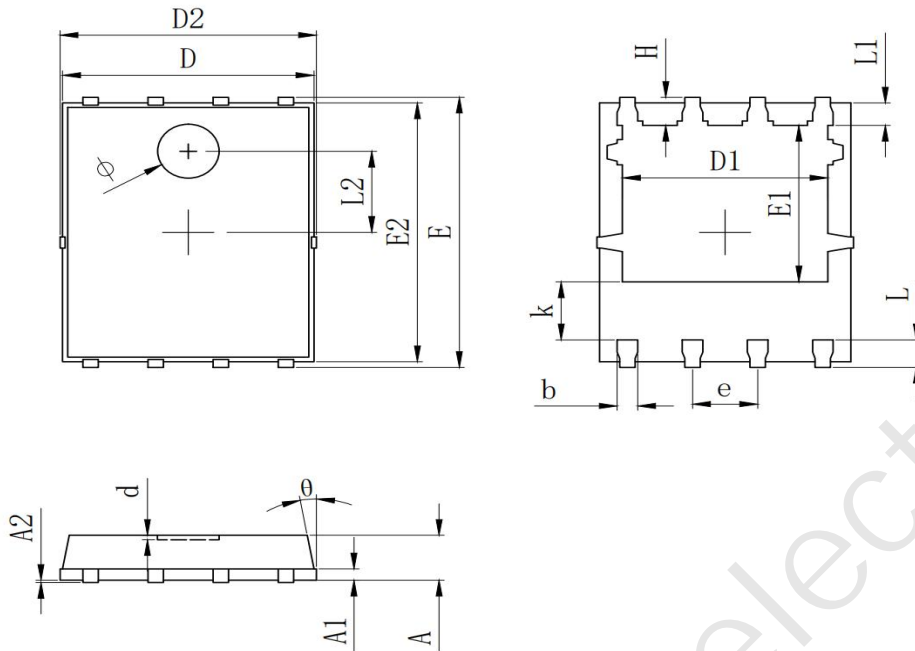


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN5x6-8L)




SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100

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