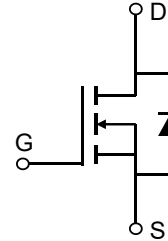


### Description

#### Features

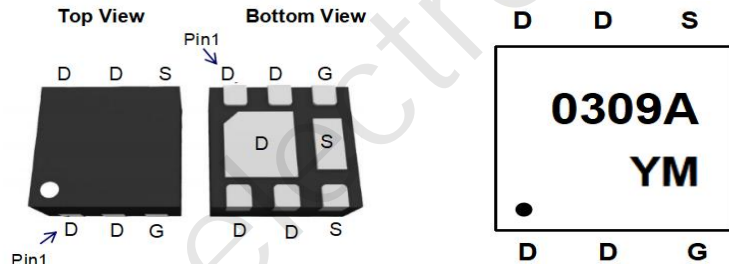
- 30V, 18A  
 $R_{DS(ON)}$  Typ = 8.9mΩ @  $V_{GS} = 4.5V$   
 $R_{DS(ON)}$  Typ = 11.2mΩ @  $V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead Free



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)
CRMVTU0309A	0309A	DFN2020-6L	TAPING	7"	3000	120000

#### Absolute Maximum Ratings (@ $T_J = 25^\circ C$ 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	±12	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	18	A
		T <sub>C</sub> = 100°C	10.8	A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>	72	A	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	6.5	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	19	°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
Off Characteristics						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 30V, 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> = ±12V	-	-	±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	0.5	0.85	1.3	V
R <sub>DS(ON)</sub>	Static Drain-Source ON-Resistance <sup>(2)</sup>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5A	-	8.9	11.5	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 3A	-	11.2	14.5	mΩ
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz	-	1600	-	pF
C <sub>oss</sub>	Output Capacitance		-	121	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	103	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 0 to 10V V <sub>DS</sub> = 10V, I <sub>D</sub> = 5A	-	19	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	3	-	nC
Q <sub>gd</sub>	Gate Drain("Miller") Charge		-	4	-	nC
Switching Characteristics						
t <sub>d(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 15V I <sub>D</sub> = 5A, R <sub>GEN</sub> = 3Ω	-	6	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	18	-	ns
t <sub>d(off)</sub>	Turn-Off DelayTime		-	21	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	5	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	18	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	72	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = 5A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I <sub>F</sub> = 5A, di/dt = 100A/us	-	7	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .

## Test Circuit

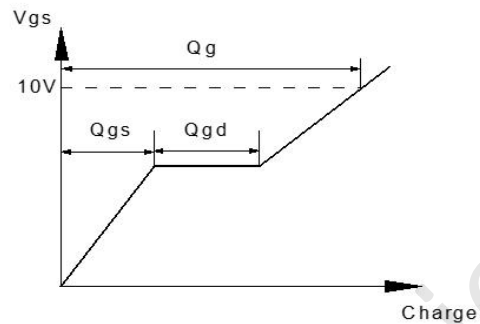
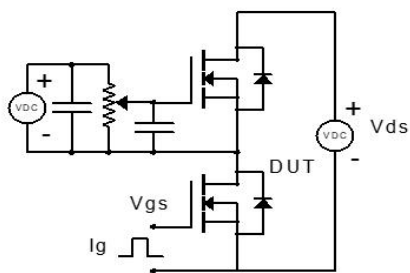


Figure 1: Gate Charge Test Circuit & Waveform

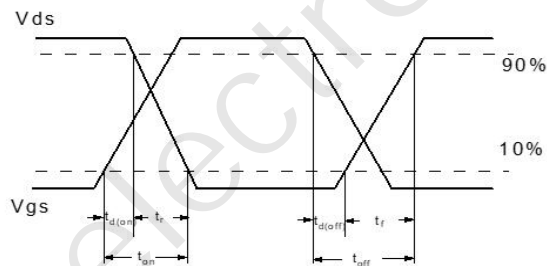
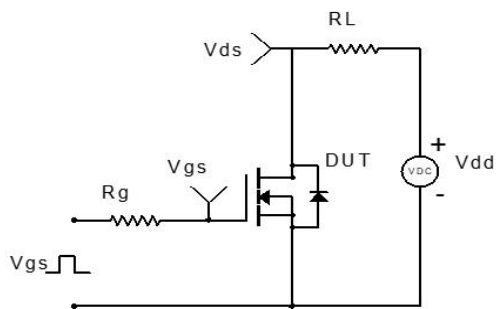


Figure 2: Resistive Switching Test Circuit & Waveform

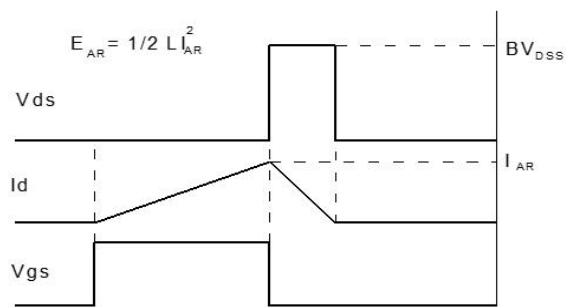
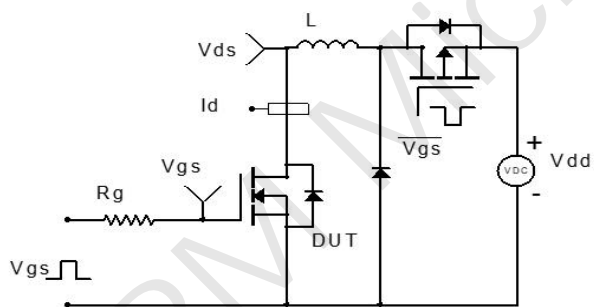


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

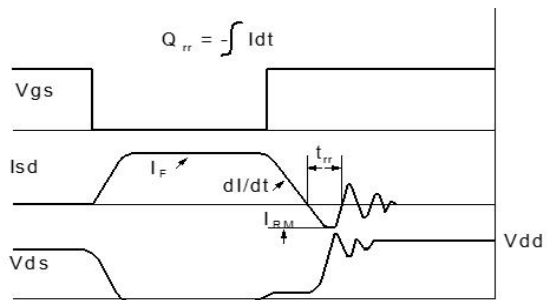
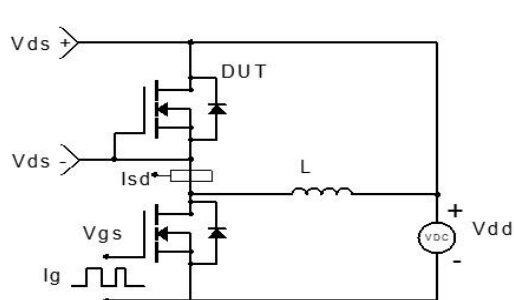
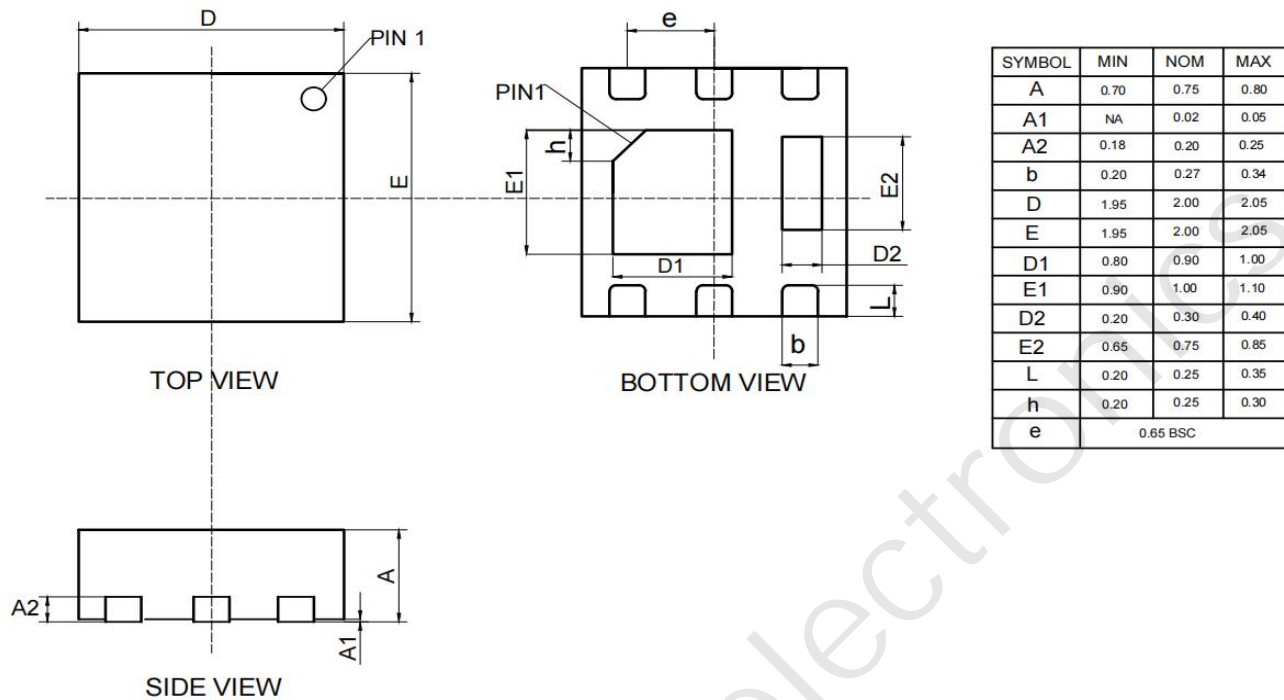


Figure 4: Diode Recovery Test Circuit & Waveform

### Package Mechanical Data(DFN2020-6L)




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### Contact information

For more information, please visit: <http://www.crm-semi.tech>

For sales information, please send an email to: [sales@crm-semi.com](mailto:sales@crm-semi.com)