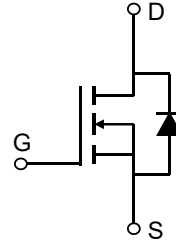


Description

Features

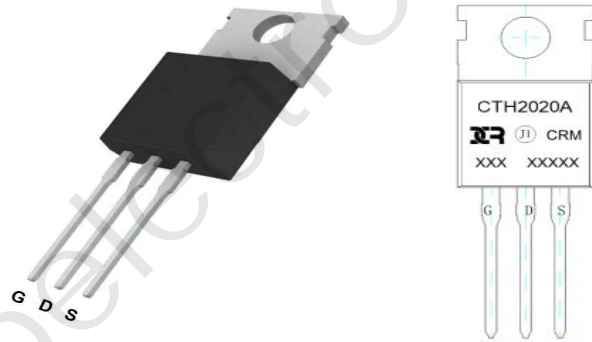
- 200V, 65A
 $R_{DS(ON)}$ Typ = 17.8mΩ @ $V_{GS} = 10V$
 Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	TUBE(pcs)	Inner Box (pcs)	Per Carton (pcs)
CRMCTH2020A	CRMCTH2020A	TO-220C-3L	TUBE	50	1000	5000

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

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	200	V	
V _{GS}	Gate-to-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	65	A
		T _C = 100°C	39	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	260	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	911	mJ	
P _D	Power Dissipation	T _C = 25°C	223	W
R _{θJC}	Thermal Resistance, Junction to Case	0.56	°C/W	
T _J , T _{STG}	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 _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	200	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 200V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.4	3	3.6	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 30A	-	17.8	23	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	-	12395	-	pF
C _{oss}	Output Capacitance		-	480	-	pF
C _{rss}	Reverse Transfer Capacitance		-	429	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 100V, I _D =20A	-	300	-	nC
Q _{gs}	Gate Source Charge		-	25	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	100	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 50V I _D = 20A, R _{GEN} = 25Ω	-	75	-	ns
t _r	Turn-On Rise Time		-	110	-	ns
t _{d(off)}	Turn-Off DelayTime		-	105	-	ns
t _f	Turn-Off Fall Time		-	85	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	65	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	260	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 20A, di/dt = 100A/us	-	137	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	0.6	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $L = 10\text{mH}$, $I_{AS} = 13.5\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

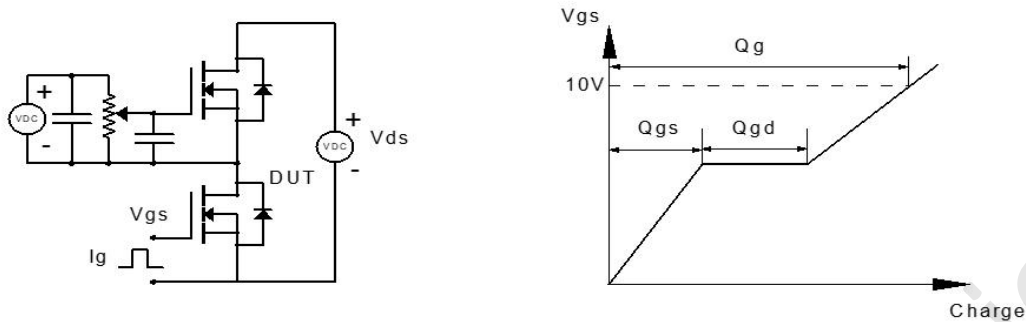


Figure 1: Gate Charge Test Circuit & Waveform

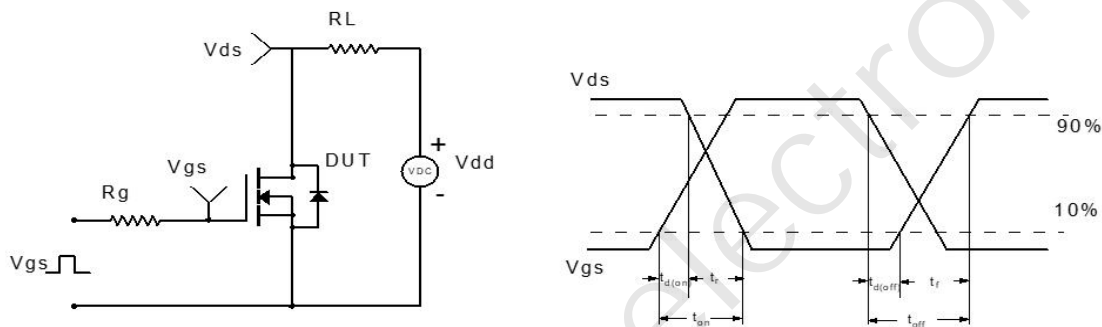


Figure 2: Resistive Switching Test Circuit & Waveform

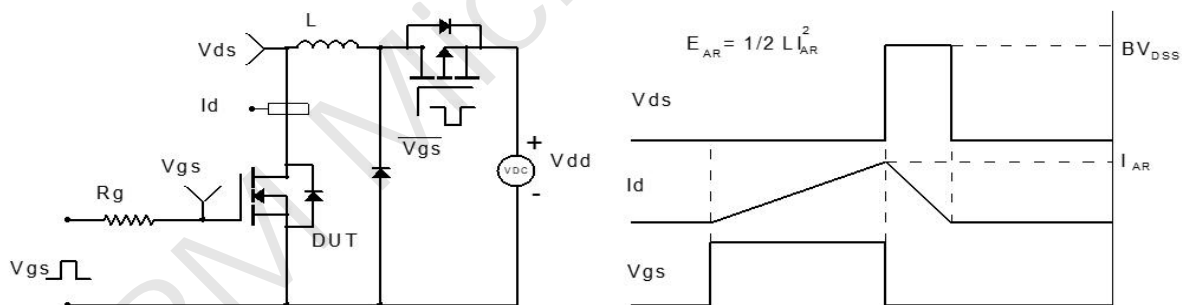


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

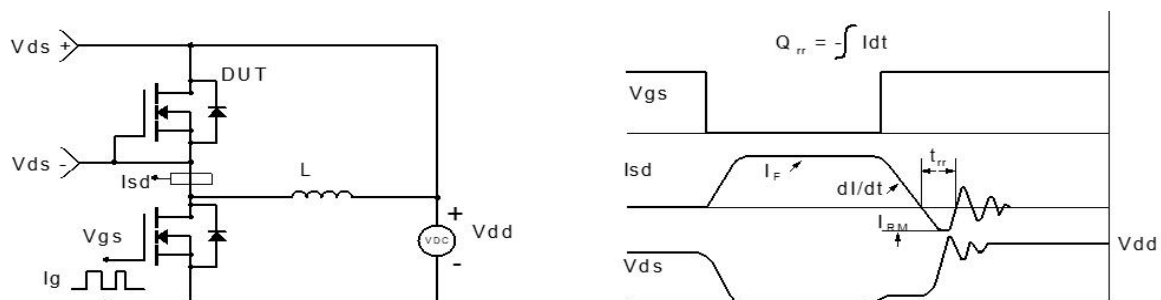
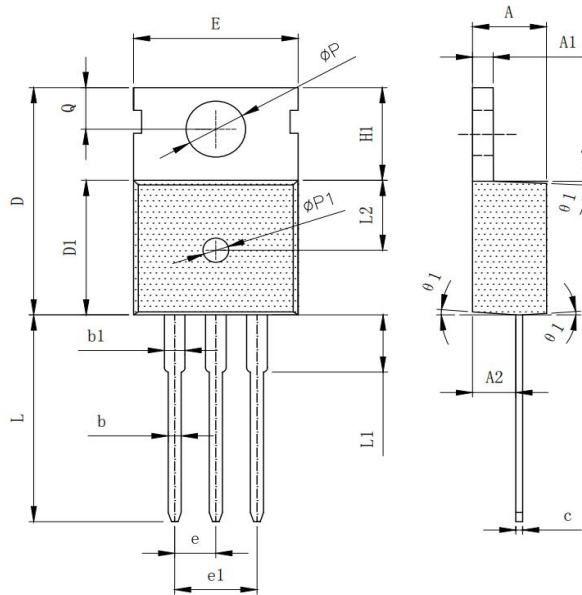



Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-220C-3L)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.25	1.30	1.35
A2	2.30	2.40	2.50
b	0.70	0.80	0.90
b1	1.25	1.35	1.45
c	0.40	0.50	0.60
D	15.50	15.80	16.10
D1	9.10	9.20	9.30
D2	12.73	12.83	12.93
E	9.70	9.90	10.20
E1	7.60	8.00	8.40
e	2.54 (BSC)		
e1	5.08 (BSC)		
H1	6.30	6.50	6.80
L	12.75	13.08	13.50
L1	--	--	3.10
L2	4.30	4.60	4.90
ΦP	3.50	3.60	3.70
ΦP1	1.40	1.50	1.60
Q	2.70	--	2.90
θ 1	2°	4°	6°


NOTES: 1. PKG  SURFACE IS MATTE Ra1.2~1.4;
OTHERS IS POLISHED Ra0.15;

Important Notice

The information presented in datasheets is for reference only. CRM reserves the right to make changes at any time to any products or information herein, without notice.

Customers are responsible for the design and applications, including compliance with all laws, regulations and safety requirements or standards.

“Typical” parameters which provided in datasheets can vary in different applications and actual performance may vary over time. Customers are responsible for doing all necessary testing to minimize the risks associated with their applications and products.

 is a registered trademark of Wuxi CRM Microelectronics Co. , Ltd.

Copyright ©2023 CRM Microelectronics Co. , Ltd. All rights reserved.

Contact information

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

For sales information, please send an email to: sales@crm-semi.com