祥瑞微 CRM Microelectronics

CRMSGH2015A

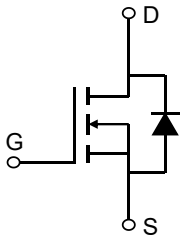
N-Channel 200V, 11mΩ Typ. Power MOSFET

Description

Features

- 200V, 100A

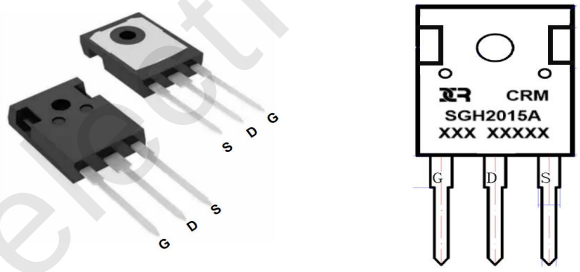
  $R_{DS(ON)}$ Typ = 11mΩ @ V_{GS} = 10V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!



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)
CRMSGH2015A	CRMSGH2015A	TO-247-3L	TUBE	30	600	3000

Absolute Maximum Ratings (@ T_J = 25°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	100	A
		T_C = 100°C	60	A
I_{DM}	Pulsed Drain Current (1)		400	A
E_{AS}	Single Pulsed Avalanche Energy (2)		1445	mJ
P_D	Power Dissipation	T_C = 25°C	250	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.5	°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
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	2.5	3.1	3.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 30A	-	11	14.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	2582	-	pF
C_{oss}	Output Capacitance		-	3813	-	pF
C_{rss}	Reverse Transfer Capacitance		-	80	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V, V_{DS} = 100V, I_D = 30A	-	70	-	nC
Q_{gs}	Gate Source Charge		-	28	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	20	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 100V, I_D= 30A, R_{GEN} = 3Ω	-	42	-	ns
t_r	Turn-On Rise Time		-	46	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	60	-	ns
t_f	Turn-Off Fall Time		-	48	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	100	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	400	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 = 30A, di/dt = 100A/us	-	110	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	245	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25ohm, L=10mH, I_{AS}=17A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

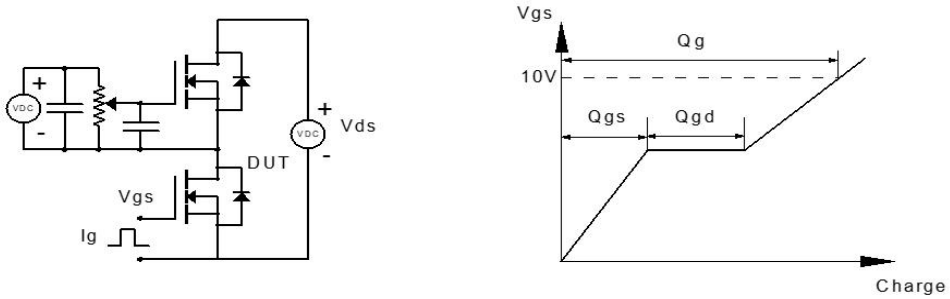


Figure 1: Gate Charge Test Circuit & Waveform

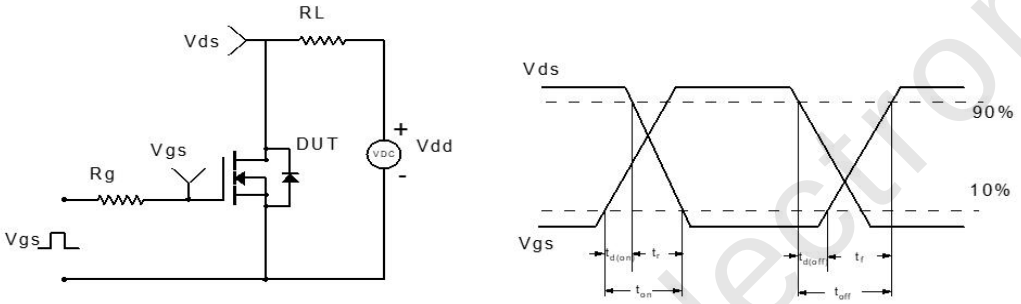


Figure 2: Resistive Switching Test Circuit & Waveform

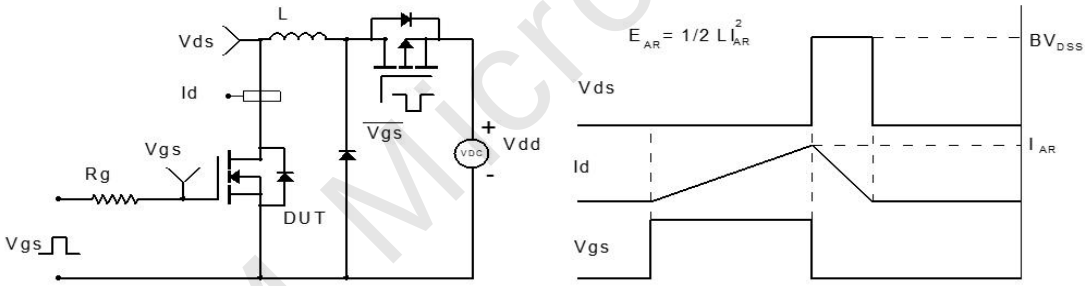


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

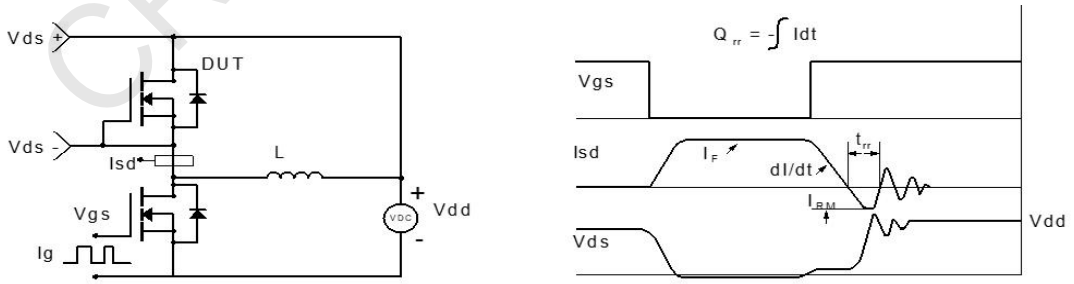
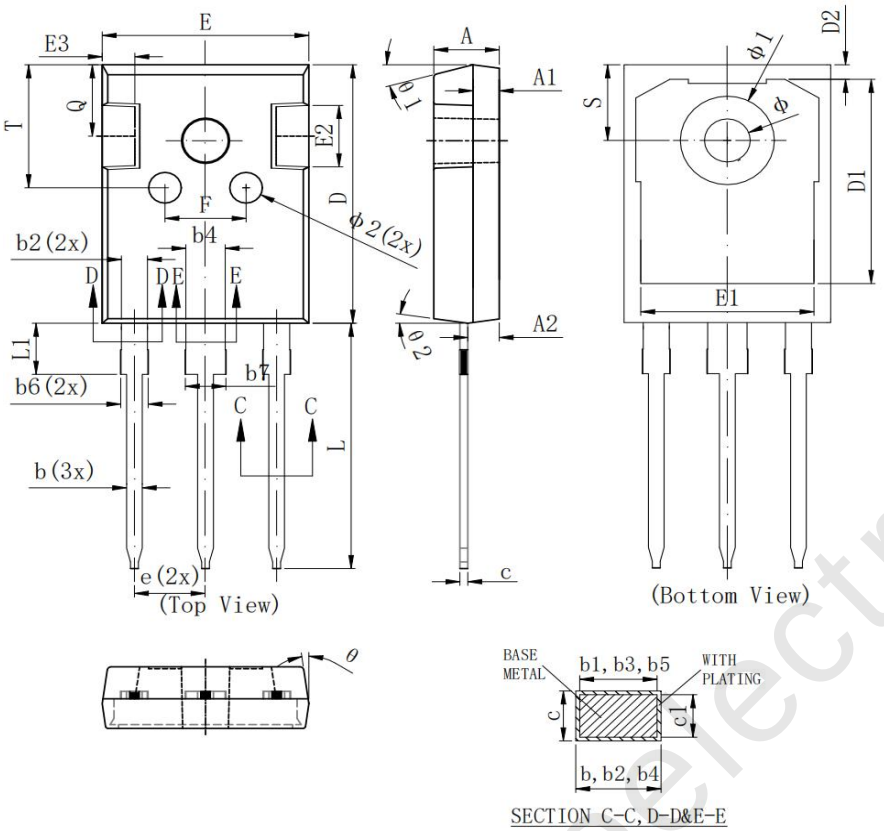


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-247-3L)



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.900	5.000	5.100
A1	1.900	2.000	2.100
A2	2.300	2.400	2.500
b	1.160	-	1.260
b1	1.150	1.200	1.220
b2	1.960	-	2.060
b3	1.950	2.000	2.020
b4	2.960	-	3.060
b5	2.950	3.000	3.020
b6	2.000	2.100	2.250
b7	3.000	3.100	3.250
c	0.590	-	0.660
c1	0.580	0.600	0.620
D	20.900	21.000	21.100
D1	16.250	16.550	16.850
D2	1.052	1.202	1.352
E	15.700	15.800	15.900
E1	13.060	13.260	13.460
E2	4.900	5.000	5.100
E3	2.400	2.500	2.600
e	5.440 BSC		
F	6.000	6.200	6.400
L	19.750	19.950	20.150
L1	-	-	4.300
φ	3.500	3.600	3.700
φ1	-	-	7.400
φ2	2.400	2.500	2.600
Q	5.600	5.800	6.000
S	6.180 BSC		
T	9.800	10.000	10.200
θ	8° REF		
θ1	15° REF		
θ2	8° REF		

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.

Contact information

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

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