CRMGGH1512B

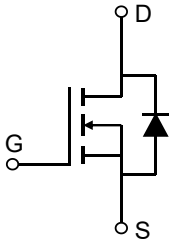
N-Channel 150V, 9.3mΩ Typ. Power MOSFET

Description

Features

- 150V, 70A

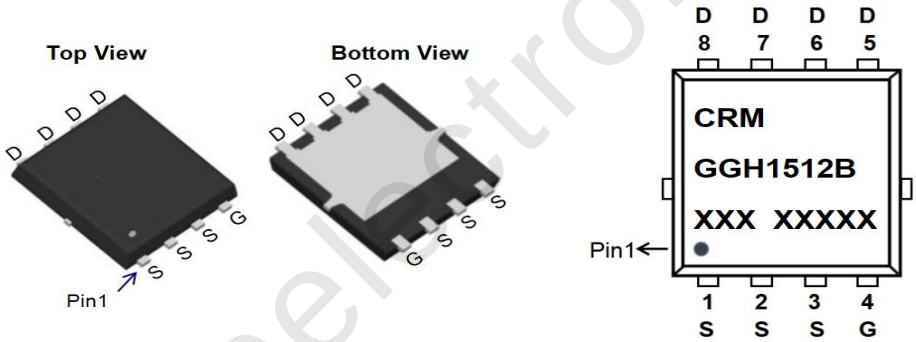
  $R_{DS(ON)}$ Typ = 9.3mΩ @ V_{GS} = 10V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMGGH1512B	CRMGGH1512B	PDFN5x6-8L	TAPING	13"	5000	50000

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		150	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	70	A
		T_C = 100°C	42	A
I_{DM}	Pulsed Drain Current (1)		280	A
E_{AS}	Single Pulsed Avalanche Energy (2)		240	mJ
P_D	Power Dissipation	T_C = 25°C	104	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.2	°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	150	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 150V, 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	3.0	3.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 30A	-	9.3	12.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	2370	-	pF
C_{oss}	Output Capacitance		-	1760	-	pF
C_{rss}	Reverse Transfer Capacitance		-	112	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 75V, I_D = 20A	-	26	-	nC
Q_{gs}	Gate Source Charge		-	9	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	3	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 75V I_D= 20A, R_{GEN} = 10Ω	-	11	-	ns
t_r	Turn-On Rise Time		-	9	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	16	-	ns
t_f	Turn-Off Fall Time		-	8	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	70	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	280	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	-	80	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	160	-	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=0.5mH, I_{AS}=31A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

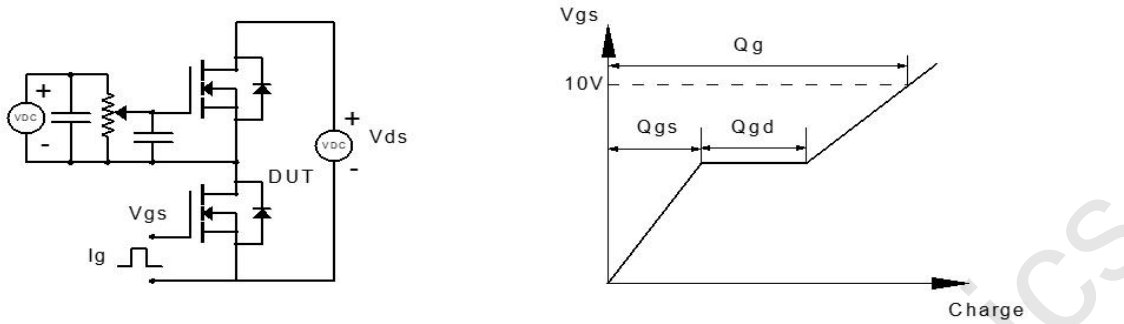


Figure 1: Gate Charge Test Circuit & Waveform

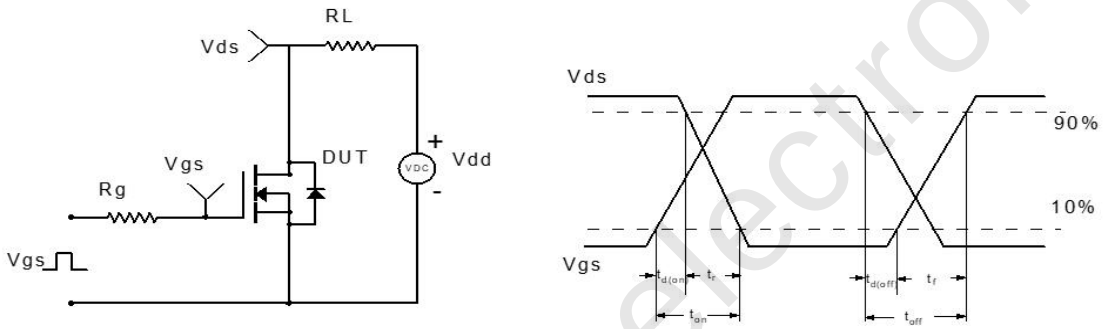


Figure 2: Resistive Switching Test Circuit & Waveform

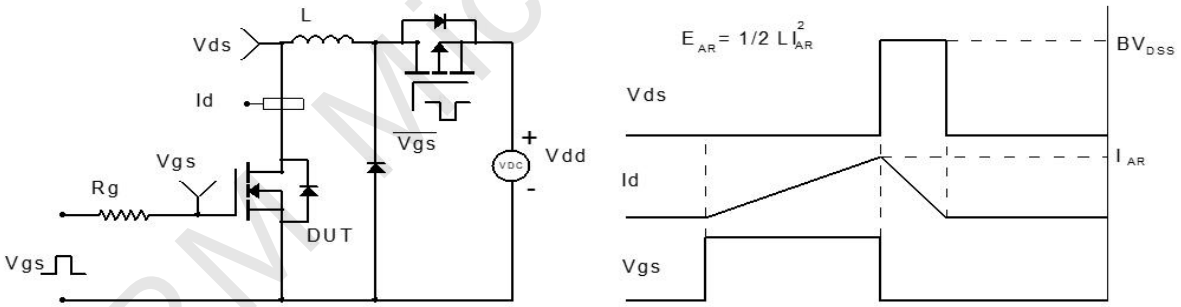


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

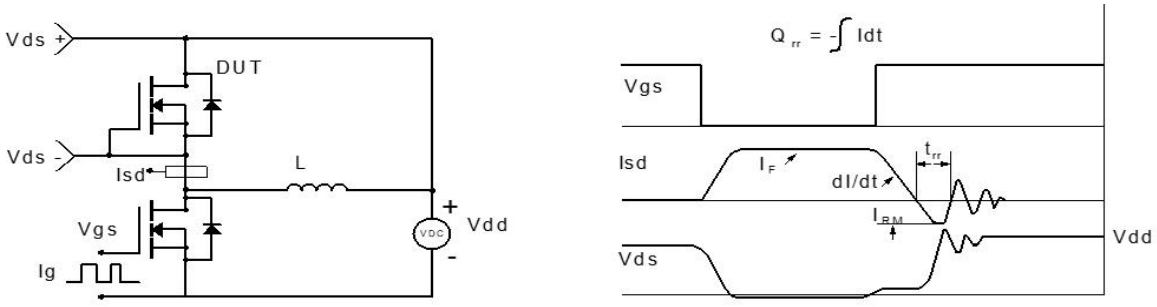
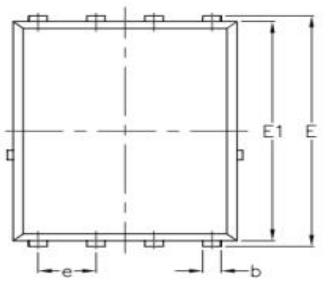
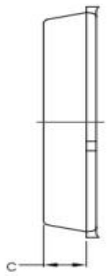


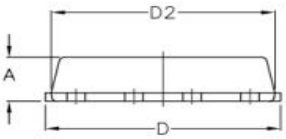
Figure 4: Diode Recovery Test Circuit & Waveform

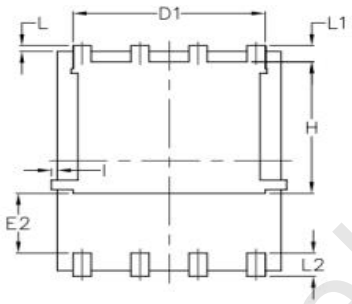
Package Mechanical Data(PDFN5x6-8L)





SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.40	—	0.0551	—
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.71	0.0150	0.0280
H	3.30	3.50	0.1299	0.1378
I		0.18	—	0.0070





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