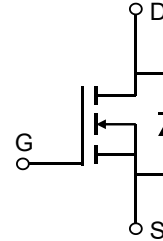


Description

Features

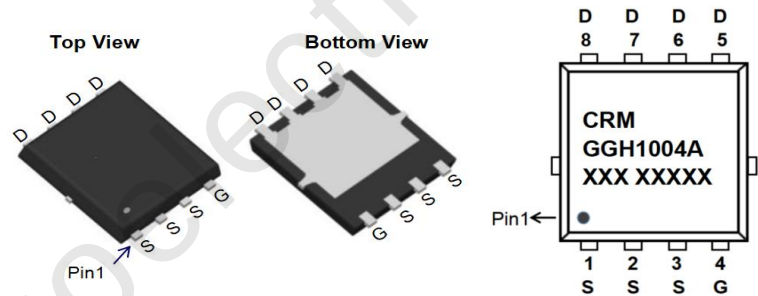
- 100V, 125A
 $R_{DS(ON)} \text{ Typ} = 3.6\text{m}\Omega @ V_{GS} = 10\text{V}$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CRMGGH1004A	CRMGGH1004A	PDFN5x6-8L	TAPING	13"	5000	60000

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

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	100	V	
V _{GS}	Gate-to-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	125	A
		T _C = 100°C	75	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	500	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	306	mJ	
P _D	Power Dissipation	T _C = 25°C	133	W
R _{θJC}	Thermal Resistance, Junction to Case	0.94	°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
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Off Characteristics

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 100\text{V}, V_{GS} = 0\text{V}$	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$	-	-	± 100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2.5	2.9	3.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = 10\text{V}, I_D = 30\text{A}$	-	3.6	4.7	mΩ

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}, V_{DS} = 50\text{V},$ $f = 1\text{MHz}$	-	2767	-	pF
C_{oss}	Output Capacitance		-	1383	-	pF
C_{rss}	Reverse Transfer Capacitance		-	23	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 50\text{V}, I_D = 30\text{A}$	-	74	-	nC
Q_{gs}	Gate Source Charge		-	28	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	20	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}, V_{DD} = 50\text{V}$ $I_D = 30\text{A}, R_{GEN} = 3\Omega$	-	16	-	ns
t_r	Turn-On Rise Time		-	35	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	50	-	ns
t_f	Turn-Off Fall Time		-	30	-	ns

Drain-Source Diode Characteristics and Max Ratings

I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	125	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	500	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = 30\text{A}$	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	$I_F = 15\text{A}, di/dt = 100\text{A/us}$	-	31	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	48	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = 35\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

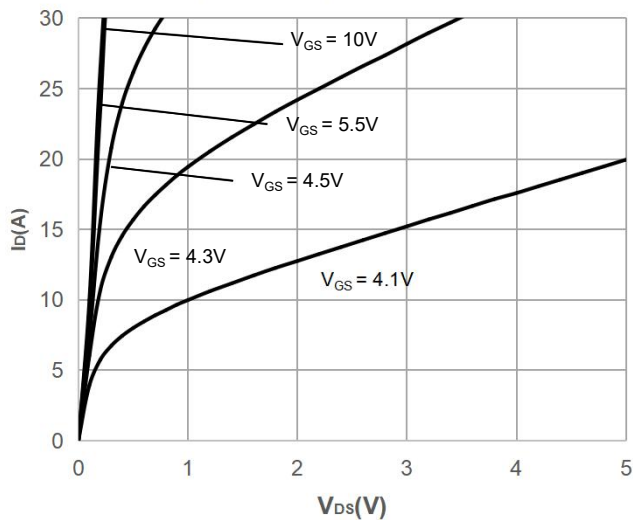


Figure 2: Typical Transfer Characteristics

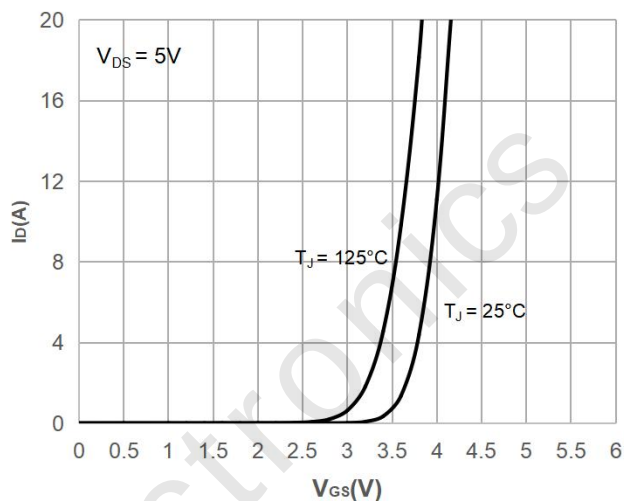


Figure 3: On-resistance vs. Drain Current

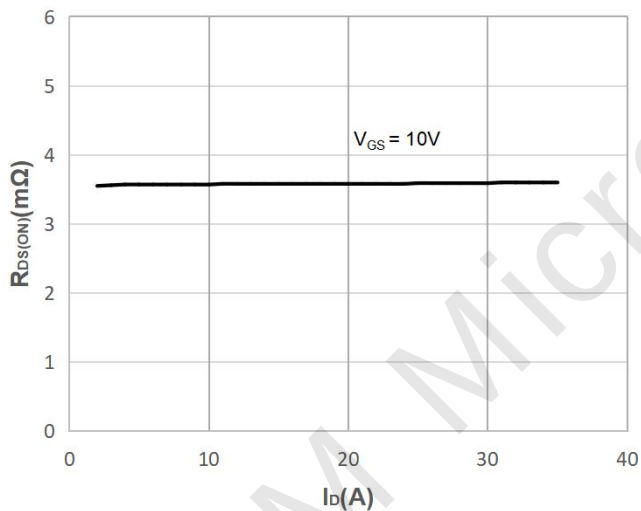


Figure 4: Body Diode Characteristics

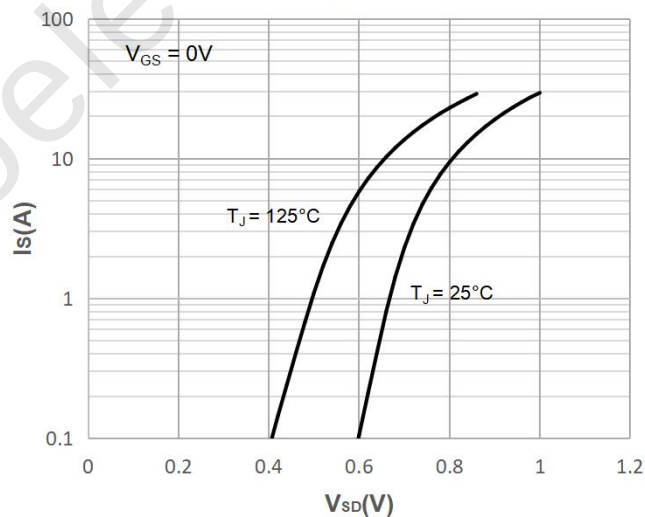


Figure 5: Gate Charge Characteristics

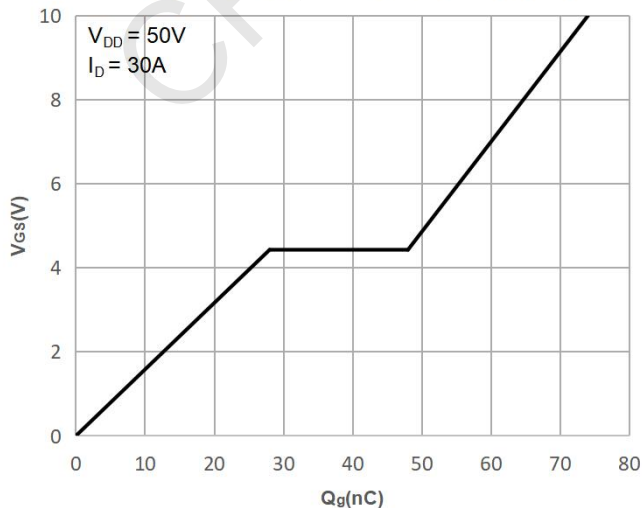
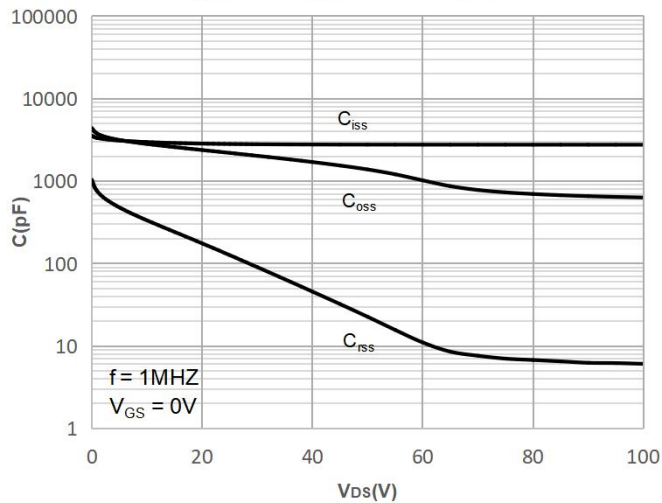


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

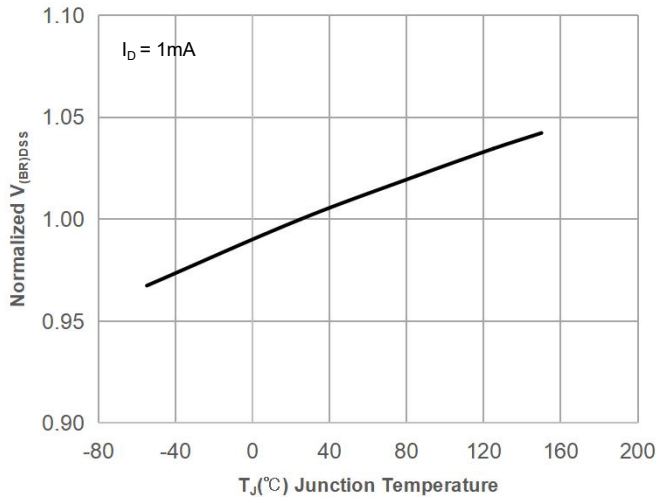


Figure 8: Normalized on Resistance vs. Junction Temperature

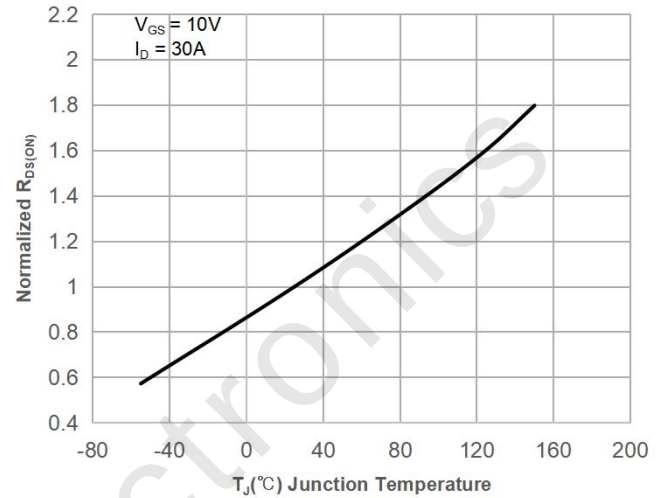


Figure 9: Maximum Safe Operating Area

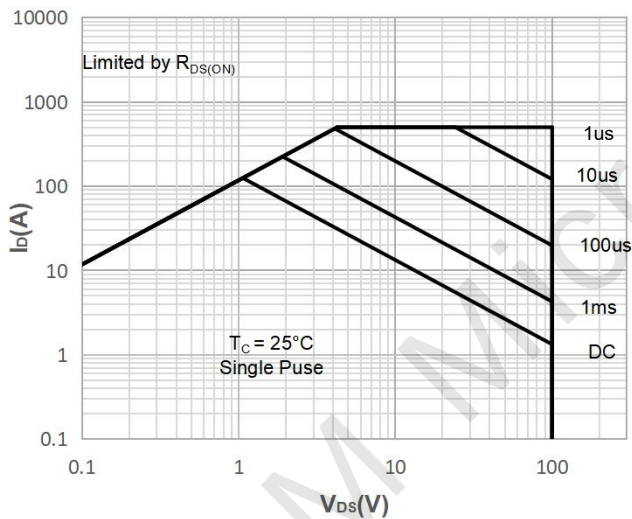


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

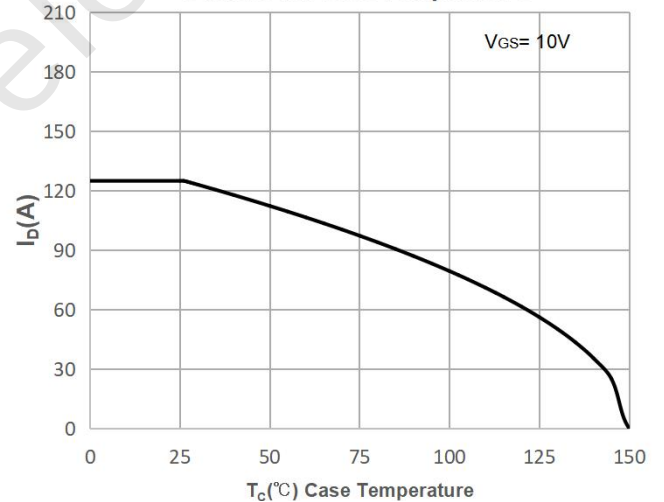


Figure 11: Normalized Maximum Transient Thermal Impedance

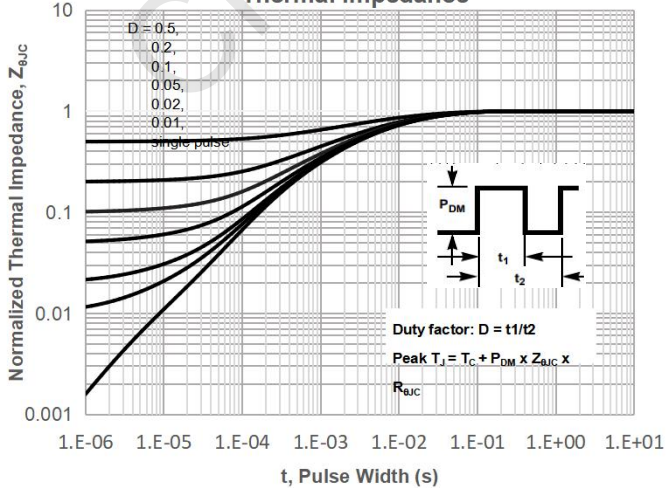
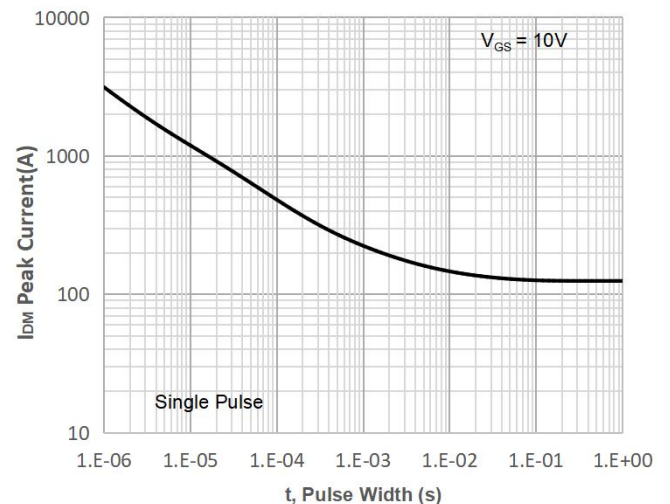


Figure 12: Peak Current Capacity



Test Circuit

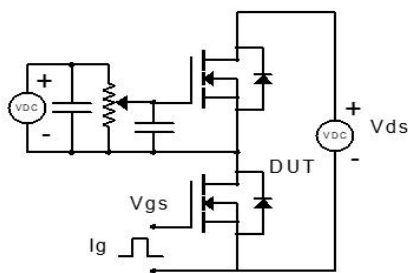


Figure 1: Gate Charge Test Circuit & Waveform

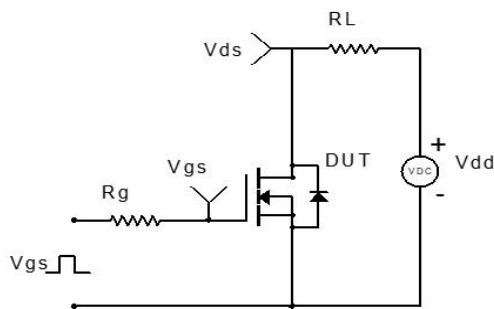


Figure 2: Resistive Switching Test Circuit & Waveform

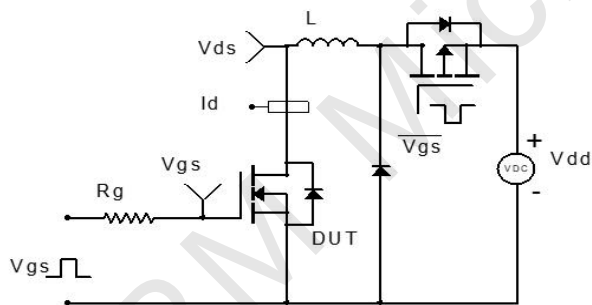


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

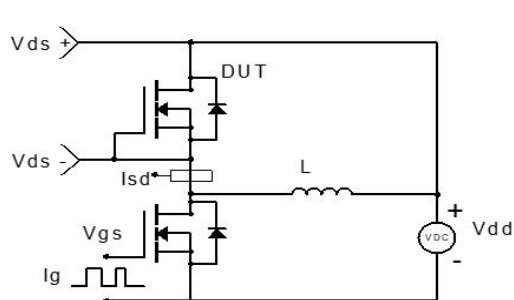
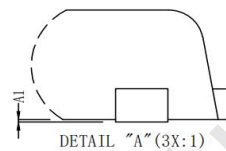
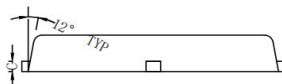
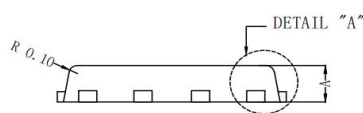
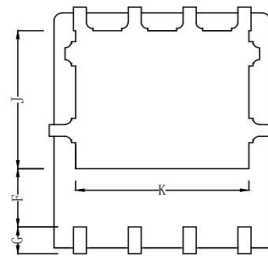
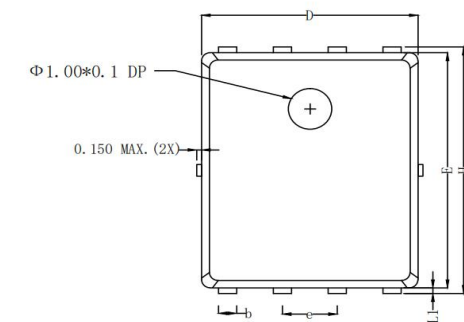


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN5x6-8L)



Dimensions In Millimeter			
Symbol	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.03	0.05
b	0.25	0.30	0.35
c	0.254 REF		
D	4.80	4.90	5.00
F	1.35 REF		
E	5.65	5.75	5.85
e	1.27 BSC		
H	5.90	6.00	6.10
L1	0.10	0.13	0.16
G	0.55 REF		
K	4.00 REF		
J	3.45 REF		

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