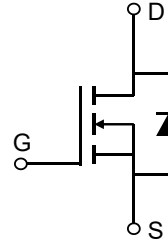


Description

Features

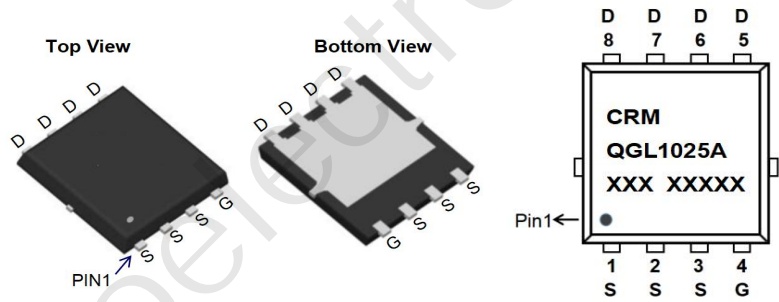
- 100V, 24A
- $R_{DS(ON)}$ Typ = 19.5mΩ @ $V_{GS} = 10V$
- $R_{DS(ON)}$ Typ = 24.8mΩ @ $V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free
- 100% UIS TESTED!
- 100% ΔV_d s TESTED!



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)
CRMQGL1025A	CRMQGL1025A	PDFN3.3x3.3-8L	TAPING	13"	5000	50000

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	24	A
		T _C = 100°C	15	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	96	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	27.6	mJ	
P _D	Power Dissipation	T _C = 25°C	25	W
R _{θJC}	Thermal Resistance, Junction to Case	5	°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	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	1.2	1.8	2.4	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$	-	19.5	25.5	mΩ
		$V_{GS} = 4.5\text{V}$, $I_D = 8\text{A}$	-	24.8	32.5	mΩ

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$, $V_{DS} = 50\text{V}$, $f = 1\text{MHz}$	-	651	-	pF
C_{oss}	Output Capacitance		-	280	-	pF
C_{rss}	Reverse Transfer Capacitance		-	8	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0$ to 10V $V_{DS} = 50\text{V}$, $I_D = 10\text{A}$	-	25	-	nC
Q_{gs}	Gate Source Charge		-	6	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	5	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}$, $V_{DD} = 50\text{V}$ $I_D = 10\text{A}$, $R_{GEN} = 3\Omega$	-	14	-	ns
t_r	Turn-On Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	23	-	ns
t_f	Turn-Off Fall Time		-	6	-	ns

Drain-Source Diode Characteristics and Max Ratings

I_S	Maximum Continuous Drain to Source Diode Forward Current	$V_{GS} = 0\text{V}$, $I_S = 10\text{A}$	-	-	24	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	96	A
V_{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time		-	50	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	90	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = 10.5\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

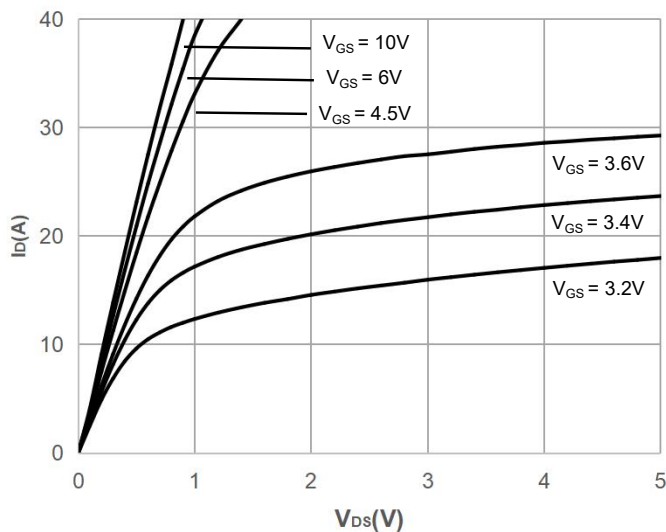


Figure 2: Typical Transfer Characteristics

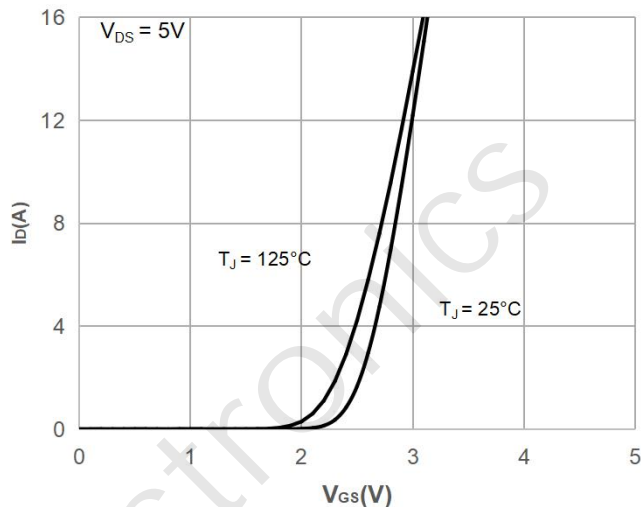


Figure 3: On-resistance vs. Drain Current

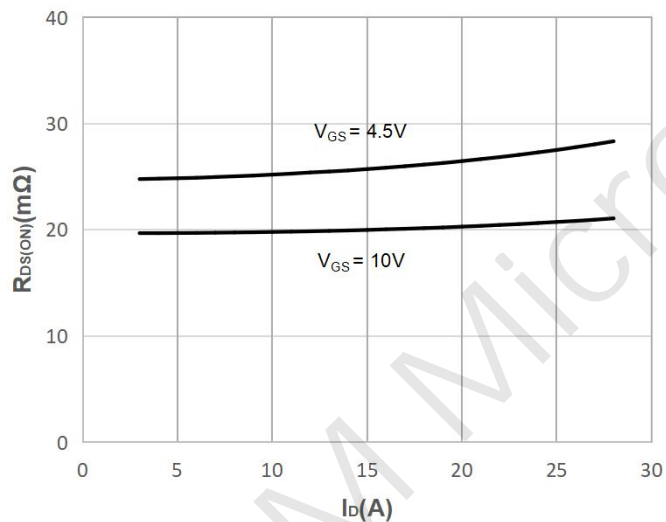


Figure 4: Body Diode Characteristics

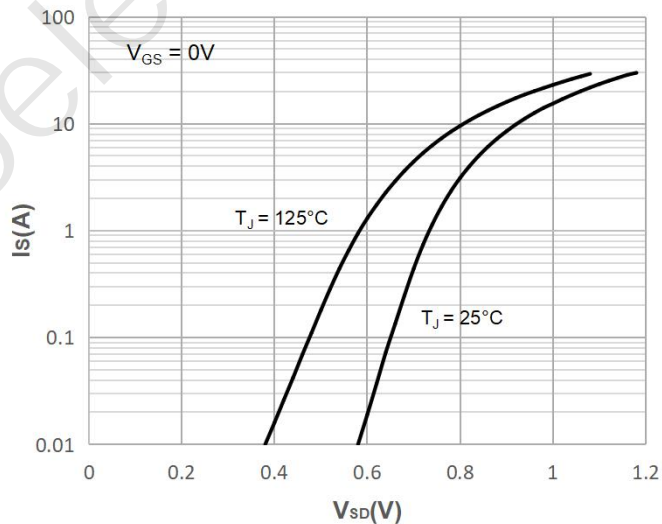


Figure 5: Gate Charge Characteristics

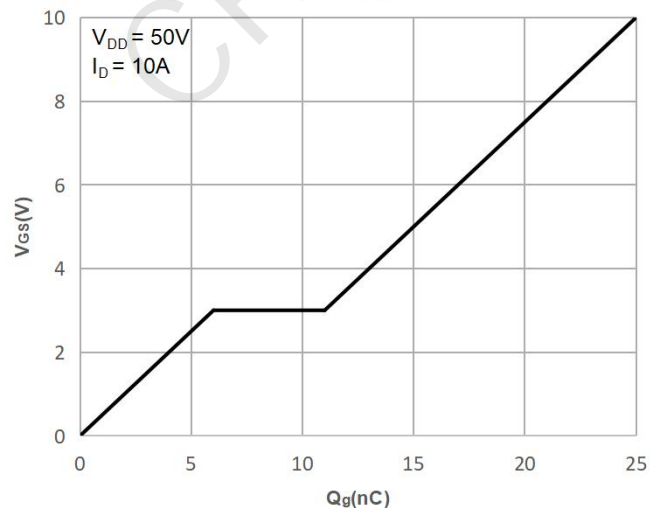
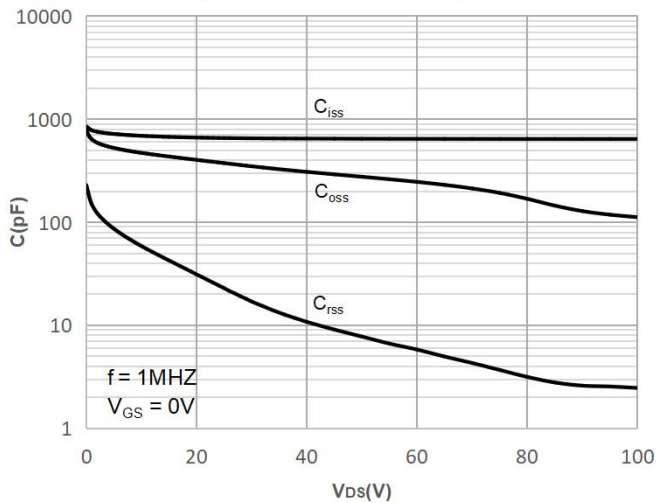


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

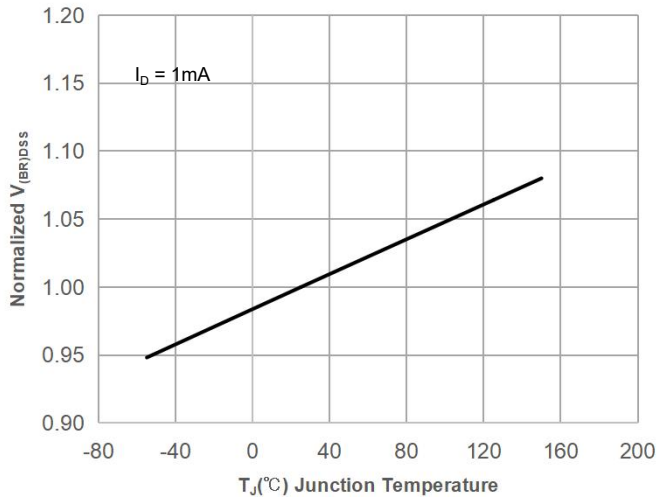


Figure 8: Normalized on Resistance vs. Junction Temperature

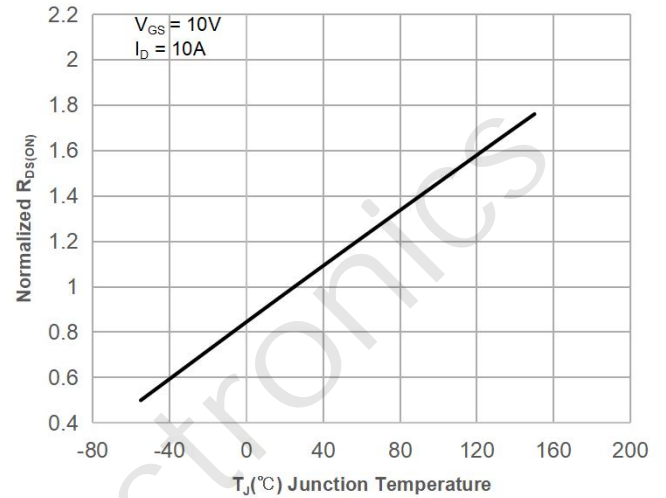


Figure 9: Maximum Safe Operating Area

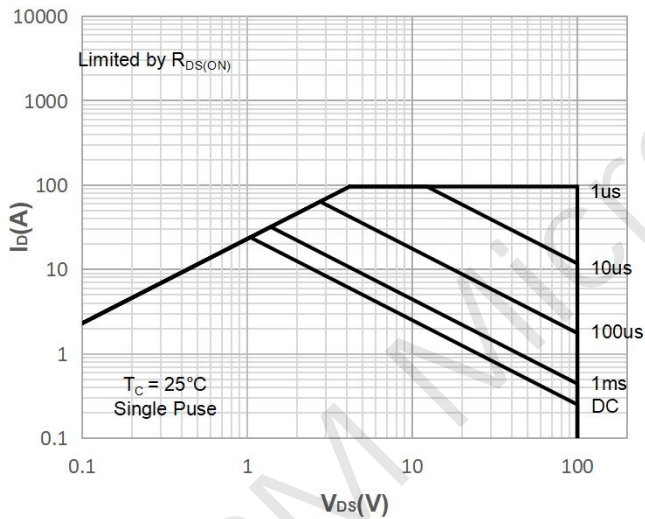


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

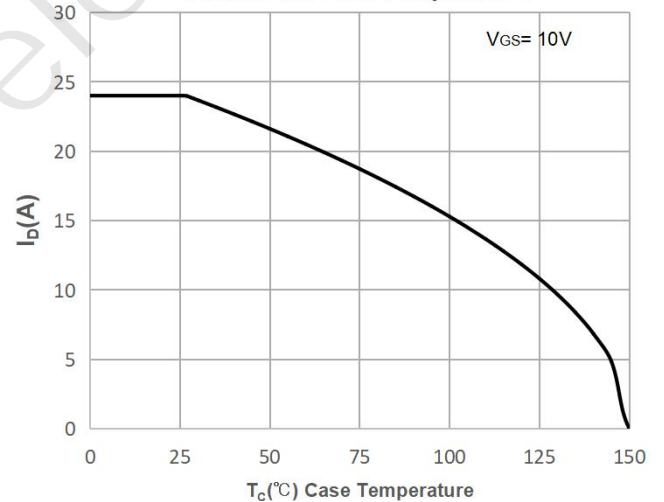


Figure 11: Normalized Maximum Transient Thermal Impedance

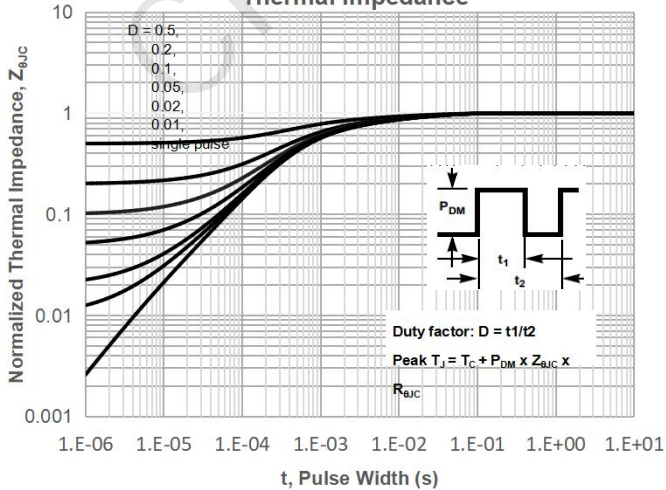
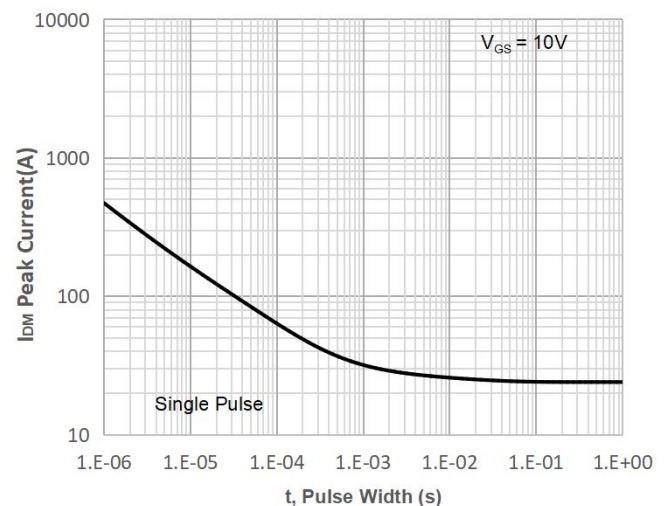


Figure 12: Peak Current Capacity



Test Circuit

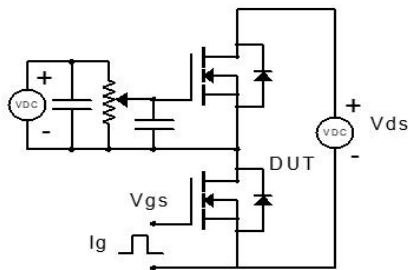


Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

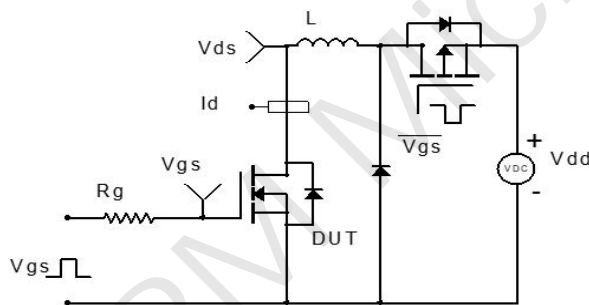
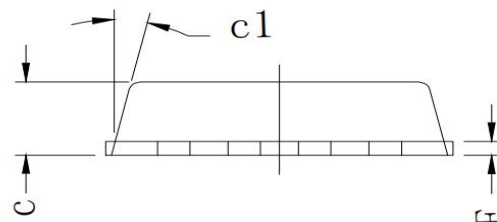
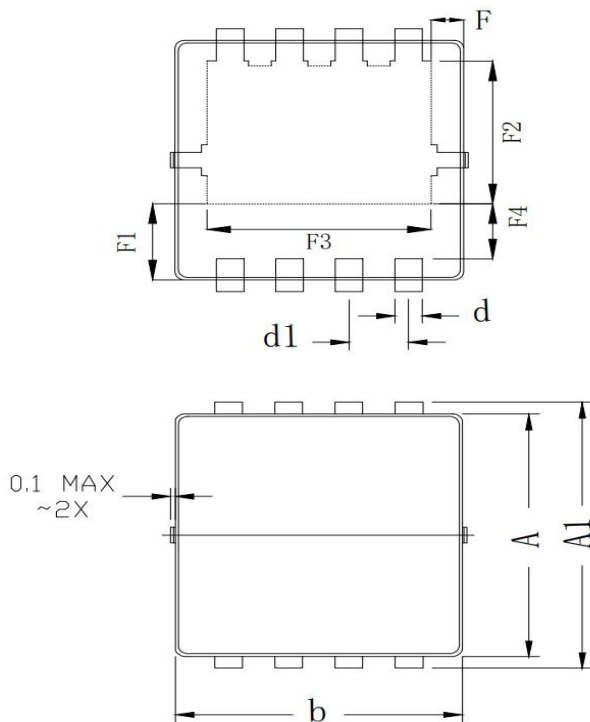


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN3.3x3.3-8L)




COMMON DIMENSION (MM)			
PKG	PDFN 3.3×3.3-8L		
SYMBOL	MIN	TYP	MAX
A	3.070	3.100	3.130
A1	3.300	3.400	3.500
b	3.070	3.100	3.130
c	0.770	0.800	0.830
c1	—	13°	—
d	0.275	0.300	0.325
d1	0.625	0.650	0.675
E	0.144	0.152	0.160
F	0.300	0.325	0.350
F1	0.960	0.985	1.010
F2	1.775	1.800	1.825
F3	2.425	2.450	2.475
F4	0.660	0.685	0.710

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