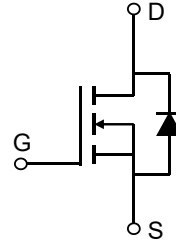


Description

Features

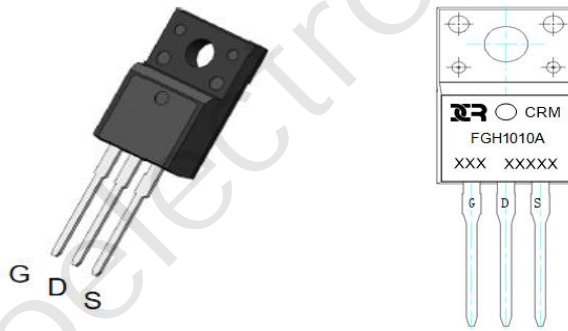
- 100V, 40A
- $R_{DS(ON)}$ Typ = 10.5mΩ @ $V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	TUBE(pcs)	Inner Box (pcs)	Per Carton (pcs)
CRMFGH1010A	CRMFGH1010A	TO-220F-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	100	V	
V _{GS}	Gate-to-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	40	A
		T _C = 100°C	24	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	160	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	76	mJ	
P _D	Power Dissipation	T _C = 25°C	37	W
R _{θJA}	Thermal Resistance, Junction to Ambient ⁽³⁾	72	°C/W	
R _{θJC}	Thermal Resistance, Junction to Case	3.3	°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	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	2.4	2.8	3.6	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽⁴⁾	$V_{GS} = 10\text{V}$, $I_D = 30\text{A}$	-	10.5	13.6	mΩ

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$, $V_{DS} = 50\text{V}$, $f = 1\text{MHz}$	-	1195	-	pF
C_{oss}	Output Capacitance		-	558	-	pF
C_{rss}	Reverse Transfer Capacitance		-	10	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0$ to 10V $V_{DS} = 50\text{V}$, $I_D = 20\text{A}$	-	28	-	nC
Q_{gs}	Gate Source Charge		-	4.9	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	7	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}$, $V_{DD} = 50\text{V}$ $I_D = 20\text{A}$, $R_{GEN} = 6\Omega$	-	13.5	-	ns
t_r	Turn-On Rise Time		-	17	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	30	-	ns
t_f	Turn-Off Fall Time		-	18	-	ns

Drain-Source Diode Characteristics and Max Ratings

I _S	Maximum Continuous Drain to Source Diode Forward Current	-	-	40	A	
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current	-	-	160	A	
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 30A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F = 20A, di/dt = 100A/us	-	50	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	80	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = 17.5\text{A}$
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

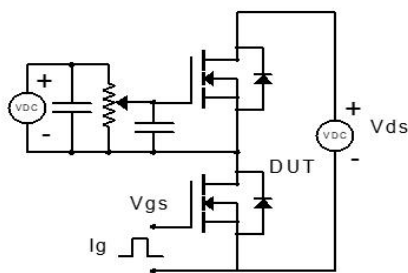


Figure 1: Gate Charge Test Circuit & Waveform

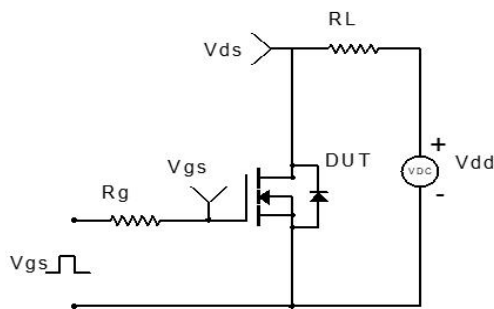


Figure 2: Resistive Switching Test Circuit & Waveform

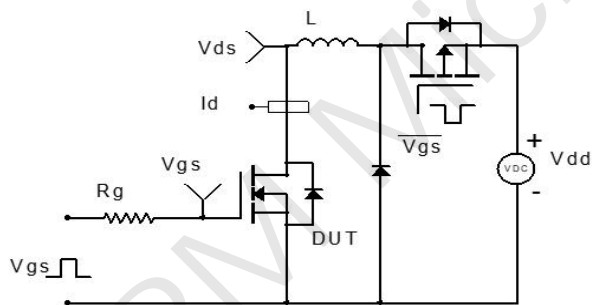


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

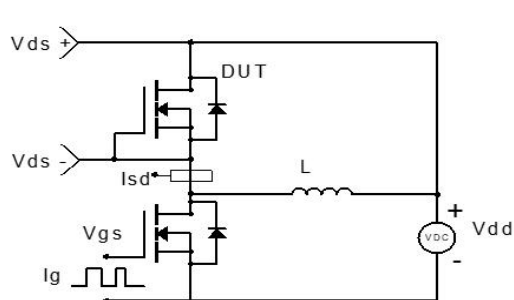
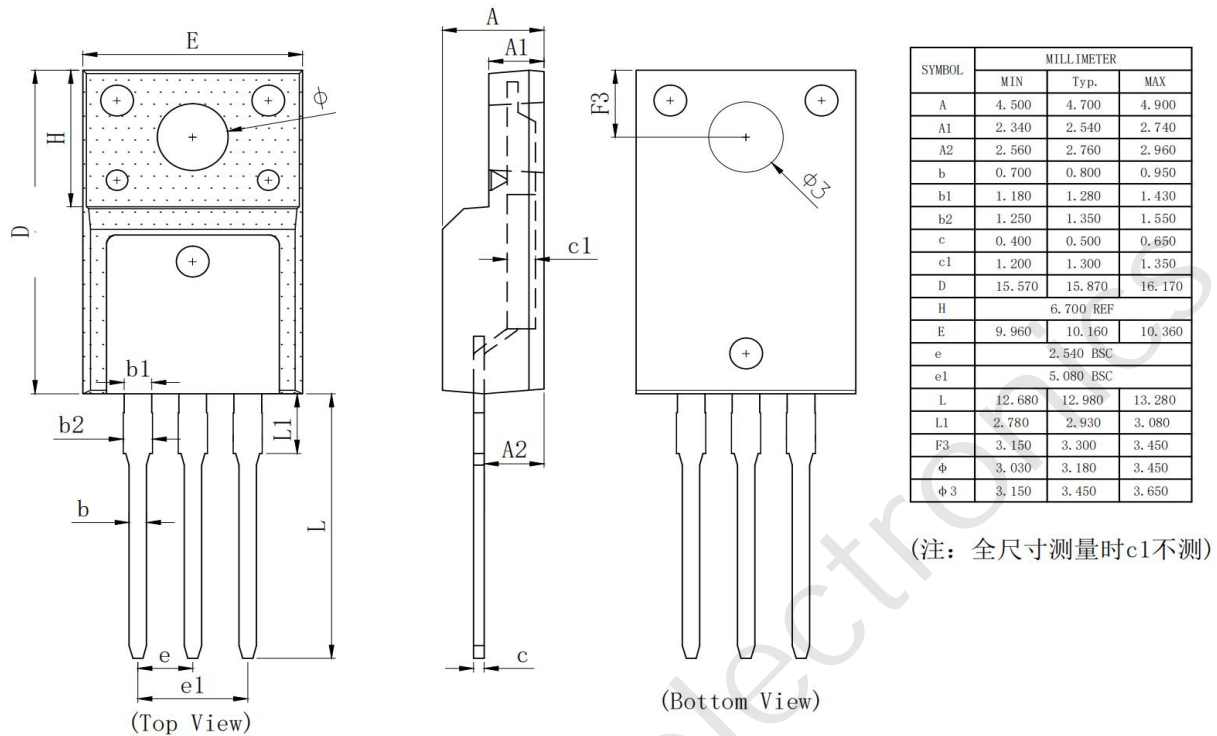


Figure 4: Diode Recovery Test Circuit & Waveform

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



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