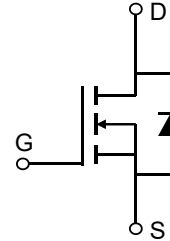


### Description

#### Features

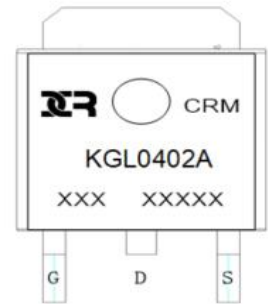
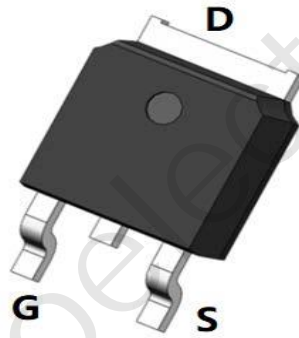
- 40V, 120A
- $R_{DS(ON)}$  Typ = 2mΩ @  $V_{GS} = 10V$
- $R_{DS(ON)}$  Typ = 2.5mΩ @  $V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- 100% UIS TESTED!
- 100%  $\Delta V_{ds}$  TESTED!



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)
CRMKGL0402A	CRMKGL0402A	TO-252-3L	TAPING	13"	2500	25000

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

Symbol	Parameter	Value	Units	
V <sub>DS</sub>	Drain-to-Source Voltage	40	V	
V <sub>GS</sub>	Gate-to-Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	120	A
		T <sub>C</sub> = 100°C	72	A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>	480	A	
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>(2)</sup>	225	mJ	
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	62.5	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	2	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	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	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	40	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 40\text{V}$ , $V_{GS} = 0\text{V}$	-	-	1.0	$\mu\text{A}$
$I_{GSS}$	Gate-Body Leakage Current	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA

#### On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1	1.5	2	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance <sup>(3)</sup>	$V_{GS} = 10\text{V}$ , $I_D = 30\text{A}$	-	2	2.6	$\text{m}\Omega$
		$V_{GS} = 4.5\text{V}$ , $I_D = 20\text{A}$	-	2.5	3.25	$\text{m}\Omega$

#### Dynamic Characteristics

$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{V}$ , $V_{DS} = 20\text{V}$ , $f = 1\text{MHz}$	-	2762	-	pF
$C_{oss}$	Output Capacitance		-	1070	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	70	-	pF
$Q_g$	Total Gate Charge	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 20\text{V}$ , $I_D = 75\text{A}$	-	42	-	nC
$Q_{gs}$	Gate Source Charge		-	10	-	nC
$Q_{gd}$	Gate Drain("Miller") Charge		-	7	-	nC

#### Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 10\text{V}$ , $V_{DD} = 20\text{V}$ $I_D = 75\text{A}$ , $R_{GEN} = 1.6\Omega$	-	9	-	ns
$t_r$	Turn-On Rise Time		-	103	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	37	-	ns
$t_f$	Turn-Off Fall Time		-	129	-	ns

#### Drain-Source Diode Characteristics and Max Ratings

$I_S$	Maximum Continuous Drain to Source Diode Forward Current	$V_{GS} = 0\text{V}$ , $I_S = 30\text{A}$	-	-	120	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	480	A
$V_{SD}$	Drain to Source Diode Forward Voltage		-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time		-	38	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	19	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2.  $E_{AS}$  condition: Starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 20\text{V}$ ,  $V_G = 10\text{V}$ ,  $R_G = 25\text{ohm}$ ,  $L = 0.5\text{mH}$ ,  $I_{AS} = 30\text{A}$
  3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .

## Test Circuit

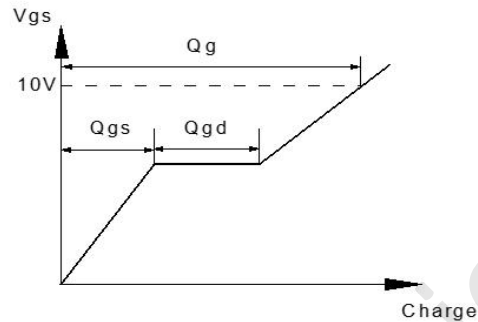
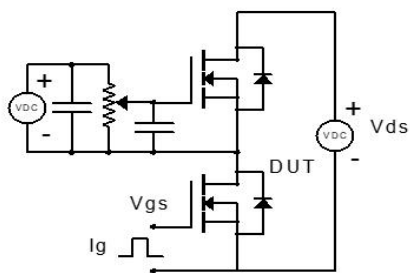


Figure 1: Gate Charge Test Circuit & Waveform

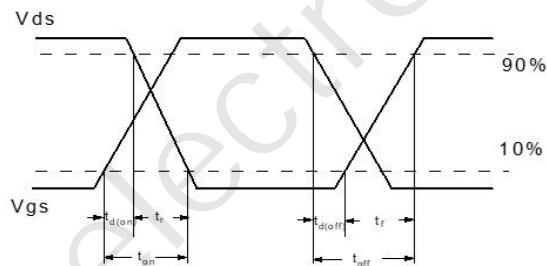
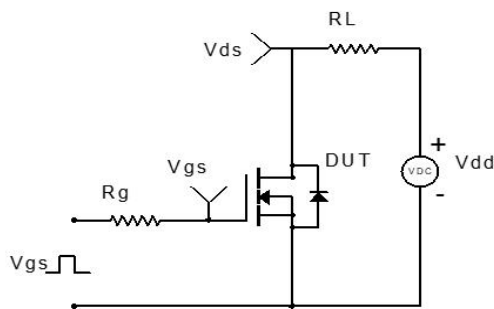


Figure 2: Resistive Switching Test Circuit & Waveform

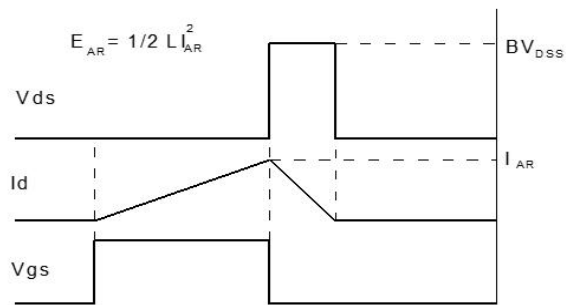
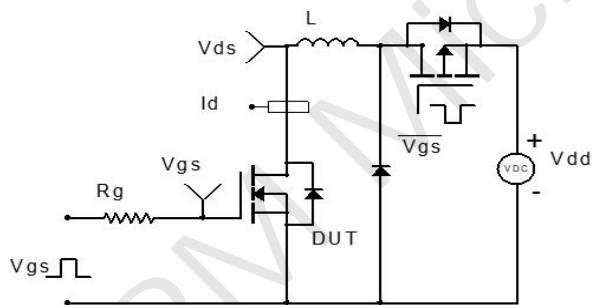


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

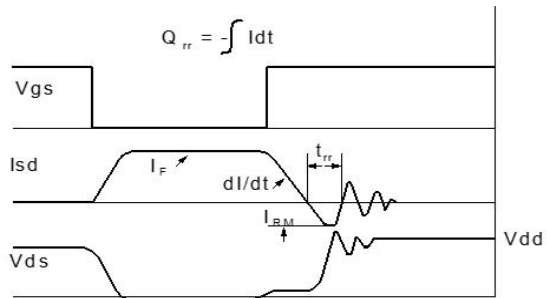
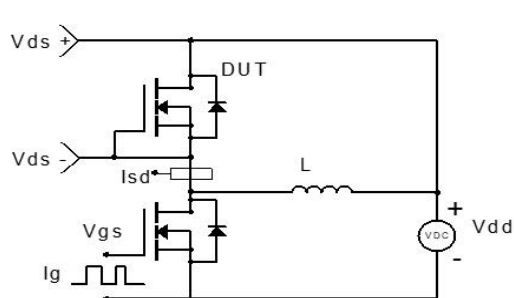
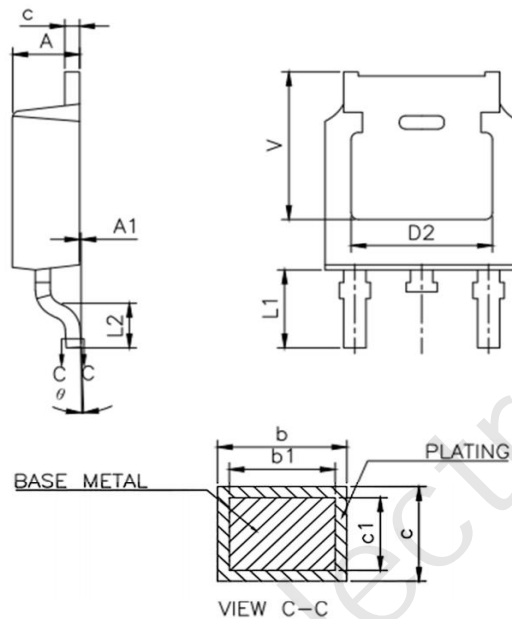
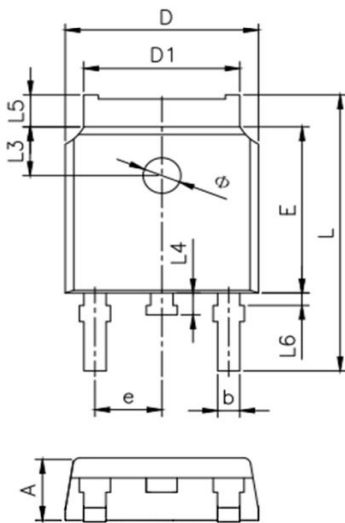


Figure 4: Diode Recovery Test Circuit & Waveform

### Package Mechanical Data(TO-252-3L)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.00	--	0.127
b	0.66	--	0.86
b1	0.65	0.76	0.81
D	6.50	6.60	6.70
D1	5.10	5.33	5.46
c	0.47	--	0.60
c1	0.46	0.51	0.56
D2	4.83 REF.		
E	6.00	6.10	6.20
e	2.186	2.286	2.386
L	9.80	10.10	10.40
L1	2.90 REF.		
L2	1.40	1.50	1.60
L3	1.80 REF.		
L4	0.60	0.80	1.00
L5	0.90	--	1.25
L6	0.15	--	0.75
Φ	1.10	--	1.30
θ	0°	--	8°
V	5.40 REF.		

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