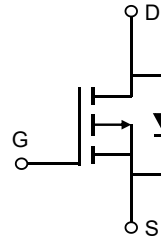


Description

Features

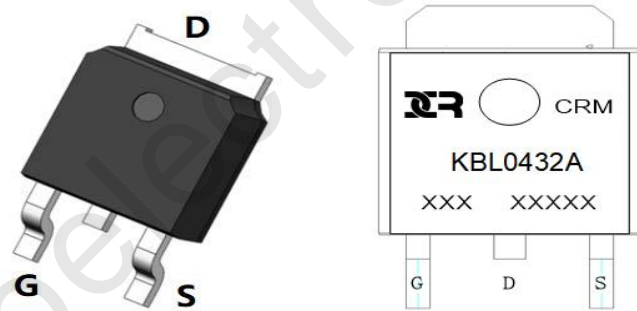
- -40V, -12A
 $R_{DS(ON)}$ Typ = 34mΩ @ $V_{GS} = -10V$
 $R_{DS(ON)}$ Typ = 45mΩ @ $V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CRMKBL0432A	CRMKBL0432A	TO-252-3L	TAPING	13"	2500	25000

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

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	-40	V
V_{GS}	Gate-to-Source Voltage	±20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	-12
		$T_C = 100^\circ C$	-7.2
I_{DM}	Pulsed Drain Current ⁽¹⁾	-48	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	25	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	11
$R_{\theta JC}$	Thermal Resistance, Junction to Case	11.4	°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
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	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	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1.1	-1.6	-2.2	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = -10\text{V}, I_D = -3\text{A}$	-	34	44	mΩ
		$V_{GS} = -4.5\text{V}, I_D = -2\text{A}$	-	45	58.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance		-	632	-	pF
C_{oss}	Output Capacitance	$V_{GS} = 0\text{V}, V_{DS} = -20\text{V},$ $f = 1\text{MHz}$	-	74	-	pF
C_{rss}	Reverse Transfer Capacitance		-	61	-	pF
Q_g	Total Gate Charge		-	15	-	nC
Q_{gs}	Gate Source Charge	$V_{GS} = 0 \text{ to } -10\text{V}$	-	3	-	nC
Q_{gd}	Gate Drain("Miller") Charge	$V_{DS} = -20\text{V}, I_D = -2\text{A}$	-	3.3	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime		-	7	-	ns
t_r	Turn-On Rise Time	$V_{GS} = -10\text{V}, V_{DD} = -20\text{V}$	-	13	-	ns
$t_{d(off)}$	Turn-Off DelayTime	$I_D = -2\text{A}, R_{GEN} = 2.5\Omega$	-	21	-	ns
t_f	Turn-Off Fall Time		-	7	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-48	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = -3\text{A}$	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time		-	25	-	ns
Qrr	Body Diode Reverse Recovery Charge	$I_F = -3\text{A}, di/dt = 100\text{A/us}$	-	18	-	nC

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

Test Circuit

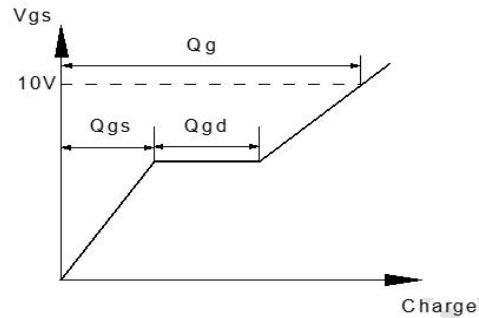
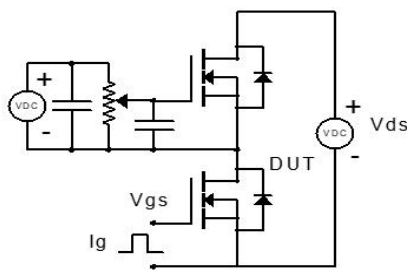


Figure 1: Gate Charge Test Circuit & Waveform

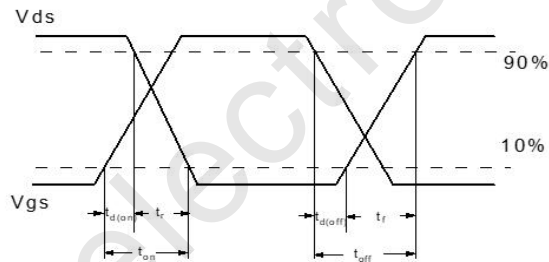
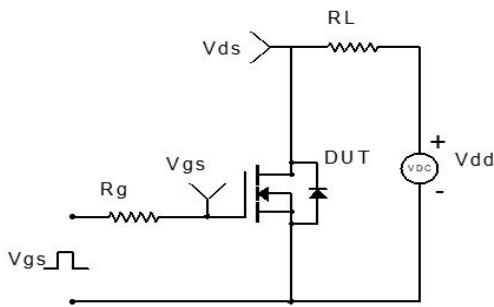


Figure 2: Resistive Switching Test Circuit & Waveform

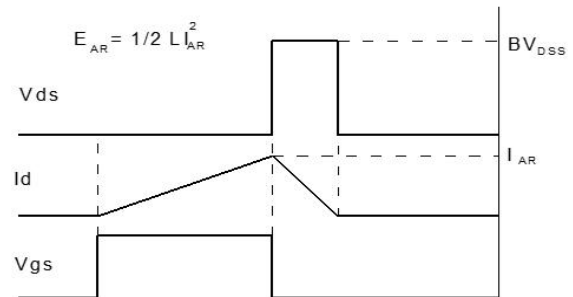
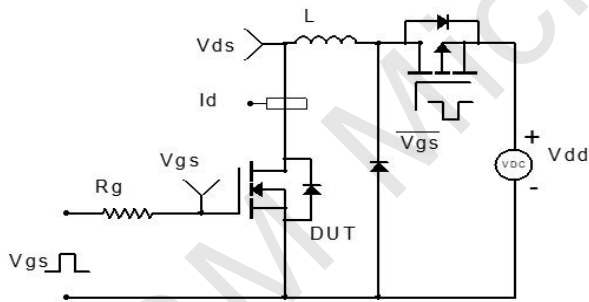


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

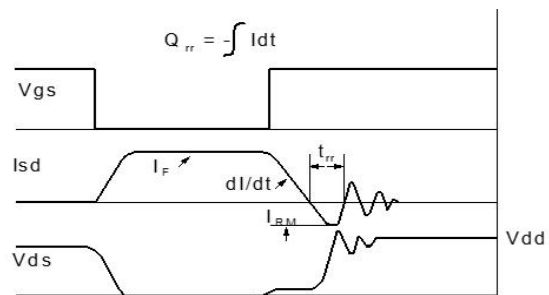
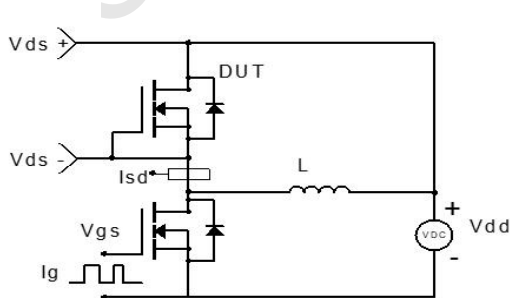
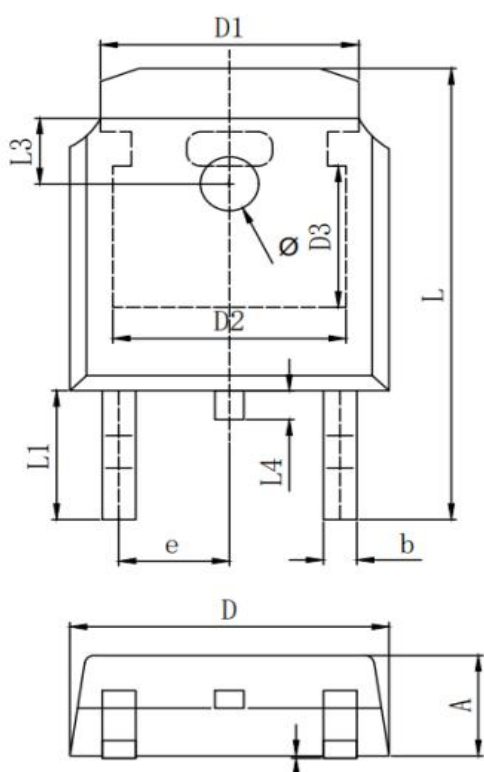


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-252-3L)




SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

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