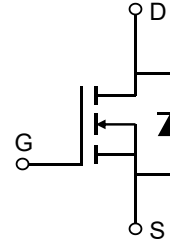


Description

Features

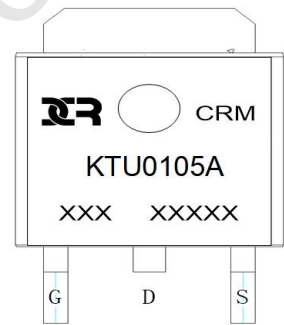
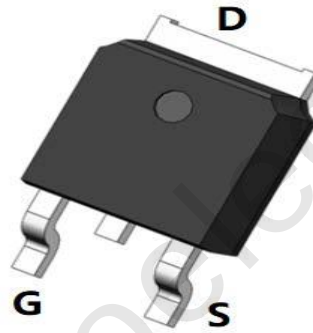
- 12V, 50A
- $R_{DS(ON)}$ Typ = 4.4mΩ @ $V_{GS} = 4.5V$
- $R_{DS(ON)}$ Typ = 6.2mΩ @ $V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CRMKTU0105A	CRMKTU0105A	TO-252-3L	TAPING	13"	2500	25000

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

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	12	V
V_{GS}	Gate-to-Source Voltage	± 12	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	50
		$T_C = 100^\circ\text{C}$	30
I_{DM}	Pulsed Drain Current ⁽¹⁾	200	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	36	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	25
$R_{\theta JC}$	Thermal Resistance, Junction to Case	5	$^\circ\text{C/W}$
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ\text{C}$

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 = 250μA, V _{GS} = 0V	12	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 12V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 4.5V, I _D = 10A	-	4.4	5.7	mΩ
		V _{GS} = 2.5V, I _D = 7A	-	6.2	8.1	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 6V, f = 1MHz	-	1632	-	pF
C _{oss}	Output Capacitance		-	350	-	pF
C _{rss}	Reverse Transfer Capacitance		-	296	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 4.5V V _{DS} = 10V, I _D = 3A	-	32	-	nC
Q _{gs}	Gate Source Charge		-	9	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	12	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 4.5V, V _{DD} = 10V I _D = 3A, R _{GEN} = 3Ω	-	0.5	-	ns
t _r	Turn-On Rise Time		-	1.3	-	ns
t _{d(off)}	Turn-Off DelayTime		-	3.3	-	ns
t _f	Turn-Off Fall Time		-	3.2	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 10A	-	-	50	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	200	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DS} = 6\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = 12\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

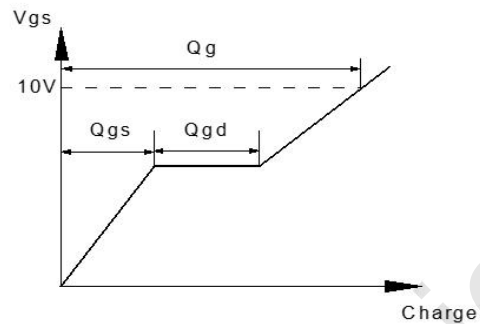
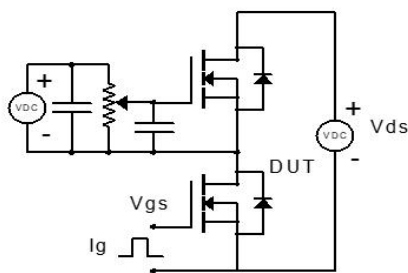


Figure 1: Gate Charge Test Circuit & Waveform

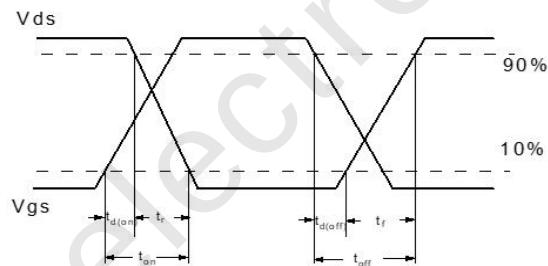
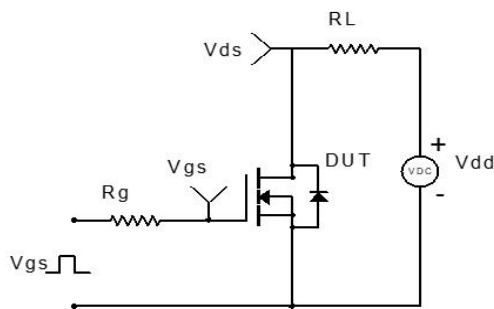


Figure 2: Resistive Switching Test Circuit & Waveform

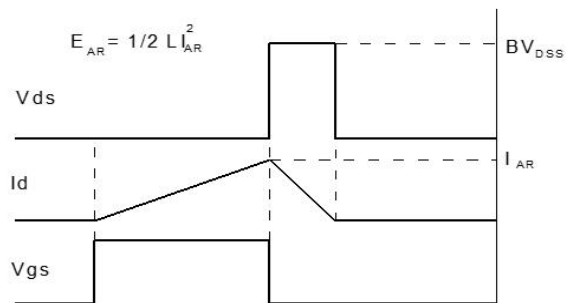
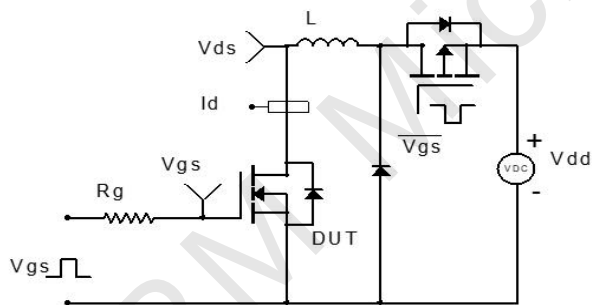


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

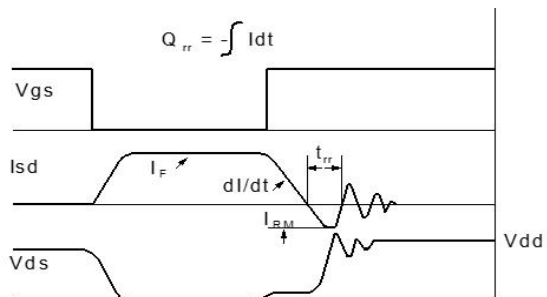
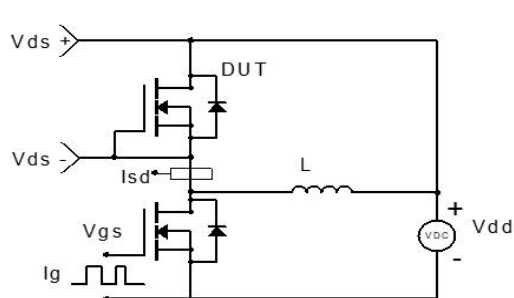
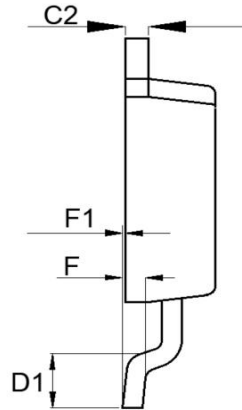
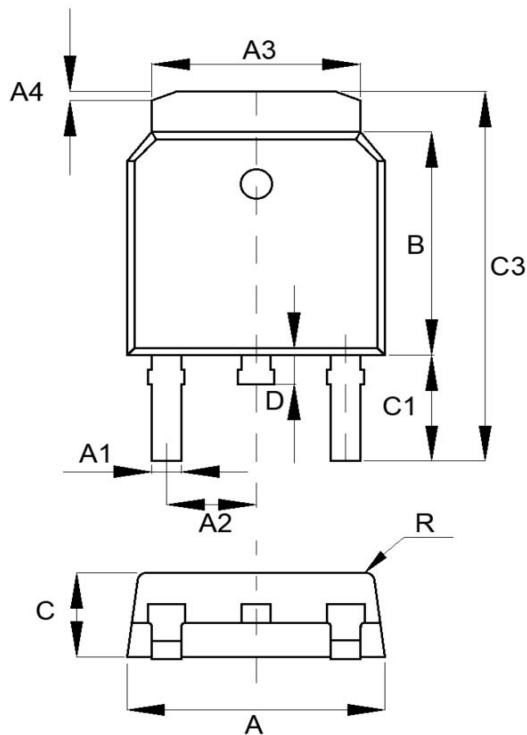


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-252-3L)



SYMBOL	MIN	NOM	MAX
A	6.550	6.600	6.650
A1	0.640	0.690	0.740
A2	—	2.286	—
A3	5.234	5.334	5.434
A4	0.070	0.270	0.470
B	6.050	6.100	6.150
C	2.250	2.300	2.350
C1	2.650	2.780	2.950
C2	0.504	0.508	0.510
C3	9.750	9.850	10.00
D	0.700	0.800	0.900
D1	1.400	1.500	1.600
F	—	0.508	—
F1	0	0.050	0.100
R	—	0.250	—

Important Notice

The information presented in datasheets is for reference only. CRM reserves the right to make changes at any time to any products or information herein, without notice.

Customers are responsible for the design and applications, including compliance with all laws, regulations and safety requirements or standards.

“Typical” parameters which provided in datasheets can vary in different applications and actual performance may vary over time. Customers are responsible for doing all necessary testing to minimize the risks associated with their applications and products.

 is a registered trademark of Wuxi CRM Microelectronics Co. , Ltd.

Copyright ©2023 CRM Microelectronics Co. , Ltd. All rights reserved.

Contact information

For more information, please visit: <http://www.crm-semi.tech>

For sales information, please send an email to: sales@crm-semi.com