

Description

N-channel Enhancement Mode Power MOSFET

Features

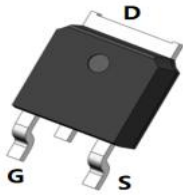
- 100V, 25A
 $R_{DS(ON)}$ Typ = 30m Ω @ $V_{GS} = 10V$
 $R_{DS(ON)}$ Typ = 31m Ω @ $V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Applications

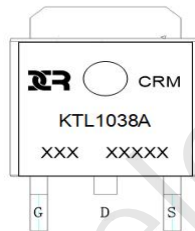
- Load Switch
- PWM Application
- Power Management



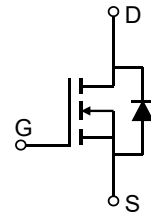
100% UIS TESTED!
100% ΔV_{ds} TESTED!



TO-252-3L



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
CRMKTL1038A	CRMKTL1038A	TAPING	TO-252-3L	13"	2500	25000

Absolute Maximum Ratings (@ $T_J = 25^\circ C$ 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	$T_C = 25^\circ C$	A
		$T_C = 100^\circ C$	
I_{DM}	Pulsed Drain Current ⁽¹⁾	100	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	64	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.9	$^\circ C/W$
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ C$



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	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.6	2.5	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 15A	-	30	39	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	31	40	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	-	2550	-	pF
C _{oss}	Output Capacitance		-	100	-	pF
C _{rss}	Reverse Transfer Capacitance		-	88	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 25V, I _D = 15A	-	66	-	nC
Q _{gs}	Gate Source Charge		-	10	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	14	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 30V I _D = 25A, R _{GEN} = 1.8Ω	-	11	-	ns
t _r	Turn-On Rise Time		-	45	-	ns
t _{d(off)}	Turn-Off DelayTime		-	67	-	ns
t _f	Turn-Off Fall Time		-	48	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	25	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	100	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 15A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 25A, di/dt = 100A/us	-	28	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	40	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = 16\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

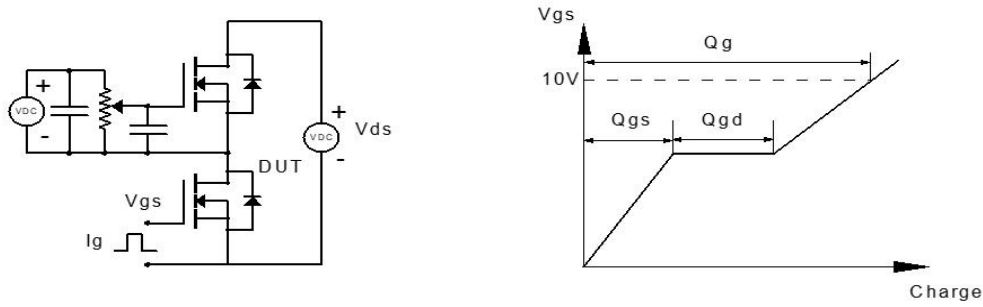


Figure 1: Gate Charge Test Circuit & Waveform

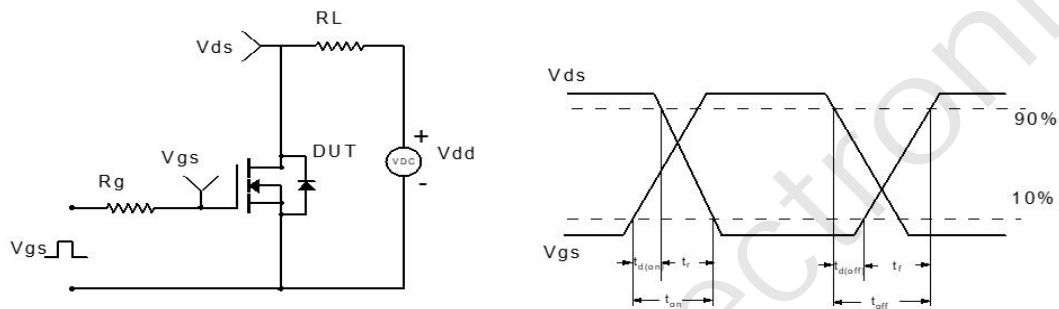


Figure 2: Resistive Switching Test Circuit & Waveform

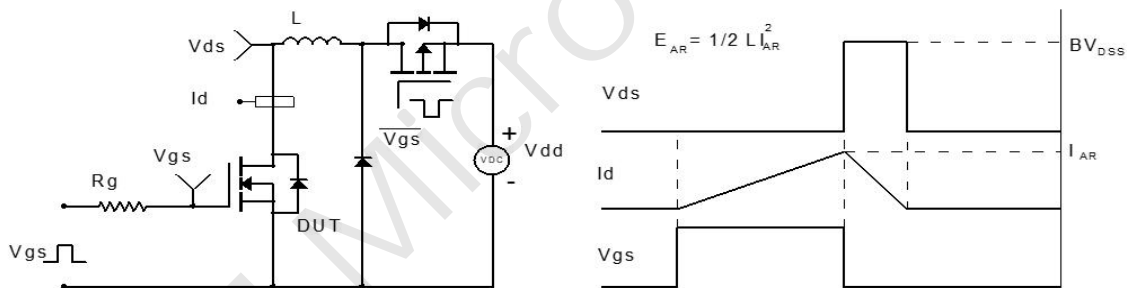


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

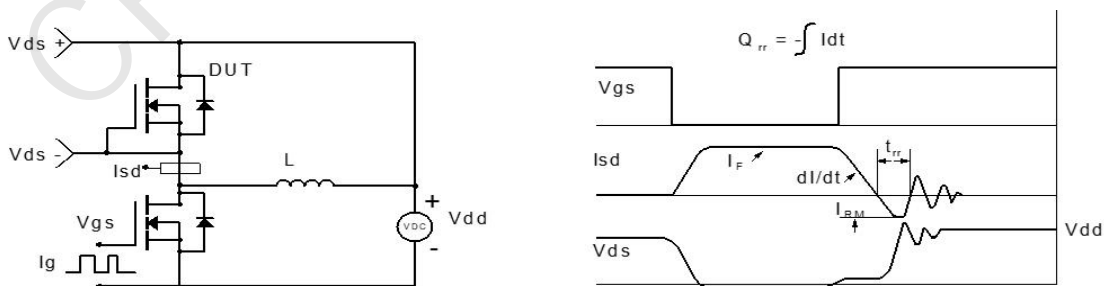
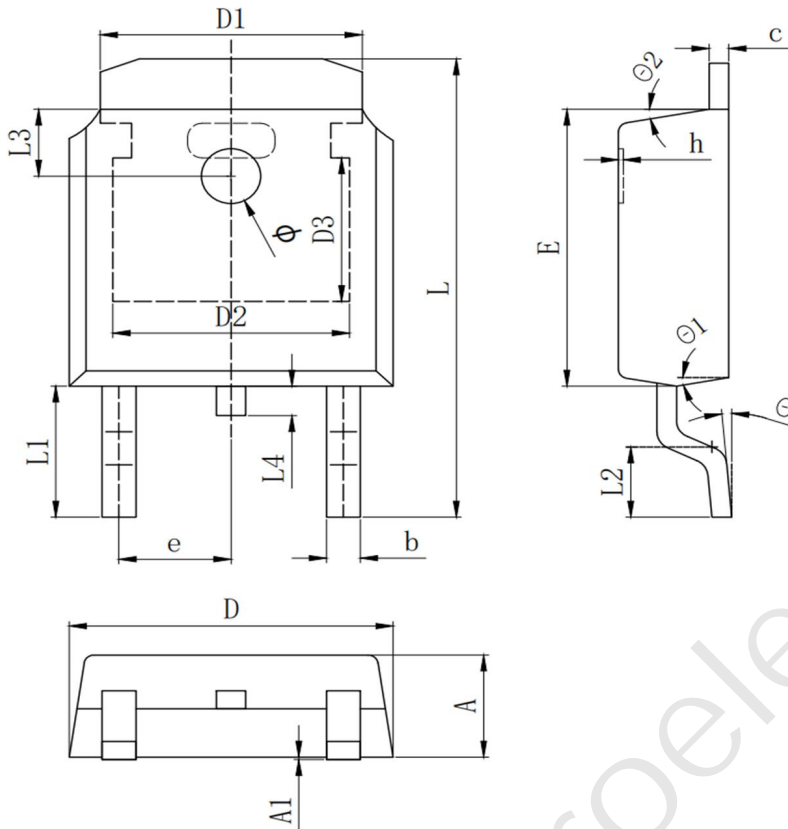


Figure 4: Diode Recovery Test Circuit & Waveform

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°		
$\theta 1$	9° TYP		
$\theta 2$	9° TYP		

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