

Description

Features

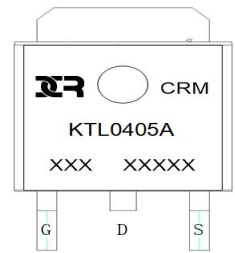
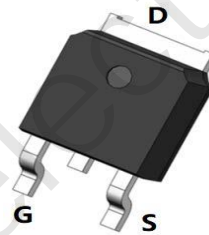
- 40V, 90A
- $R_{DS(ON)}$ Typ = 3.6mΩ @ $V_{GS} = 10V$
- $R_{DS(ON)}$ Typ = 4.8mΩ @ $V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CRMKTL0405A	CRMKTL0405A	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	40	V
V_{GS}	Gate-to-Source Voltage	±20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	90
		$T_C = 100^\circ\text{C}$	54
I_{DM}	Pulsed Drain Current ⁽¹⁾	360	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	150	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	65
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.9	°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 = 250μA, V _{GS} = 0V	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 40V, 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	1.1	1.6	2.5	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 20A	-	3.6	4.6	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	4.8	6.3	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 20V, f = 1MHz	-	3880	-	pF
C _{oss}	Output Capacitance		-	274	-	pF
C _{rss}	Reverse Transfer Capacitance		-	215	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 20V, I _D = 30A	-	73	-	nC
Q _{gs}	Gate Source Charge		-	15	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	16	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 20V I _D = 30A, R _{GEN} = 3Ω	-	12	-	ns
t _r	Turn-On Rise Time		-	29	-	ns
t _{d(off)}	Turn-Off DelayTime		-	60	-	ns
t _f	Turn-Off Fall Time		-	16	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	90	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	360	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 20A, di/dt = 100A/us	-	16	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	10	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 20\text{V}$, $V_G = 10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = 24.5\text{A}$
 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

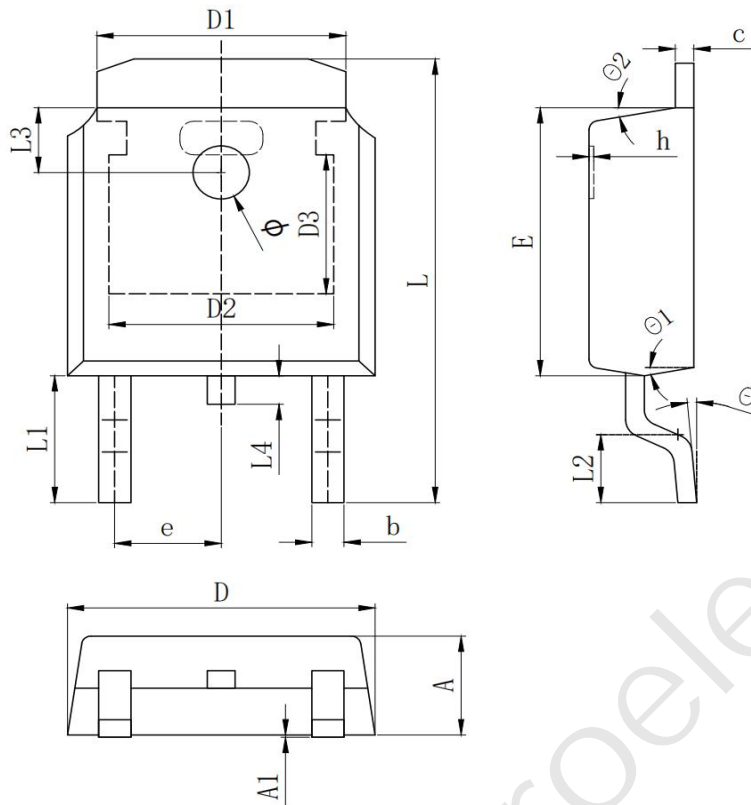


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



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°
θ1	9° TYP		
θ2	9° TYP		

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