CRMKTL0515A

N-Channel 45V, 13.5mΩ Typ. Power MOSFET

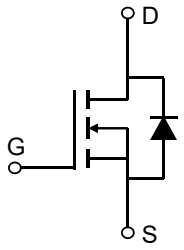
Description

Features

- 45V, 32A

  $R_{DS(ON)}$ Typ = 13.5mΩ @ V_{GS} = 10V

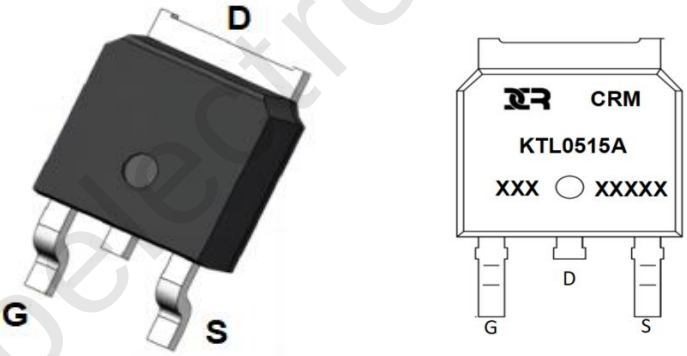
  $R_{DS(ON)}$ Typ = 15.7mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!



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)
CRMKTL0515A	CRMKTL0515A	TO-252-3L	TAPING	13"	2500	25000

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		45	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	32	A
		T_C = 100°C	19.2	A
I_{DM}	Pulsed Drain Current [1]		128	A
E_{AS}	Single Pulsed Avalanche Energy [2]		28	mJ
P_D	Power Dissipation	T_C = 25°C	31	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°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	45	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 45V, 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	0.9	1.4	1.9	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 15A	-	13.5	17.5	mΩ
		V_{GS} = 4.5V, I_D = 7.5A	-	15.7	20.4	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	-	1190	-	pF
C_{oss}	Output Capacitance		-	71	-	pF
C_{rss}	Reverse Transfer Capacitance		-	61	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 20V, I_D = 10A	-	23.5	-	nC
Q_{gs}	Gate Source Charge		-	2.8	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 20V I_D= 10A, R_{GEN} = 3Ω	-	6.5	-	ns
t_r	Turn-On Rise Time		-	10	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	22	-	ns
t_f	Turn-Off Fall Time		-	9.5	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	32	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	128	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 = 10A, di/dt = 100A/us	-	18	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	6.5	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=10.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

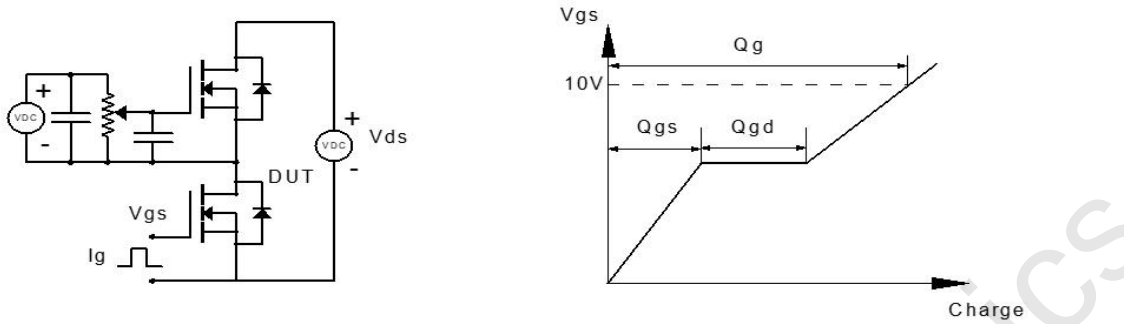


Figure 1: Gate Charge Test Circuit & Waveform

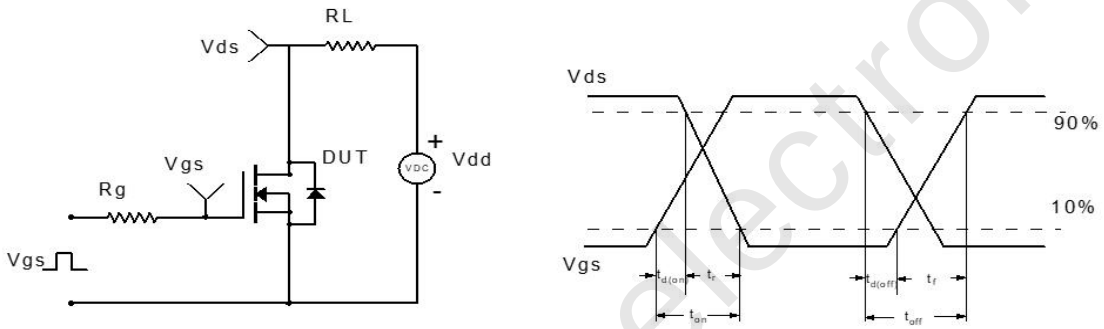


Figure 2: Resistive Switching Test Circuit & Waveform

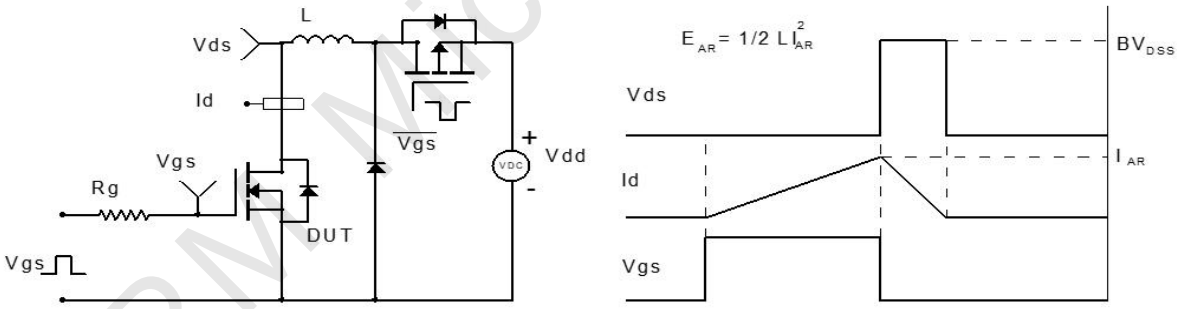


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

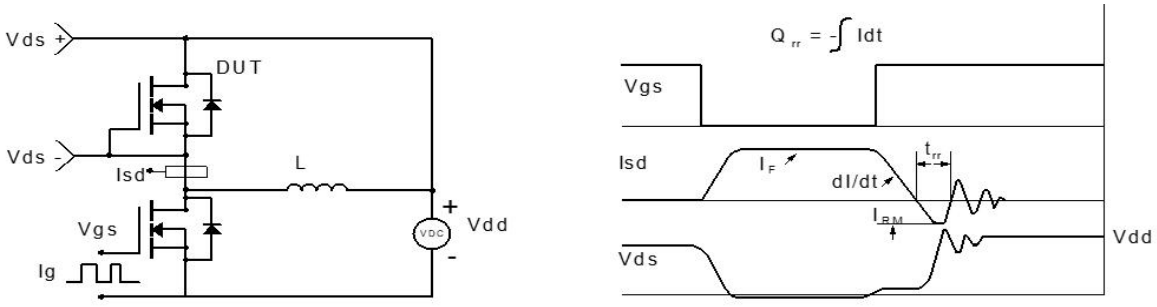
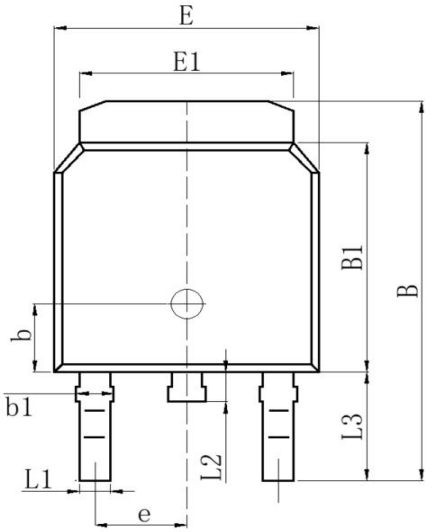
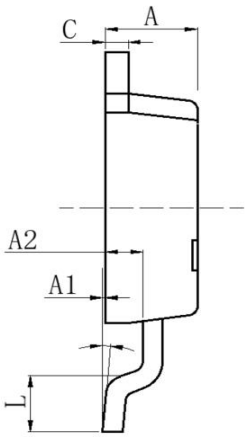


Figure 4: Diode Recovery Test Circuit & Waveform

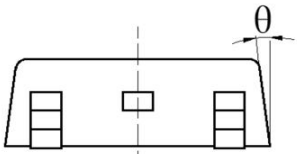
Package Mechanical Data(TO-252-3L)



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.00	–	0.10
A2	0.95	1.00	1.05
C	0.508REF		
L	1.40	1.50	1.60
E	6.50	6.60	6.70
E1	5.20	5.30	5.40
B	9.90	10.10	10.30
B1	6.00	6.10	6.20
b	1.70	1.80	1.90
b1	1.00MAX		
L1	0.60	0.75	0.90
L2	0.70	0.90	
L3	2.95REF		
e	2.286BSC		
θ	7°		

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