CRMCTL1032A

Description

N-channel Enhancement Mode Power MOSFET

Features

- 100V, 30A
  $R_{DS(ON)}$ < 32mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ < 34mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

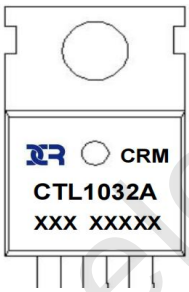
Applications

- Load Switch
- PWM Application
- Power Management

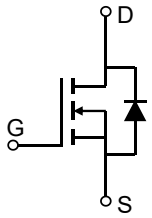
100% UIS TESTED!
100% ΔVds TESTED!

RoHS

TO-220C-3L



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	TUBE (pcs)	Inner Box (pcs)	Per Carton (pcs)
CRMCTL1032A	CRMCTL1032A	TUBE	TO-220C-3L	50	1000	5000

Absolute Maximum Ratings (@ T_C = 25°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°C	30	A
		T_C = 100°C	18	
I_{DM}	Pulsed Drain Current (1)		120	A
E_{AS}	Single Pulsed Avalanche Energy (2)		64	mJ
P_D	Power Dissipation	T_C = 25°C	83	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.5	°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	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	1.7	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 15A	-	24	32	mΩ
		V_{GS} = 4.5V, I_D = 10A	-	26	34	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	3033	-	pF
C_{oss}	Output Capacitance		-	130	-	pF
C_{rss}	Reverse Transfer Capacitance		-	113	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V, V_{DS} = 30V, 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= 15A, 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		-	-	30	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	120	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 = 30A, 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=25C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=16A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

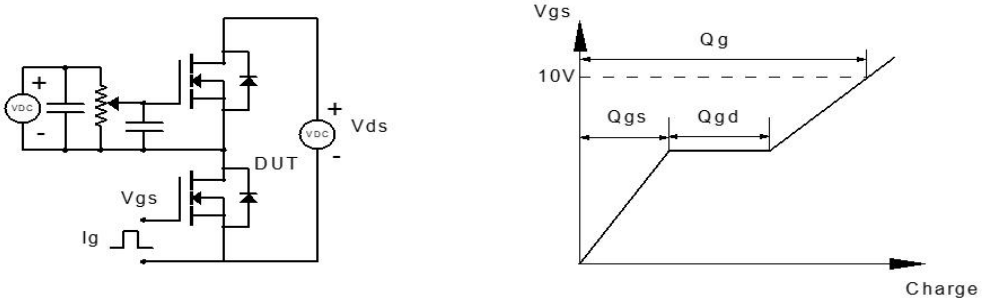


Figure 1: Gate Charge Test Circuit & Waveform

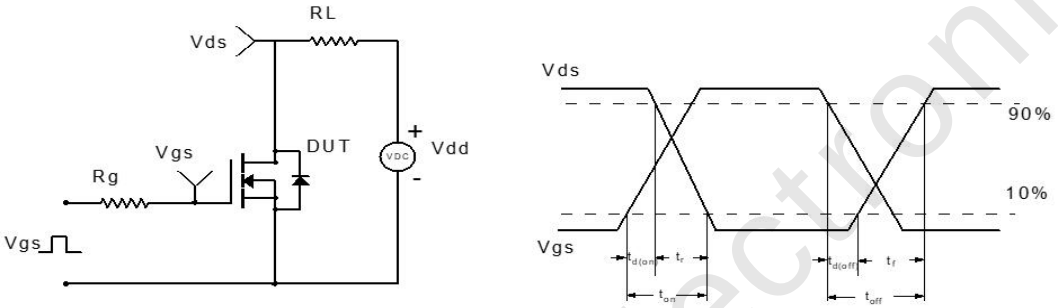


Figure 2: Resistive Switching Test Circuit & Waveform

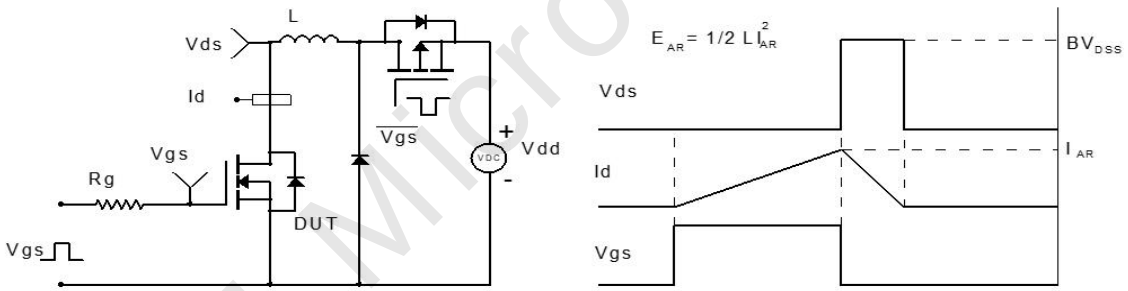


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

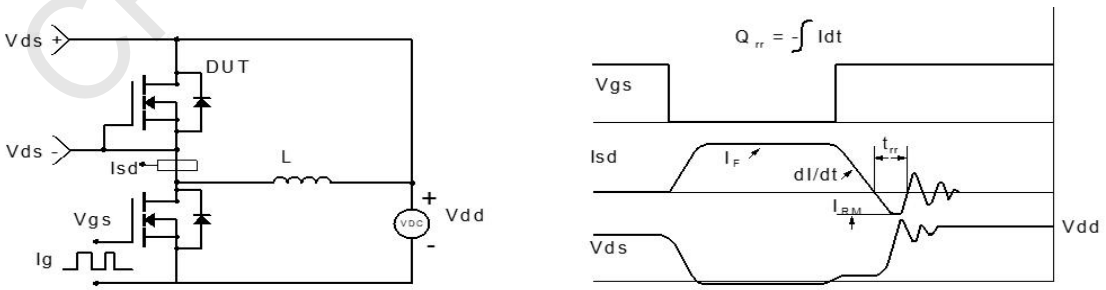
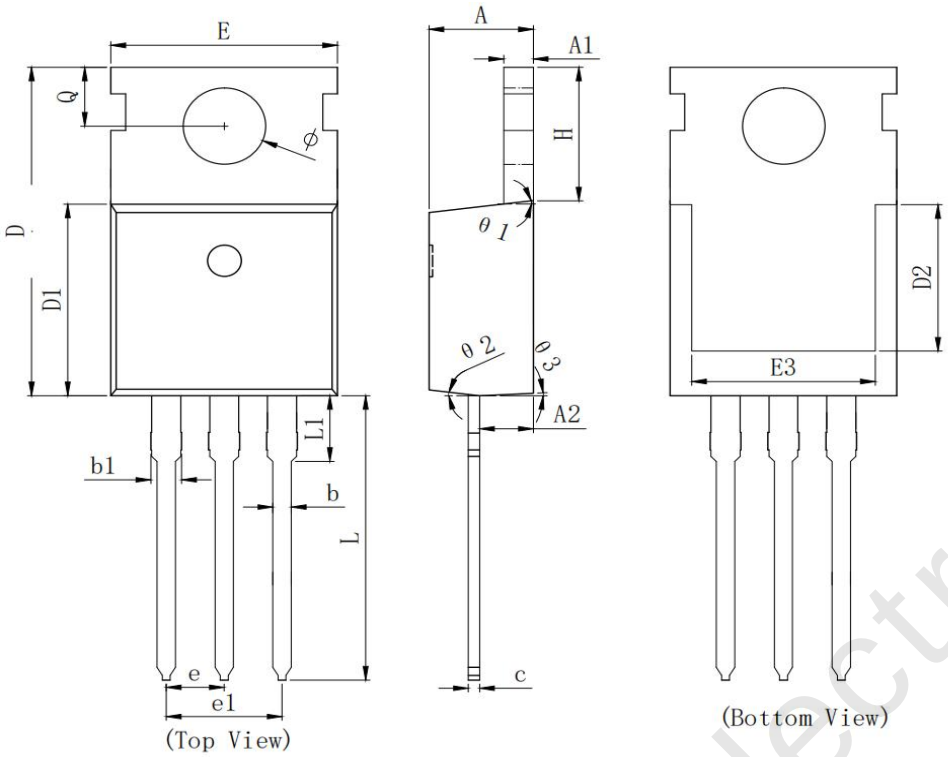


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-220C-3L)



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.700
A1	1.250	1.300	1.400
A2	2.150	2.350	2.550
b	0.700	0.800	0.950
b1	1.170	1.270	1.470
c	0.450	0.500	0.600
D	15.100	15.600	16.100
D1	8.800	9.100	9.400
D2	5.500	6.300 REF	
E	9.700	10.000	10.300
E3	7.000	7.600 REF	
e	2.540 BSC		
e1	5.080 BSC		
L	13.200	13.500	13.800
L1		3.100	3.400
H	6.250	6.500	6.750
Φ	3.400	3.600	3.800
Q	2.600	2.800	3.000
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		