祥瑞微 CRM Microelectronics

CRMCATH0606A

N-Channel 60V,5.7mΩ Typ. Power MOSFET

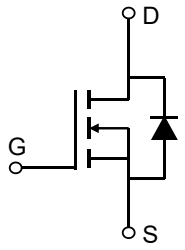
Description

Features

- 60V, 94A

  $R_{DS(ON)}$ Typ =5.7mΩ @ V_{GS} = 10V

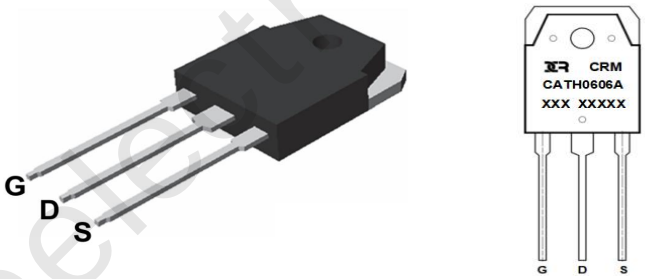
  Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	TUBE(pcs)	Inner Box (pcs)	Per Carton (pcs)
CRMCATH0606A	CRMCATH0606A	TO-3P-3L	TUBE	30	480	2400

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		60	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	94	A
		T_C = 100°C	56.4	A
I_{DM}	Pulsed Drain Current [1]		376	A
E_{AS}	Single Pulsed Avalanche Energy [2]		176	mJ
P_D	Power Dissipation	T_C = 25°C	119	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.05	°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	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60V, 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	2.4	3	3.6	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 20A	-	5.7	7.4	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	3830	-	pF
C_{oss}	Output Capacitance		-	283	-	pF
C_{rss}	Reverse Transfer Capacitance		-	245	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 30V, I_D =30A	-	77	-	nC
Q_{gs}	Gate Source Charge		-	21	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	24	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 30V I_D= 30A, R_{GEN} = 1.8Ω	-	18	-	ns
t_r	Turn-On Rise Time		-	88	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	37	-	ns
t_f	Turn-Off Fall Time		-	85	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	94	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	376	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 20A	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=26.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

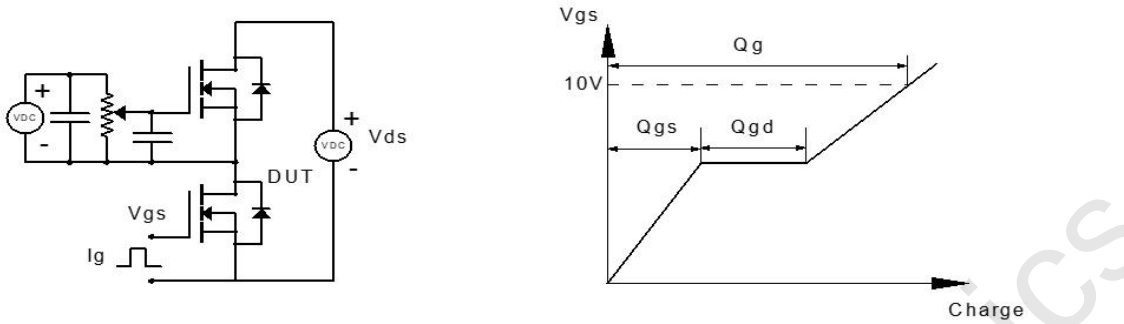


Figure 1: Gate Charge Test Circuit & Waveform

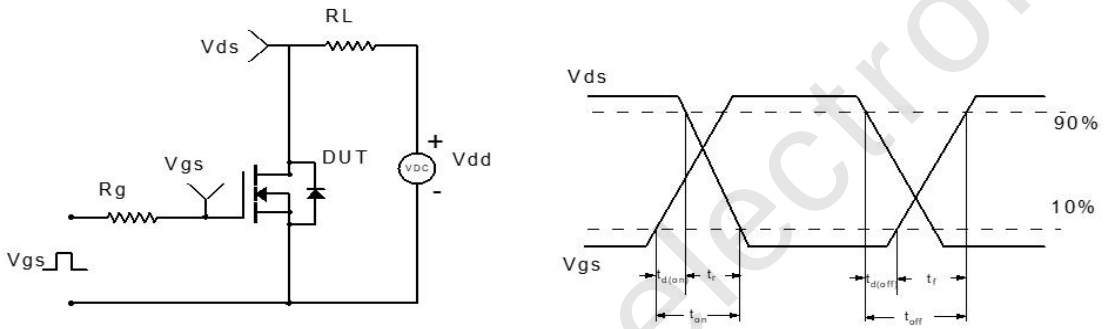


Figure 2: Resistive Switching Test Circuit & Waveform

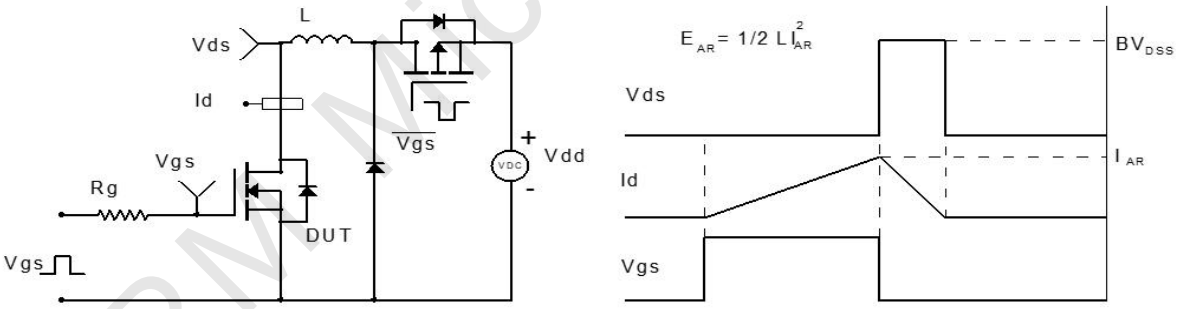


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

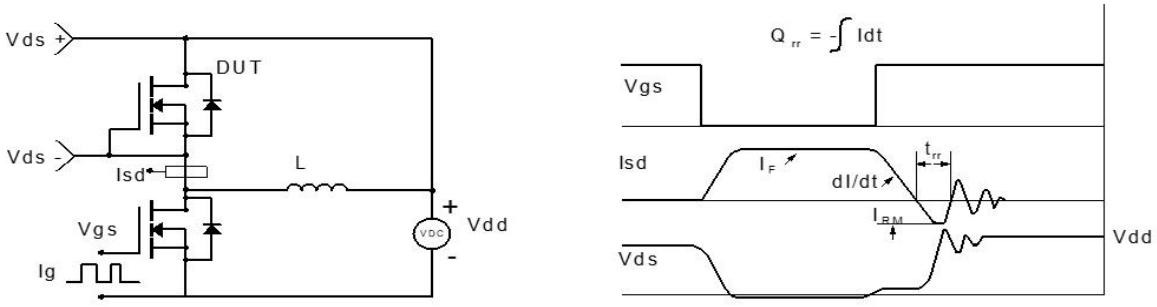
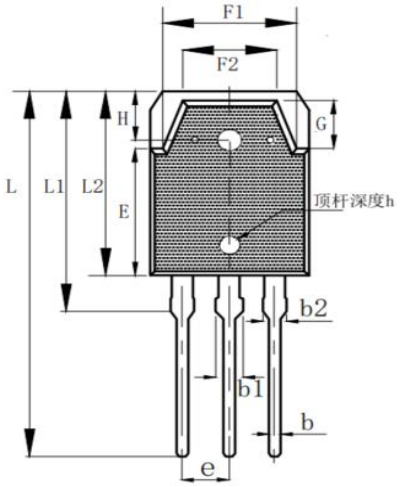
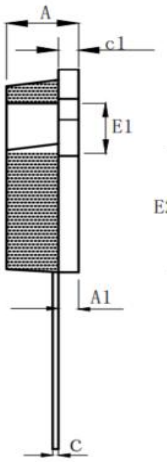
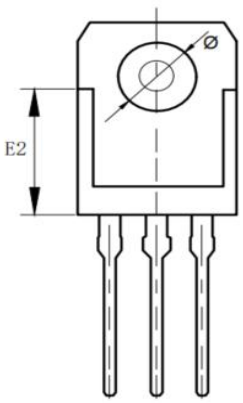


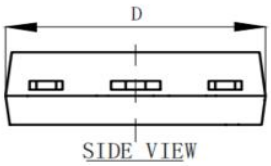
Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-3P-3L)









SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.60	4.80	5.00
A1	1.20	1.40	1.60
b	0.80	1.00	1.20
b1	2.80	3.00	3.20
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
c1	1.45	1.55	1.65
D	15.45	15.65	15.85
E	13.70	13.90	14.10
E1	3.30REF		
E2	12.90REF		
e	5.45TYP		
F1	13.40	13.60	13.80
F2	9.40	9.60	9.80
L	39.70	39.90	40.10
L1	23.20	23.40	23.60
L2	19.70	19.90	20.10
G	4.60	4.80	5.00
H	5.00REF		
h	0.00	0.15	0.30
Ø	3.30REF		

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