CRMKTU0305A

Description

N-channel Enhancement Mode Power MOSFET

Features

25V, 90A

$$\begin{split} R_{DS(ON)} \, Typ &= 3 m \Omega \,\, \textcircled{@} \,\, V_{GS} = 4.5 V \\ R_{DS(ON)} \, Typ &= 4 m \Omega \,\, \textcircled{@} \,\, V_{GS} = 2.5 V \end{split}$$

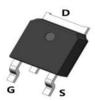
- Advanced Trench Technology
- Excellent R_{DS(ON)} and Low Gate Charge

Applications

- Load Switch
- PWM Application
- Power Management

100% UIS TESTED! 100% ΔVds TESTED!

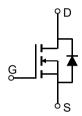








Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
CRMKTU0305A	CRMKTU0305A	TAPING	TO-252-3L	13"	2500	25000

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

Symbol	Parameter		Value	Units	
V _{DS}	Drain-to-Source Voltage		25	V	
V_{GS}	Gate-to-Source Voltage		±12	V	
	Continuous Drain Current	T _C = 25°C	90	Δ.	
I _D		T _C = 100°C	54	Α	
I _{DM}	Pulsed Drain Current (1)		360	А	
E _{AS}	Single Pulsed Avalanche Energy (2)		132	mJ	
P_{D}	Power Dissipation	T _C = 25°C	54	W	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.3	°C/W	
T _J , T _{STG}	Junction & Storage Temperature F	Range	-55 to 150	°C	

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Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Off Cha	aracteristics					
V _{(BR)DSS}	Drain-Source Breakdown Voltage	$I_D = 250 \mu A, V_{GS} = 0 V$	25	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 25V, V_{GS} = 0V$	-	-	1.0	μΑ
I_{GSS}	Gate-Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	±100	nA
On Cha	aracteristics					
V _{GS(th)}	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	0.4	0.8	1.2	V
	O. (1) D. (2) O. (3)	$V_{GS} = 4.5V, I_D = 20A$	-	3.0	3.9	mΩ
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 2.5V, I _D = 10A	-	4.0	5.2	mΩ
Dynami	ic Characteristics					
C _{iss}	Input Capacitance		-	3280	-	pF
C _{oss}	Output Capacitance	$V_{GS} = 0V, V_{DS} = 10V,$	-	362	-	pF
C _{rss}	Reverse Transfer Capacitance	f = 1MHz	-	298	-	pF
Qg	Total Gate Charge			42	-	nC
Q_{gs}	Gate Source Charge	$V_{GS} = 0 \text{ to } 10V$ $V_{DS} = 15V, I_D = 30A$	<u></u>	9	-	nC
Q_{gd}	Gate Drain("Miller") Charge	V _{DS} = 13V, 1 _D = 30A	-	10	-	nC
Switchi	ing Characteristics					
t _{d(on)}	Turn-On DelayTime		-	9	-	ns
t _r	Turn-On Rise Time	$V_{GS} = 10V, V_{DD} = 15V$	-	15	-	ns
$t_{d(off)}$	Turn-Off DelayTime	I_D = 30A, R_{GEN} = 3 Ω	-	36	-	ns
t _f	Turn-Off Fall Time) `	-	11	-	ns
Drain-S	Source Diode Characteristics and M	ax Ratings				
Is	Maximum Continuous Drain to Source Diode	Forward Current	-	-	90	Α
I _{SM}	Maximum Pulsed Drain to Source Diode For	ward Current	-	-	360	Α
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	-	11	-	ns
Qrr	Body Diode Reverse Recovery Charge	1 _F - 20A, ui/ut = 100A/us	-	2.5	-	nC

Notes:

^{1.} Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

^{2.} E_{AS} condition: Starting T_J =25C, V_{DD} =10V, V_G =10V, R_G =25ohm, L=0.5mH, I_{AS} =23A

^{3.} Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 0.5%.



Test Circuit

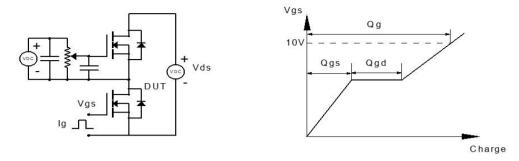


Figure 1: Gate Charge Test Circuit & Waveform

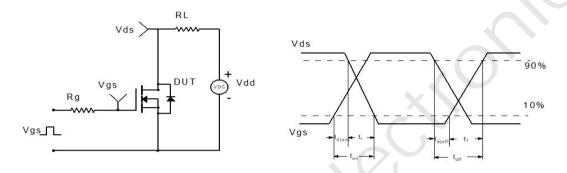


Figure 2: Resistive Switching Test Circuit & Waveform

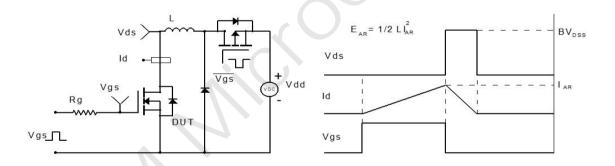


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

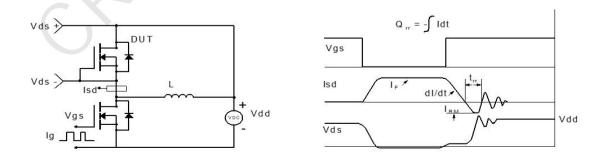
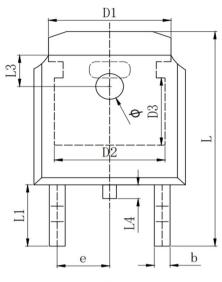


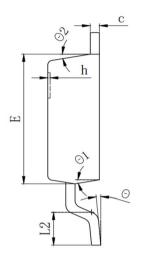
Figure 4: Diode Recovery Test Circuit & Waveform



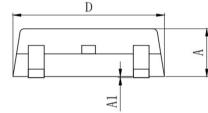
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Package Mechanical Data(TO-252-3L)





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			
Е	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		
ф	1. 100	1.200	1.300		
θ	0°		8°		
θ 1		9° TYP			
θ2		9° TYP			



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