CRMKTL0648A

Description

N-channel Enhancement Mode Power MOSFET

Features

• 60V, 15A

 $R_{DS(ON)}$ Typ= 31.5m Ω @ V_{GS} = 10V $R_{DS(ON)}$ Typ= 41m Ω @ V_{GS} = 4.5V

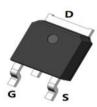
- Advanced Trench Technology
- Excellent R_{DS(ON)} and Low Gate Charge

Applications

- Load Switch
- PWM Application
- Power Management

100% UIS TESTED! 100% ΔVds TESTED!

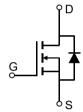








Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
CRMKTL0648A	CRMKTL0648A	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		60	V
V _{GS}	Gate-to-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C = 25°C	15	А
		T _C = 100°C	9	
I _{DM}	Pulsed Drain Current (1)		60	Α
E _{AS}	Single Pulsed Avalanche Energ	y ⁽²⁾	18	mJ
P_D	Power Dissipation	T _C = 25°C	21	W
$R_{ heta JC}$	Thermal Resistance, Junction to	Case	5.7	°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	$I_D = 250 \mu A, V_{GS} = 0 V$	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V	-	-	1.0	μА
I _{GSS}	Gate-Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	1	±100	nA
On Cha	racteristics					
V _{GS(th)}	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	1.2	1.9	2.5	V
		$V_{GS} = 10V, I_{D} = 5A$	-	31.5	41.0	mΩ
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = 4.5V, I_D = 3A$	-	41.0	53.0	mΩ
Dynami	ic Characteristics					
C _{iss}	Input Capacitance		- (650	-	pF
C _{oss}	Output Capacitance	$V_{GS} = 0V, V_{DS} = 25V,$		42	-	pF
C _{rss}	Reverse Transfer Capacitance	f = 1MHz	7-	38	-	pF
Q_g	Total Gate Charge		_	19	-	nC
Q_{gs}	Gate Source Charge	$V_{GS} = 0 \text{ to } 10V$	<u></u>	4.2	-	nC
Q_{gd}	Gate Drain("Miller") Charge	$V_{DS} = 30V, I_{D} = 10A$	-	3.9	-	nC
Switchi	ing Characteristics					
t _{d(on)}	Turn-On DelayTime		-	10	-	ns
t _r	Turn-On Rise Time	$V_{GS} = 10V, V_{DD} = 30V$	-	70	-	ns
$t_{d(off)}$	Turn-Off DelayTime	$I_D = 10A, R_{GEN} = 2.7\Omega$	-	16	-	ns
t _f	Turn-Off Fall Time		-	5	-	ns
Drain-S	Source Diode Characteristics and I	Max Ratings				
I _S	Maximum Continuous Drain to Source Dioc	le Forward Current	-	-	15	Α
I _{SM}	Maximum Pulsed Drain to Source Diode Fo	orward Current	-	-	60	А
V_{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 15A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time		-	19	-	ns
Qrr	Body Diode Reverse Recovery Charge	I _F = 10A, di/dt = 100A/us	-	21	-	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} =8.5A

^{3.} Pulse Test: Pulse Width $\!\!\!<\!300\mu s,$ Duty Cycle $\!\!\!<\!0.5\%.$



Test Circuit

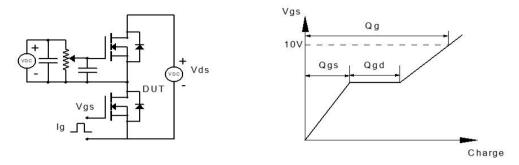


Figure 1: Gate Charge Test Circuit & Waveform

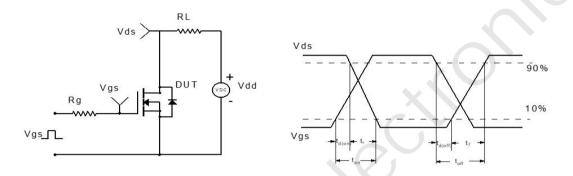


Figure 2: Resistive Switching Test Circuit & Waveform

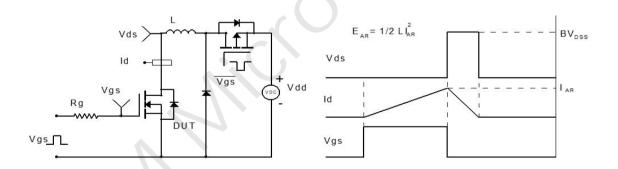


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

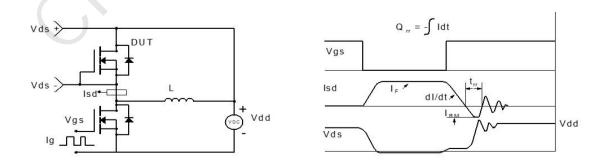
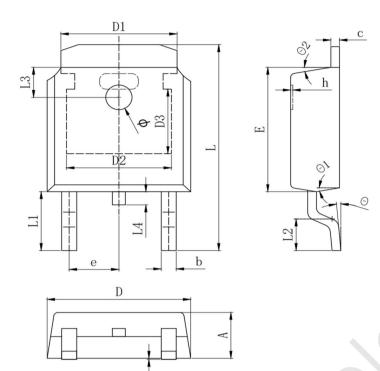


Figure 4: Diode Recovery Test Circuit & Waveform



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Package Mechanical Data(TO-252-3L)



SYMBOL	MILLIMETER				
SIMBUL	MIN	Тур.	MAX		
A	2. 200	2.300	2.400		
A1	0.000	0.000 0.12			
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		
ф	1. 100	1.200	1.300		
θ	0°		8°		
0 1	9° TYP				
θ 2	9° TYP				

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