CRMJTL20570A

Description

N-channel Enhancement Mode Power MOSFET

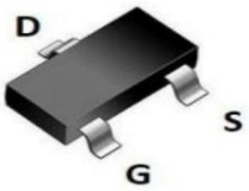
Features

- 200V, 1.3A
  $R_{DS(ON)}$ Typ= 480mΩ @ V_{GS} = 10V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

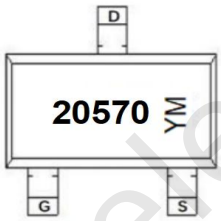
Applications

- Load Switch
- PWM Application
- Power Management

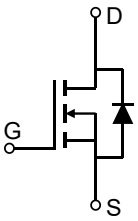
RoHS



SOT-23-3L



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
20570	CRMJTL20570A	TAPING	SOT-23-3L	7"	3000	120000

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		200	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A = 25°C	1.3	A
		T_A = 100°C	0.8	
I_{DM}	Pulsed Drain Current (1)		5.2	A
P_D	Power Dissipation	T_A = 25°C	2.5	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		50	°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	200	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 200V, 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	1.3	2.1	2.7	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 1A	-	480.0	576.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	495	-	pF
C_{oss}	Output Capacitance		-	24	-	pF
C_{rss}	Reverse Transfer Capacitance		-	18	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 100V, I_D = 1A	-	12	-	nC
Q_{gs}	Gate Source Charge		-	2.5	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	3.8	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 100V I_D= 1A, R_{GEN} = 2.5Ω	-	10	-	ns
t_r	Turn-On Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	15	-	ns
t_f	Turn-Off Fall Time		-	15	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	1.3	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	5.2	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 1A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 1A, di/dt = 100A/us	-	50	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	98	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

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

Test Circuit

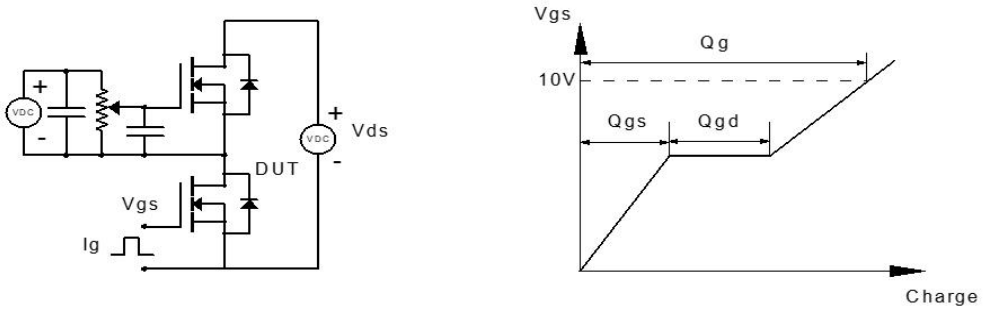


Figure 1: Gate Charge Test Circuit & Waveform

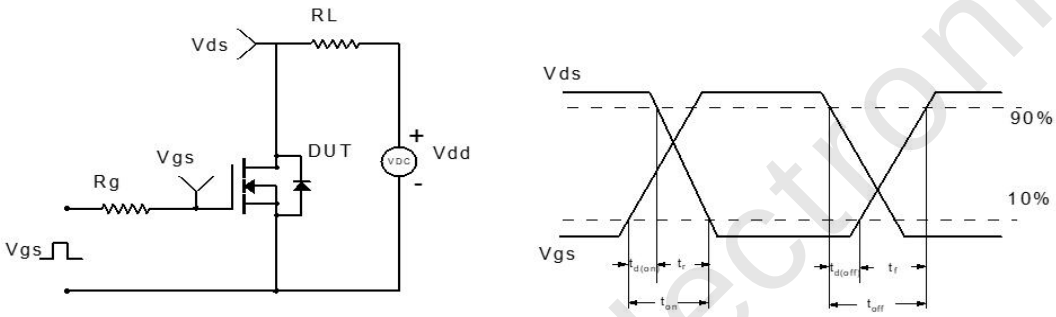


Figure 2: Resistive Switching Test Circuit & Waveform

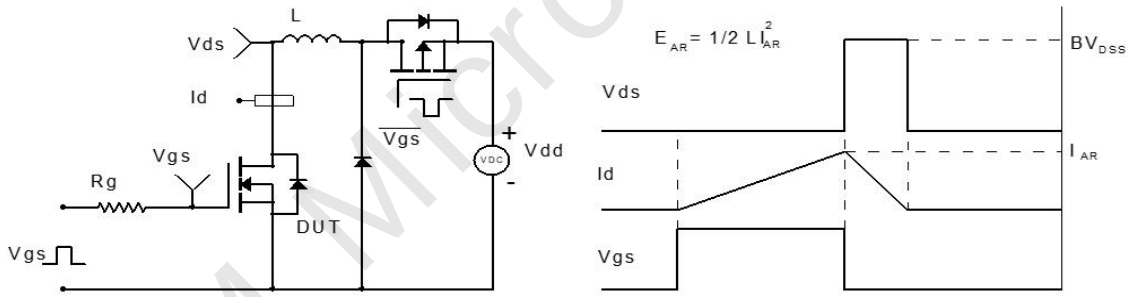


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

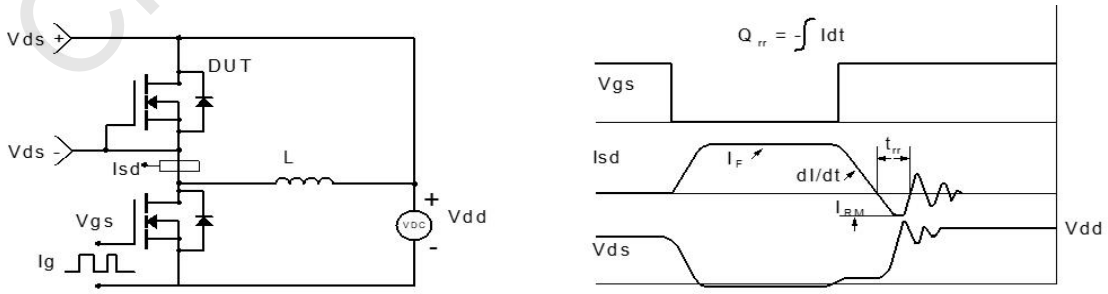
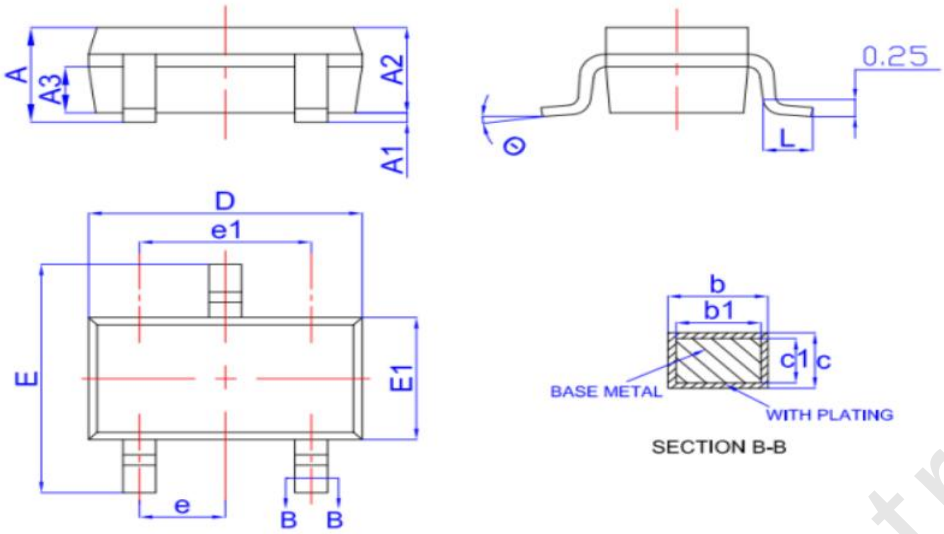


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23-3L)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.25
A1	0.04	—	0.10
A2	1.00	1.10	1.20
A3	0.55	0.65	0.75
b	0. 3	—	0. 4
b1	0.37	0.40	0.43
c	0.11	—	0.21
c1	0.10	0.13	0.16
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95BSC		
e1	1.90BSC		
L	0.30	—	0.60
θ	0	—	8°