CRMJP2N20A

Description

N-channel Enhancement Mode Power MOSFET

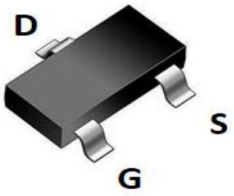
Features

- 200V, 2A
  $R_{DS(ON)}$ < 2100mΩ @ V_{GS} = 10V
- Fast Switching
- Improved dv/dt Capability

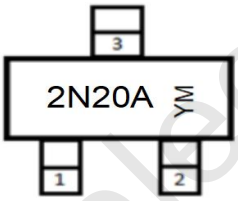
Applications

- Load Switch
- PWM Application
- Power Management

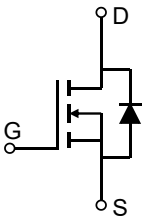
RoHS



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)
2N20A	CRMJP2N20A	TAPING	SOT-23-3L	7"	3000	120000

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		200	V
V_{GS}	Gate-to-Source Voltage		±30	V
I_D	Continuous Drain Current	T_C = 25°C	2	A
		T_C = 100°C	1.2	
I_{DM}	Pulsed Drain Current (1)		8	A
P_D	Power Dissipation	T_C = 25°C	1.4	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		89	°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} = ±30V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.65	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 2A	-	1600.0	2100.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	110	-	pF
C_{oss}	Output Capacitance		-	19	-	pF
C_{rss}	Reverse Transfer Capacitance		-	3	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 160V, I_D = 2A	-	13	-	nC
Q_{gs}	Gate Source Charge		-	1	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	6.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 100V I_D= 2A, R_{GEN} = 25Ω	-	8	-	ns
t_r	Turn-On Rise Time		-	14	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	42	-	ns
t_f	Turn-Off Fall Time		-	30	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	2	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	8	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 2A	-	-	1.2	V

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

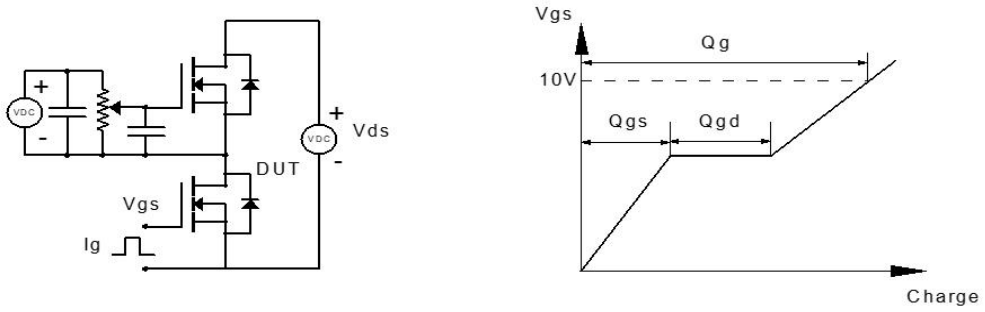


Figure 1: Gate Charge Test Circuit & Waveform

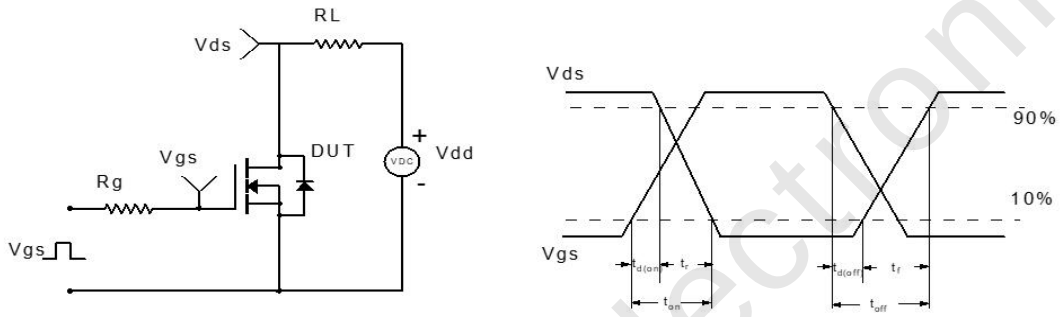


Figure 2: Resistive Switching Test Circuit & Waveform

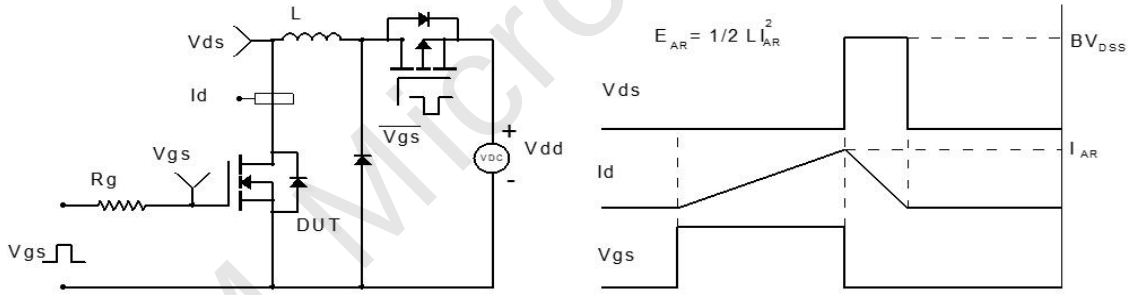


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

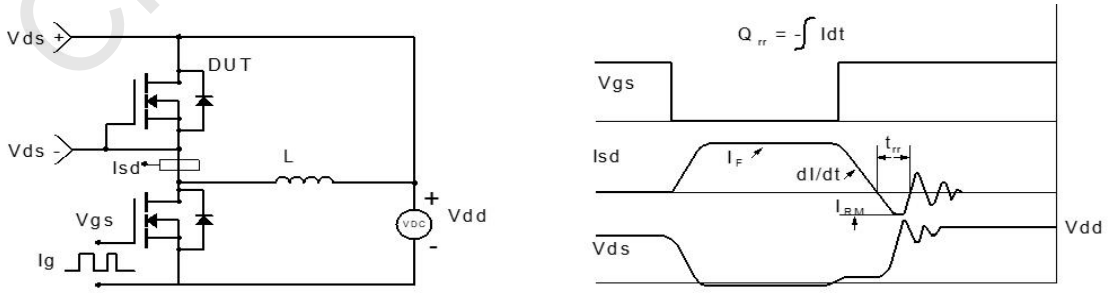
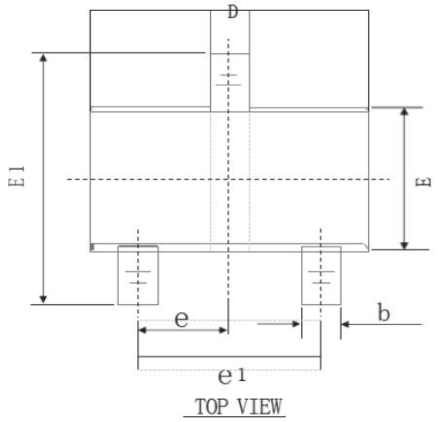
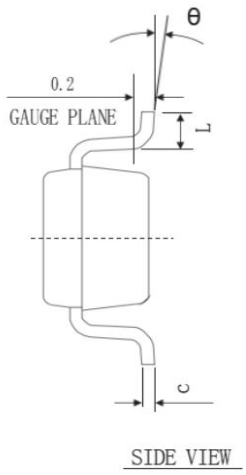


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23-3L)





COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	- -	- -	1.30
A1	0.00	0.05	0.10
A2	1.00	1.10	1.20
b	0.30	0.40	0.50
c	0.10	0.125	0.15
e1	1.80	1.90	2.00
D	2.80	2.90	3.00
E	1.50	1.60	1.70
E1	2.60	2.80	3.00
L	0.30	0.45	0.60
θ	0°	4°	8°
e	0.95BSC