

Description

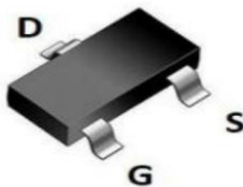
N-channel Enhancement Mode Power MOSFET

Features

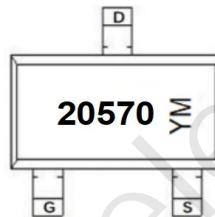
- 200V, 1.3A
 $R_{DS(ON)}$ Typ= 480mΩ @ $V_{GS} = 10V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Applications

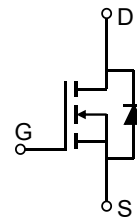
- Load Switch
- PWM Application
- Power Management



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 (@ $T_J = 25^\circ\text{C}$ 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	$T_A = 25^\circ\text{C}$	A
		$T_A = 100^\circ\text{C}$	
I_{DM}	Pulsed Drain Current ⁽¹⁾	5.2	A
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	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 ($T_J = 25^\circ\text{C}$ 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 1inch² pad of 2oz copper FR4 PCB
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

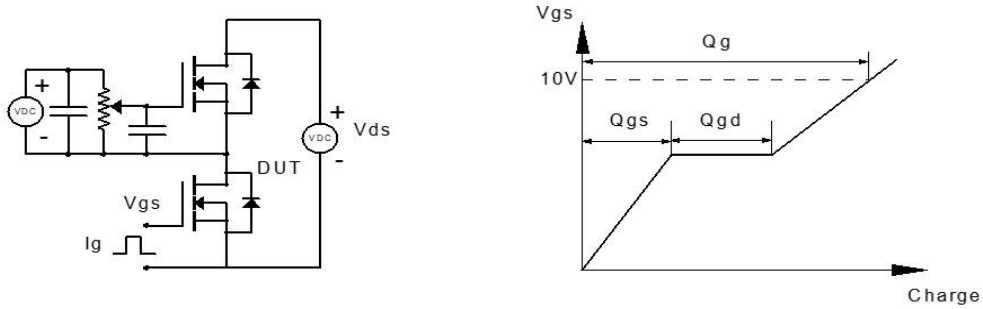


Figure 1: Gate Charge Test Circuit & Waveform

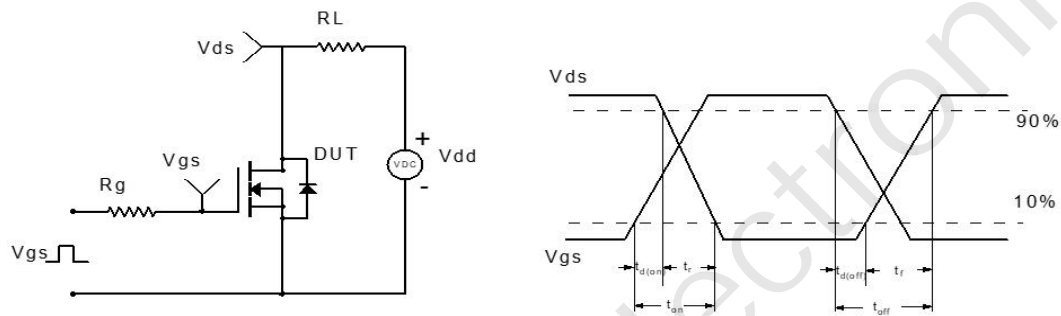


Figure 2: Resistive Switching Test Circuit & Waveform

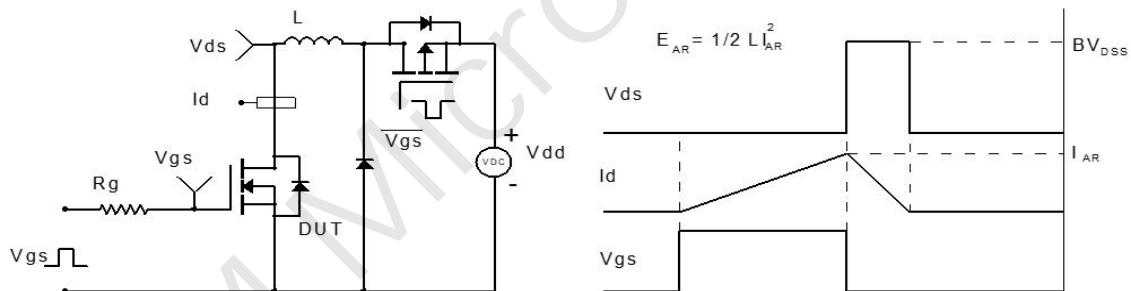


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

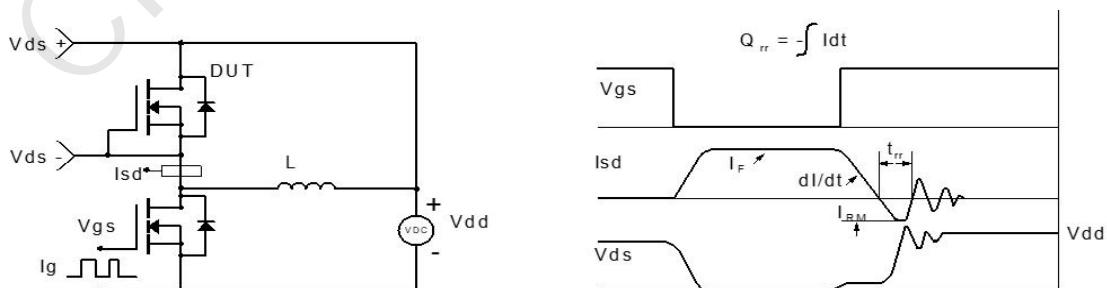
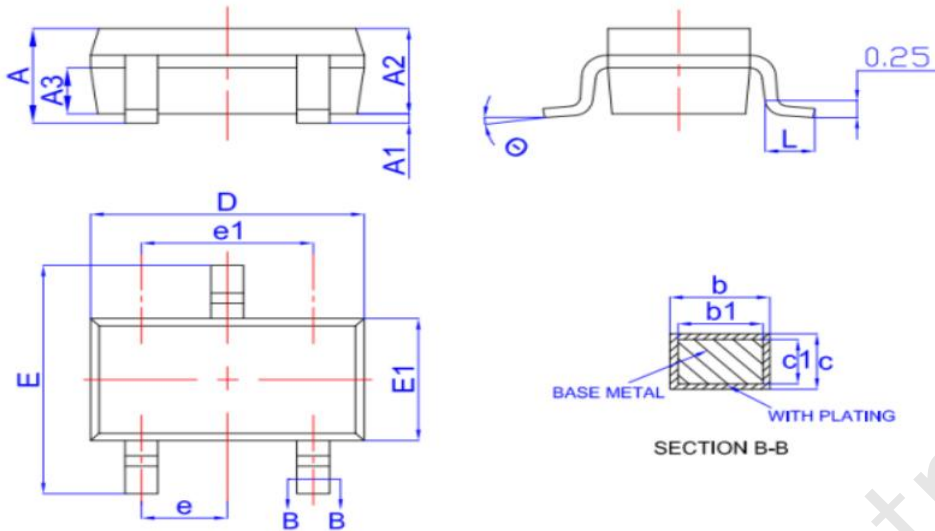


Figure 4: Diode Recovery Test Circuit & Waveform

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°

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