WM02DN70M3

Dual N-Channel Enhancement MOSFET

Description

WM02DN70M3 uses advanced power trench technology that has been especially tailored to minimize the on-state resistance This device is suitable for un-directional or bidirectional load switch, facilitated by its common-drain configuration

$V_{(BR)DSS}$(V)	I_D(A)	$R_{DS(on)}$TYP (mΩ)
20	7	11.5 @VGS=10V
		13 @VGS=4.5V
		15 @VGS=2.5V

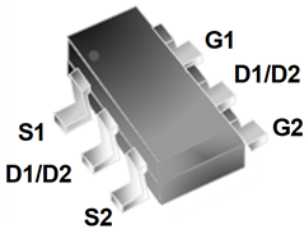
Features

- Super high dense cell for low $R_{DS(ON)}$
- RoHS Compliant and Halogen-Free
- ESD protected: Class 2

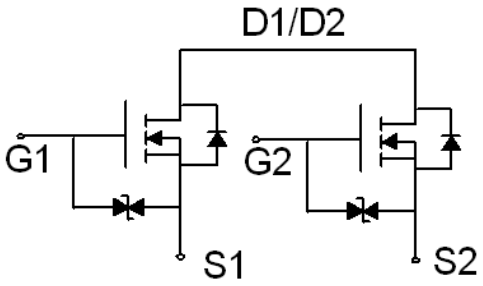
Applications

- Battery protection
- Load switch

Schematic & PIN Configuration



SOT-23-6L(Top view)



Device symbol

Absolute Maximum Rating (T_A=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25°C	I_D	7	A
	T_A=100°C		4.4	
Pulsed Drain Current[1]		I_{DM}	28	A
Total Power Dissipation	T_A=25°C	P_D	1.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[2]	$R_{\theta JA}$	83.3	°C/W

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate-body Leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V	-	-	±10	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.4	0.6	1	V
Drain-Source on-Resistance[3]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 7A	-	11.5	17	mΩ
		V_{GS} = 4.5V, I_D = 6.5A	-	13	19.5	
		V_{GS} = 2.5V, I_D = 6A	-	15	21	
Forward Transconductance[3]	g_{fs}	V_{DS} = 5V, I_D = 7A	-	12	-	S
Dynamic Characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} =0V, f =1MHz	-	771	-	pF
Output Capacitance	C_{oss}		-	130	-	
Reverse Transfer Capacitance	C_{rss}		-	102	-	
Switching Characteristics[4]						
Total Gate Charge	Q_g	V_{GS} =10V, V_{DS} = 10V, I_D= 7A	-	18.7	-	nC
Gate-Source Charge	Q_{gs}		-	1.9	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 10V R_G= 3Ω, I_D= 7A	-	4.5	-	ns
Rise Time	t_r		-	10.5	-	
Turn-off Delay Time	$t_{d(off)}$		-	42	-	
Fall Time	t_f		-	12	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1	V
Continuous Source Current	I_S	-	-	-	7	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

2. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.

3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.

4. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

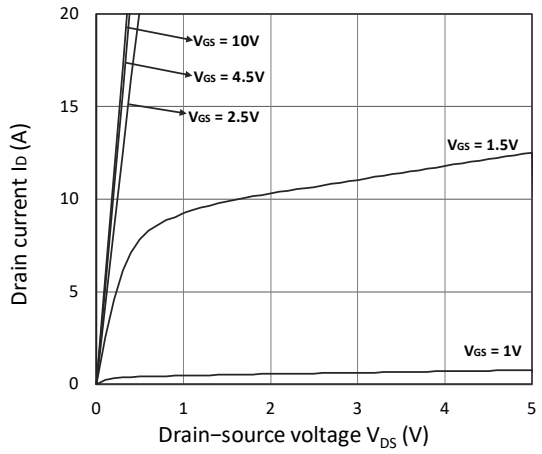


Figure 1. Output Characteristics

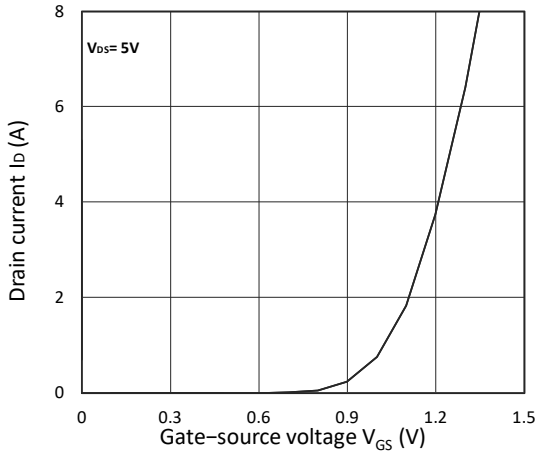


Figure 2. Transfer Characteristics

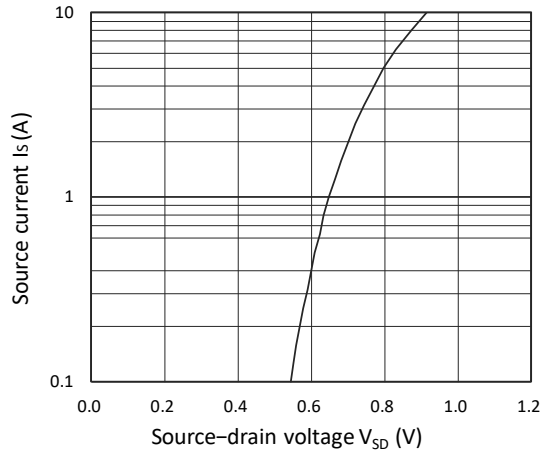


Figure 3. Forward Characteristics of Reverse

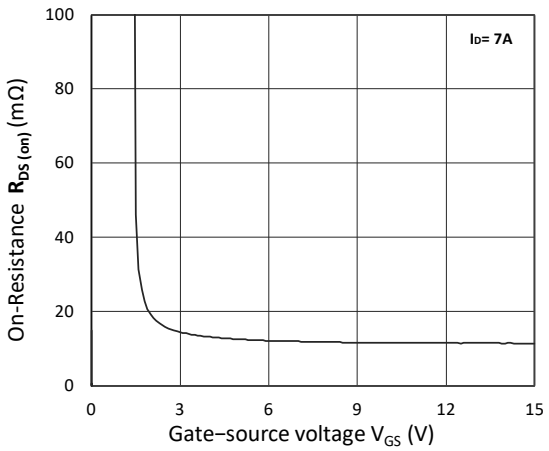


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

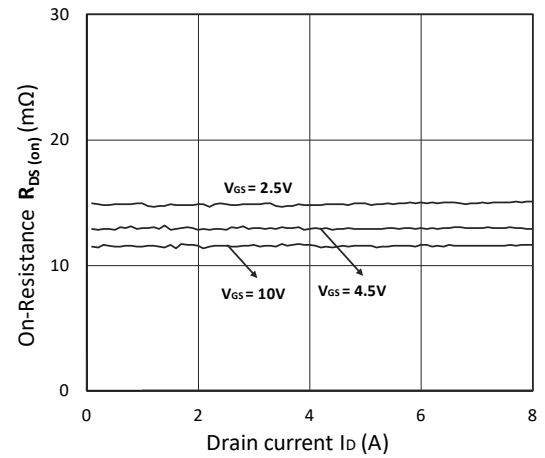


Figure 5. $R_{DS(ON)}$ vs. I_D

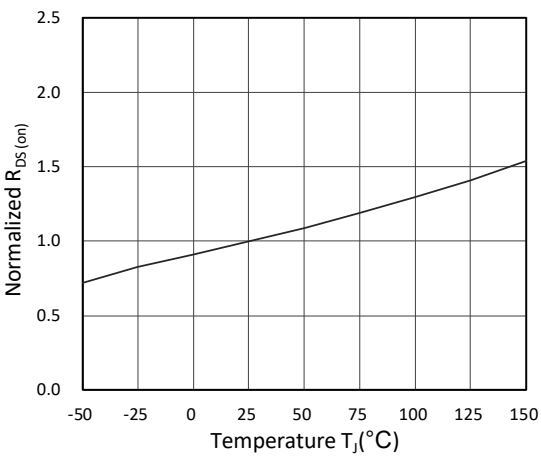


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

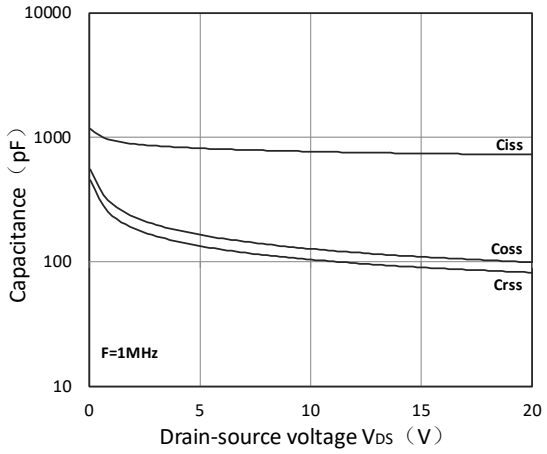


Figure 7. Capacitance Characteristics

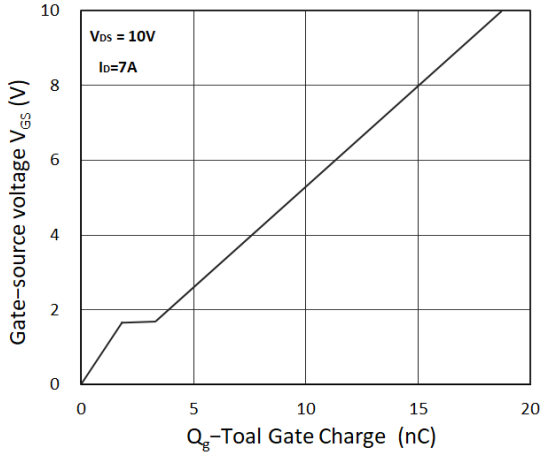
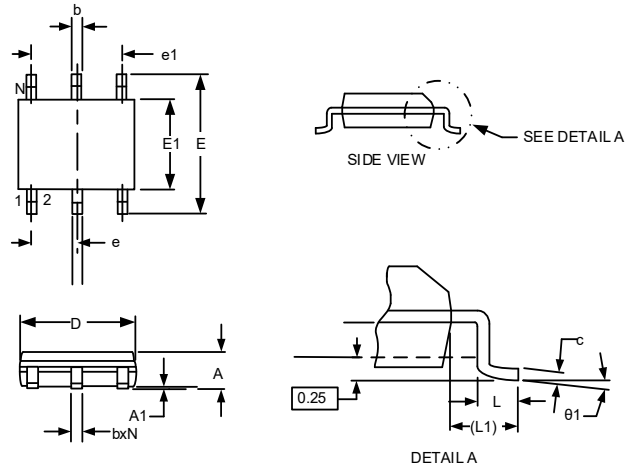
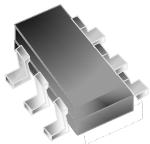


Figure 8. Gate Charge Characteristics

Outline Drawing –SOT-23-6L

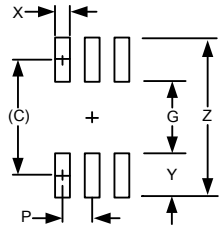
PACKAGE OUTLINE





SOT-23-6L

DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.25	0.035	0.049
A1	0.00	0.15	0.000	0.006
b	0.25	0.55	0.010	0.022
c	0.08	0.22	0.003	0.009
D	2.80	3.10	0.110	0.122
E1	1.50	1.75	0.060	0.069
E	2.60	3.00	0.102	0.118
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0. 0.075BSC	
L	0.30	0.60	0.012	0.024
L1	0.55	0.75	0.022	0.030
θ1	0°	8°	0°	8°

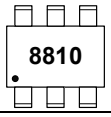


DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.098	2.50
G	0.055	1.40
P	0.037	0.95
X	0.024	0.60
Y	0.043	1.10
Z	0.141	3.60

Notes:

Controlling Dimension: Millimeter.

Marking Codes

Part Number	WM02DN70M3
Marking Code	

Package Information

Qty： 3k/Reel

CONTACT INFORMATION

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