

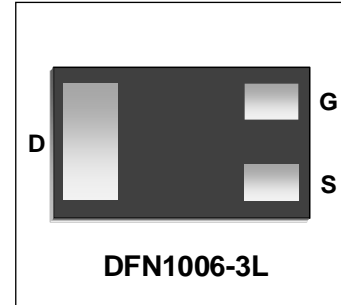


# WM03N09F

## N-Channel Trench MOSFET

### Features

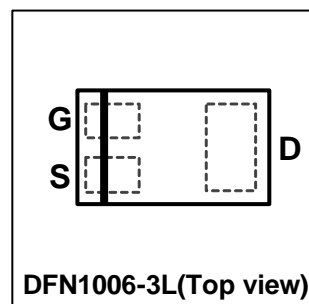
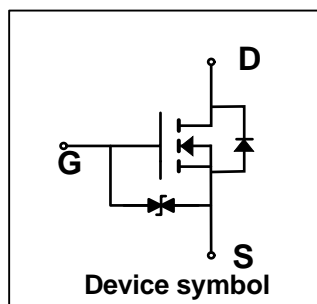
- $V_{DS} = 30\text{ V}$ ,  $I_D = 0.93\text{ A}$   
 $R_{DS(on)} < 0.50\ \Omega @ V_{GS} = 4.5\text{ V}$   
 $R_{DS(on)} < 0.60\ \Omega @ V_{GS} = 2.5\text{ V}$
- Very Fast Switching
- Trench MOSFET Technology
- Low Threshold Voltage
- Pb Free Device
- ESD Protected



### Mechanical Characteristics

- DFN1006-3L Package
- Marking : Making Code
- RoHS Compliant

### Schematic & PIN Configuration



### Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Continuous Drain Current <sup>1</sup>	$I_D$	930	mA
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Power Dissipation <sup>1</sup>	$P_D$	715	mW
Pulsed Drain Current ( $t_p = 10\ \mu\text{s}$ )	$I_{DM}$	3.7	A
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}\text{C}$
Junction-to-Ambient - Steady State <sup>1</sup>	$R_{\theta JA}$	305	$^{\circ}\text{C/W}$

**Electrical Characteristics (T<sub>amb</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	<b>BV<sub>DSS</sub></b>	V <sub>GS</sub> =0 V, I <sub>D</sub> = 250μA	30	-	-	V
Gate Threshold Voltage	<b>V<sub>GS(th)</sub></b>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	1.0	1.5	V
Drain Cut-off Current	<b>I<sub>DSS</sub></b>	V <sub>DS</sub> =30 V, V <sub>GS</sub> =0 V	-	-	1	μA
Gate leakage Current	<b>I<sub>GSS</sub></b>	V <sub>GS</sub> =±10 V, V <sub>DS</sub> =0 V	-	-	±10	μA
Drain-Source on-state Resistance <sup>2</sup>	<b>R<sub>DS(on)</sub></b>	V <sub>GS</sub> =4.5 V, I <sub>D</sub> =0.6A	-	0.32	0.50	Ω
		V <sub>GS</sub> =2.5 V, I <sub>D</sub> =0.3A	-	0.41	0.60	
<b>Dynamic characteristics</b>						
Input Capacitance	<b>C<sub>iss</sub></b>	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0 V, f = 1 MHz	-	37	-	pF
Output Capacitance	<b>C<sub>oss</sub></b>		-	8.6	-	
Reverse Transfer Capacitance	<b>C<sub>rss</sub></b>		-	5.4	-	
<b>Switching Characteristics</b>						
Total Gate Charge	<b>Q<sub>g</sub></b>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 1.0 A	-	0.65	-	nC
Gate-Source Charge	<b>Q<sub>gs</sub></b>		-	0.14	-	
Gate-Drain Charge	<b>Q<sub>gd</sub></b>		-	0.18	-	
Turn-on Delay Time	<b>t<sub>d(on)</sub></b>	V <sub>DS</sub> = 15V, V <sub>GEN</sub> =4.5V, R <sub>G</sub> = 6Ω, R <sub>L</sub> = 15Ω	-	6.5	-	ns
Rise Time	<b>t<sub>r</sub></b>		-	9.5	-	
Turn-off Delay Time	<b>t<sub>d(off)</sub></b>		-	14	-	
Fall Time	<b>t<sub>f</sub></b>		-	5.5	-	
<b>Drain-Source Body Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	<b>V<sub>SD</sub></b>	I <sub>S</sub> = 0.6A, V <sub>GS</sub> = 0V	-	-	1.2	V

Note:

1: Surface-mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces)

2: Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%.

Typical Characteristics

Figure 1. Output Characteristics

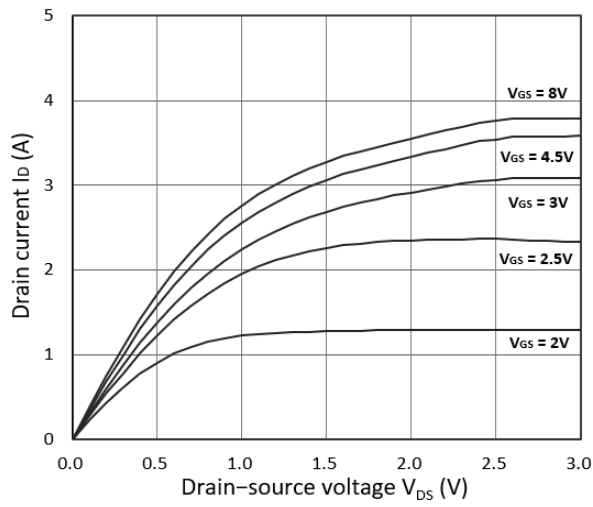


Figure 2. Transfer Characteristics

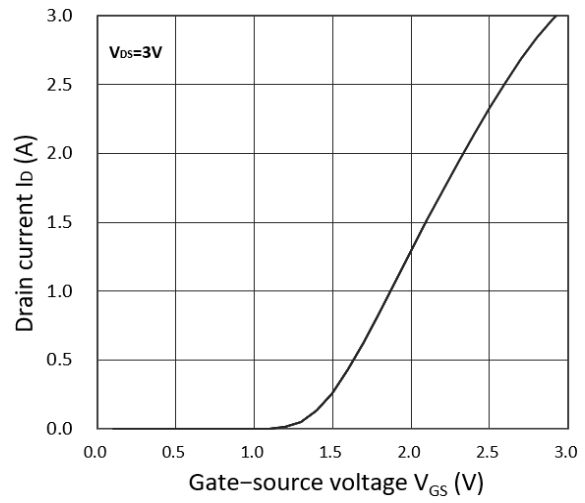


Figure 3.  $R_{DS(on)}$  vs.  $I_D$

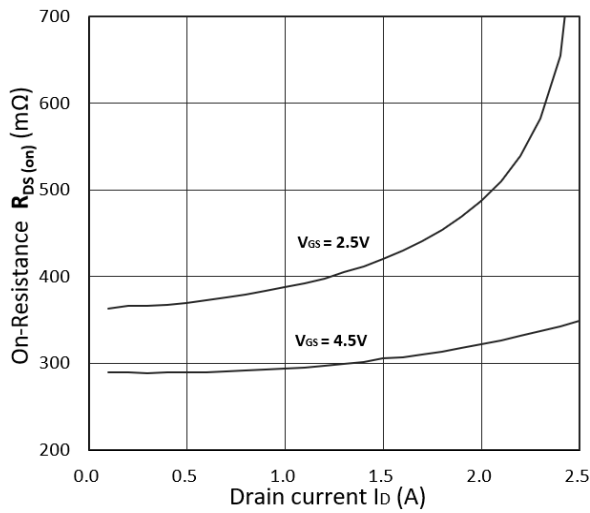


Figure 4.  $R_{DS(on)}$  vs.  $V_{GS}$

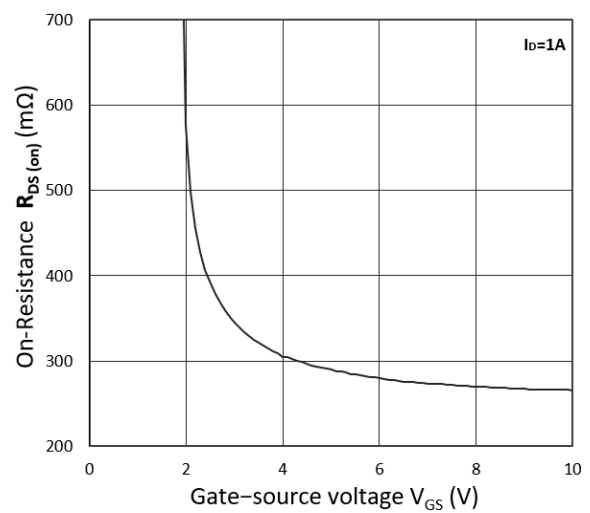


Figure 5.  $I_S$  vs.  $V_{SD}$

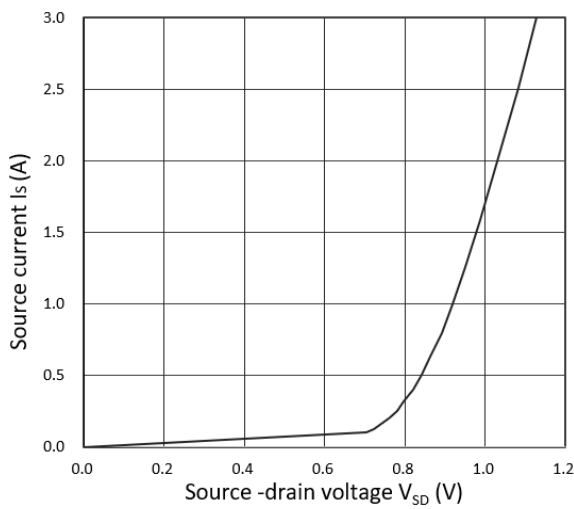
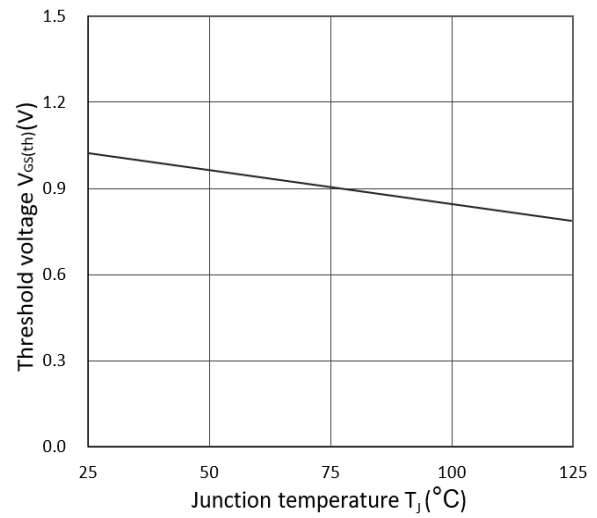


Figure 6.  $V_{GS(th)}$  vs.  $T_J$



Outline Drawing – DFN1006-3L

**PACKAGE OUTLINE**

TOP VIEW

BOTTOM VIEW

**DFN1006-3L**

SYMBOL	MILLIMETER		
	MIN.	TYP.	MAX.
A	0.45	0.50	0.55
A1	0.00	-	0.05
b	0.40	0.50	0.60
b1	0.10	0.15	0.20
D	0.95	1.00	1.05
e	0.65BSC		
E	0.55	0.60	0.65
E1	0.19BSC		
L	0.20	0.25	0.30

**Land Pattern**

**Marking Codes**

Part Number	WM03N09F
Marking Code	

**Package Information**

Qty: 10k/Reel

**CONTACT INFORMATION.**

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For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.  
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
Users should verify actual device performance in their specific applications.