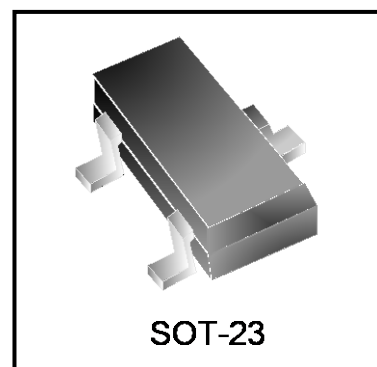


### Features

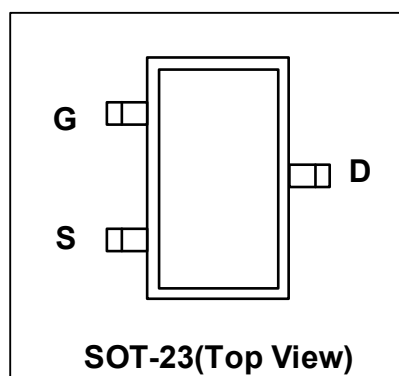
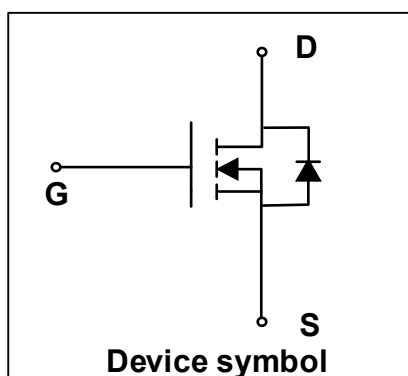
- $V_{DS} = 50V$ ,  $I_D = 0.2A$   
 $R_{DS(on)} < 3.5\Omega @ V_{GS} = 10V$   
 $R_{DS(on)} < 6\Omega @ V_{GS} = 4.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/output Leakage



### Mechanical Characteristics

- SOT-23 Package
- Marking : Making Code
- RoHS Compliant

### Schematic & PIN Configuration



### Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	50	V
Continuous Drain Current	$I_D$	0.2	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	1	A
Gate-Source Voltage Continuous	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D$	300	mW
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55 to +150	$^{\circ}C$
Thermal Resistance from Junction to Ambient <sup>1</sup>	$R_{\theta JA}$	417	$^{\circ}C/W$

**Electrical Characteristics** ( $T_{amb}=25^{\circ}\text{C}$  unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	50	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = 50\text{V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
Gate Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA
Drain-Source on-State Resistance <sup>3</sup>	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 0.2\text{A}$	-	1.1	3.5	$\Omega$
		$V_{GS} = 4.5\text{V}, I_D = 0.2\text{A}$	-	1.2	6	
Gate Threshold Voltage <sup>3</sup>	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.5	-	1.5	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$	-	31	-	pF
Output Capacitance	$C_{oss}$		-	4.9	-	
Reverse Transfer Capacitance	$C_{rss}$		-	2.5	-	
<b>Switching Characteristics</b>						
Turn-on Delay Time <sup>4</sup>	$t_{d(on)}$	$V_{DD} = 30\text{V}, I_D = 0.2\text{A}, R_G = 6\Omega$	-	5	-	nS
Rise Time <sup>4</sup>	$t_r$		-	18	-	
Turn-off Delay Time <sup>4</sup>	$t_{d(off)}$		-	36	-	
Fall Time <sup>4</sup>	$t_f$		-	14	-	
<b>Drain-Source Body Diode Characteristics</b>						
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	$I_S = 0.2\text{A}, V_{GS} = 0\text{V}$	-	-	1.4	V

## Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch..
3. Pulse Test : Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing

Typical Characteristics

Figure 1. Output Characteristics

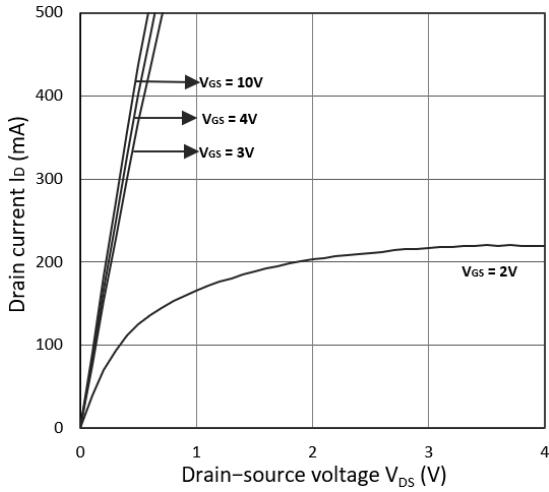


Figure 2. Transfer Characteristics

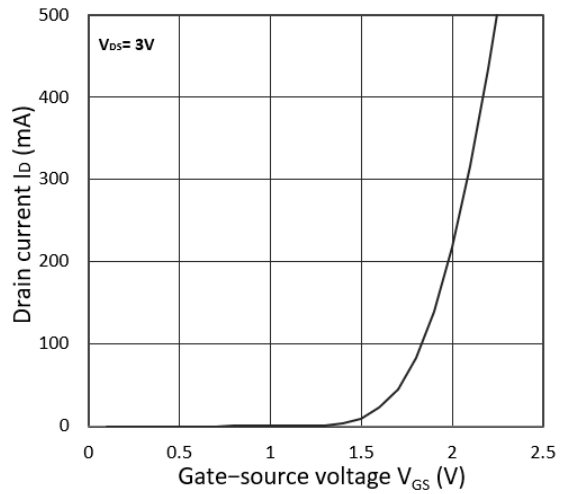


Figure 3.  $R_{DS(ON)}$  vs.  $I_D$

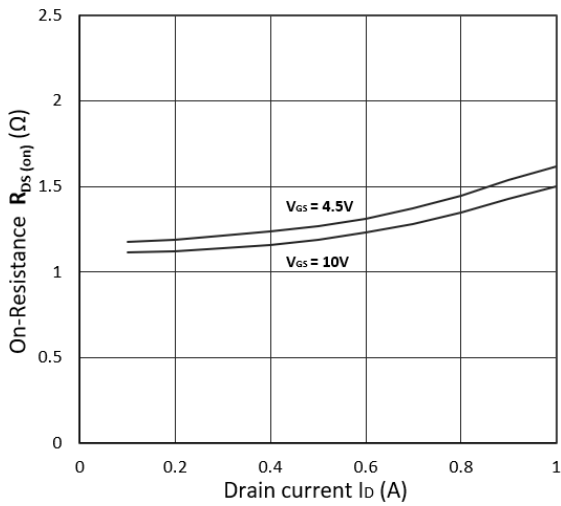


Figure 4.  $R_{DS(ON)}$  vs.  $V_{GS}$

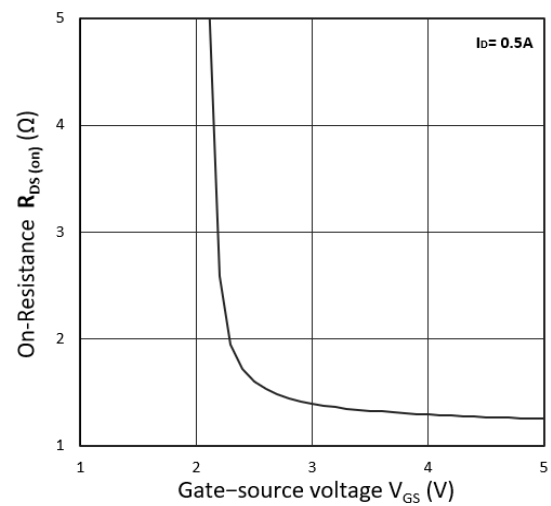


Figure 5.  $I_S$  vs.  $V_{SD}$

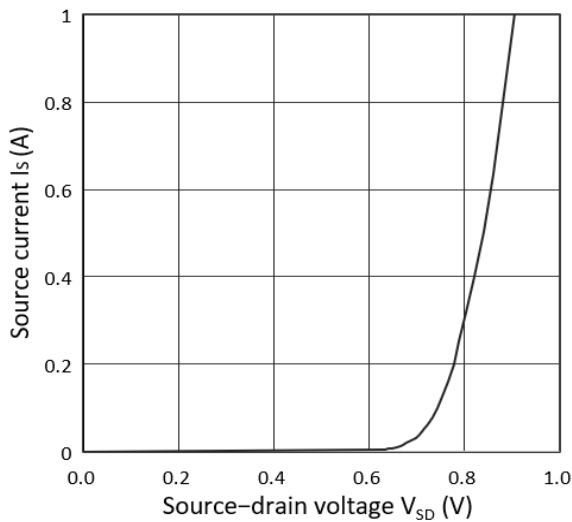
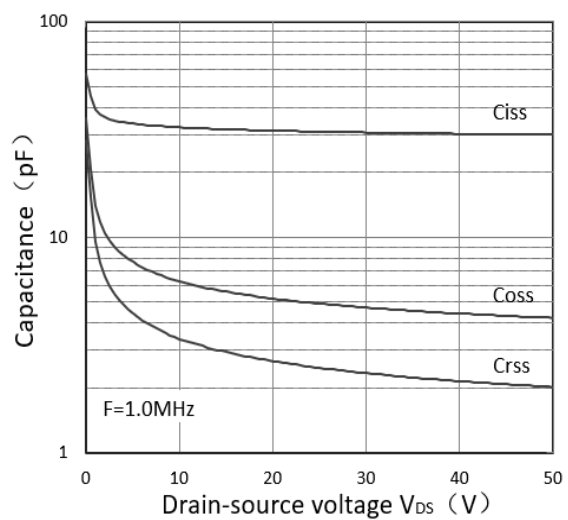


Figure 6. Capacitance Characteristics



Outline Drawing – SOT-23

### PACKAGE OUTLINE

**SOT-23**

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	2.25	2.55	0.089	0.100
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 BSC	
e1	1.80	2.00	0.071	0.079
L	0.45	0.65	0.018	0.026
θ	0°	8°	0°	8°

DIMENSIONS		
DIM	INCHES	MILLIMETERS
M	0.080	2.02
C	0.032	0.80
Z	0.111	2.82
e	0.037 BSC	0.95 BSC
e1	0.075 BSC	1.9 BSC
b	0.032	0.80

**Notes**

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.

Marking Codes

Part Number	WM05N02M
Marking Code	

Package Information

Qty: 3k/Reel

CONTACT INFORMATION

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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.*