

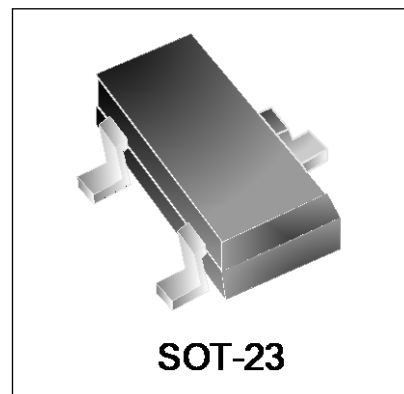
P-Channel MOSFET

Features

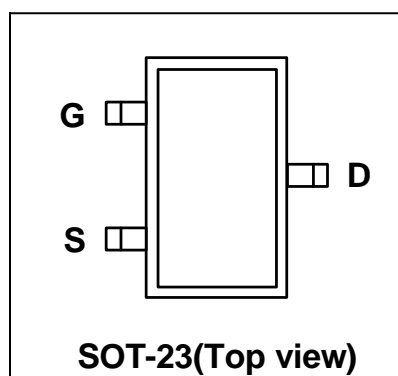
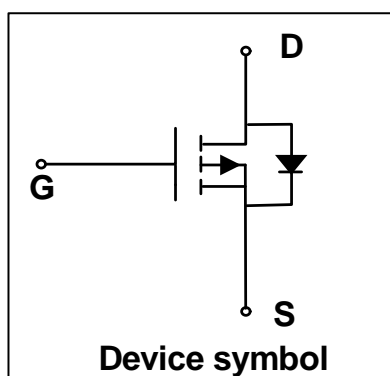
- $V_{DS} = -20\text{ V}$, $I_D = -2.3\text{ A}$
 $R_{DS(on)} < 115\text{ m}\Omega$ @ $V_{GS} = -4.5\text{ V}$
 $R_{DS(on)} < 145\text{ m}\Omega$ @ $V_{GS} = -2.5\text{ V}$
- Low Gate Charge
- Trench Power LV MOSFET Technology

Mechanical Characteristics

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



Schematic & PIN Configuration



Absolute Maximum Rating

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	TA=25°C	-2.3
		TA=70°C	-1.6
Pulsed Drain Current ¹	I_{DM}	-8	A
Power Dissipation	P_D	0.7	W
Operating Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	178	°C/W

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}= 0V, I_D= -250\mu A$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}= -20V, V_{GS}= 0V$	-	-	-1	μA
Gate-Source Leakage	I_{GSS}	$V_{DS}= 0V, V_{GS}= \pm 10V$	-	-	± 100	nA
Gate-Source Threshold Voltage ³	$V_{GS(th)}$	$V_{DS}= V_{GS}, I_D= -250\mu A$	-0.4	-	-1.2	V
Drain-Source on-State Resistance ³	$R_{DS(on)}$	$V_{GS}= -4.5V, I_D= -1.5A$	-	90	115	m Ω
		$V_{GS}= -2.5V, I_D= -1.5A$	-	115	145	
		$V_{GS}= -1.8V, I_D= -1.5A$	-	155	250	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS}= 0V, V_{DS}= -10V, f= 1MHz$	-	270	-	pF
Output Capacitance	C_{oss}		-	37	-	
Reverse Transfer Capacitance	C_{rss}		-	29	-	
Switching Characteristics						
Total gate charge ⁴	Q_g	$V_{GS}= -4.5V, V_{DS}= -10V, I_D= -2A$	-	3.9	-	nC
Gate-source charge ⁴	Q_{gs}		-	0.7	-	
Gate-drain charge ⁴	Q_{gd}		-	0.9	-	
Turn-on Time ⁴	$t_{d(on)}$	$V_{GS}= -4.5V, V_{DD}= -10V,$ $R_L = 5\Omega, R_{GEN}= 3\Omega$	-	12	-	nS
Rise Time ⁴	t_r		-	10	-	
Turn-off Time ⁴	$t_{d(off)}$		-	15	-	
Fall Time ⁴	t_f		-	9	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	$I_S= -2A, V_{GS}= 0V$	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 board using 1 square inch pad size, 1oz single-side copper.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to product

Typical Characteristics

Figure 1. Output Characteristics

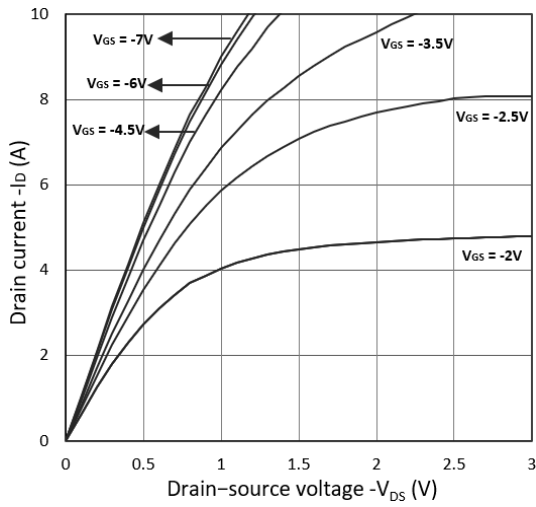


Figure 2. Transfer Characteristics

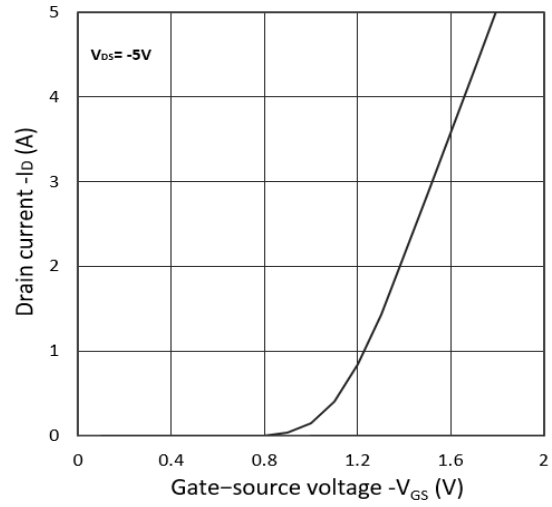


Figure 3. $R_{DS(ON)}$ vs. I_D

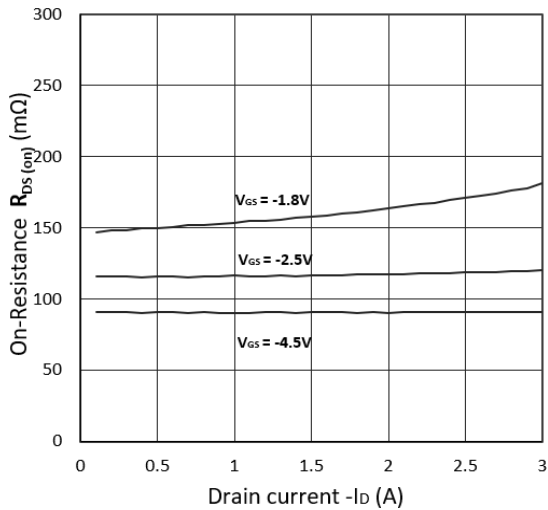


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

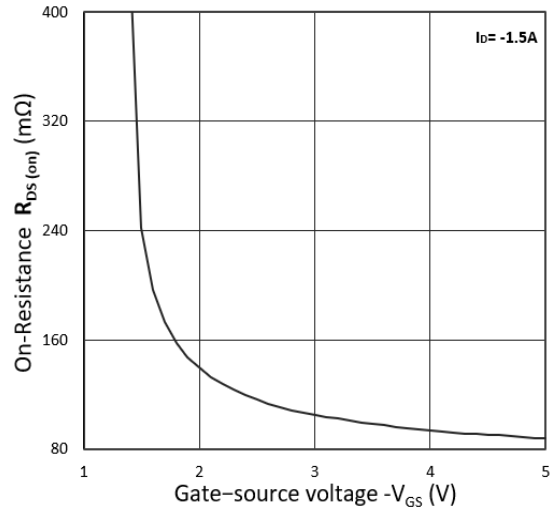


Figure 5. I_S vs. V_{SD}

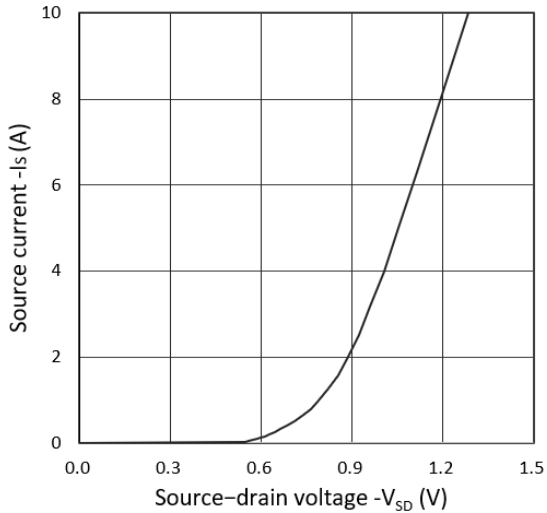
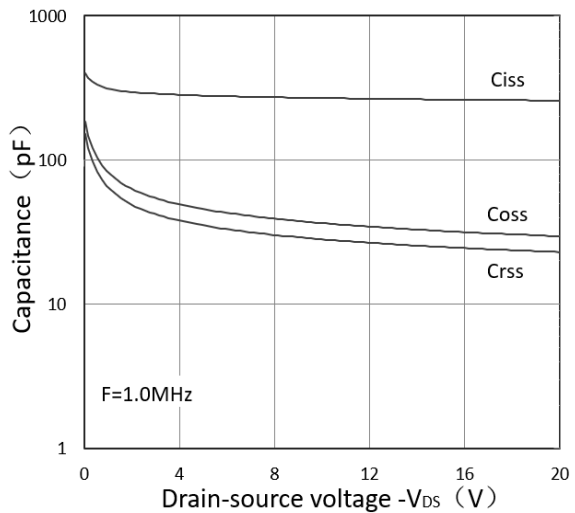


Figure 6. Capacitance Characteristics



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	WM02P23M
Marking Code	

Package Information

Qty: 3k/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.