



WM10N20M

N-Channel MOSFET

Features

- $V_{DS} = 100V$, $I_D = 2A$
 $R_{DS(on)} < 280m\Omega @ V_{GS} = 10V$
 $R_{DS(on)} < 310m\Omega @ V_{GS} = 4.5V$
- High Density Cell Design for Low $R_{DS(on)}$
- Surface Mount Package
- Trench Power MV MOSFET Technology

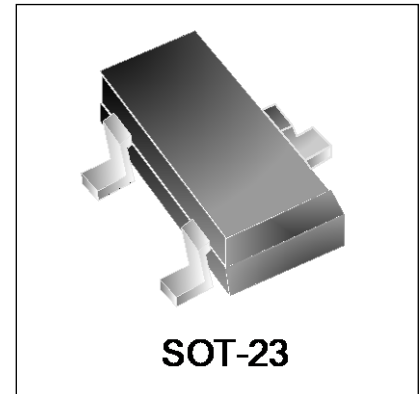
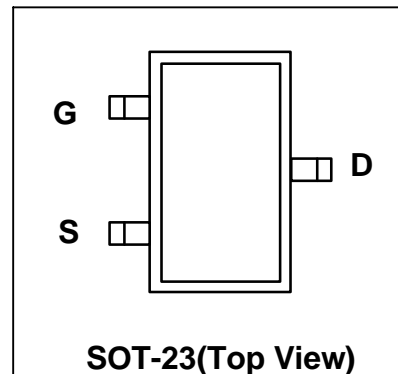
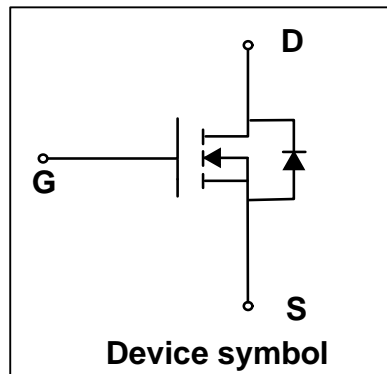
Mechanical Characteristics

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

Applications

- DC-DC Converters
- Power Management Functions

Schematic & PIN Configuration



Absolute Maximum Rating ($T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Continuous Drain Current	I_D	$T_A = 25^{\circ}C$	2
		$T_A = 70^{\circ}C$	1.6
Pulsed Drain Current ¹	I_{DM}	8	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation	P_D	1.2	W
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}C$
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	105	$^{\circ}C/W$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	100	-	-	V
Gate Threshold Voltage ¹	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	1.1	1.8	3	
Drain Cut-off Current	I_{DSS}	$V_{DS} = 100\text{V}, V_{GS} = 0\text{V}$	-	-	1	μA
Gate leakage Current	I_{GSS1}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$	-	-	± 100	nA
	I_{GSS2}	$V_{GS} = \pm 10\text{V}, V_{DS} = 0\text{V}$	-	-	± 50	
Drain-Source On-state Resistance ¹	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 2\text{A}$	-	250	280	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 2\text{A}$	-	260	310	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 50\text{V},$ $f = 1\text{MHz}$	-	330	-	pF
Output Capacitance	C_{oss}		-	88	-	
Reverse Transfer Capacitance	C_{rss}		-	17	-	
Switching Characteristics³						
Total gate charge	Q_g	$V_{DS} = 50\text{V}, V_{GS} = 10\text{V},$ $I_D = 2\text{A}$	-	5.3	-	nC
Gate-source charge	Q_{gs}		-	1.4	-	
Gate-drain charge	Q_{gd}		-	1.8	-	
Turn-On Time	$t_{d(on)}$	$V_{GS} = 10\text{V}, V_{DD} = 50\text{V},$ $R_L = 39\Omega, R_{GEN} = 1\Omega$ $I_D = 1.3\text{A}$	-	14	-	ns
Rise time	t_f		-	54	-	
Turn-Off Time	$t_{d(off)}$		-	18	-	
Fall time	t_f		-	11	-	
Source-Drain Diode characteristics						
Body Diode Voltage	V_{SD}	$I_S = 2\text{A}, V_{GS} = 0\text{V}$	-	0.7	1.2	V

Notes:

1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
3. Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1. Output Characteristics

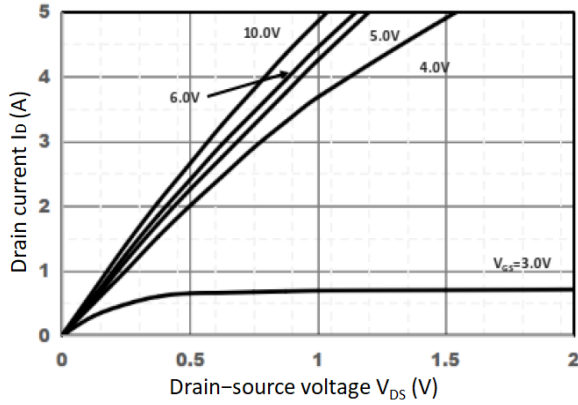


Figure 2. Transfer Characteristics

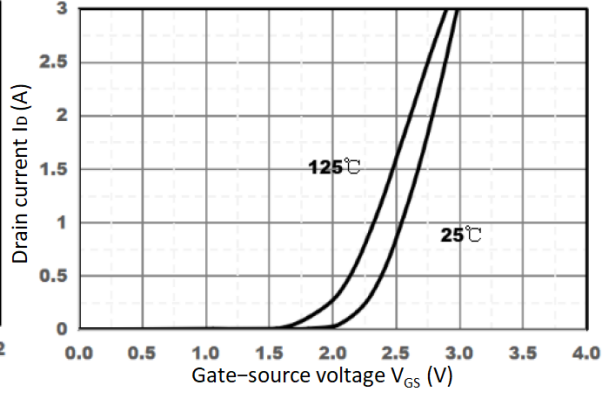


Figure 3. Capacitance Characteristics

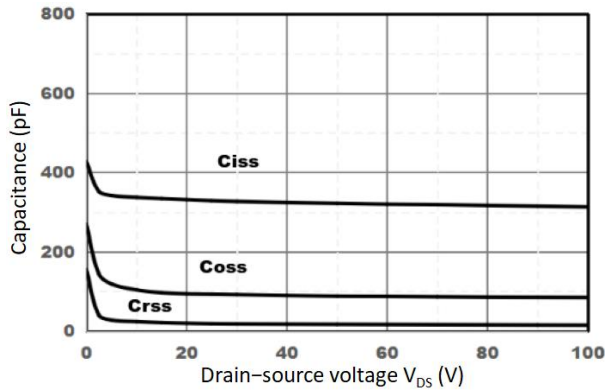


Figure 4. Gate Charge Characteristics

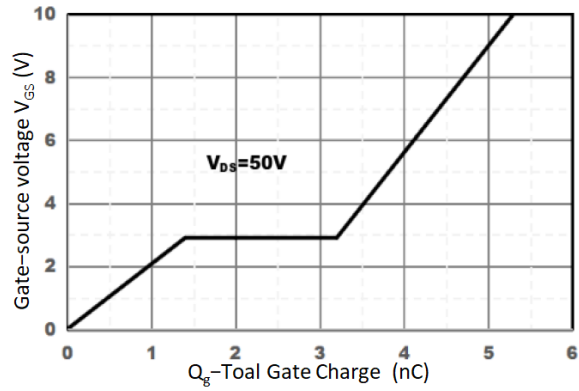


Figure 5. $R_{DS(on)}$ vs. I_D

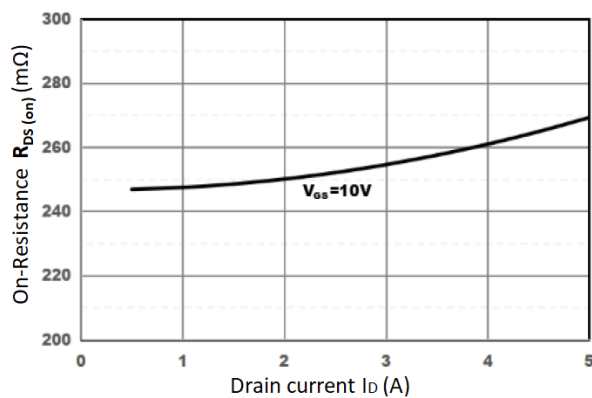


Figure 6. Normalized $R_{DS(on)}$ vs. T_J

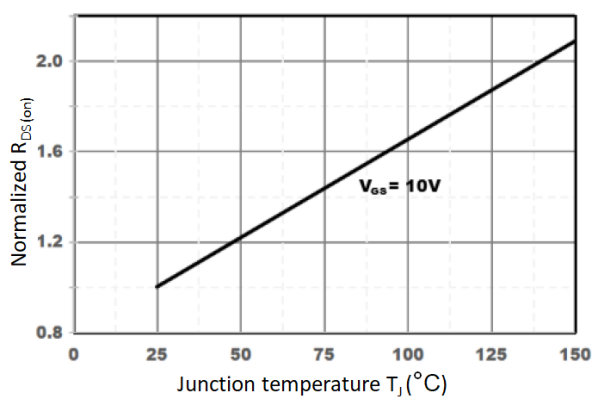


Figure 7. Safe Operating Area

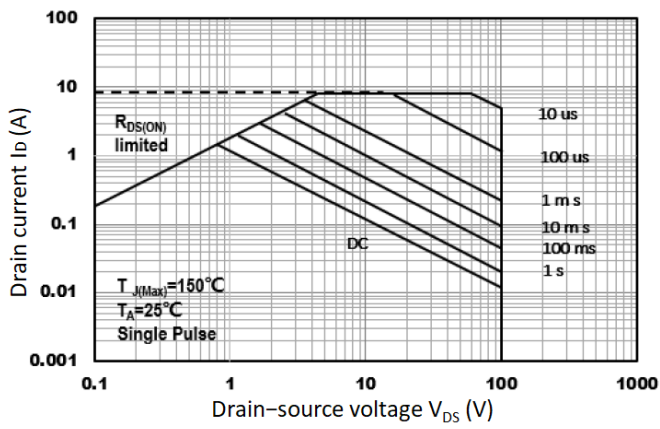
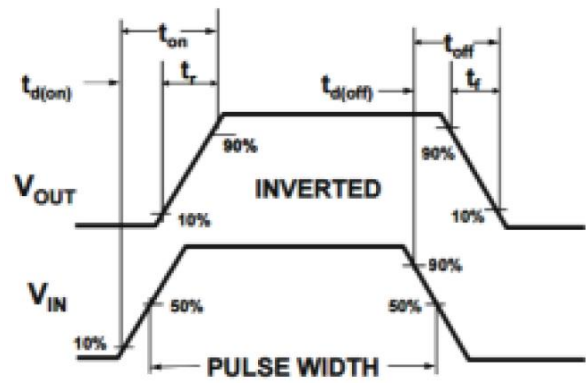


Figure 8. Switching Wave



Outline Drawing – SOT-23

PACKAGE OUTLINE

SOT-23

DIMENSIONS				
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	WM10N20M
Marking Code	2324

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.