



WM02P160R

P-Channel MOSFET

Features

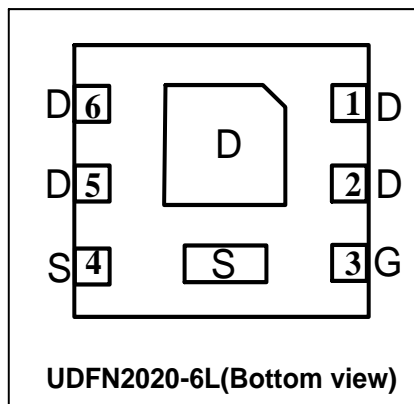
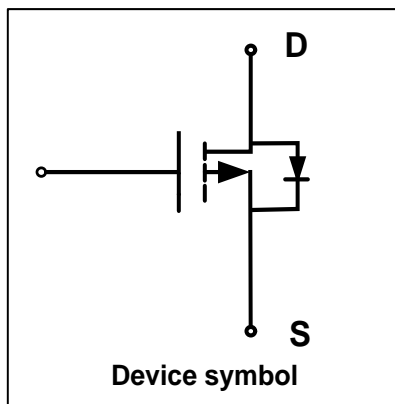
- $V_{DS} = -20\text{ V}$, $I_D = -16\text{ A}$
 $R_{DS(on)} < 17\text{ m}\Omega$ @ $V_{GS} = -4.5\text{ V}$
 $R_{DS(on)} < 21\text{ m}\Omega$ @ $V_{GS} = -2.5\text{ V}$
 $R_{DS(on)} < 30\text{ m}\Omega$ @ $V_{GS} = -1.8\text{ V}$
- High Speed Switching
- Excellent $R_{DS(on)}$ and Low Gate Charge

Applications

- Load Switch
- Battery Protection
- Power Management



Schematic & PIN Configuration



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

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	
Continuous Drain Current	I_D	-16	A
Pulsed Drain Current ¹	I_{DM}	-64	A
Power Dissipation	P_D	18	W
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	6.9	$^{\circ}\text{C/W}$

Electrical Characteristics (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20	-	-	V
Gate-Source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.6	-1	
Gate-Source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$	-	-	± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	-	-	-1	μA
Drain-source on-state resistance ¹	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -10A$	-	12	17	m Ω
		$V_{GS} = -2.5V, I_D = -6.5A$	-	14	21	
		$V_{GS} = -1.8V, I_D = -4.0A$	-	20	30	
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -10V,$ $f = 1.0MHz$	-	2750	-	pF
Output capacitance	C_{oss}		-	320	-	
Reverse transfer capacitance	C_{rss}		-	280	-	
Switching Characteristics						
Total gate charge ²	Q_g	$V_{GS} = -10V, V_{DS} = -15V,$ $I_D = -9.1A$	-	30	-	nC
Gate-source charge ²	Q_{gs}		-	5.3	-	
Gate-drain charge ²	Q_{gd}		-	7.6	-	
Turn-on delay time ²	$t_{d(on)}$	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -6A, R_{GEN} = 2.5\Omega,$	-	14	-	ns
Rise time ²	t_r		-	20	-	
Turn-off delay time ²	$t_{d(off)}$		-	95	-	
Fall Time ²	t_f		-	65	-	
Drain-Source Body Diode Characteristics						
Body Diode voltage	V_{SD}	$I_S = -13A, V_{GS} = 0V$	-	-0.8	-1.2	V

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing

Typical Characteristics

Figure 1. Output Characteristics

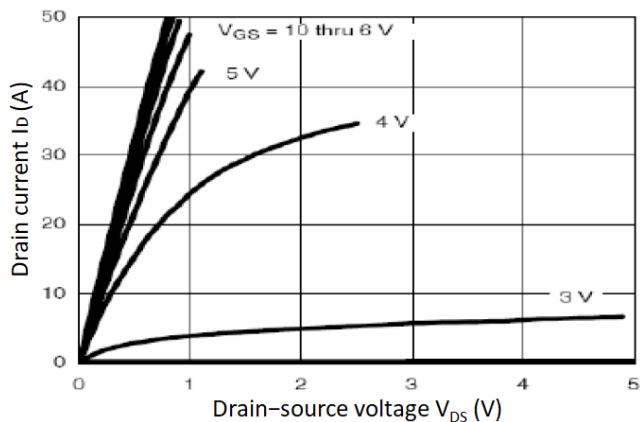


Figure 2. Transfer Characteristics

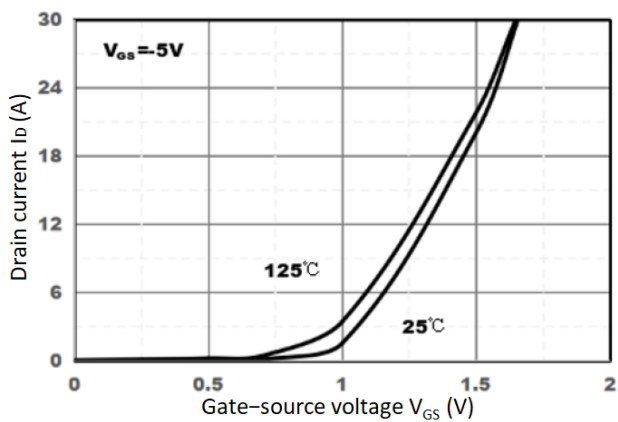


Figure 3. Capacitance Characteristics

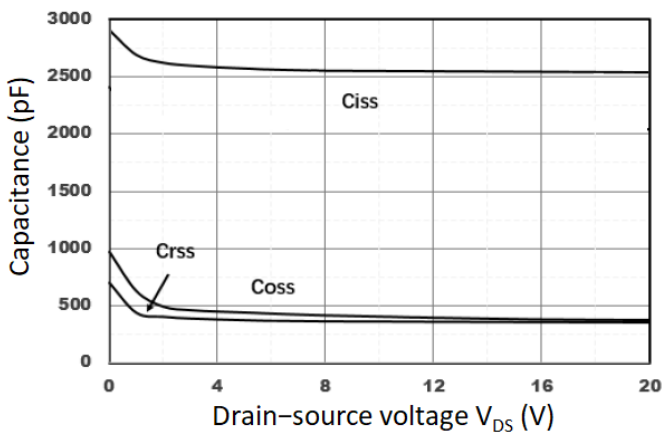


Figure 4. Gate Charge Characteristics

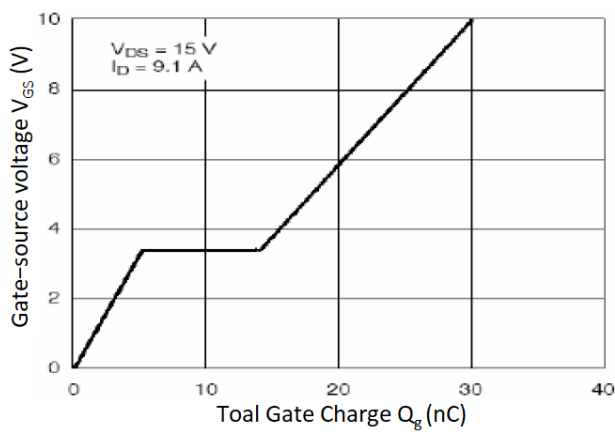


Figure 5. $R_{DS(ON)}$ vs. I_D

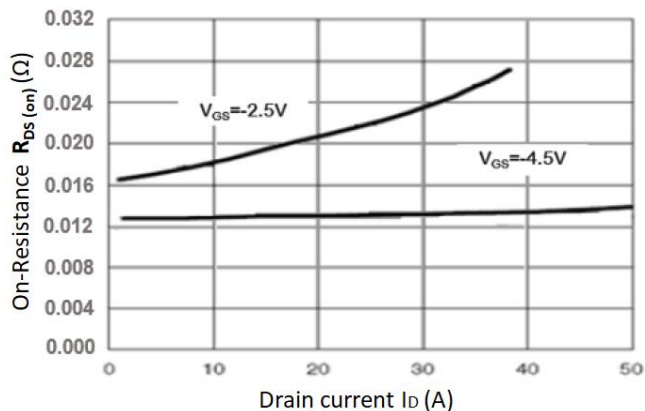


Figure 6. Normalized $R_{DS(ON)}$ vs. T_J

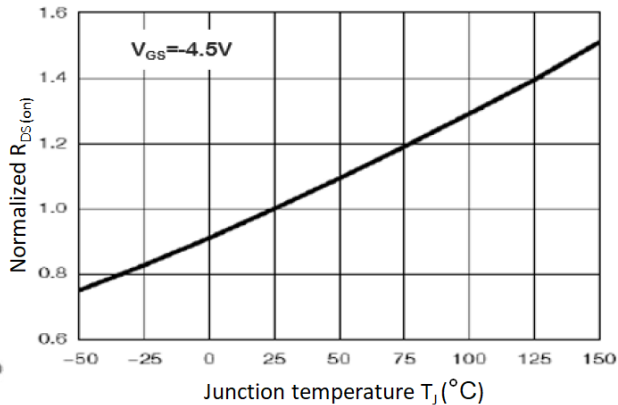


Figure 7. Safe Operation Area

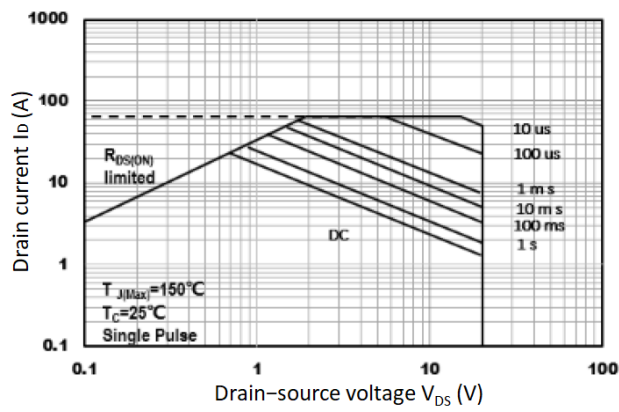
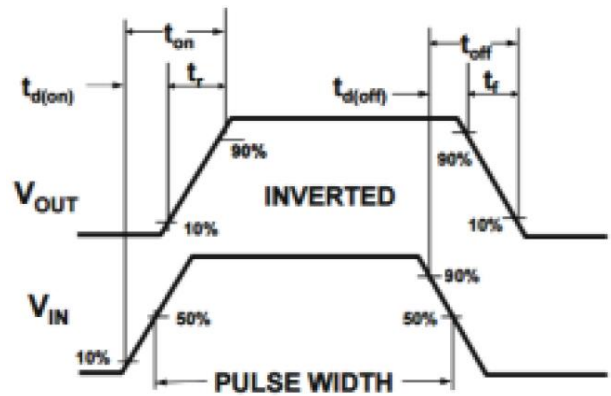


Figure 8. Switching Wave



Outline Drawing – UDFN2020-6L

PACKAGE OUTLINE

TOP VIEW

BOTTOM VIEW

SIDE VIEW

UDFN2020-6L

SYMBOL	MILLIMETER		
	MIN	TYP	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A3	0.152REF		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e	0.65BSC		
L	0.25	0.30	0.35
L1	0.46	0.56	0.66
D1	0.80	0.90	1.00
E1	0.80	0.90	1.00

Marking Codes

Part Number	WM02P160R
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.