

12V Common-Drain Dual N-Channel MOSFET

Description

WMAC61020B uses advanced power trench technology that has been especially tailored to minimize the on-state resistance. This device is suitable for un-directional or bidirectional load switch, facilitated by its common-drain configuration.

V _{SSS} (V)	I _S (A)	R _{SS(on)} TYP (mΩ)
12	14	2.1 @V _{GS} =4.5V
		2.25 @V _{GS} =3.8V
		2.5 @V _{GS} =3.1V
		3.0 @V _{GS} =2.5V

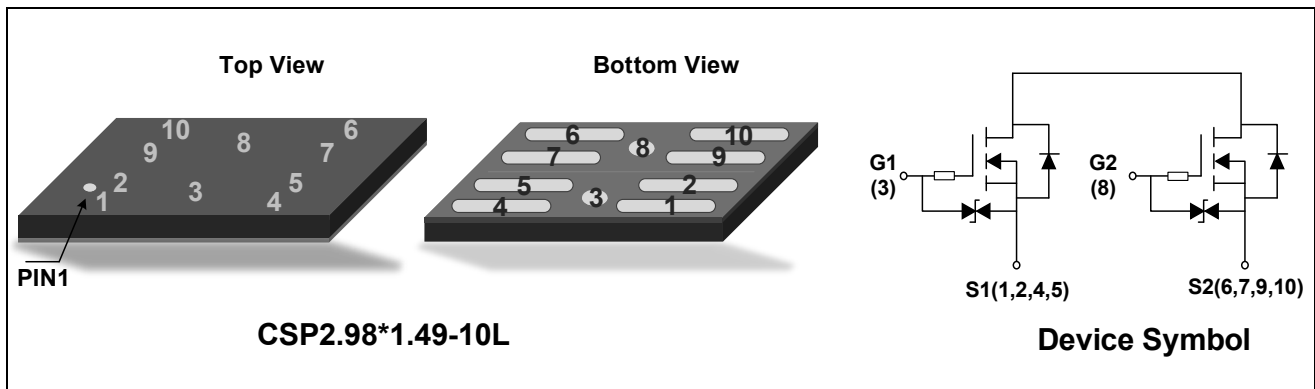
Features

- CSP(Chip Size Package)
- Super High Dense Cell for Low R_{SS(ON)}
- RoHS Compliant and Halogen-Free
- ESD Protected

Applications

- Battery Protection
- Load Switch

Schematic & PIN Configuration



Absolute Maximum Rating (T_A=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Source -Source Voltage		V _{SSS}	12	V
Gate-Source Voltage		V _{GSS}	±8	V
Continuous Source Current	DC ¹	I _{S1}	14	A
	DC ²	I _{S2}	30	A
Pulsed Source Current ³		I _{SP}	138	A
Total Power Dissipation	DC ¹	P _{D1}	0.57	W
	DC ²	P _{D2}	3.5	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C
Maximum Junction-to-Ambient	DC ¹	R _{θJA1}	210	°C/W
	DC ²	R _{θJA2}	36	°C/W

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Source-Source Breakdown Voltage	V _{SSS}	V _{GS} = 0V, I _S = 250μA	12	-	-	V
Zero Gate Voltage Source Current	I _{SSS}	V _{SS} = 12V, V _{GS} = 0V	-	-	1	μA
Gate-body Leakage Current	I _{GSS}	V _{SS} = 0V, V _{GS} = ±8V	-	-	±10	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{SS} = 8V, I _S = 250μA	0.4	0.9	1.4	V
Source-Source on-Resistance	R _{SS(on)}	V _{GS} = 4.5V, I _S = 6A	1.5	2.1	2.7	mΩ
		V _{GS} = 3.8V, I _S = 6A	1.6	2.25	2.8	
		V _{GS} = 3.1V, I _S = 6A	1.7	2.5	3.9	
		V _{GS} = 2.5V, I _S = 6A	2.0	3.0	6.0	
Forward Transconductance	y _{gfs}	V _{SS} = 5V, I _S = 6A	-	40	-	S
Dynamic Characteristics ¹						
Input Capacitance	C _{iss}	V _{SS} = 10V, V _{GS} = 0V, f = 100kHz	-	4120	-	pF
Output Capacitance	C _{oss}		-	449	-	
Reverse Transfer Capacitance	C _{rss}		-	130	-	
Switching Characteristics						
Total Gate Charge ¹	Q _g	V _{GS} = 4.5V, V _{SS} = 6V, I _S = 6A	-	36	-	nC
Gate Source Charge ¹	Q _{gs}		-	7.5	-	
Gate Drain Charge ¹	Q _{gd}		-	4.8	-	
Turn-on Delay Time ^{1,2}	t _{d(on)}	V _{GS} = 4.5V, V _{SS} = 6V, I _S = 6A, R _G = 3Ω	-	0.98	-	μs
Rise Time ^{1,2}	t _r		-	1.35	-	
Turn-off Delay Time ^{1,2}	t _{d(off)}		-	2.95	-	
Fall Time ^{1,2}	t _f		-	3.63	-	
Source-Source Diode Characteristics						
Forward Source to Source Voltage	V _{F(S-S)}	I _S = 6A, V _{GS} = 0V	-	-	1.2	V

Notes:

1. Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm) using the minimum recommended pad size (36 μm Copper).
2. Mounted on Ceramic substrate (70mm x 70mm x t1.0mm)
3. $t \leq 10\mu s$, duty cycle $\leq 1\%$.

Typical Characteristics

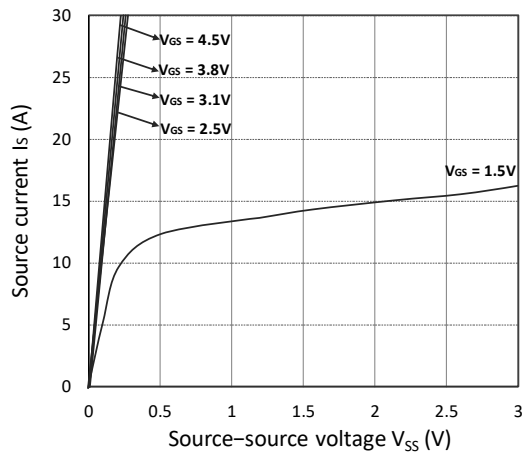


Figure 1. Output Characteristics

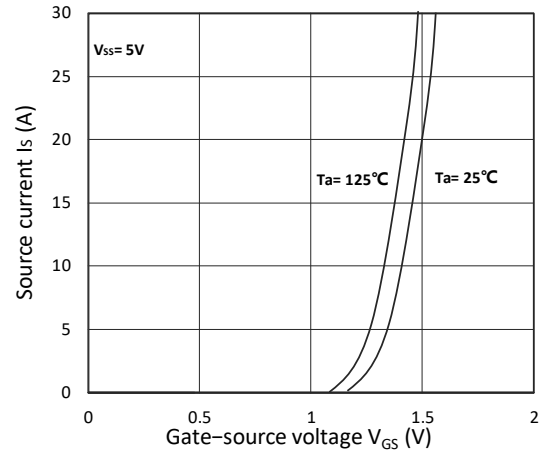


Figure 2. Transfer Characteristics

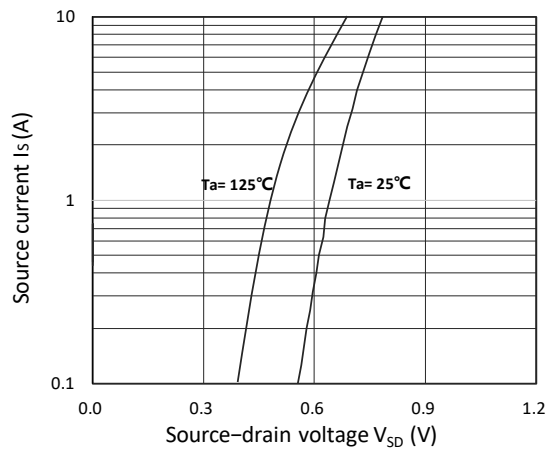
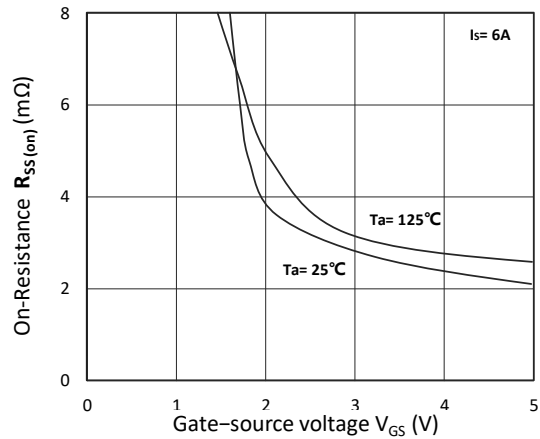
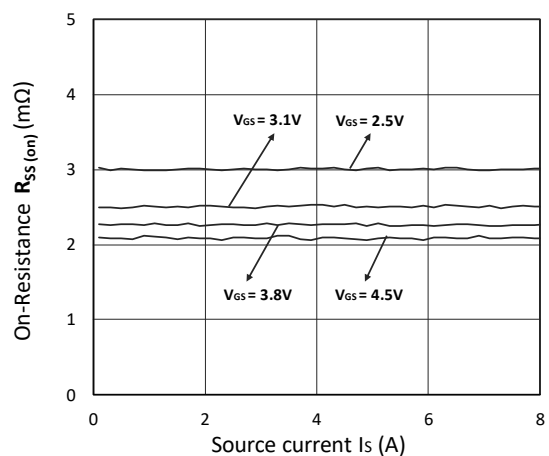
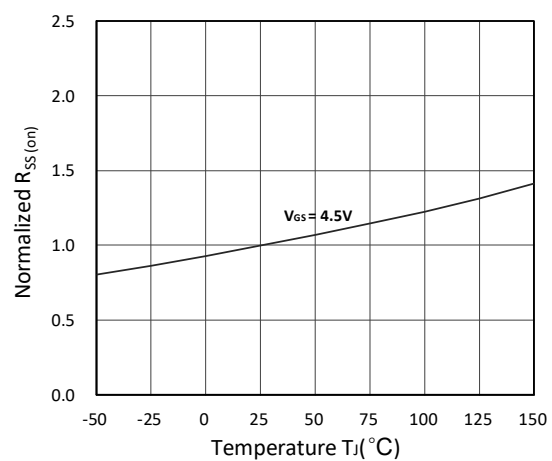


Figure 3. Forward Characteristics of Reverse

Figure 4. $R_{SS(ON)}$ vs. V_{GS} Figure 5. $R_{SS(ON)}$ vs. I_S Figure 6. Normalized $R_{SS(ON)}$ vs. Temperature

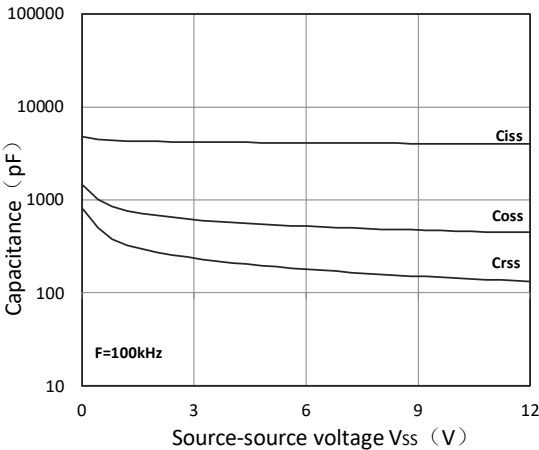


Figure 7. Capacitance Characteristics

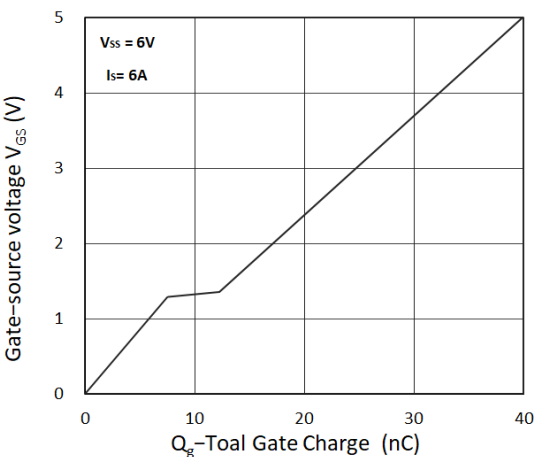
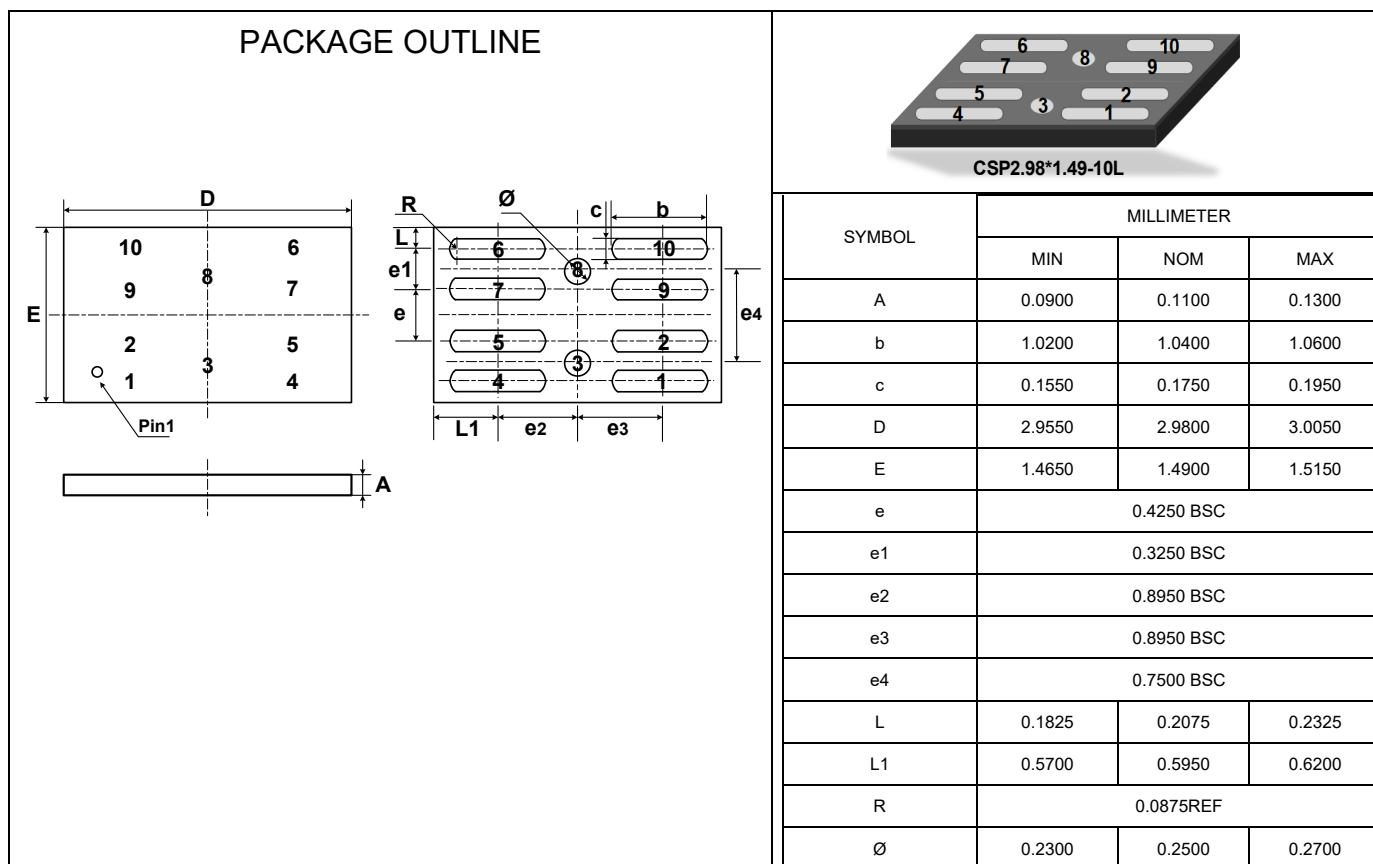


Figure 8. Gate Charge Characteristics

Outline Drawing CSP2.98*1.49-10L



Marking Codes

Part Number	WMAC61020B	
Marking Code	61020 WXXXX •	61020= Device code WXXXX= Date code

Package Information

Qty: 8k/Reel

CONTACT INFORMATION

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