

1.Description

The UMW UCC27517DBVR device is a low voltage power MOSFET and IGBT in phase gate driver. Proprietary latch-immune of CMOS technology enables single-chip integrated architectures with high robustness. The UMW UCC27517DBVR logic input level is compatible with CMOS or TTL logic output levels down to 3.3V. The output driver has Internal Undervoltage Lockout (UVLO) circuitry with hysteresis and buffer stage of output current. The UMW UCC27517DBVR is designed to operate over a wide VCC range of 5 V to 25 V and wide temperature range of -40°C to 125°C.

3.Features

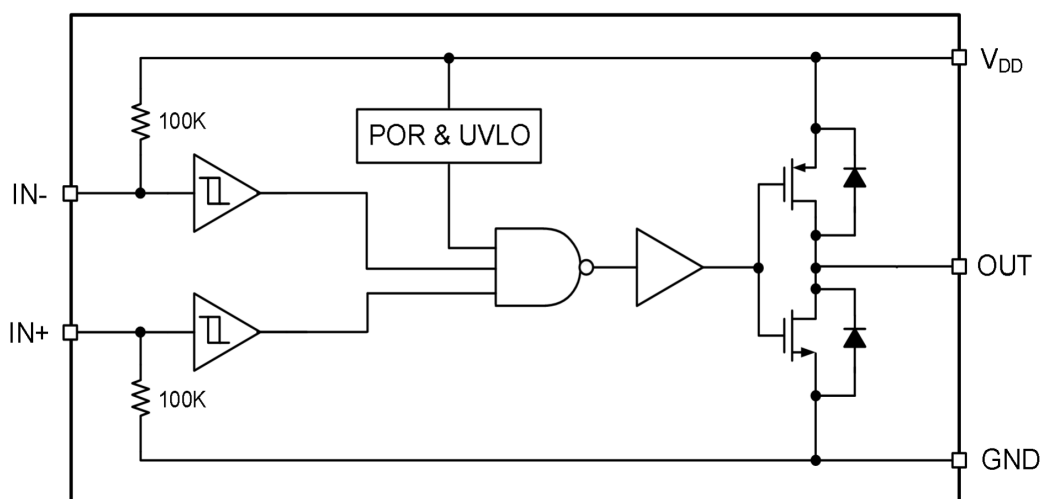
- Dual Input Design (Choice of an Inverting (IN- pin) or Non-inverting (IN+ pin) Driver Configuration)
 - Unused Input Pin Can Be Used for Enable or Disable Function
- TTL and CMOS Compatible Input-Logic Threshold
- 5 to 25-V Single-Supply Range
- Operating Temperature Range of -40 to 125°C

2.Applications

- Switch-Mode Power Supplies
 - General Gate Driver
 - Driving MOSFETs and IGBTs
-
- Undervoltage Lockout
 - Undervoltage Lockout turn-on threshold 4.0V
 - Undervoltage Lockout turn-off threshold 3.9V
 - Turn on/Turn off Delays:
 - Ton/Toff =30ns/30ns
 - 4-A Peak Source and Sink-Drive Current

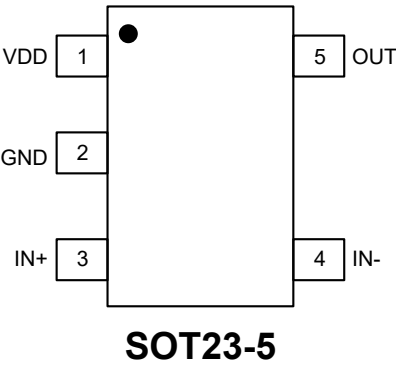


4.Pin Configuration





5.Pinning Information



Pin Functions

Number	Symbol	Description
1	VDD	Bias supply input
2	GND	Ground: All signals are referenced to this pin
3	IN+	Non-inverting Input: When the driver is used in inverting configuration, connect IN+ to VDD in order to enable output, OUT held LOW if IN+ is unbiased or floating
4	IN-	Inverting Input: When the driver is used in non-inverting configuration, connect IN- to GND in order to enable output, OUT held LOW if IN- is unbiased or floating
5	OUT	Sourcing/Sinking Current Output of Driver



6. Absolute Maximum Ratings

Exceeding the limit maximum rating may cause permanent damage to the device. All voltage parameters are rated with reference to V_{SS} and an ambient temperature of 25°C.

Parameter	Symbol	Min	Max	Units
Supply voltage range	V_{CC}	-0.3	25	V
OUT voltage range	V_O	-0.3	$V_{CC}+0.3$	V
IN+, IN- voltage	V_{IN}	-0.3	$V_{CC}+0.3$	V
Thermal resistance	R_{thJA}		151	°C/W
Storage temperature	T_S	-55	150	°C
Lead temperature	T_L		300	°C

7. Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

Parameter	Min	Nom	Max	Units
Supply Voltage Range, VDD	4.5	12	18	V
Operating Junction Temperature Range	-40		125	°C
Input Voltage, IN+ and IN.	0		18	V



8. Electrical Characteristics

$T_A=25^{\circ}\text{C}$, $V_{CC}=15\text{V}$, $CL=1\text{nF}$ (unless otherwise noted)

Parameter	Symbol	Min	Typ	Max	Units
Input signal high threshold	V_{IH}	2.7			V
Input signal low threshold	V_{IL}			0.8	V
Under voltage Lockout (UVLO) turn-on threshold V_{CC}	V_{CCUV+}		4		V
Under voltage Lockout (UVLO) turn-off threshold V_{CC}	V_{CCUV-}		3.9		V
UVLO threshold hysteresis V_{CC}	V_{CCUVHY}		0.1		V
Input current($IN+/IN-=HIGH$)	I_{IN+}		50	100	μA
Input current($IN+/IN-=LOW$)	I_{IN-}			5	μA
High output voltage	V_{OH}		$V_{DD}-0.35$		V
Low output voltage	V_{OL}			0.35	V
V_{CC} quiescent supply current	I_Q		180	400	μA
Output high short-circuit pulse current	I_{O+}		4		A
Output low short-circuit pulse current	I_{O-}		4		A
Rise time	t_R		10	15	ns
Fall time	t_F		10	15	ns
Turn-on propagation delay	t_{ON}		30	60	ns
Turn-off propagation delay	t_{OFF}		30	60	ns

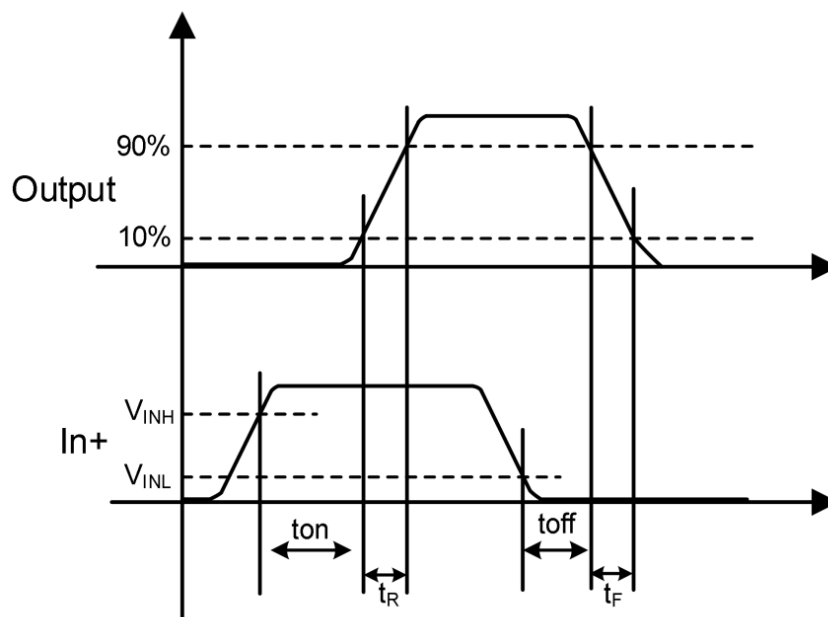


Figure 1. Input-Output waveform (non-inverting)

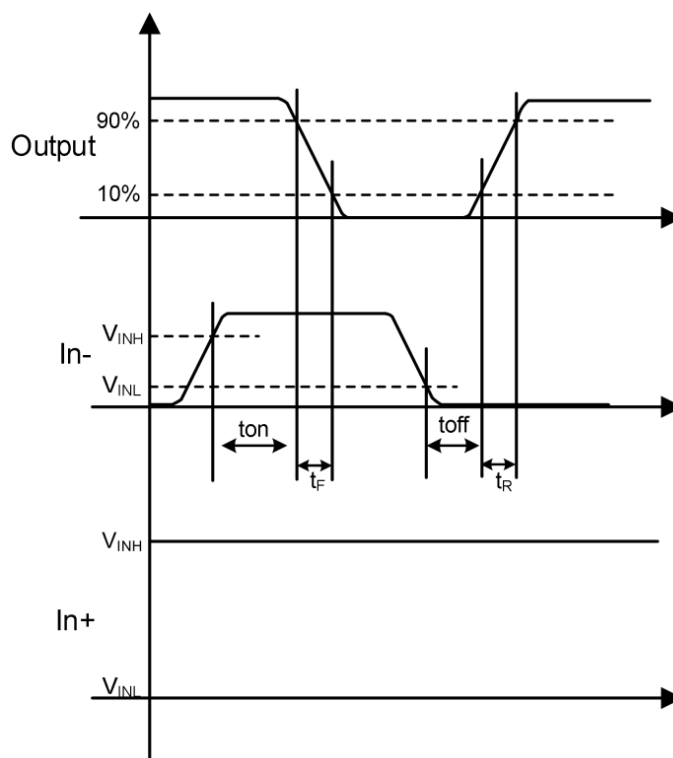


Figure 2. Input-Output waveform (inverting)



9.1 Typical Characteristic

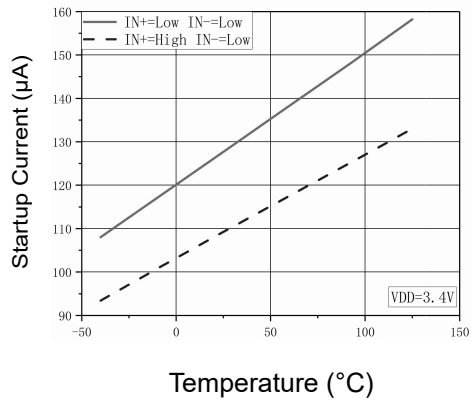


Figure 1: Start-Up Current vs Temperature

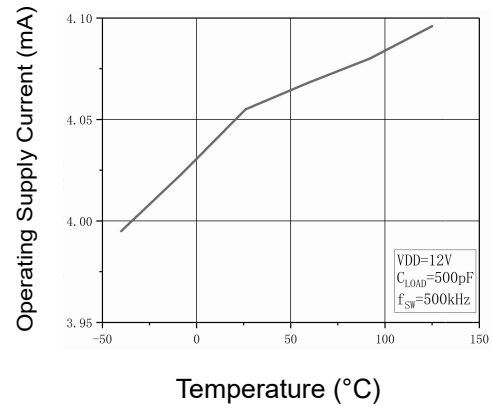


Figure 2: Operating Supply Current vs Temperature (Outputs Switching)

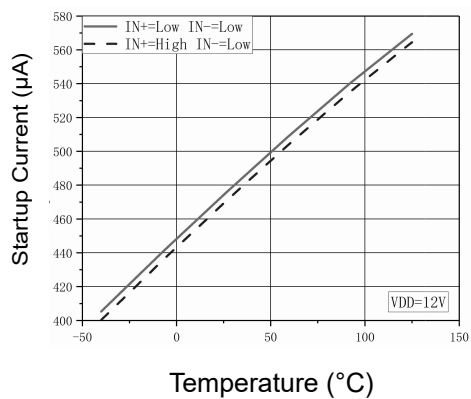


Figure 3: Supply Current vs Temperature (Outputs In DC On/Off Condition)

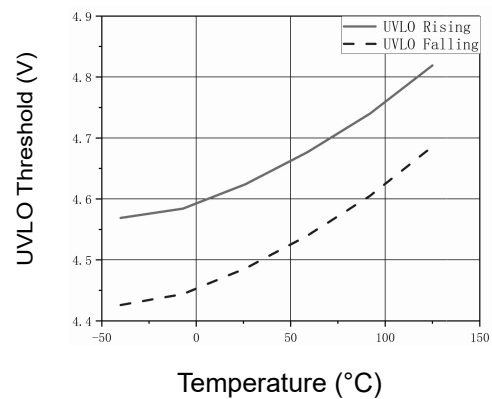


Figure 4: UVLO Threshold vs Temperature

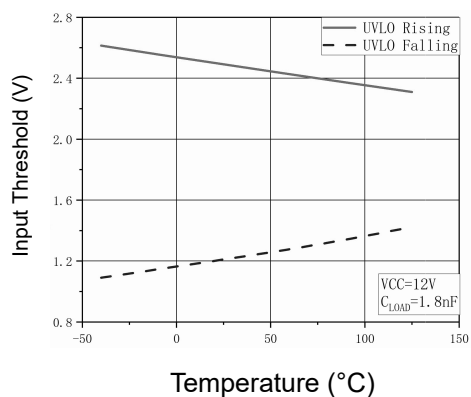


Figure 5: Input Threshold vs Temperature

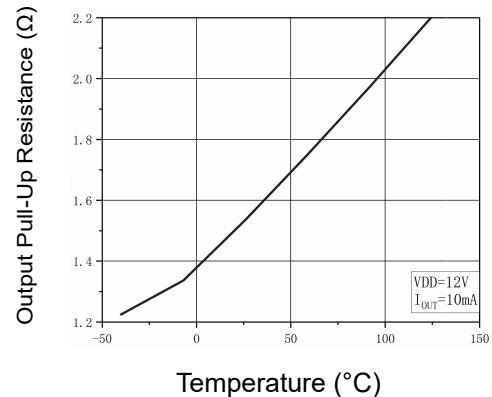


Figure 6: Output Pull-Up Resistance vs Temperature



9.2 Typical Characteristic

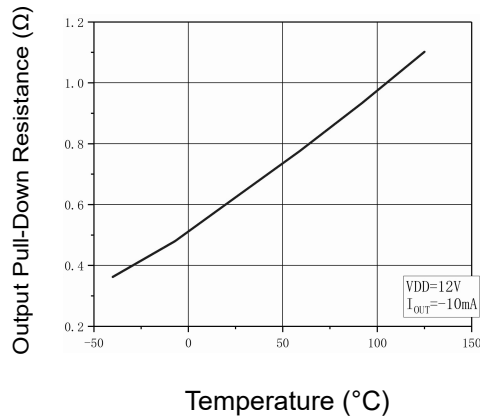


Figure 7: Output Pull-down Resistance vs Temperature

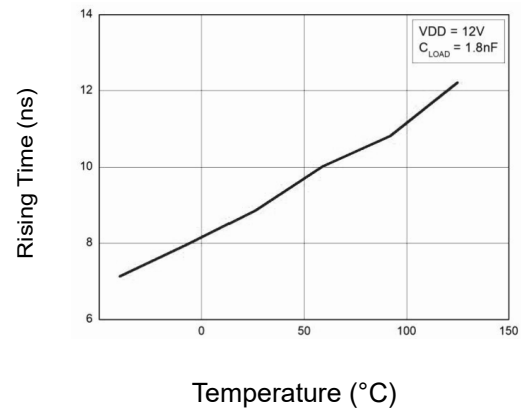


Figure 8: Rise Time vs Temperature

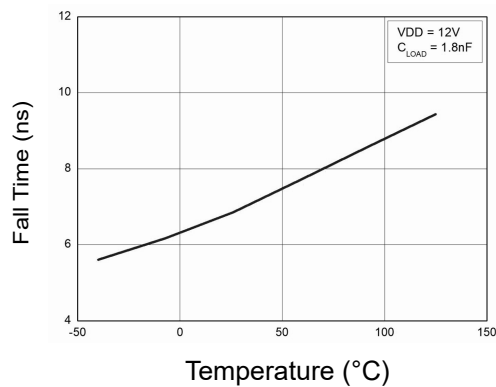


Figure 9: Fall Time vs Temperature

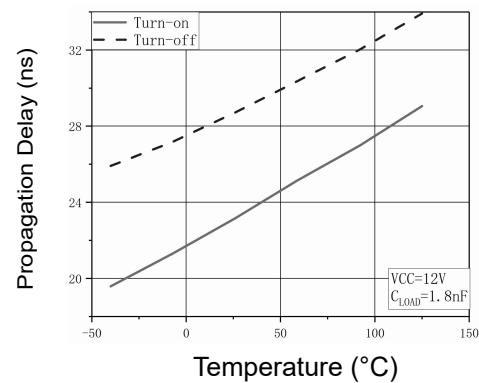


Figure 10: Input to Output Propagation Delay vs Temperature

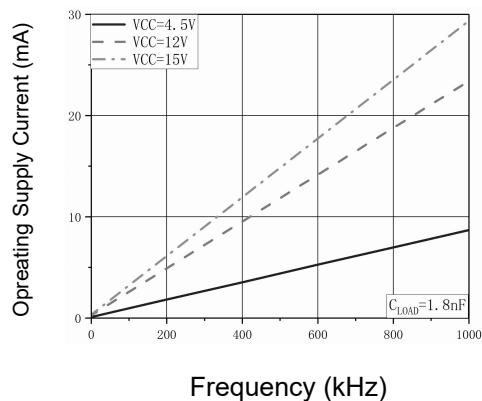


Figure 11: Operating Supply Current vs Frequency

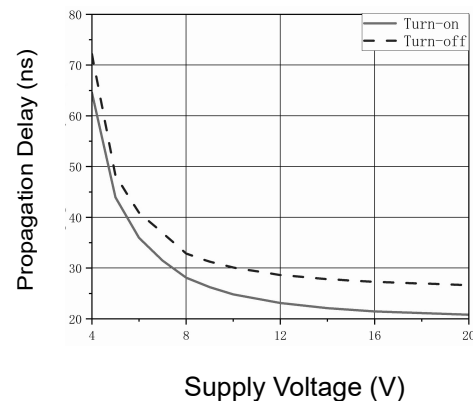
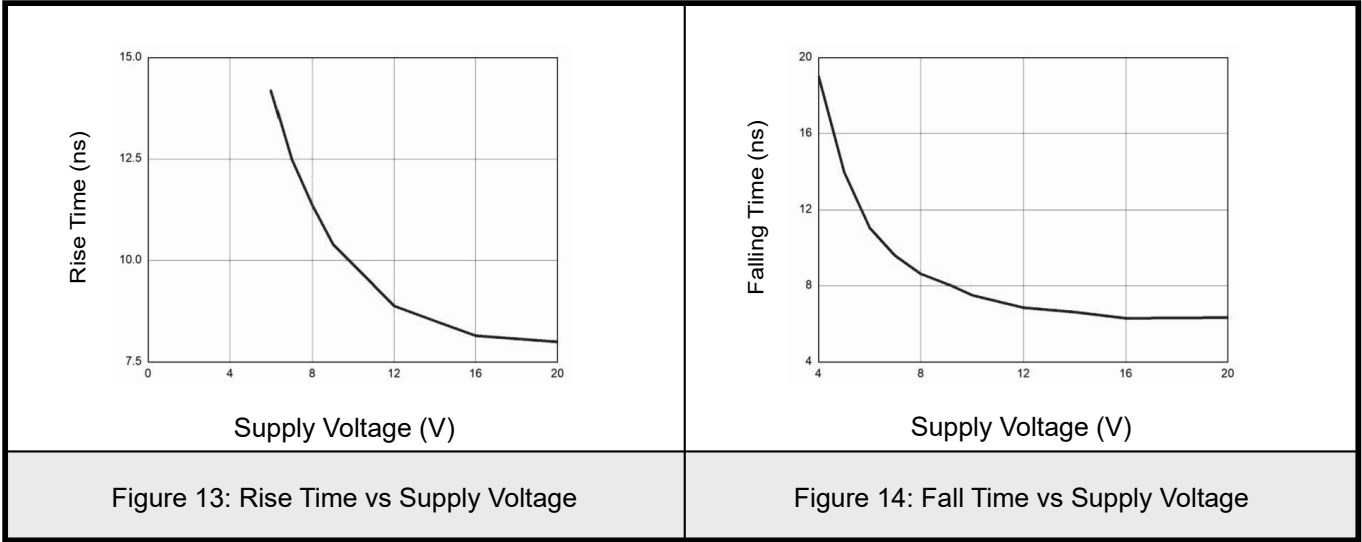


Figure 12: Propagation Delays vs Supply Voltage

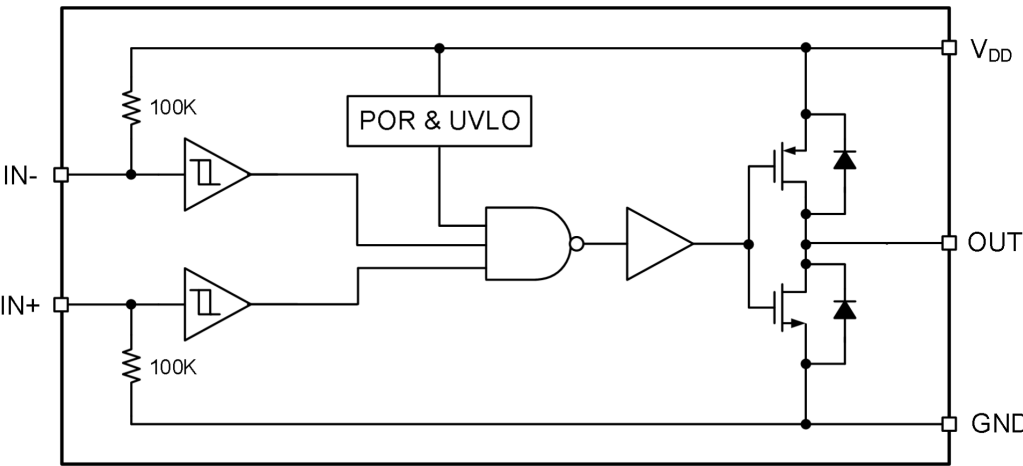


9.3 Typical Characteristic





10.Functional Block Diagram



11.Device Functional Modes

Table 1 Device Logic Table

IN+	IN-	OUT
L	L	L
L	H	L
H	L	H
H	H	L
L	L	L
X ⁽¹⁾	Any	L
Any	X ⁽¹⁾	L

Notes: (1) Floating condition.



12. Typical Application

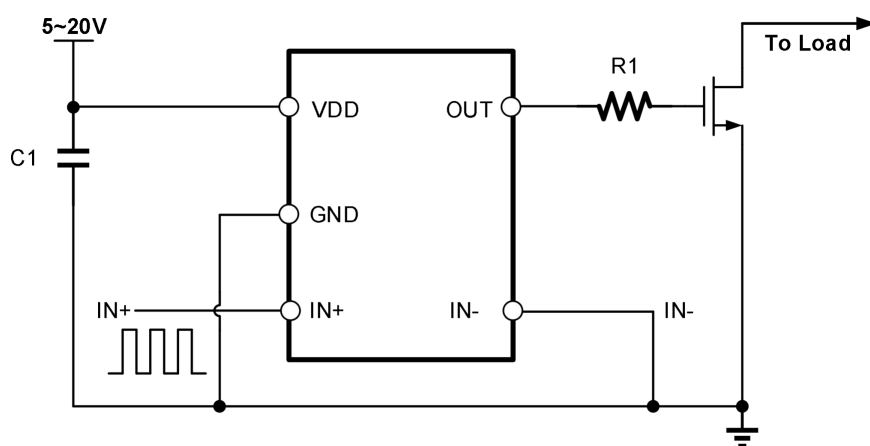


Figure 15. Non-inverting Typical Application Diagram of UMW UCC27517DBVR

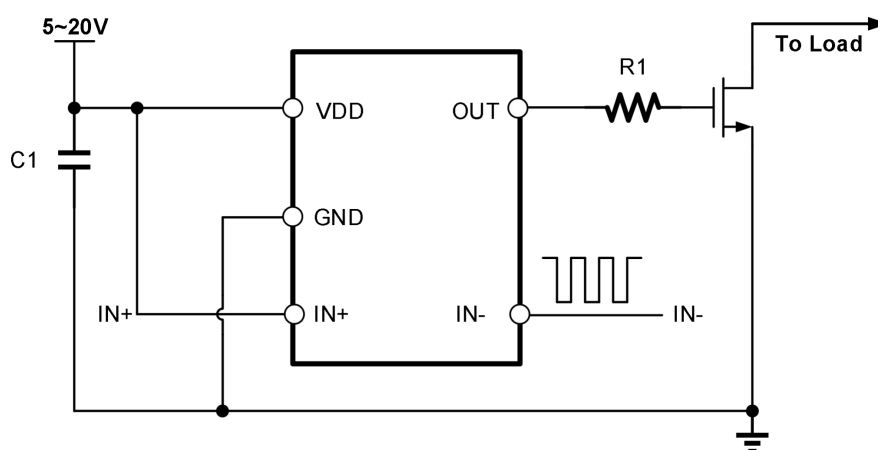
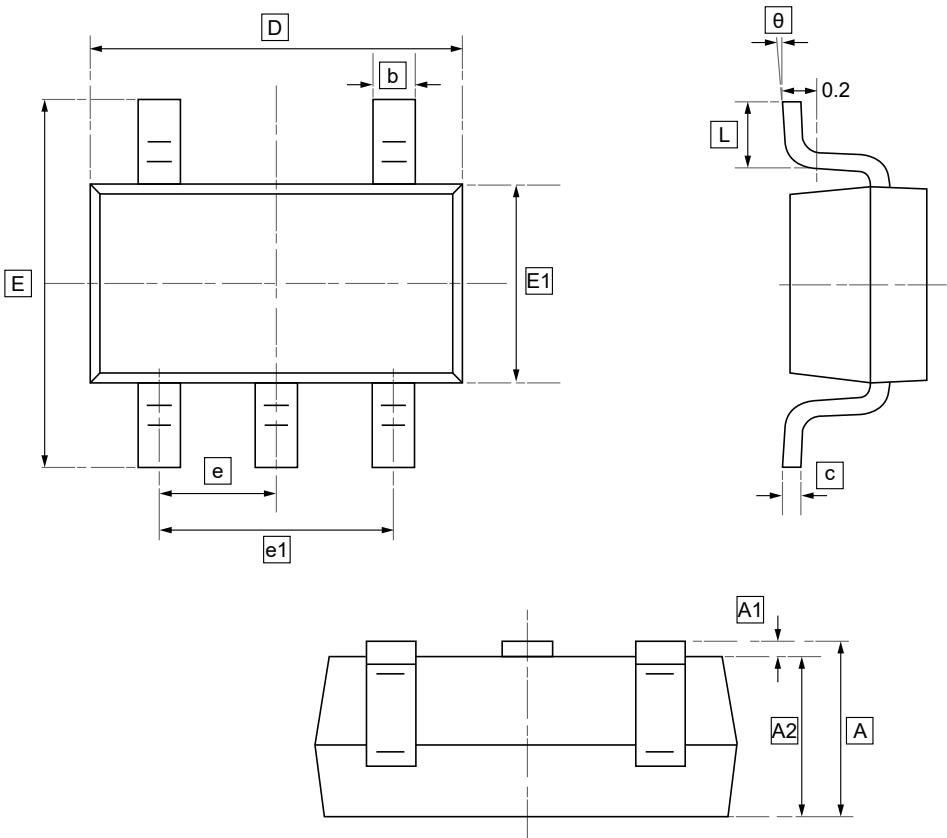


Figure 16. Inverting Typical Application Diagram of UMW UCC27517DBVR



13.SOT23-5 Package Outline Dimensions

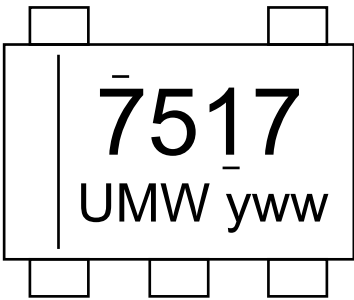


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E1	E	e	e1	L	θ
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0°
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	8°



14.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW UCC27517DBVR	SOT23-5	3000	Tape and reel



15.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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