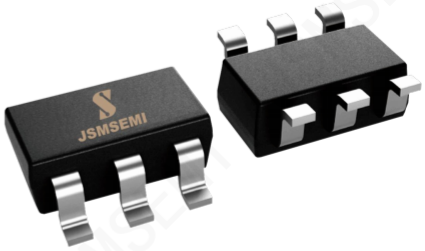
## Description

The UCC27531DBVR-JSM is a low-voltage power MOSFET and IGBT in-phasegate driver.Proprietary latch immune CMOS technology can achieve a highly robust single-chip integrated structure. UCC27531DBVR-JSM is compatible with the CMOS or LSTTL logic output levels as low as 3.3V.The output drive has a wide VCC range,undervoltag elock with lag and output current buffer level. It canwork in the temperature range of -40℃to125℃.




## Features

- Input and output are in the same phase
- TTL and CMOS Compatible Input-Logic Threshold
- 2-A Peak Source and 4-ASink-Drive Current
- 10 to 25-V Single-Supply Range
- High Ability of driving capacitive load
- Operating Temperature Range of -40 to125°C
- Undervoltage Lockout
  --Undervoltage Lockout turn-on threshold 8.9V
  --Undervoltage Lockout turn-off threshold 8.2V
- Turn on/Turn off Delays:
  --Ton/Toff=30ns/30ns
- The RoSH Standard
  SOT-23-6

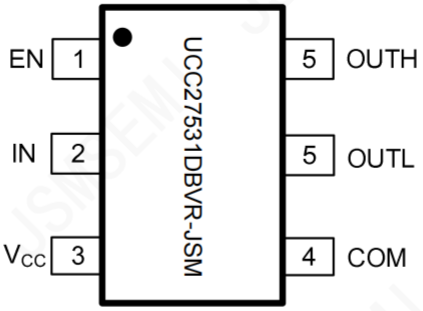
## Applications

- Switch-Mode Power Supplies General
- Gate Driver
- Driving MOSFETs and IGBTs

## Ordering Information

| Order number | Package | Operation Temperature Range | MSL Grade | Ship, Quantity | Green |
|---|---|---|---|---|---|
| UCC27531DBVR-JSM | SOT-23-6 | -40 to 125°C | 3 | T&R,3000 | Rohs |

## Pin Configuration and Functions

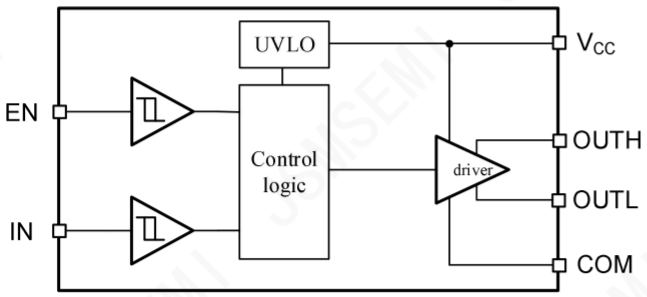


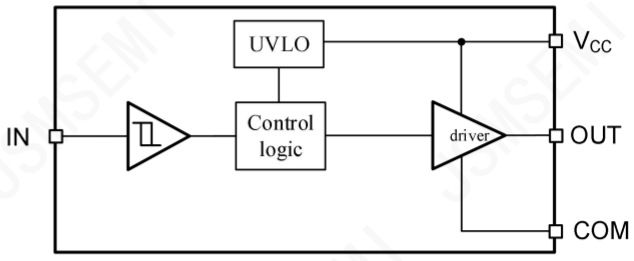

**5-Pin SOT23-6 Package Top View**

### Pin Functions

| PIN | NAME | DESCRIPTION |
|---|---|---|
| 1 | EN | Enable (Pull EN to GND to disable output, pull it high or leave open to enable output) |
| 2 | IN | Driver non-inverting input |
| 3 | VCC | Bias supply input |
| 4 | COM | Ground: All signals are referenced to this pin. |
| 5 | OUTH | 2-A Source Current Output of driver |
| 6 | OUTL | 4-A sink current output of driver |

### Pin Configuration



# Specifications

## Absolute Maximum Ratings

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. All voltages are with respect to COM unless otherwise noted, Currents are positive into, negative out of the specified terminal, environment temperature is 25 ℃.

| Symbol | Definition | MIN | MAX | UNIT |
|---|---|---|---|---|
| $V_{CC}$ | Supply voltage range | -0.3 | 25 | V |
| $V_O$ | OUT voltage range（OUTH，OUTL，OUT） | -0.3 | VCC+0.3 | |
| $V_{IN}$ | Input voltage（IN，EN） | -0.3 | VCC+0.3 | |

## Thermal Information

| Symbol | Definition | MIN | MAX | UNIT |
|---|---|---|---|---|
| $R_{thJA}$ | thermal resistance | — | 151 | °C/W |
| $T_S$ | Storage temperature | -55 | +150 | °C |
| $T_J$ | Operating junction temperature | — | +150 | |
| $T_L$ | Lead temperature | — | 300 | |

## Recommended Operating Conditions

To properly operate, device should be used in the following recommended conditions. All voltages are with respect to COM unless otherwise noted, Currents are positive into, negative out of the specified terminal, environment temperature is 25 ℃.

| Symbol | Definition | MIN | MAX | UNIT |
|---|---|---|---|---|
| $V_{CC}$ | Supply voltage range | 10 | 20 | V |
| $V_O$ | OUT voltage range（OUTH、OUTL、OUT） | 0 | $V_{CC}$ | |
| $V_{IN}$ | Input voltage（IN，EN） | 0 | $V_{CC}$ | |
| $T_A$ | ambient temperature | -40 | 125 | °C |

## Electrical Characteristics $T_A$= 25℃, $V_{CC}$=15V(unless otherwise noted)

| Symbol | Definition | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| $V_{IH}$ | Input signal high threshold | 2.5 | — | — | V |
| $V_{IL}$ | Input signal low threshold | — | — | 0.8 | V |
| $V_{EN+}$ | EN turn-on threshold | 2.5 | — | — | V |
| $V_{EN-}$ | EN turn-off threshold | — | — | 0.8 | V |
| $V_{CCUV+}$ | Undervoltage Lockout (UVLO) turn-on threshold VCC | 8 | 8.9 | 9.8 | V |
| $V_{CCUV-}$ | Undervoltage Lockout (UVLO) turn-off threshold VCC | 7.4 | 8.2 | 9 | V |
| $V_{CCUVHY}$ | UVLO threshold hysteresis VCC | — | 0.7 | — | V |
| $I_{IN}$ | Input current，VIN=5V | — | 50 | 100 | μA |
| $I_{IN-}$ | Input current，VIN=0V | — | — | 5 | μA |
| $I_{EN}$ | Input current，VEN=5V | — | 0 | 5 | μA |
| $I_{EN-}$ | Input current，VEN=0V | — | 10 | 20 | μA |
| $V_{OH}$ | High output voltage | — | — | 0.35 | V |
| $V_{OL}$ | Low output voltage | — | — | 0.35 | V |
| $I_Q$ | VCC quiescent supply current | — | 200 | 300 | μA |
| $I_{O+}$ | Output high short-circuit pulse current | — | 2 | — | A |
| $I_{O-}$ | Output low short-circuit pulse current | — | 4 | — | A |
| $t_R$ | Rise time($V_{CC}$=15V,$C_{LOAD}$=1000pF) | — | 10 | — | ns |
| $t_F$ | Fall time($V_{CC}$=15V,$C_{LOAD}$=1000pF) | — | 5 | — | ns |
| $t_{ON}$ | Turn-on propagation delay($V_{CC}$=15V,$C_{LOAD}$=1000pF) | — | 30 | — | ns |
| $t_{OFF}$ | Turn-off propagation delay($V_{CC}$=15V,$C_{LOAD}$=1000pF) | — | 30 | — | ns |

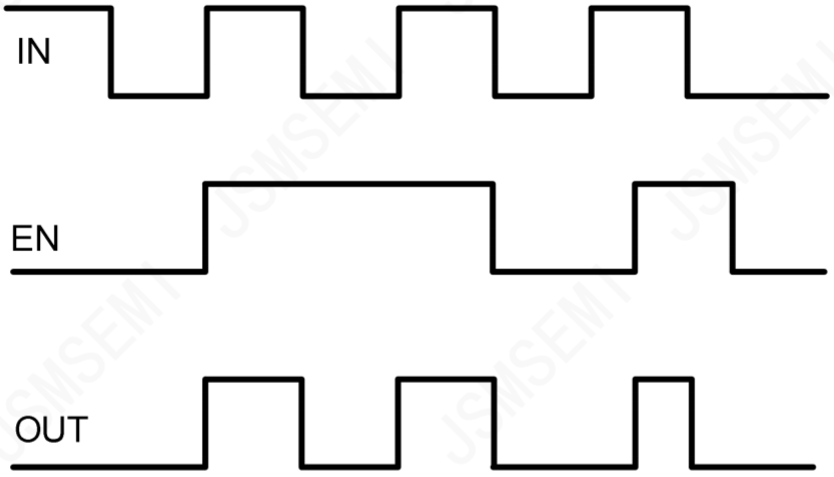



Figure 1 Input-Output waveform

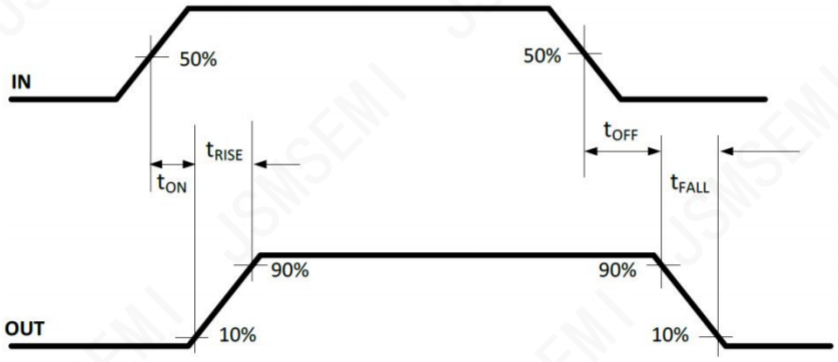



Figure 2 Propagation time waveform

## Detailed Description

### Functional Block Diagram

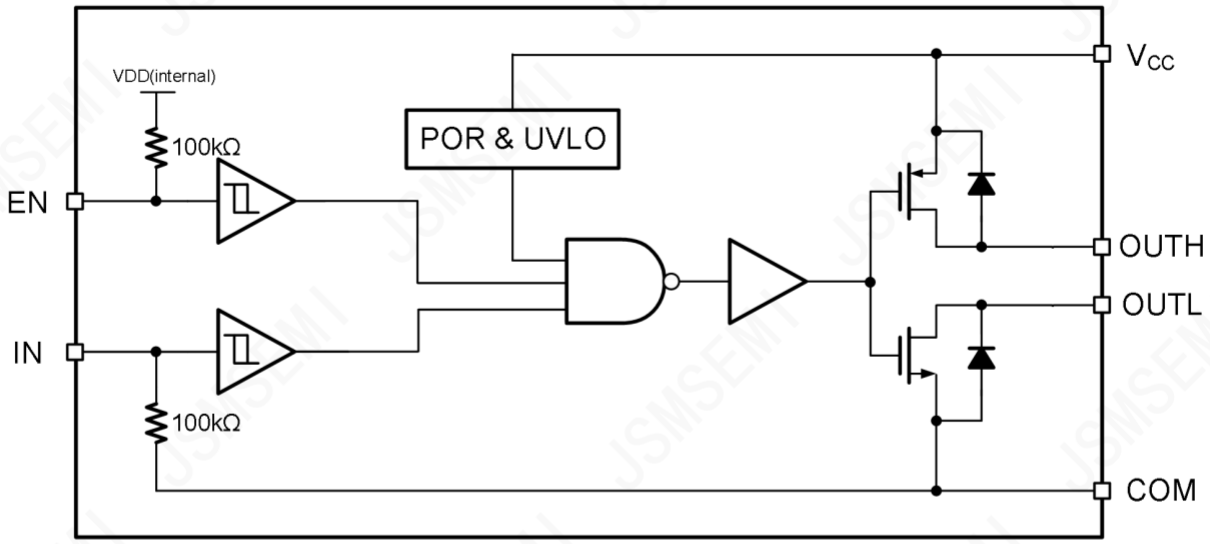



Figure 3 Functional Block Diagram of UCC27531DBVR-JSM

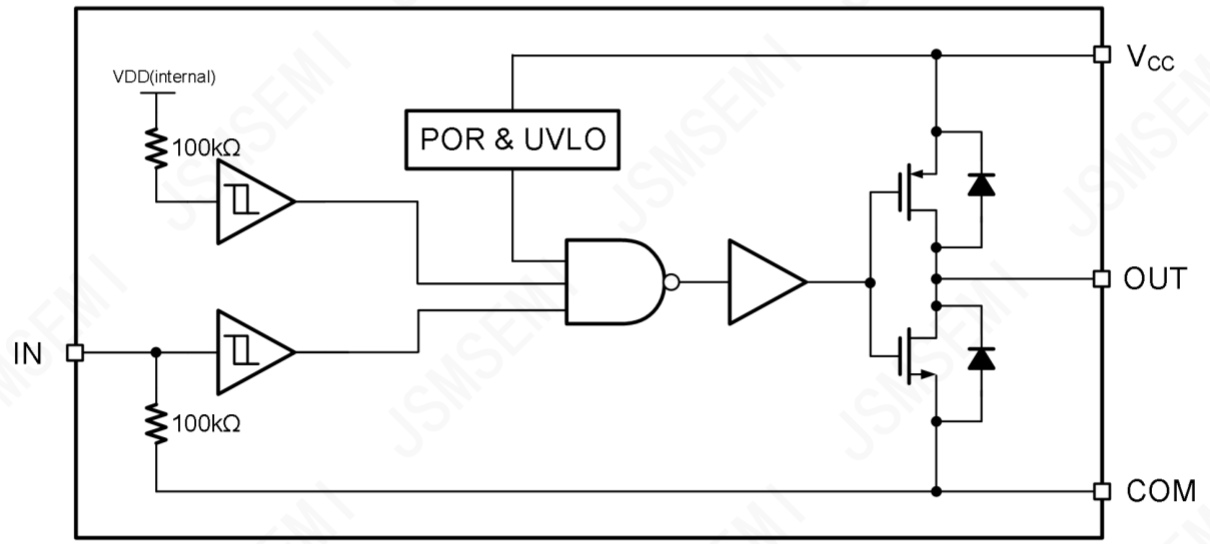



Figure 4 Functional Block Diagram of UCC27531DBVR-JSM

**Typical Application**

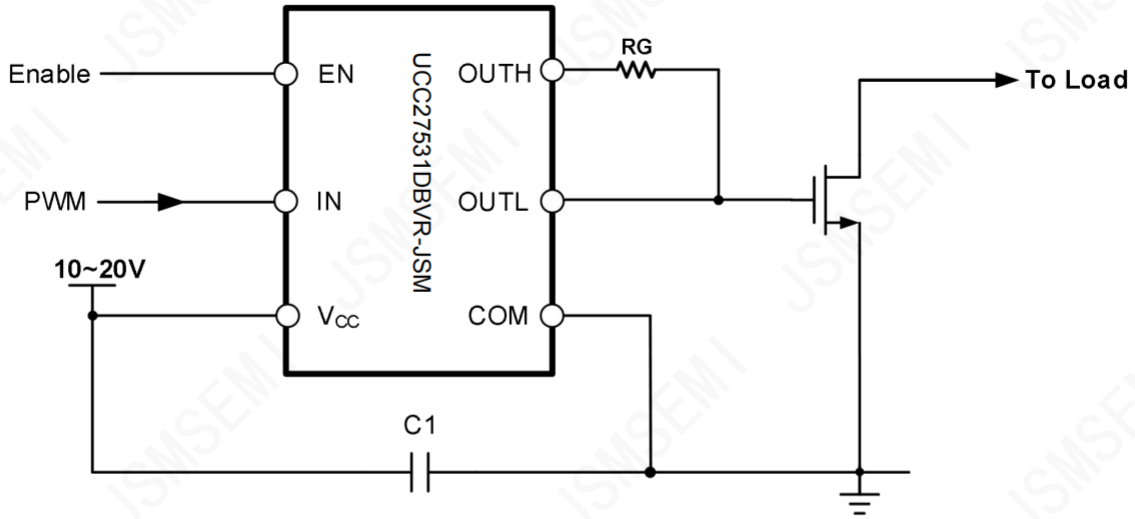



Figure 5 Typical Application Diagram of UCC27531DBVR-JSM

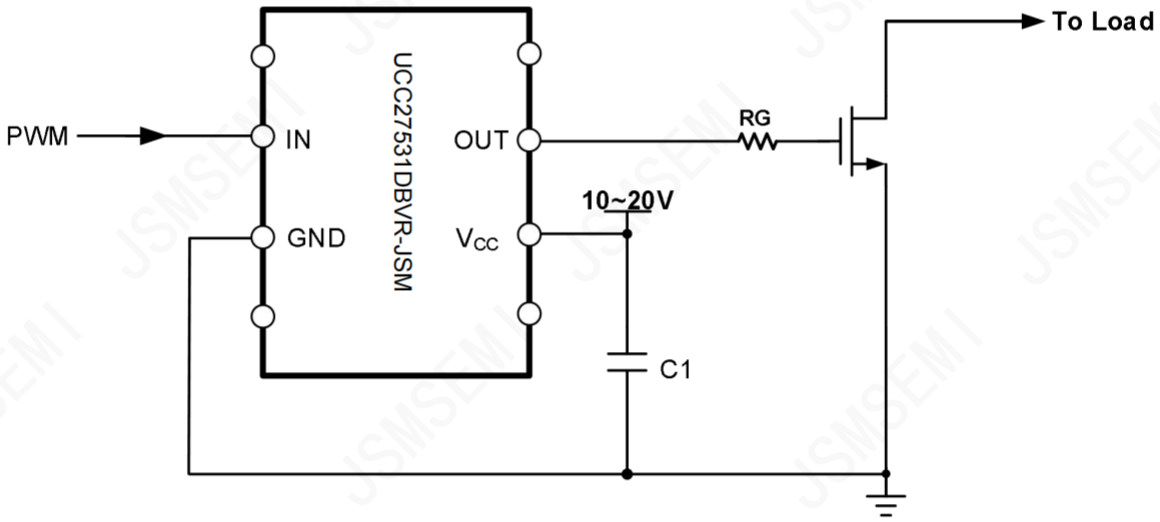
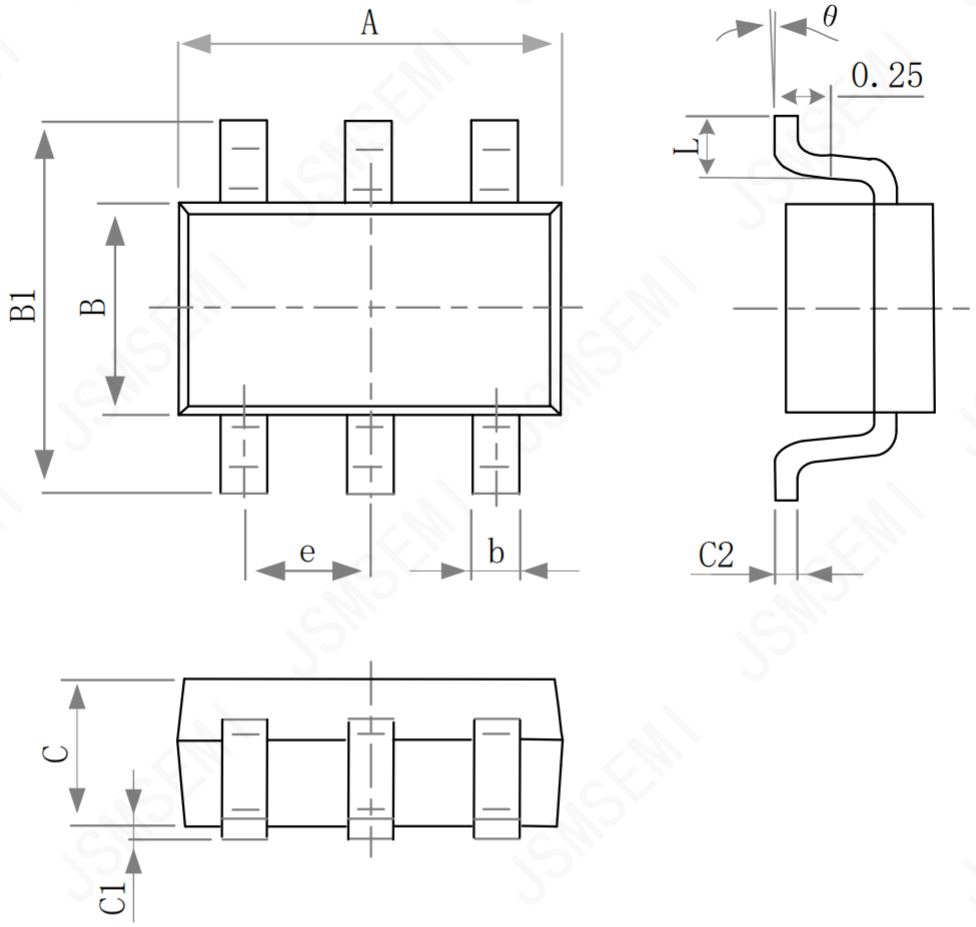



Figure 6 Typical Application Diagram of UCC27531DBVR-JSM

## Package Information

SOT23-6 Package Outlines




SOT23-6 Package Dimensions

| 尺寸 / 标注 | 最小(mm) | 最大(mm) | 尺寸 / 标注 | 最小(mm) | 最大(mm) |
|---|---|---|---|---|---|
| A | 2.82 | 3.02 | C | 1.05 | 1.15 |
| e | 0.95（BSC） | | C1 | 0.03 | 0.15 |
| b | 0.28 | 0.45 | C2 | 0.12 | 0.23 |
| B | 1.50 | 1.70 | L | 0.35 | 0.55 |
| B1 | 2.60 | 3.00 | θ | 0° | 8° |

## Revision History

| Rev. | Change | Date |
|---|---|---|
| V1.0 | Initial version | 6/27/2021 |
| | | |

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