

*Parameters Subject to Change Without Notice*

### DESCRIPTION

The JW1769A/B/C is a constant current LED regulator with high current accuracy which applies to single stage step-down power factor corrected LED drivers. 600V power MOS is integrated, which can significantly simplify the design of LED lighting system.

High accuracy of output current is achieved by sampling the output current directly. Critical conduction mode operation reduces the switching losses and largely increases the efficiency. JW1769A/B/C is supplied from the output directly, and auxiliary winding is not needed.

JW1769A/B/C has multi-protection functions which largely enhance the safety and reliability of the system, including VCC over-voltage protection, VCC UVLO, short-circuit protection, LED open protection, cycle-by-cycle current limit and over-temperature protection.

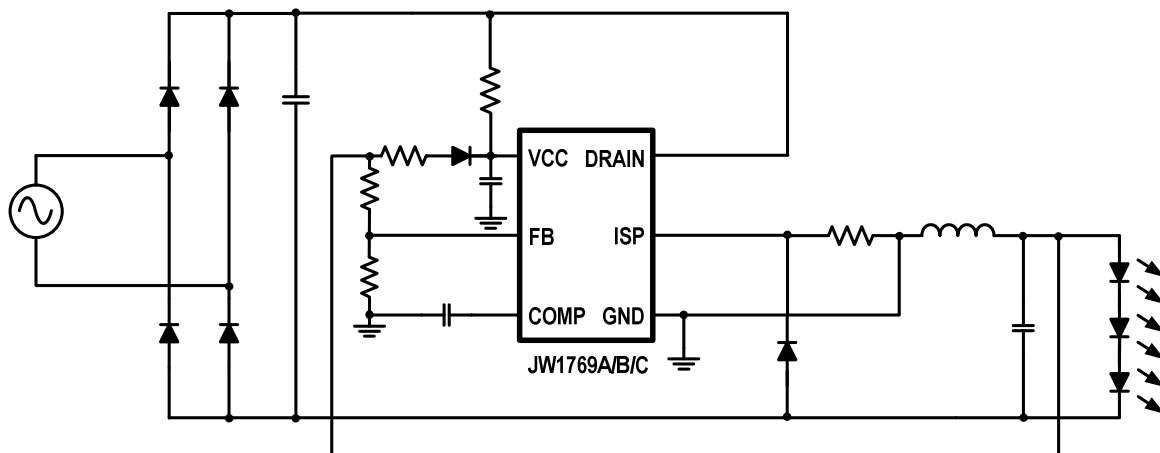
### FEATURES

- No auxiliary winding
- 600V high voltage MOSFET integrated
- EMI friendly
- High current accuracy of line and load regulation
- High power factor with low output current-ripple
- Critical conduction mode
- High efficiency over wide operating range
- Cycle-by-cycle current limit
- LED short protection
- LED open protection
- Over-temperature protection
- Compact SOP7 package

### APPLICATIONS

- Non-isolation Offline LED driver

### TYPICAL APPLICATION



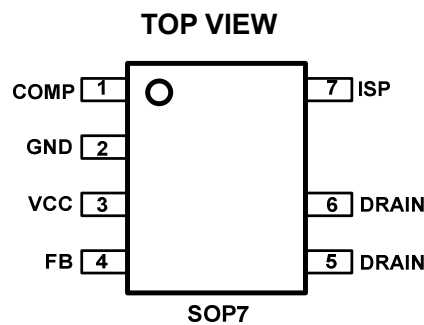
## ORDER INFORMATION

| LEAD FREE FINISH | TAPE AND REEL     | PACKAGE | TOP MARKING |
|------------------|-------------------|---------|-------------|
| JW1769ASOPA#PBF  | JW1769ASOPA#TRPBF | SOP7    | JW1769A     |
| JW1769BSOPA#PBF  | JW1769BSOPA#TRPBF | SOP7    | JW1769B     |
| JW1769CSOPA#PBF  | JW1769CSOPA#TRPBF | SOP7    | JW1769C     |

Note:

JWXXXXPPP#TRPBF  
 Part Number      Package Code      Tape and Reel (If "TR" is not shown, it means Tube)      Pb Free

## PIN CONFIGURATION



## ABSOLUTE MAXIMUM RATING<sup>1)</sup>

|   |                 |
|---|-----------------|
| VCC PIN.....                                | 43V             |
| All other pins.....                         | -0.3V to 4.5V   |
| Junction Temperature <sup>2) 3)</sup> ..... | 150°C           |
| Lead Temperature.....                       | 260°C           |
| Storage Temperature.....                    | -65°C to +150°C |

## RECOMMENDED OPERATING CONDITIONS

|   |                |
|---|----------------|
| FB PIN .....                                  | 1.6V to 2.6V   |
| Operating Junction Temp(T <sub>J</sub> )..... | -40°C to 125°C |

## THERMAL PERFORMANCE<sup>4)</sup>

|            | $\theta_{JA}$ | $\theta_{JC}$ |
|------------|---------------|---------------|
| SOP7 ..... | 96.....       | 45°C/W        |

**Note:**

- Exceeding these ratings may damage the device.
- JW1769A/B/C guarantees robust performance from -40°C to 150°C junction temperature. The junction temperature range specification is assured by design, characterization and correlation with statistical process controls.
- The JW1769A/B/C includes thermal protection that is intended to protect the device in overload conditions. Thermal protection is active when junction temperature exceeds the maximum operating junction temperature. Continuous operation over the specified absolute maximum operating junction temperature may damage the device.
- Measured on JESD51-7, 4-layer PCB.

**ELECTRICAL CHARACTERISTICS**
 $V_{IN} = 20V, T_A = 25^{\circ}C, \text{ unless otherwise stated.}$ 

| Item  | Symbol                | Condition                                 | Min.                 | Typ. | Max. | Units |
|---|-----------------------|---|----------------------|------|------|-------|
| V <sub>CC</sub> Turn-On Voltage               | V <sub>CC_ON</sub>    |   | 18                   | 21.0 | 24   | V     |
| V <sub>CC</sub> Turn-off Low Voltage          | V <sub>CC_OFF_L</sub> |   | 6.4                  | 7    | 8    | V     |
| V <sub>CC</sub> Hysteresis                    | V <sub>CC_HYS</sub>   | V <sub>CC_ON</sub> -V <sub>CC_OFF_L</sub> |                      | 14   |      | V     |
| V <sub>CC</sub> Clamp                         | V <sub>CC_CLP</sub>   |   |                      | 35   |      | V     |
| V <sub>CC</sub> Shunt Regulator Current Limit | I <sub>CC_SHUNT</sub> | V <sub>CC</sub> = 58V                     | 4                    | 6    | 8    | mA    |
| V <sub>CC</sub> Quiescent Current             | I <sub>Q</sub>        | V <sub>CC</sub> <V <sub>CC_ON</sub>       | 26                   | 31   | 36   | uA    |
| FB Pin High Threshold                         | V <sub>FB_H</sub>     |   | 2.75                 | 2.9  | 3.05 | V     |
| V <sub>ISP</sub> Sample Value                 | V <sub>ISP</sub>      |   | 96                   | 100  | 104  | mV    |
| V <sub>ISP</sub> Max Voltage                  |                       |   | 500                  | 550  | 610  | mV    |
| Leading Edge Blanking Time                    | T <sub>LEB</sub>      |   | 500                  | 750  | 1000 | ns    |
| Maximum Frequency                             | F <sub>MAX</sub>      |   |                      | 140  | 160  | kHz   |
| Maximum MOS On Time                           | T <sub>ONMAX</sub>    |   |                      | 30   |      | us    |
| MOS Saturation Current                        | JW1769A               | I <sub>d</sub>                            | V <sub>gs</sub> =10V | 4    |      | A     |
|   | JW1769B               |   |                      | 10   |      |       |
|   | JW1769C               |   |                      | 8    |      |       |
| MOS R <sub>dson</sub>                         | JW1769A               | R <sub>dson</sub>                         | V <sub>gs</sub> =10V |      | 6.8  | Ω     |
|   | JW1769B               |   |                      |      | 1.8  |       |
|   | JW1769C               |   |                      |      | 3.5  |       |
| Breakdown Voltage                             | JW1769A               | BV  |                      | 600  |      | V     |
|   | JW1769B               |   |                      | 600  |      |       |
|   | JW1769C               |   |                      | 600  |      |       |