

Parameters Subject to Change Without Notice

DESCRIPTION

The JW1758A/B/C is a constant current LED controller 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.

JW1758A/B/C integrates high voltage power source, and can be supplied by line voltage directly, and auxiliary winding is not needed.

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.

JW1758A/B/C has multi-protection functions which largely enhance the safety and reliability of the system, including VCC over-voltage protection, VCC UVLO, LED open protection, pulse-by-pulse current limit, inductor short protection and over-temperature protection.

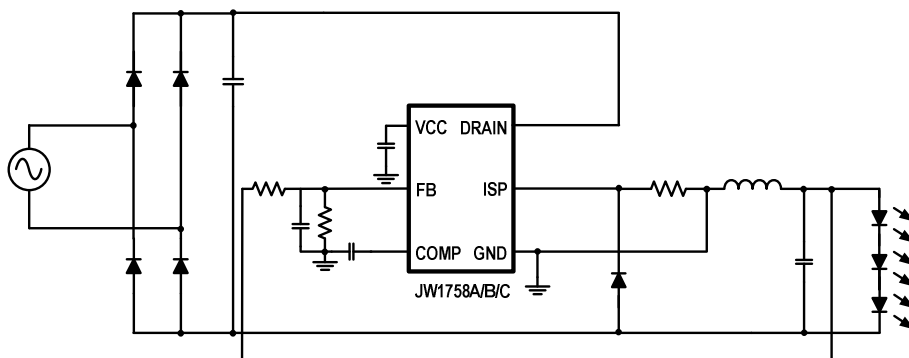
FEATURES

- No auxiliary winding
- Supplied from line voltage directly
- 600V high voltage MOSFET integrated
- 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 open protection
- Inductor short protection
- ISP short protection
- Temperature compensation of LED
- Internal over-temperature protection
- SOP7 package

APPLICATIONS

- Non-isolation Offline LED driver

TYPICAL APPLICATION



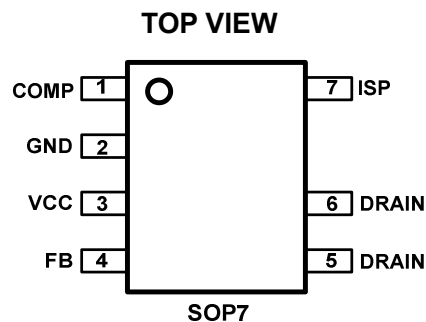
ORDER INFORMATION

| LEAD FREE FINISH | TAPE AND REEL | PACKAGE | TOP MARKING |
|------------------|-------------------|---------|-------------|
| JW1758ASOPA#PBF | JW1758ASOPA#TRPBF | SOP7 | JW1758A |
| JW1758BSOPA#PBF | JW1758BSOPA#TRPBF | SOP7 | JW1758B |
| JW1758CSOPA#PBF | JW1758CSOPA#TRPBF | SOP7 | JW1758C |

Note:

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

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATING¹⁾

| | |
|---|-----------------|
| VCC Voltage..... | 40V |
| All other pins..... | -0.3V to 4.5V |
| Junction Temperature ^{2) 3)} | 150°C |
| Lead Temperature..... | 260°C |
| Storage Temperature..... | -65°C to +150°C |

RECOMMENDED OPERATING CONDITIONS

| | |
|---|----------------|
| VCC Voltage..... | 13V |
| FB PIN | 0.8V to 1.4V |
| Operating Junction Temp (T _J) | -40°C to 125°C |

THERMAL PERFORMANCE⁴⁾

| | θ_{JA} | θ_{JC} |
|-----------|---------------|---------------|
| SOP7..... | 96 | 45°C/W |

Note:

- Exceeding these ratings may damage the device.
- The JW1758A/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 JW1758A/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 JE51-7, 4-layer PCB.

ELECTRICAL CHARACTERISTICS

| <i>V_{IN}=20V, T_A=25 °C, unless otherwise stated.</i> | | | | | | |
|--|--------------------------|---------------------------|----------------------|------|------|-------|
| Item | Symbol | Condition | Min. | Typ. | Max. | Units |
| VCC Start-Up Voltage | V _{CC_STARTUP} | | 12 | 13.2 | 14.5 | V |
| VCC Shut Down Voltage | V _{CC_SHUTDOWN} | | 8.4 | 9.3 | 10.1 | V |
| HV Power Supply Voltage | V _{H_HVPOWER} | | 12 | 13.2 | 14.5 | V |
| VCC Quiescent Current | I _{CCQ} | VCC=6V | 70 | 87 | 100 | uA |
| VCC Operational Current | I _{CCO} | VCC=15.5V,FB=2V | 140 | 160 | 185 | uA |
| VCC Over Voltage Threshold | V _{TH_OVP} | | 16.7 | 18.5 | 20.2 | V |
| VCC Shunt Current | I _{SHUNT} | VCC=18V | 2.8 | 5 | 7.1 | mA |
| ISP Sample Reference | V _{R_ISP} | | 194 | 200 | 206 | mV |
| Maximum On Time of MOSFET | T _{ON_MAX} | COMP=2.4V | 26 | 30 | 37 | us |
| COMP Source Current | I _{COMP} | 1.2V<COMP<2.4V, ISP=0V | 8.5 | 10 | 12.5 | uA |
| Maximum Switch Frequency | F _{MAX} | COMP<1.2V | | | 155 | khz |
| FB High Voltage Threshold | V _{FB_H} | | 1.52 | 1.6 | 1.68 | V |
| FB Low Voltage Threshold | V _{FB_L} | | 145 | 182 | 215 | mV |
| ISP Maximum Voltage | V _{ISP_LIMIT} | | 1.13 | 1.2 | 1.27 | V |
| Over Thermal Protection Threshold ⁵⁾ | Temp _{OTP} | | | 145 | | °C |
| MOS R _{dson} | JW1758A | R _{dson} | V _{gs} =10V | | 6.8 | Ω |
| | JW1758B | | | | 1.8 | |
| | JW1758C | | | | 3.5 | |
| Breakdown Voltage | BV | | 600 | | | V |

Note:

5) Guaranteed by design.