

## 4.5V to 65V Dual 1.6A Synchronous Buck LED Driver

### Descriptions

The CPSQ5352 is a dual full-independent channel synchronous step-down LED driver with delivering 1.6A current capability. CPSQ5352 operates over a wide input voltage range from 4.5V to 65V with SPI interface. It integrates main switch and synchronous switch with low  $R_{DS(ON)}$  to minimize the conduction loss.

The CPSQ5352 applies Constant-on-time (COT) control mode which provides very fast load transient response and easy loop design and requires a minimal number of readily-available, standard, external components. The frequency is programmable from 100kHz to 2.2MHz. The LED current accuracy can up to 4% over wide input voltage, output voltage and ambient temperature.

The CPSQ5352 support both analog dimming or PWM dimming. The LED current and dimming duty can be programmable by internal or external.

The CPSQ5352 integrates full protections features including LED short, LED open, over-current, bootstrap under voltage, thermal warning and shutdown protection. It also provides multiple ADC channels to diagnose functional safety.

The CPSQ5352 is available in an 8.1mm x 11mm 32pin HTSSOP package with a 3.7mm x 4.6mm top exposed pad.

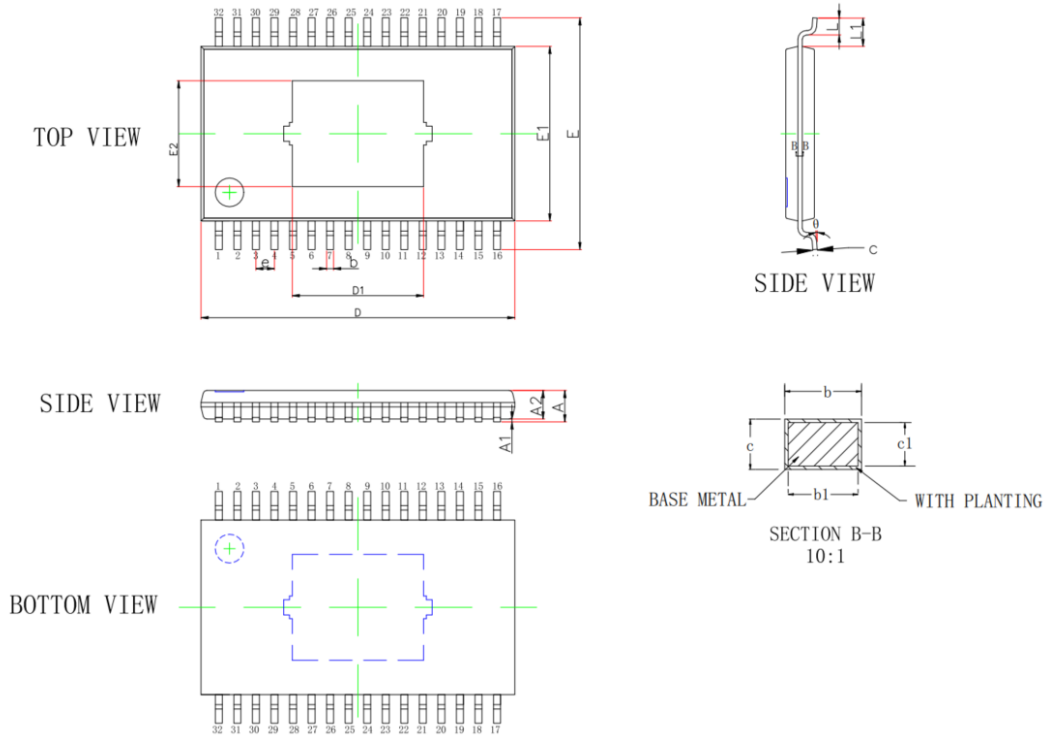
### Features

- AEC-Q100 Grade-1 Qualified for Automotive Applications
- Wide Input Voltage Range from 4V to 65V
- Dual Full-Independent LED Drivers
- Up to 1.6A LED Current with 4% Accuracy
- Automatic current offset check function
- Programmable Switching Frequency from 100kHz to 2.2MHz
- Analog and PWM Dimming
- External Shut Dimming for LED Matrix Manager
- Auto Offset Cancellation
- SPI Interface
  - Configure LED Current Style
  - Functional Safety for Fault Monitor and Report
  - 10-bit ADC for Monitor
  - 10-bit DAC for Configure
- Comprehensive protection features.
  - LED Open and Short
  - Bootstrap Under-voltage
  - MOSFETs cycle-by-cycle current limit.
  - Thermal Warning and Shutdown
- Limp-Home and Standalone Mode
- Available in 8.1mm x 11mm 32pin HTSSOP package
- RoHS compliant, Pb-Free and Halogen-Free

### Applications

- Automotive headlight
- LED Driving Module

## 1. Package Information



Symbol	Dimensions In Millimeters		
	Min.	NOM	Max.
A	—	—	1.200
A1	0.000	0.075	0.150
A2	0.900	1.000	1.100
b	0.200	—	0.280
b1	0.190	0.220	0.250
c	0.150	—	0.190
c1	0.140	0.152	0.160
D	10.900	11.000	11.100
D1	4.500	4.600	4.700
E	7.900	8.100	8.300
E1	6.000	6.100	6.200
E2	3.600	3.700	3.800
e	0.650(BSC)		
L	0.500	0.625	0.750
θ	0°		8°

## 2. Important Notice

Convenient Power Semiconductor reserves the right to modify, improve and terminate its products, service, documentation, etc. without advance notice. Customers are encouraged to contact Convenient Power Semiconductor sales representative get the latest product information.

Without proper legal authorization, Convenient Power Semiconductor products shall not be used for medical or military applications. Convenient Power Semiconductor does not assume any liability of personal or property damages of any kind due to such applications.

All text, images, trademarks of this document, and any intellectual property contained in the product and in this document belong to Convenient Power Semiconductor. No part of this document may be used, copied, modified, distributed or published without legal authorization from Convenient Power Semiconductor.

ConvenientPower