

## General Description

The OCP8122 is dual channel LED driver controller IC which loads the boost DC-DC controller and the constant current control of LED driver designed to build LED backlight for 3D LCD display mode large-size LCD TV application.

The OCP8122 provides two independently controlled LED drivers to achieve optimum efficiency. The drive outputs are phase-shifted by 180 degree to minimize current ripple in high power applications. The OCP8122 provides independent PWM dimming function for each channel and common analog dimming control for both channels. It provides system design flexibility for LCD-TV with local dimming or 3D display mode.

The OCP8122 can be configured for Master-Slave operation to support multi-channel applications. Synchronization is achieved by a proprietary single-wire interface which minimizes system components.

The OCP8122 provides the over-voltage protection (OVP), Power MOSFET over-current protection (OCP), Output to ground short-circuit protection, output over load protection, Soft-Start (SS), under-voltage lock-out (UVLO), limited current condition (LCC) protection, thermal shutdown protection (TSD). A soft-start feature is provided to minimize in-rush current during start-up.

The OCP8122 is available in SSOR-24L and SOP-24L package, and it is RoHS compliant and 100% lead Pb free. Operating temperature range of the OCP8122 is from -40°C to 85°C.

## Features

- Wide Supply Voltage Range: 8.0V ~ 25V
- Dual Channel DC-DC Controller
- Drives One String of High Power LEDs per Channel
- Number of LEDs in series limited by external MOSFETs rating
- 180 degree phase shift drive output between the two channel

**OCP8122** 

- Independent PW/M dimming control for each changel
- Common Analog Dimming for two channel
- Constant Operation Frequency
- Operation Frequency Synchronization
- External Power MOSFET Over-Current
  Protection
- External enable control
- Integrated high frequency oscillator
- Øver-voltage protection
- Output to Return Short-circuit Protection
- Output to Ground Short-dircuit Protection
- Output Over Load Protection
- Limited Current Condition Protection
- Low n-rush current soft-start function
- Under-voltage lock-out
- Thermal shutdown
- Fault Status Output
- Low Standby current
- **T →** -40 ~ 85 °C
- Available in SSOP-24L and SOP-24L Package

## Applications

- LCD White LED Backlighting
- LCD TVs

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- Automotive and Infotainment Displays
- 3D Mode Display LCD Panel



## Pin Configuration

SSOP-24L/SOP-24L (Top View)

Pin Name         Pin No. SSOP24L /SOP24L         I/O         Pin Function           UVLS         1         1         Power Supply Under Voltage Lock-out Detection pin           VCC         2         P         Input Power for controller and internal MOSFET driver           EN         3         1         ON/OFF control for the controller           VREG         4         I/O         Internal Regulation Output Voltage pin           RSET         5         I/O         Resistor to set operation frequency and master/slave mode           SYNC         6         I/O         Operation Frequency Synchronization Signal input / output           PWM1         7         I         PWM drimining control for channel-1           PWM2         8         PWW. drimming control for channel-2           ADIM         9         Canadog dimming control for be controller           TIMER         10         I/O         Capacitor Setting shudown delay time           CMP1         11         I/O         Connect resistor and capacitor to set soft start and compensation for channel 2           FB2         13         I         Channel 2 LED Current Sense Input           GATE2         14         O         Channel 2 MOSFET driver control           OVP2         15         I         Channel 2 MOS	UVLS       1       24       STATUS         VCC       2       23       SWOUT1         3       22       SWOUT2         VREG       4       21       GIND         RSET       5       20       CS1         SYNC       6       0CP8122       19       0VP1         PWM1       7       0       0VP1       18       GATE1         PWM2       4       17       16       CS2       0VP2         TIMER       10       15       0VP2       0VP2       0VP2         CMP1       12       13       IFB2       IFB2									
UVLS1IPower Supply Under Voltage Lock-out Detection pinVCC2PInput Power for Centroller and internal MOSFET driveEN3ION/ORF centrol for the controllerVREG4I/OInternal Regulation Output Voltage/pinRSET5I/OResistor to set operation frequency and master/slave modeSYNC6I/OOperation Frequency Synchronization Signal input / outputPWM17IRVM dimming control for channelPWM28PWM dimming control for channelPWM28PWM dimming control for the controllerTIMER10I/OCapacitor Setting Shudown delay timeCMP111I/OConnect resistor and capacitor to set soft start and compensation for channel 1CMP212I/OConnect resistor and capacitor to set soft start and compensation for channel 1CMP212I/OConnect resistor and capacitor to set soft start and compensation for channel 2GATE214OChannel 2/MOSFET driver controlOVP215IChannel 2/MOSFET driver controlOVP215IChannel 2 Power MOSFET Switching Current SenseIFB117IChannel 1 Output over-voltage protection senseCS216IChannel 1 Output over-voltage protection senseGS120IChannel 1 Output over-voltage protection senseGMD21PGroundSWDUT222OChannel 1 Boost Power MOSFET Drive OutputSWO	Pin Name	Pin No. SSOP24L /SOP24L	I/O	Pin Function						
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GATE2J4OChannel 2 MOSFET driver controlOVP215IChannel 2 Output over-voltage protection senseCS216IChannel 2 Power MOSFET Switching Current SenseIFB117IChannel 1 LED Current Sense InputGATE118QChannel 1 MOSFET driver controlOVP119IChannel 1 Output over-voltage protection senseCS120YChannel 1 Output over-voltage protection senseGND21PGroundSWOUT222OChannel 2 Boost Power MOSFET Drive OutputSWOUT123OChannel 1 Boost Power MOSFET Drive OutputSTATUS24OFault Operation Status Output (Open Drain Output)	NFB2	13		Channel 2 LED Current Sense Input						
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IFB117IChannel 1 LED Current Sense InputGATE1180Channel 1 MOSFET driver controlOVP119LChannel 1 Output over-voltage protection senseCS120YChannel 1 Power MOSFET Switching Current SenseGND21PGroundSWOUT222OChannel 2 Boost Power MOSFET Drive OutputSWOUT123OChannel 1 Boost Power MOSFET Drive OutputSTATUS24OFault Operation Status Output (Open Drain Output)	CS2	16	$\sim$	Channel 2 Power MOSFET Switching Current Sense						
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OVP11912Channel 1 Output over-voltage protection senseCS1201Channel 1 Power MOSFET Switching Current SenseGND21PGroundSWOUT2220Channel 2 Boost Power MOSFET Drive OutputSWOUT1230Channel 1 Boost Power MOSFET Drive OutputSTATUS240Fault Operation Status Output (Open Drain Output)	GATE1	18	$\langle Q \rangle$	Channel 1 MOSFET driver control						
CS120YChannel 1 Power MOSFET Switching Current SenseGND21PGroundSWOUT222OChannel 2 Boost Power MOSFET Drive OutputSWOUT123OChannel 1 Boost Power MOSFET Drive OutputSTATUS24OFault Operation Status Output (Open Drain Output)	OVP1	19	19 Channel 1 Output over-voltage protection sense							
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SWOUT123OChannel 1 Boost Power MOSFET Drive OutputSTATUS24OFault Operation Status Output (Open Drain Output)	SWOUT2	22	0	Channel 2 Boost Power MOSFET Drive Output						
STATUS 24 O Fault Operation Status Output (Open Drain Output)	SWOUT1	23	0	Channel 1 Boost Power MOSFET Drive Output						
	STATUS	24	0	Fault Operation Status Output (Open Drain Output)						

**Contact Information:** 







Contact Information:

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Package Information SOP-24L



Note: 1, Refer to JEDEC STD MS-013 AD

2, DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER END. DIMENSION "EN" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 mm PERSIDE

Eumbal	Dimens	sions In Milli	meters	Dimensions In Inches		
Symbol	Min.	Nom.	Max.	Min.	Nom.	Max.
	2.350	2.500	2.650	0.093	0.098	0.104
A1	0.100	0.200	0.300	0.004	0.008	0.012
A2	2.100	2,300	2.500	0.083	0.091	0.098
b	0.330	0.420	0.510	0.013	0.017	0.020
С	0.204	0.267	0.330	0.008	0.011	0.013
	15,200	15.400	15.600	0.598	0.606	0.614
((E	7.400	7.500	7.600	0.291	0.295	0.299
ET	10.210	10.410	10.610	0.402	0.410	0.418
е	)) 1.270 (BSC)			0.050 (BSC)		
L	0.400	0.835	1.270	0.016	0.033	0.050
θ	0°	4 °	8°	0°	4 °	8°





Note: 1, Refer to JEDEC STD MO-137 AE

2, DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER END. DIMENSION "E1" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 mm PER SIDE

Symbol	Dimens	sions In Milli	meters	Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.35	1.60	1.75	0.053	0.063	0.069
A1	0.10	Q.15	0.25	0.004	0.006	0.010
A2	1.25 🔨	11/20	-	0.005	-	-
b	0.20		0.30	0.008	-	0.012
С	017		0.25	0.007	-	0.010
D	8.56	8.66	8.76	0.337	0.341	0.345
É(	5.80	6.00	6.20	0.228	0.236	0.244
E	3.80	3.90	4.00	0.150	0.154	0.157
е	$\mathcal{Y}$	0.635 (BSC)		0.025 (BSC)		
L <sup>C</sup>	0.400	-	1.27	0.016	-	0.050
L1	•	1.04 (BSC)		0.041 (BSC)		
θ	0°	-	8°	0°	-	8°

**Contact Information:** 

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For more detail information , please direct any inquiries and/or comments to info@orient-chip.com.