

## Simple 90V 20mA Temperature Compensated Constant Current LED Driver IC

### Features

- ❑ 5.0V to 90V operating range ( $V_{A-B}$ )
- ❑ 20mA  $\pm 10\%$  at 5-90V
- ❑ 0.05% / °C Typical Temperature Coefficient
- ❑ TO-243AA (SOT-89), TO-252 (D-PAK), & TO-92 packages
- ❑ No external components (two terminal device)
- ❑ Can be paralleled for higher current

### Applications

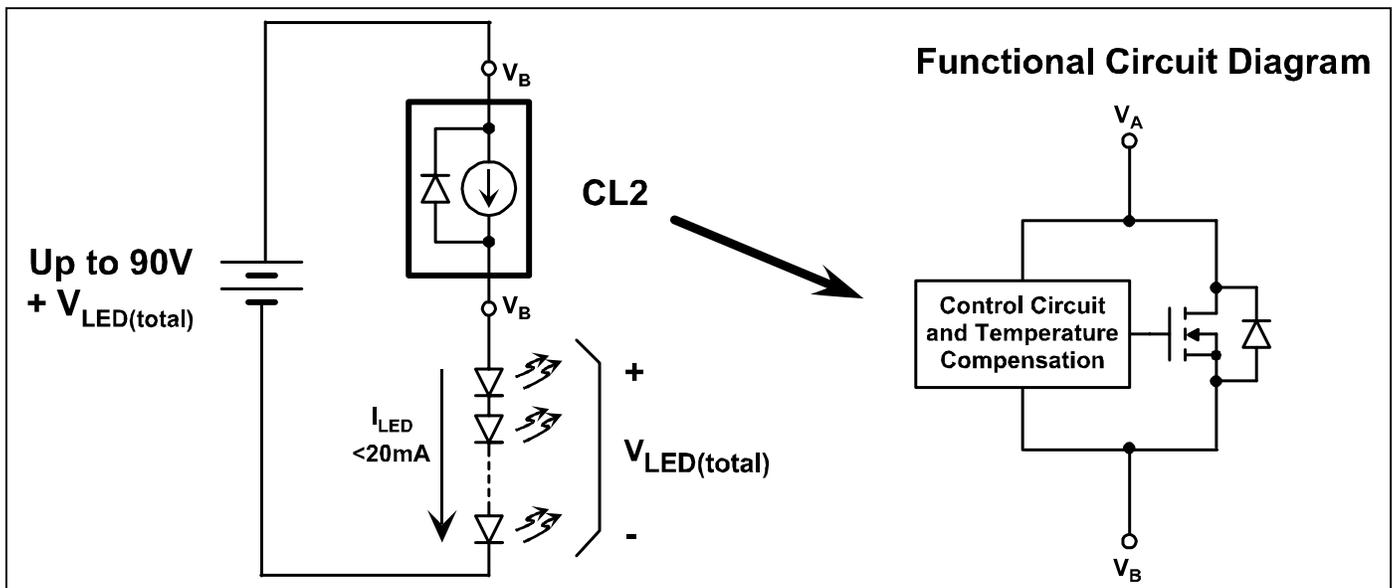
- ❑ LED driver
- ❑ Industrial lamp indicators
- ❑ Signage
- ❑ Accent lighting
- ❑ Automotive
- ❑ Constant current source
- ❑ Constant current sink

### General Description

The Supertex CL2 is a high voltage, temperature compensated, constant current source. The device is trimmed to provide a constant current of 20mA $\pm 10\%$  at an input voltage of 5-90V. No external components are required. The device can be used as a two terminal constant current source or constant current sink.

A typical application for the CL2 is to drive LEDs with a constant current of 20mA. They can also be used in parallel to provide higher currents such as 40mA, 60mA or 80mA. The device is available in SOT-89, TO-243AA (D-PAK), and TO-92 packages.

### Typical Application Circuit



## Ordering Information

| Order Number / Package |           |        |
|------------------------|-----------|--------|
| TO-92                  | TO-243AA* | TO-252 |
| CL2N3                  | CL2N8     | CL2K4  |

\*Same as SOT-89 product supplied on 2000 piece tape reels.

## Thermal Characteristics

| Package           | Power Dissipation<br>@ T <sub>A</sub> = 25°C | θ <sub>JC</sub><br>°C/W | θ <sub>JA</sub><br>°C/W |
|-------------------|--|-------------------------|-------------------------|
| TO-92             | 0.6W   | 125                     | 170                     |
| TO-243AA (SOT-89) | 1.3W*  | 15                      | 78*                     |
| TO-252 (D-PAK)    | 2.0W*  | 6.0                     | 50*                     |

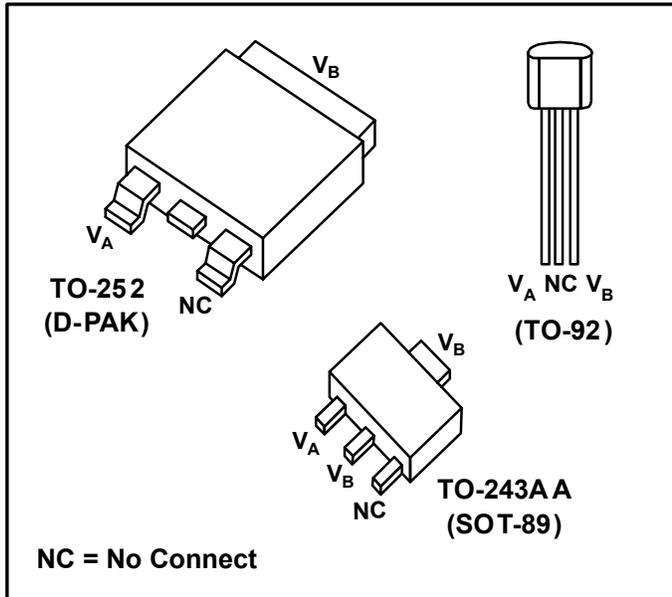
\* Mounted on FR4 board; 25mm x 25mm x 1.57mm.

## Absolute Maximum Ratings\*

|   |                 |
|---|-----------------|
| V <sub>A-B</sub> , Operating Voltage            | 100V            |
| T <sub>J</sub> , Operating Junction Temperature | -40°C to +125°C |
| T <sub>s</sub> , Storage Temperature            | -55°C to +150°C |

\*Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied. Continuous operation of the device at the absolute rating level may affect device reliability.

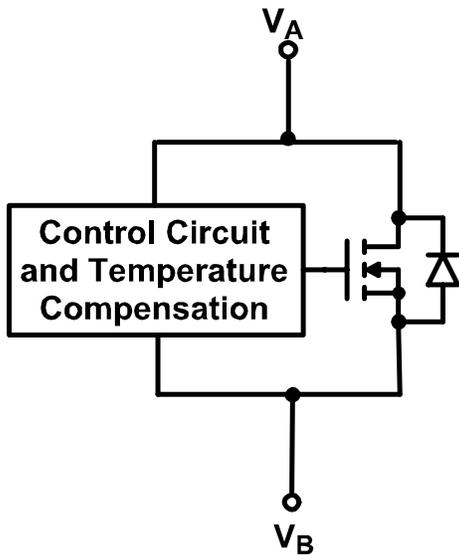
## Package Options



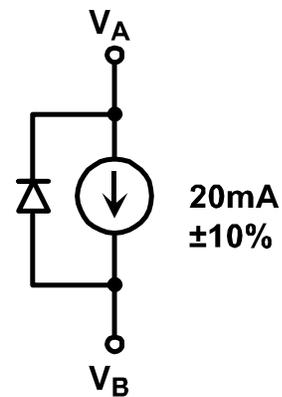
**Electrical Characteristics** (@  $T_J = 25^\circ\text{C}$  unless otherwise specified)

| Symbol                    | Parameter                         | Min  | Typ  | Max  | Units               | Conditions   |
|---------------------------|-----------------------------------|------|------|------|---------------------|--|
| $V_{A-B}$                 | Maximum operating voltage         |      |      | 90   | V                   |  |
| $I_{A-B}$                 | Current regulation                | 18.0 | 20.0 | 22.0 | mA                  | $V_{A-B} = 5-90\text{V}$   |
| $\Delta I_{A-B}/\Delta T$ | $I_{A-B}$ temperature coefficient |      | 0.05 | ①SL  | %/ $^\circ\text{C}$ | $V_{A-B} = 45\text{V}$ ,<br>$T_J = -40^\circ\text{C}$ to $100^\circ\text{C}$ |
| $T_J$                     | Operating junction temperature    | -40  |      | 125  | $^\circ\text{C}$    |  |

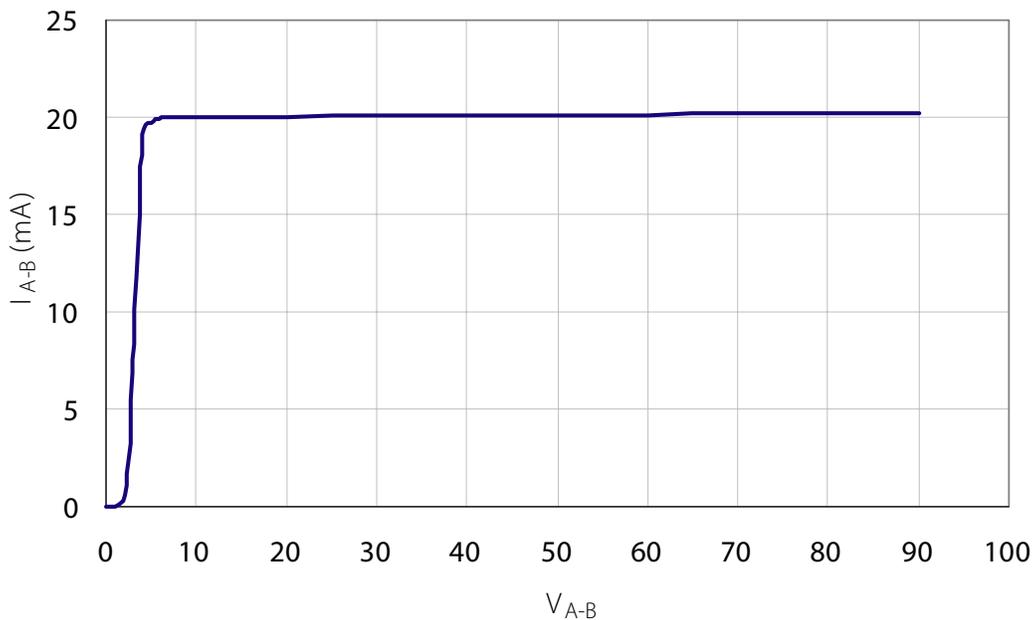
**Functional Circuit Diagram**



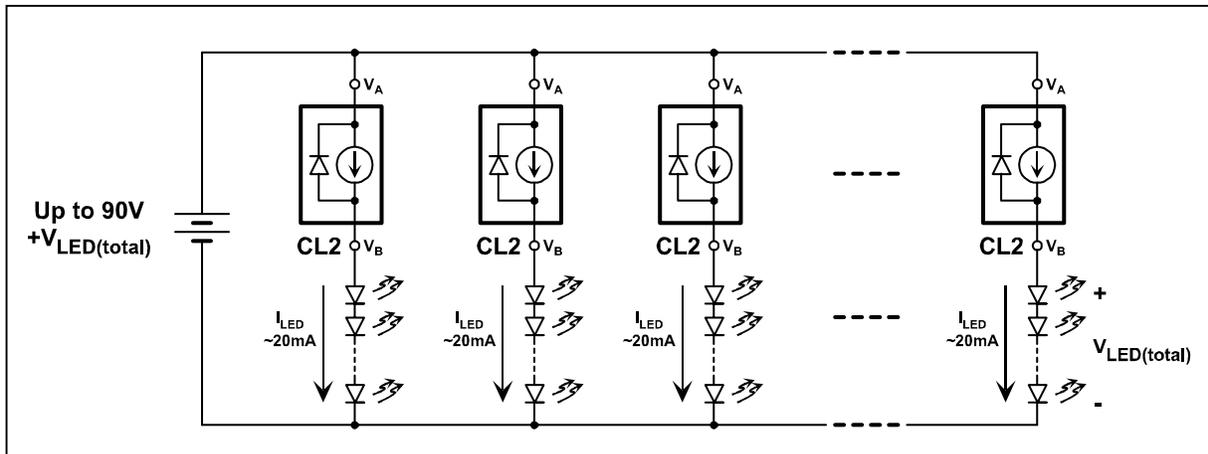
**Equivalent Block Diagram**



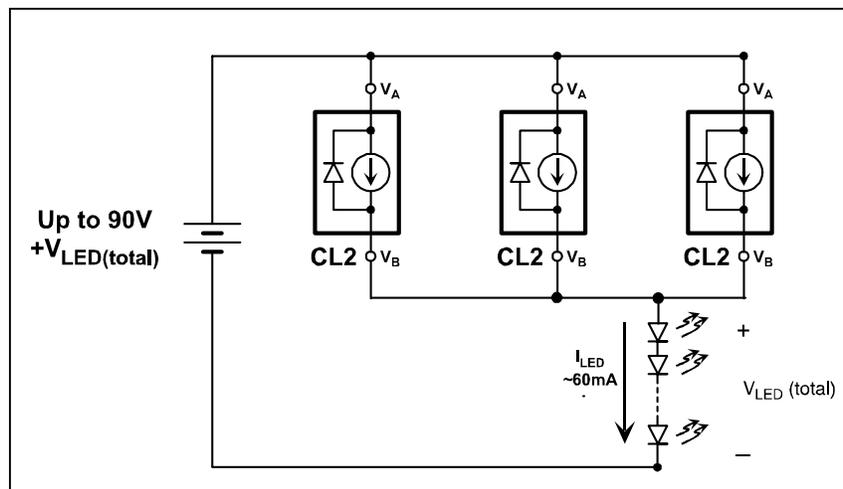
**Output Current vs. Voltage**



## CL2 for Multiple LED Strings



## CL2 for Higher Current



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