

Simple 90V, 25mA, Temperature Compensated, Constant Current, LED Driver IC

Features

- ▶ 5.0V to 90V operating range (V_{A-B})
- ▶ 25mA $\pm 10\%$ at 5-90V
- ▶ 0.01% / °C typical temperature coefficient
- ▶ No external components (two terminal device)
- ▶ Can be paralleled for higher current

Applications

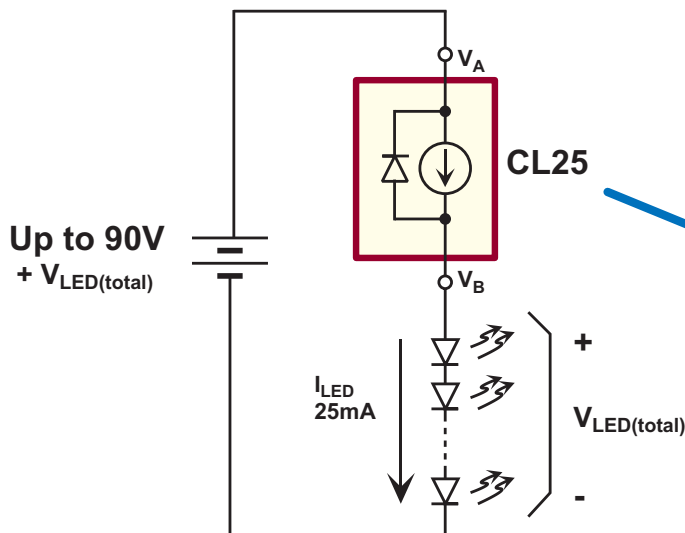
- ▶ LED channel lighting
- ▶ Industrial lamp indicators
- ▶ Accent lighting

General Description

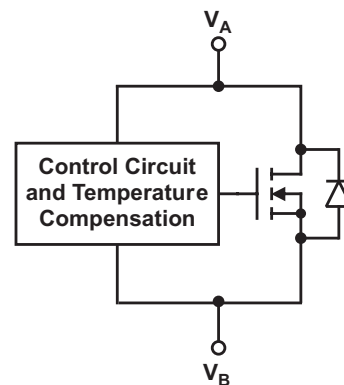
The Supertex CL25 is a high voltage, temperature compensated, constant current source. The device is trimmed to provide a constant current of 25mA $\pm 10\%$ at an input voltage of 5-90V. No external components are required. The device can be used as a two terminal constant current source or constant current sink.

A typical application for the CL25 is to drive LEDs with a constant current of 25mA. They can also be used in parallel to provide higher currents such as 50mA, 75mA or 100mA. The device is available in TO-92 and TO-243AA (SOT-89) packaging.

Typical Application Circuit



Functional Circuit Diagram



Ordering Information

Device	Package Options	
	TO-92	TO-243AA (SOT-89)
CL25	CL25N3-G	CL25N8-G

-G indicates package is RoHS compliant ('Green')



Thermal Characteristics

Package	Power Dissipation @ $T_A = 25^\circ\text{C}$	θ_{JC} °C/W	θ_{JA} °C/W
TO-92	0.6W	125	170
TO-243AA (SOT-89)	1.3W*	15	78*

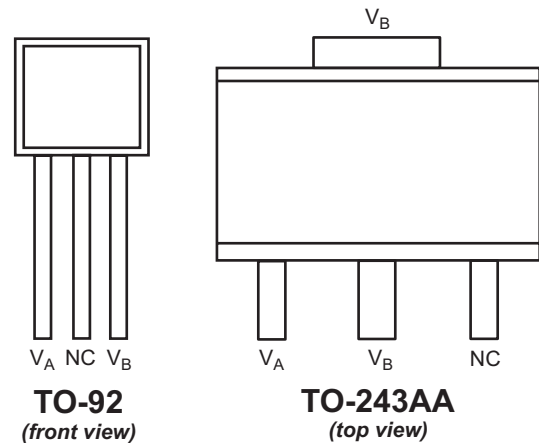
* Mounted on FR4 board; 25mm x 25mm x 1.57mm

Absolute Maximum Ratings

Parameter	Value
Operating voltage, V_{A-B}	100V
Operating junction temperature, T_J	-40°C to +125°C
Storage temperature, T_S	-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. All voltages are referenced to device ground.

Pin Configuration



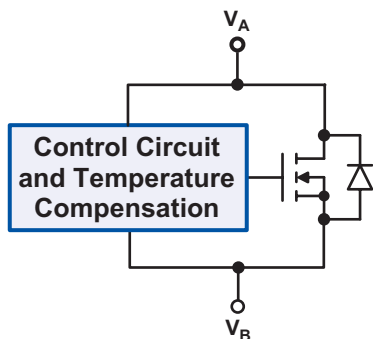
NC = No Connect

Electrical Characteristics

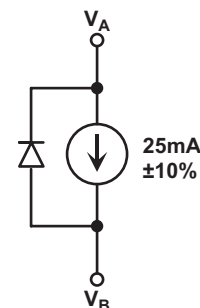
($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{A-B}	Operating voltage	5	-	90	V	---
I_{A-B}	Current regulation	22.5	25	27.5	mA	$V_{A-B} = 5\text{V} - 90\text{V}$
$\Delta I_{A-B}/\Delta T$	I_{A-B} temperature coefficient	-	0.01	-	%/°C	$V_{A-B} = 45\text{V}$, $T_J = -40^\circ\text{C}$ to $+100^\circ\text{C}$
T_J	Operating junction temperature	-40	-	125	°C	---
R_{A-B}	Dynamic resistance	-	300k	-	Ω	---

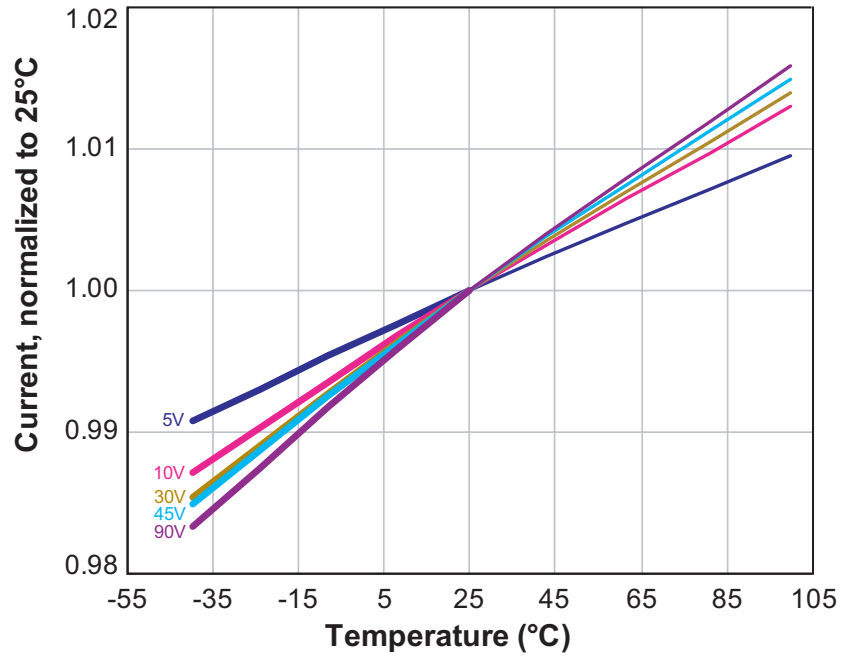
Functional Circuit Diagram



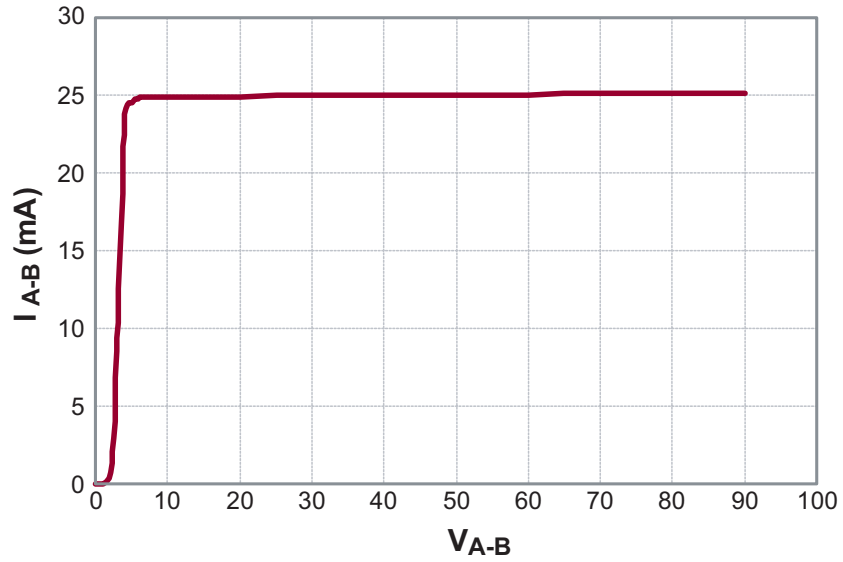
Equivalent Block Diagram



Temperature Characteristics



Output Current vs Voltage



CL25 for Multiple LED Strings



CL25 for Higher Current

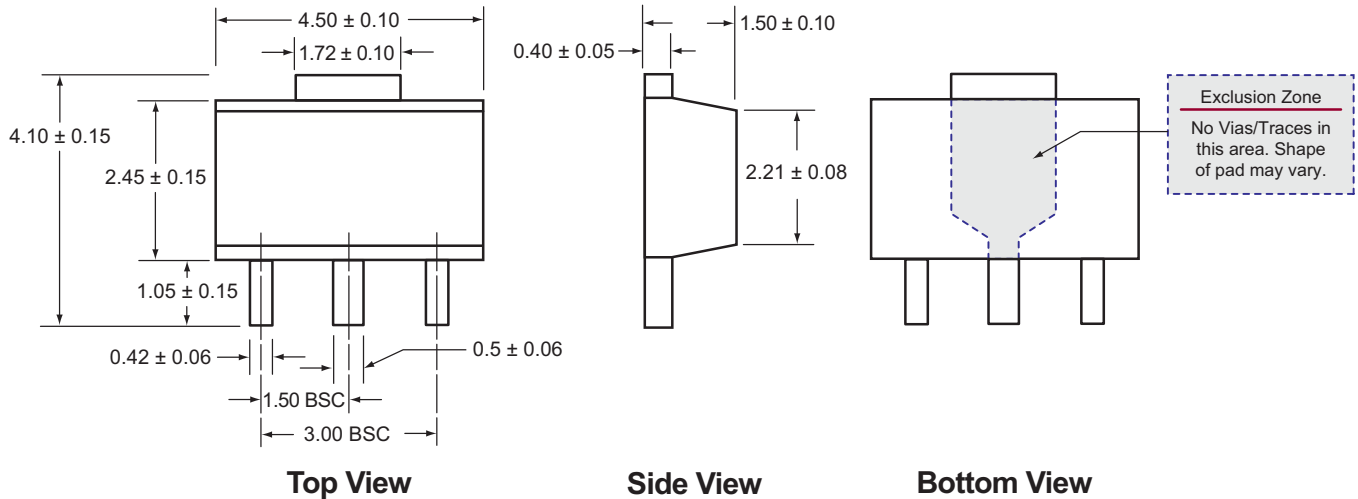


3-Lead TO-92 Package Outline (N3)



Notes:
All dimensions are in millimeters; all angles in degrees.

3-Lead TO-243AA (SOT-89) Package Outline (N8)



Notes:
All dimensions are in millimeters; all angles in degrees.

(The package drawings in this data sheet may not reflect the most current specifications. For the latest package outline information go to <http://www.supertex.com/packaging.html>.)

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