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

Features

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

Applications

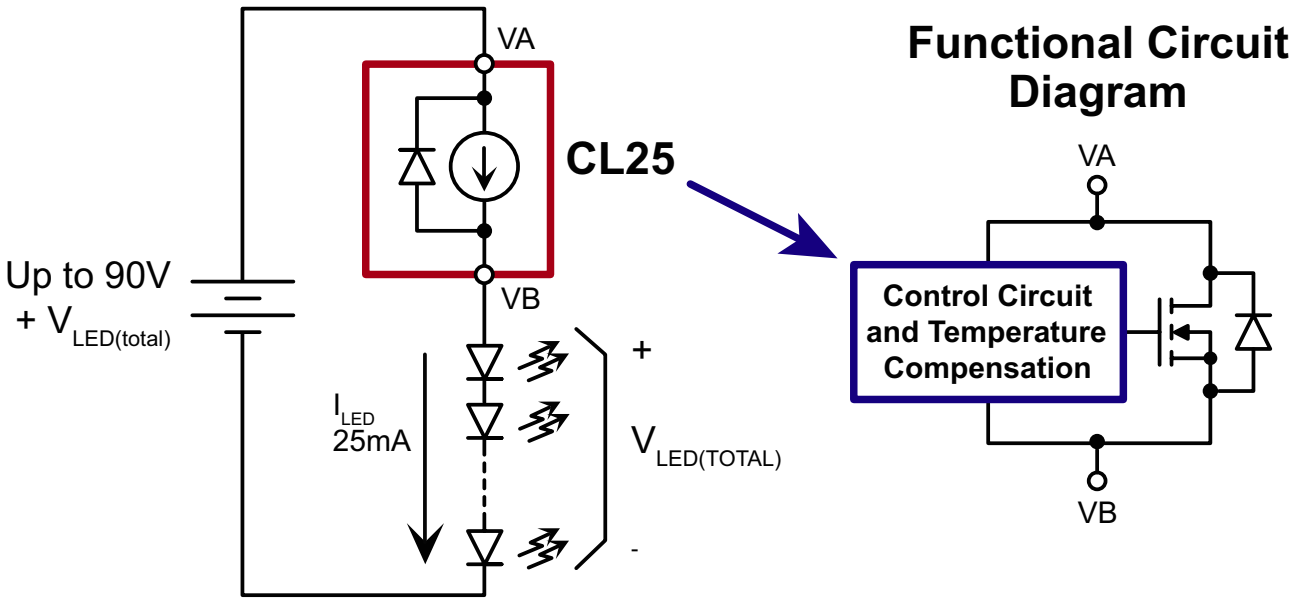
- LED channel lighting
- Industrial lamp indicators
- Accent lighting

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±10% at an input voltage of 5.0 - 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. Multiple CL2s 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



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°C (W)	θ_{JC} (°C/W)	θ_{JA} (°C/W)
TO-92	0.6	125	170
TO-243AA (SOT-89)	1.3*	15	78*

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

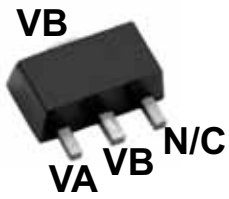
Absolute Maximum Ratings

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

TO-92 (N3)



TO-243AA (SOT-89) (N8)

NC = No Connect

Product Marking

YY = Year Sealed
WW = Week Sealed
_____ = "Green" Packaging

Package may or may not include the following marks: Si or

TO-92 (N3)

W = Code for week sealed
_____ = "Green" Packaging

Package may or may not include the following marks: Si or

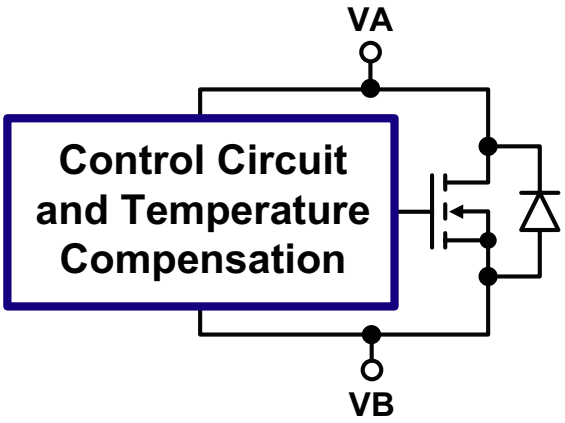
TO-243AA (SOT-89) (N8)

Electrical Characteristics

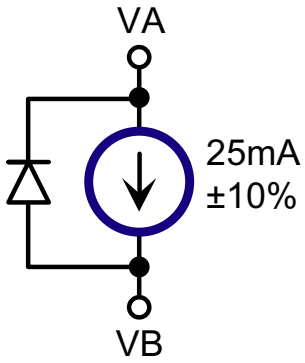
(T_A = 25°C unless otherwise specified)

Sym	Parameter	Min	Typ	Max	Units	Conditions
V_{A-B}	Operating voltage	5.0	-	90	V	---
I_{A-B}	Current regulation	22.5	25	27.5	mA	V_{A-B} = 5.0V - 90V
$\Delta I_{A-B}/\Delta T$	I_{A-B} temperature coefficient	-	0.01	-	%/°C	V_{A-B} = 45V, T_J = -40°C to +100°C
T_J	Operating junction temperature	-40	-	125	°C	---
R_{A-B}	Dynamic resistance	-	300	-	kΩ	---

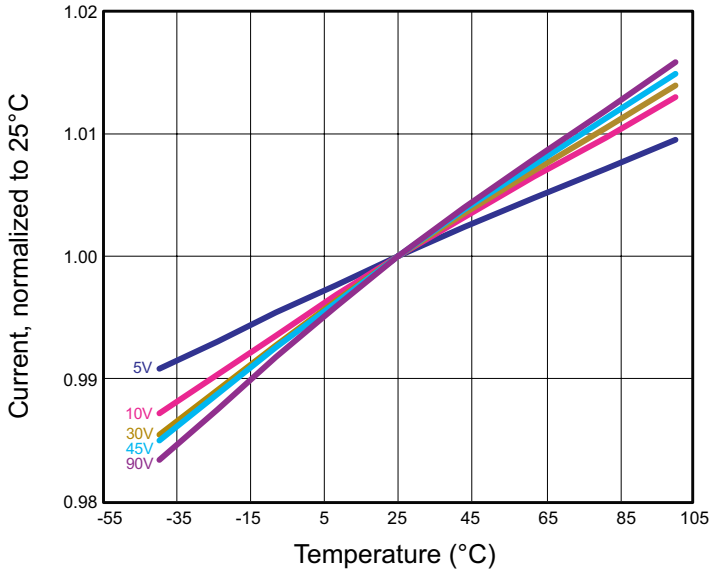
Functional Circuit Diagram



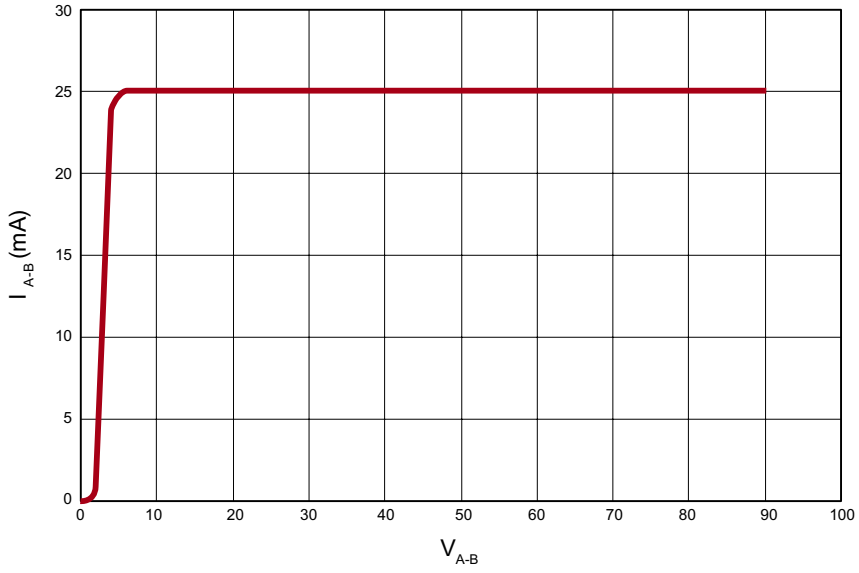
Equivalent Block Diagram



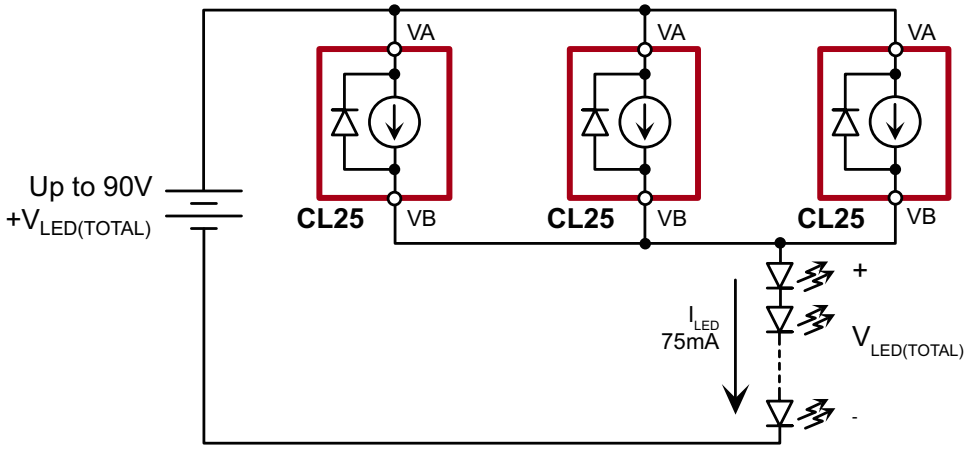
Temperature Characteristics



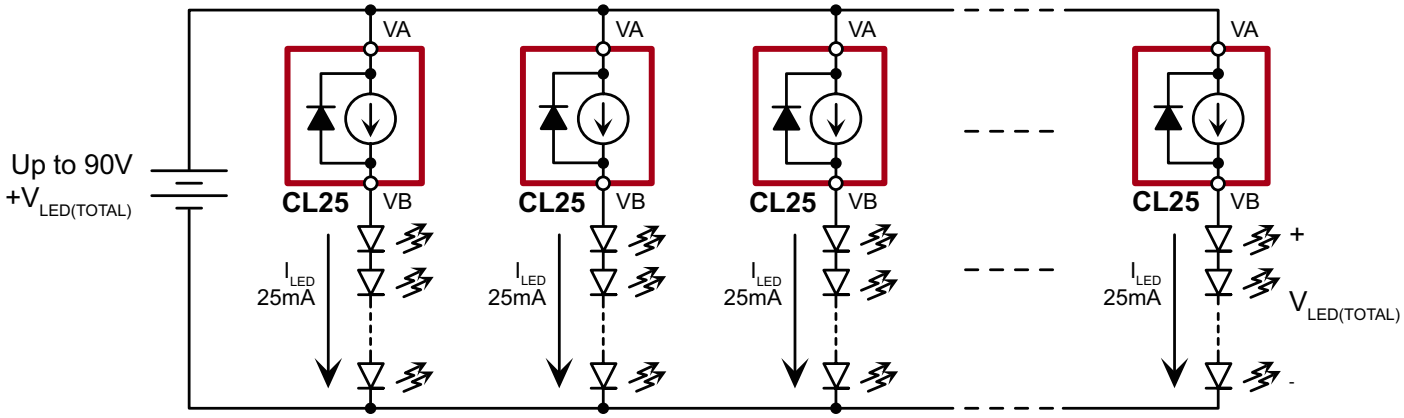
Output Current vs Voltage



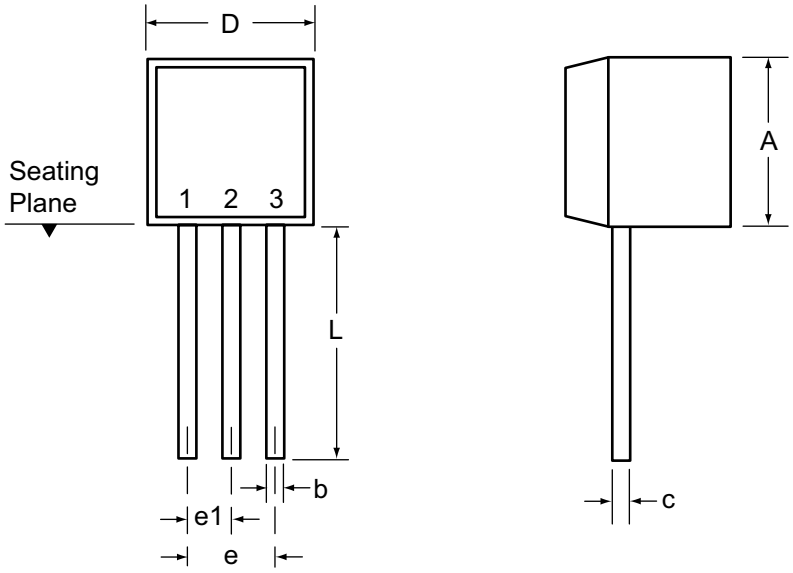
CL25 for Multiple LED Strings



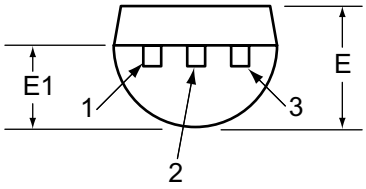
CL25 for Higher Current



3-Lead TO-92 Package Outline (N3)



Front View **Side View**

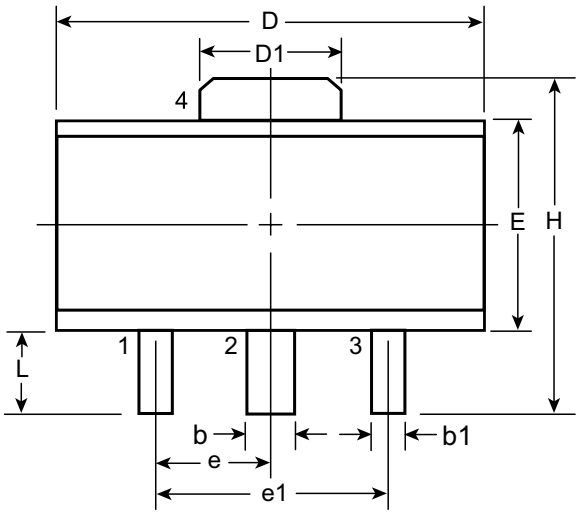


Bottom View

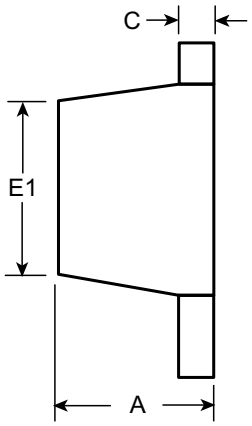
Symbol		A	b	c	D	E	E1	e	e1	L
Dimensions (inches)	MIN	.170	.014†	.014†	.175	.125	.080	.095	.045	.500
	NOM	-	-	-	-	-	-	-	-	-
	MAX	.210	.022†	.022†	.205	.165	.105	.105	.055	.610*

JEDEC Registration TO-92.
** This dimension is not specified in the JEDEC drawing.*
† This dimension differs from the JEDEC drawing.
Drawings not to scale.
***Supertex Doc.#:** DSPD-3TO92N3, Version E041009.*

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



Top View



Side View

Symbol		A	b	b1	C	D	D1	E	E1	e	e1	H	L
Dimensions (mm)	MIN	1.40	0.44	0.36	0.35	4.40	1.62	2.29	2.00†	1.50 BSC	3.00 BSC	3.94	0.73†
	NOM	-	-	-	-	-	-	-	-			-	-
	MAX	1.60	0.56	0.48	0.44	4.60	1.83	2.60	2.29			4.25	1.20

JEDEC Registration TO-243, Variation AA, Issue C, July 1986.
† This dimension differs from the JEDEC drawing
***Drawings not to scale**.*
***Supertex Doc. #:** DSPD-3TO243AAN8, Version F111010.*

Supertex inc.
1235 Bordeaux Drive, Sunnyvale, CA 94089
Tel: 408-222-8888
www.supertex.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Supertex:

CL25N3-G CL25N8-G CL25N3-G P003 CL25N3-G P013 CL25N3-G P002 CL25N3-G P014 CL25N3-G P005