

LED Driver IC

with Wide Input Voltage Rang and Constant Current Regulator

Features

- > 150V wide range operating voltage
- > Voltage surge suppressing
- > Adjustable output current
- > Universal 100VAC to 220VAC input
- > Negative Temperature Coefficient
- > Less components in application

Applications

- > AC lighting panels, display signage, decorative lighting, channel lettering
- > Automotive applications: side mirror display, lamp post, display light and backlight
- > Switch maintain current control
- > Household or industrial LED bulb, fluorescent lamps, mining lamps.

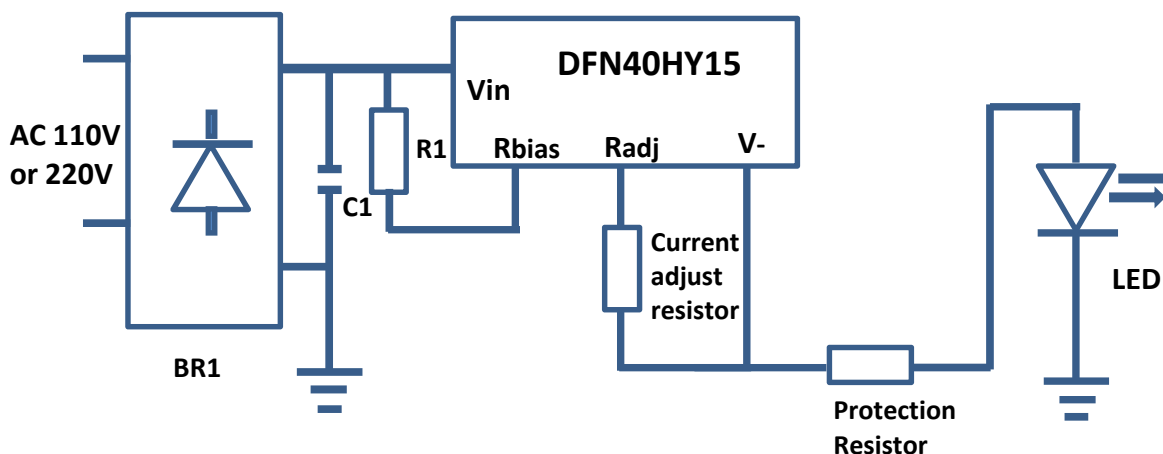
General Description

The DFN40HY15 is a linear constant current regulator IC. It is a simple, economical and robust device designed to provide a cost-effective solution for regulating current in LEDs, and able to reserve constant current feature within a large voltage range, suitable for 110V or 220V power supply LED bulb, LED tube, Ultra thin lamp.

When DFN40HY15 is used as a multi-segment LED driver, the PFC can reach 0.98, efficiency exceed 0.93.

The IC is equipped with negative temperature coefficient protection and packaged in a 8-Lead 3mm x 3mm DFN package.

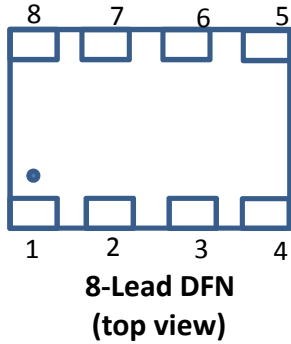
Typical Application Circuit



Ordering Information

Part Number	Package Option
DFN40HY15	8-Lead DFN (3.3 x 3.3 mm)

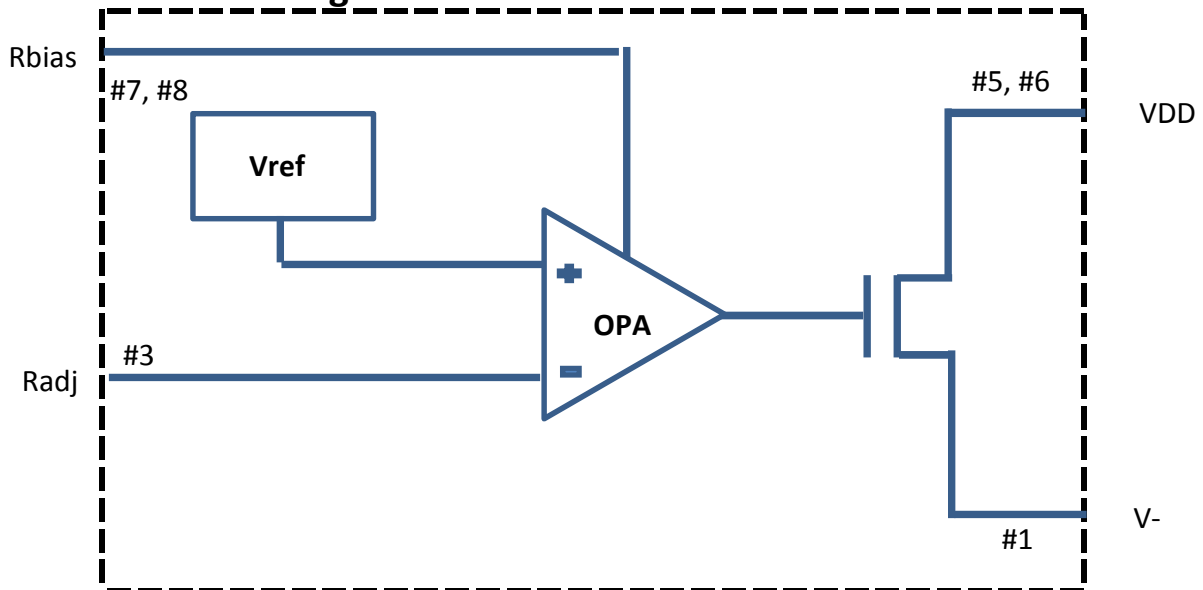
Pin Configuration



Pin Description

Pin	Name	Description	Pin	Name	Description
1	V-	Constant current Output	5	V+	VDD
2	NC	NC	6	V+	VDD
3	Radj	Input Current adjust	7	Rbias	Start voltage adjust
4	NC	NC	8	Rbias	Start voltage adjust

Functional Block Diagram



Absolute Maximum Ratings

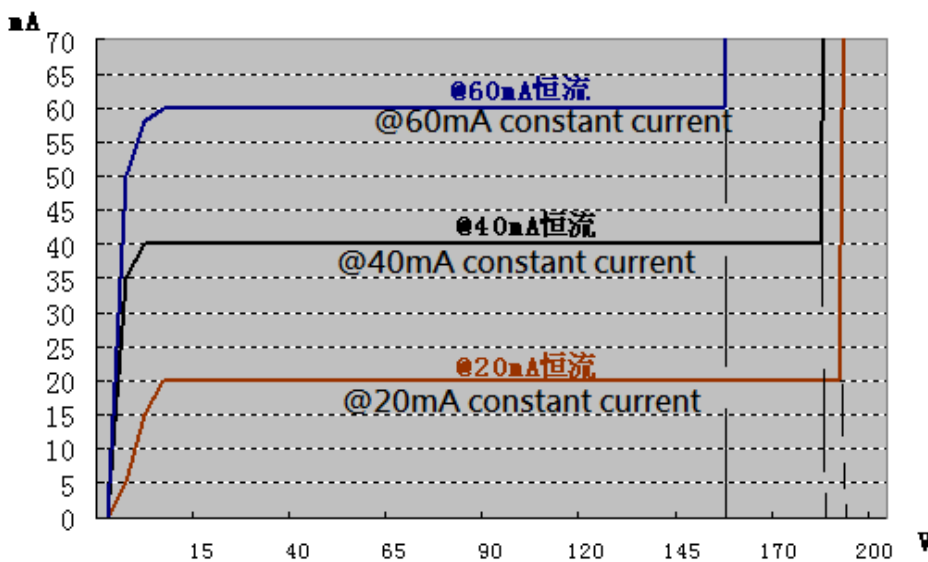
Parameter	Symbol	Value	Unit
Anode-Cathode voltage	Vak	150	V
Reverse voltage	VR	500	mV
Operating junction and storage temperature range	Tj, Tstg	-55 to +175	°C
ESD rating: Human body mode	ESD	10000	V
Package thermal resistance	Rthj	80	°C/W

Electric Characteristics (TA=25°C unless otherwise noted)

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Steady state current (Regulable)	Ireg.(SS)	31	40	49	mA
Pulse current (Regulable)	Ireg(P)	33.3	44	54	mA
Capacitance @Vak=7.5V, f=1MHz	C		17		pF
Capacitance @Vak=0V, f=1MHz	C		70		pF
Voltage overhead	Va	5	6.5	8	V
Turn-on time	Ton		20		ns

Typical Performance Characteristics

V-I Curve at Constant Current



Vak, Anode-Cathode Voltage (V)

Rating and Characteristics Curves

FIG. 1 – Steady State Current($I_{reg(SS)}$) vs Anode-Cathode Voltage (V_{ak})

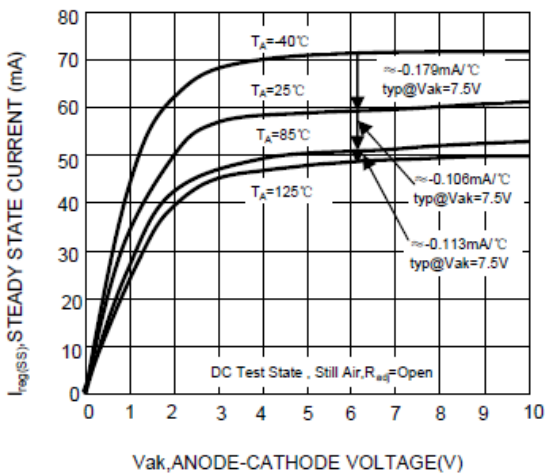


FIG. 2 – Pulse Current($I_{reg(p)}$) vs Anode-Cathode Voltage (V_{ak})

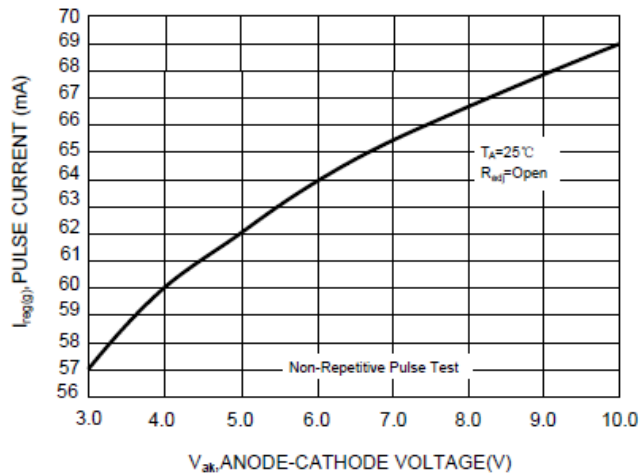


FIG. 3 – Steady State Current vs Pulse Current Testing

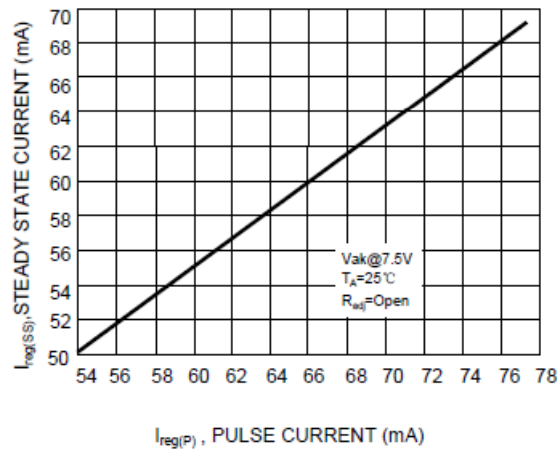
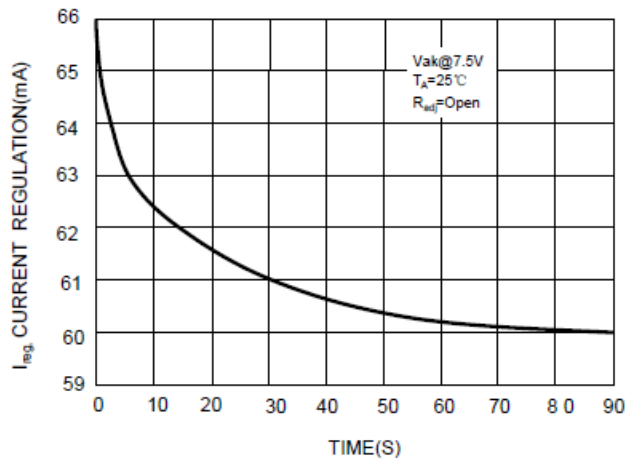
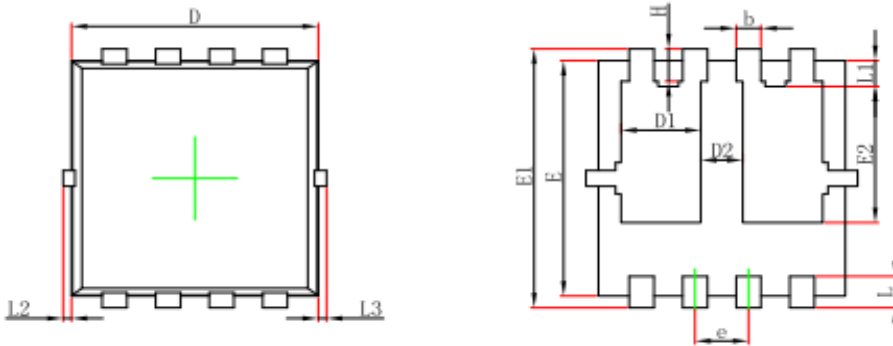


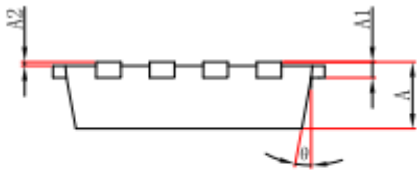
FIG. 4 – Current Regulation vs Time



8-Lead DFN Package Outline



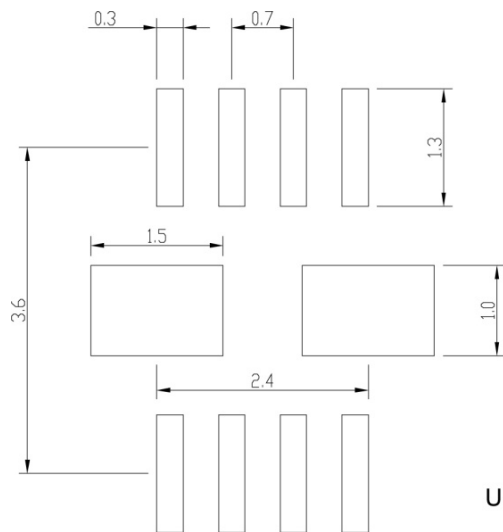
Top View
[顶视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF		0.006 REF	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
Q	9°	13°	9°	13°

Soldering footprint



Unit:mm