

80V 0.5A Switching Current Buck PFM LED Constant Current Driver**XL8003****Features**

- n Wide 24V to 80V Input Voltage Range
- n 0.2V current sense voltage reference.
- n Directly drive 3~8 series 1W LED.
- n Excellent line and load regulation.
- n High efficiency up to 96%.
- n Internal optimize power HV-MOSFET.
- n Built in thermal shutdown function.
- n Built in UVLO function.
- n Built in current limiting function.
- n Built in LED open & short protection.
- n Built in soft-start circuit.
- n Available in SOIC-8 package.

General Description

The XL8003 is a monolithic high voltage switching regulator with PFM that is specifically designed to operate from a 24V~80V DC supply.

The XL8003 is a high efficiency LED driver switching regulator. The LED string is driven at DC constant current rather than constant voltage, thus providing constant current output and enhanced reliability.

Applications

- n EBIKE LED Lighting
- n LED Lighting & LED LAMP
- n General purpose lighting



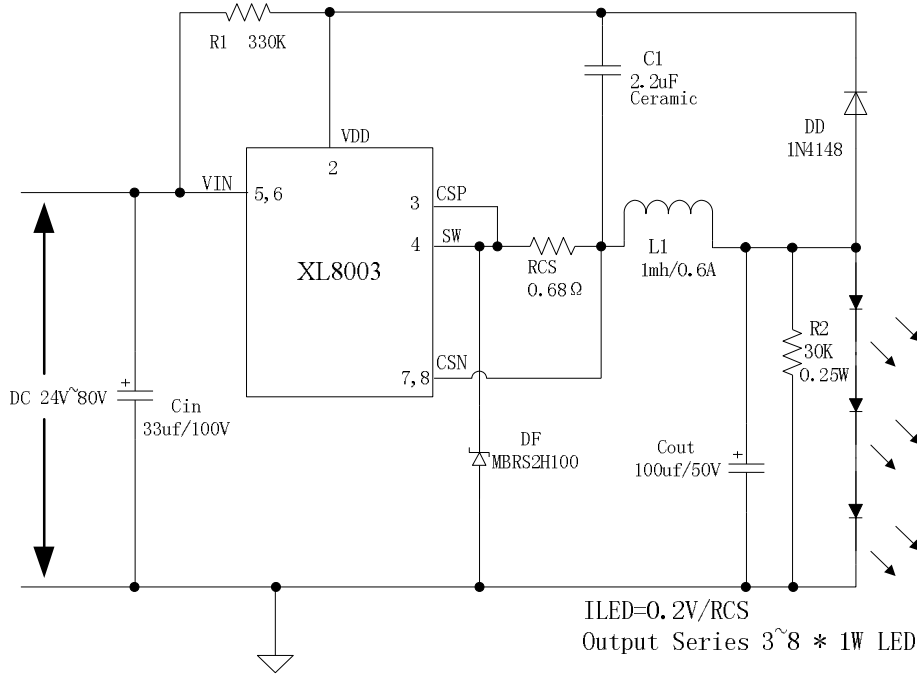
SOIC-8

Figure1. Package Type of XL8003

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Typical application circuit



- [1] Input DC 24V~80V.
- [2] Output Constant Current Drive Series 3~8 * 1W LED.
- [3] Support Output LED Open & Short Protection.

Figure4. XL8003 Typical Application (3W~8W LED lamp)

Ordering Information

Order Information	Marking ID	Package Type	Packing Type Supplied As
XL8003E1	XL8003E1	SOIC-8	2500 Units on Tape & Reel

XLSEMI Pb-free products, as designated with “E1” suffix in the par number, are RoHS compliant.

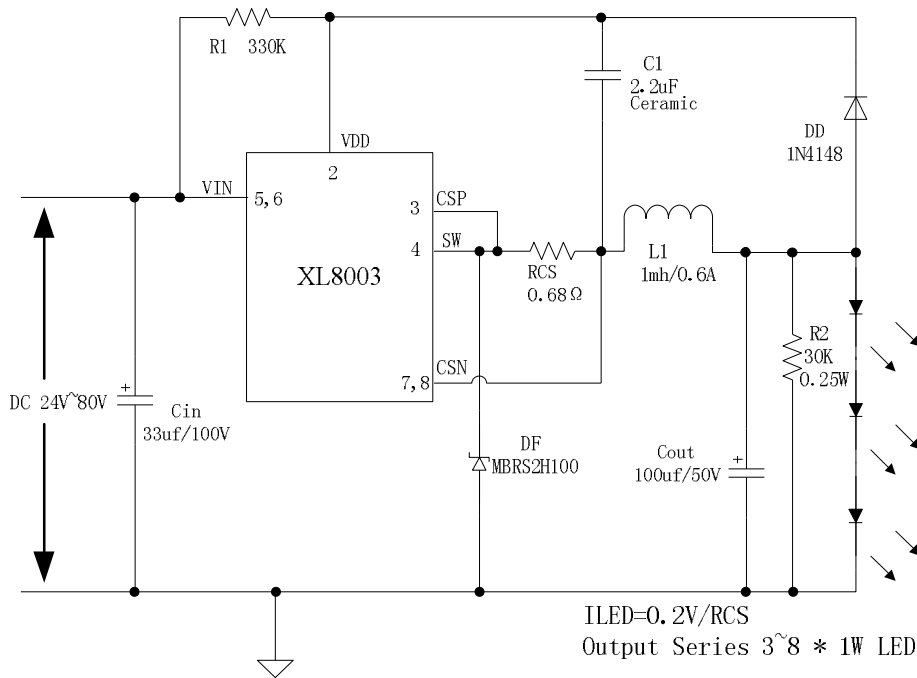
Absolute Maximum Ratings Note1!

Parameter	Symbol	Value	Unit
Input Voltage	V _{in}	-0.3 to 90	V
Power Dissipation	P _D	Internally limited	mW
Thermal Resistance (SOP-8L) (Junction to Ambient, No Heatsink, Free Air)	R _{JA}	100	°C/W
Operating Junction Temperature	T _J	-40 to 125	°C
Storage Temperature	T _{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 sec)	T _{LEAD}	260	°C
ESD (HBM)		3000	V

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[1] Typical application circuit (3W ~ 8W)



- [1] Input DC 24V~80V.
- [2] ~~Output Constant Current Driver Series~~ 3~8 * 1W LED.
- [3] Support Output LED Open & Short Protection.

Figure5. XL8003 System Application (3W ~ 8W)

The figure5 system parameters as following:

VIN=36V DC						
1W LED Series	Vin(V)	Iin(mA)	Vout(V)	Iout(mA)	Fosc(KHz)	Efficiency(%)
3	35.97	89	9.60	297	44.9	89.06
4	35.98	114	12.79	294	50.0	91.68
5	35.98	140	16.07	291	53.7	92.84
6	35.97	164	19.22	289	53.0	94.16
7	35.96	188	22.41	287	49.1	95.14
8	35.96	212	25.68	285	41.8	96.00
VIN=48V DC						
1W LED Series	Vin(V)	Iin(mA)	Vout(V)	Iout(mA)	Fosc(KHz)	Efficiency(%)
3	47.99	68	9.62	300	47.6	88.44
4	47.99	87	12.79	298	56.2	91.29
5	47.99	107	16.07	295	62.6	92.32
6	47.98	125	19.21	292	66.6	93.53
7	47.98	144	22.41	290	68.1	94.06
8	47.98	162	25.67	287	67.2	94.78

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VIN=60V DC						
1W LED Series	Vin(V)	Iin(mA)	Vout(V)	Iout(mA)	Fosc(KHz)	Effiency(%)
3	59.99	55	9.62	303	48.4	88.34
4	59.99	71	12.78	301	58.4	90.32
5	59.98	87	16.06	298	66.8	91.71
6	59.99	102	19.21	295	73.1	92.61
7	59.98	117	22.40	292	77.6	93.20
8	59.98	132	25.66	290	80.2	93.99
VIN=72V DC						
1W LED Series	Vin(V)	Iin(mA)	Vout(V)	Iout(mA)	Fosc(KHz)	Effiency(%)
3	71.97	47	9.62	306	48.7	87.03
4	71.97	60	12.80	304	59.5	90.11
5	71.97	74	16.08	301	69.0	90.88
6	71.96	87	19.23	298	76.4	91.53
7	71.96	100	22.42	296	82.7	92.22
8	71.95	113	25.68	293	87.4	92.55

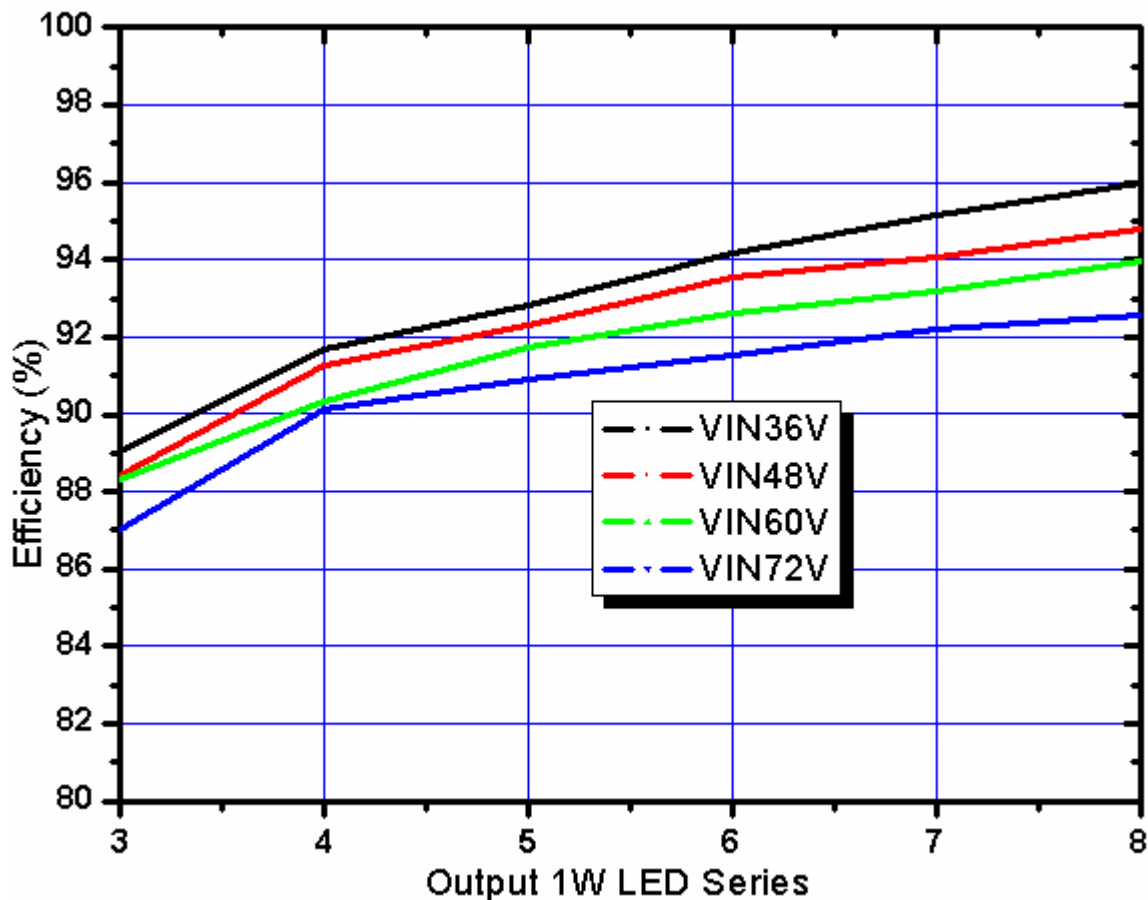


Figure6. XL8003 System efficiency curve

