

Linear LED constant current drive MEL71XX-N

General Description

MEL71XX-N is a low standby current and low dropout voltage LED constant current drive. The output current range from 100 to 400 mA, stepping adjustment, each step 10 mA, and can through multiple chip parallel way to extend the LED current driving ability.

It has a soft start inside, temperature protection and low voltage protection.

Features

- Output current: 100 mA ~ 400mA (each step 10mA)
 - Highly Accuracy: $\pm 5\%$
 - Voltage range: 2.7V~5.5V
 - Dropout Voltage: 150mV@350mA
 - Standby Current: 140uA
 - Thermal Shutdown Protection: 140°C
 - Under-voltage protection
- MEL71XX-N: $V_{th}=2.5V$
MEL71XXB-N: $V_{th}=1.5V$

Typical Applications

- LED lighting drive
- LED flashlight, LED lamp, LED miner's lamp, LED lamp

Package

- 3-pin SOT89-3、SOT23-3

Typical Application Circuit

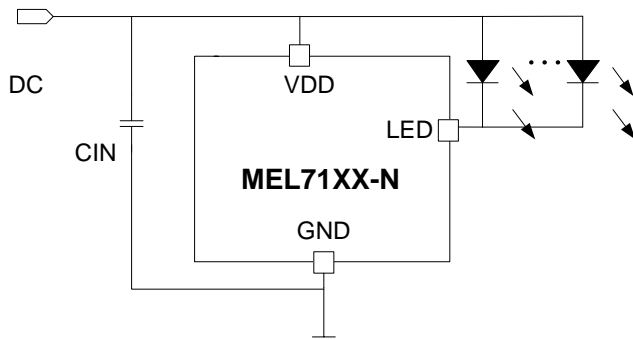


Fig.1 Separate application

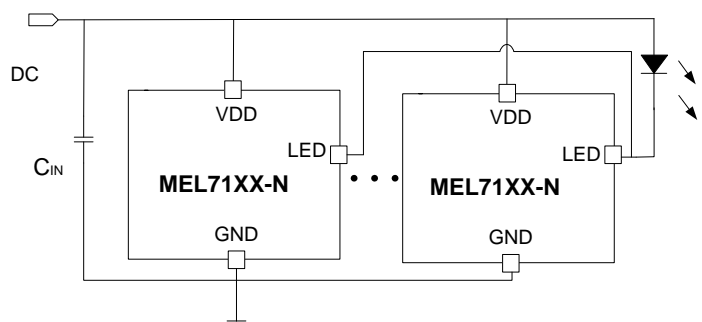
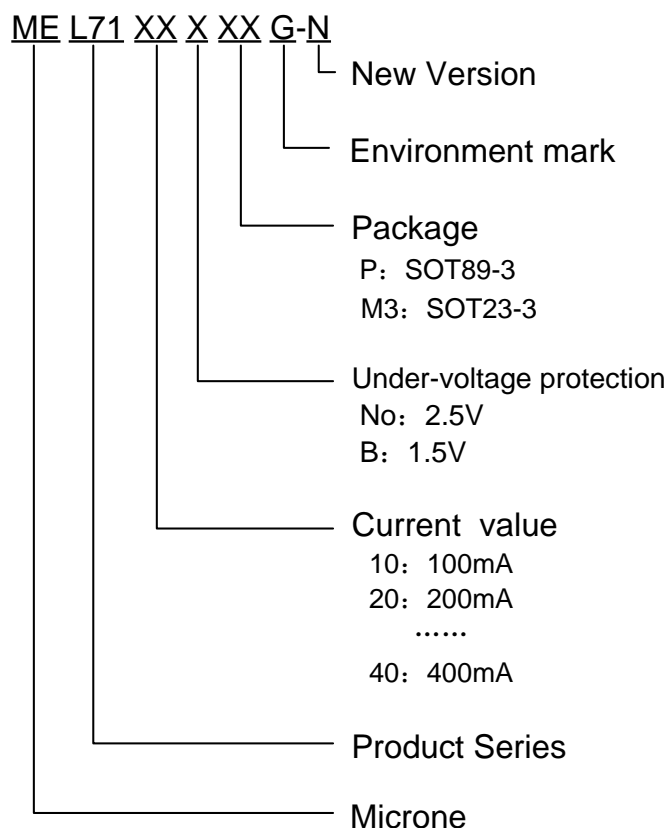


Fig.2 Parallel extended drive current application

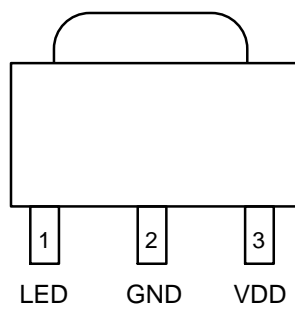
Selection Guide



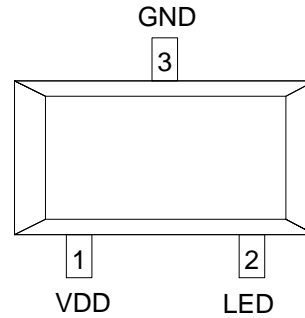
product series	product description
MEL7112PG-N	$I_{OUT} = 120\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7114PG-N	$I_{OUT} = 140\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7118PG-N	$I_{OUT} = 180\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7122PG-N	$I_{OUT} = 220\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7126PG-N	$I_{OUT} = 260\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7128PG-N	$I_{OUT} = 280\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7130PG-N	$I_{OUT} = 300\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7132PG-N	$I_{OUT} = 320\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7135PG-N	$I_{OUT} = 350\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7138PG-N	$I_{OUT} = 380\text{mA}$; $V_{th} = 2.5\text{V}$; Package: SOT89-3
MEL7138BM3G-N	$I_{OUT} = 380\text{mA}$; $V_{th} = 1.5\text{V}$; Package: SOT23-3
MEL7140BM3G-N	$I_{OUT} = 400\text{mA}$; $V_{th} = 1.5\text{V}$; Package: SOT23-3

NOTE: If you need other current and package, please contact our sales staff.

Pin Configuration



SOT89-3



SOT23-3

Pin Assignment

PIN Number (SOT89-3)	PIN Number (SOT23-3)	Pin Name	Functions
1	2	LED	LED foot , Connect the LED cathode
2	3	GND	Power Ground Connect power negative
3	1	VDD	The power supply voltage input ,Connect power anode

Block Diagram

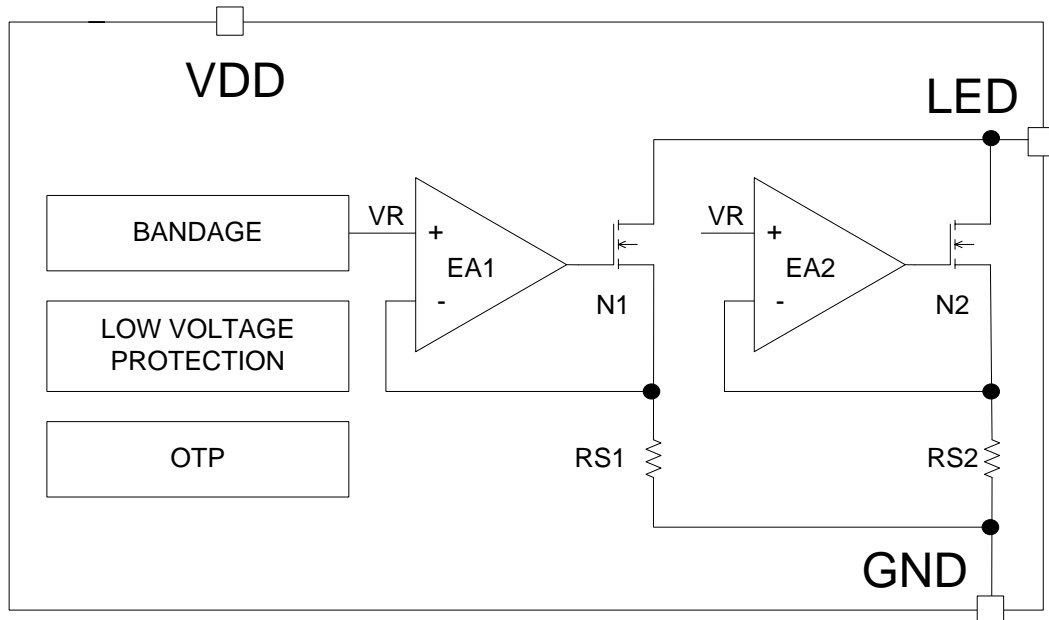


Fig.3

Absolute Maximum Ratings

Parameter		Symbol	Ratings	Units
supply voltage		VDD	-0.3~6.0	V
LED voltage		VLED	-0.3~6.0	V
LED Current		I _{LED-MAX}	500	mA
Operating Ambient Temperature Range		T _{opr}	-40~+85	°C
Storage Temperature Range		T _{stg}	-55~+150	°C
Maximum junction temperature		T _J	-40~+150	°C
Continuous Total Power Dissipation	SOT89-3	P _D	1.25	W
	SOT23-3		0.54	
Thermal resistance(Junction to air)	SOT89-3	θ _{JA}	100	°C/W
	SOT23-3		230	
Lead Temperature		T _{solder}	260°C, 10s	

Note: the absolute maximum rating is the biggest physical damage limit value of the product can withstand, in any case, please do not exceed the rating.

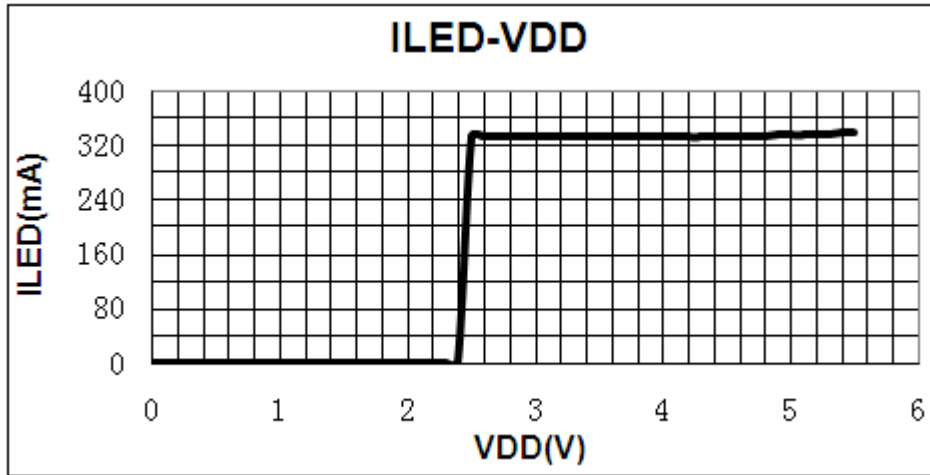
Electrical Characteristics

(TA = 25 °C, VDD = 3.7V, unless otherwise noted)

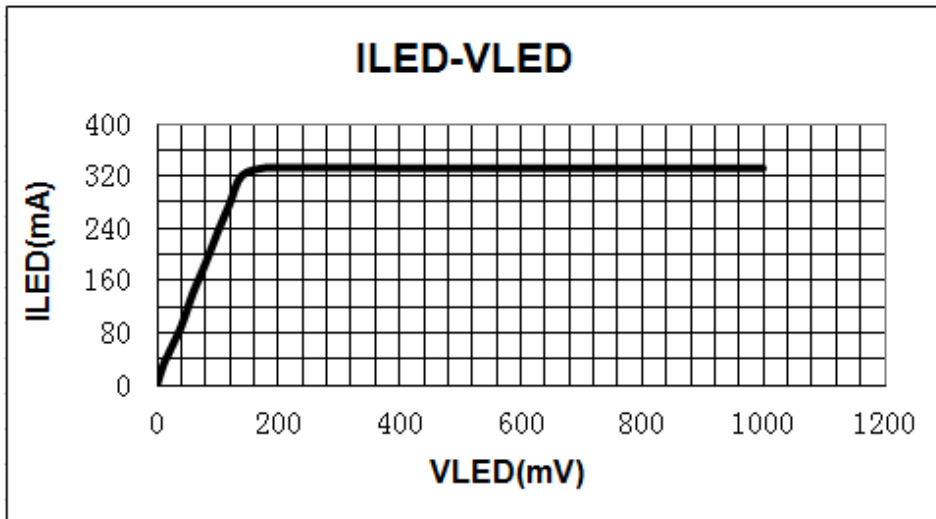
Parameter		Symbol	Conditions	Min.	Typ.	Max.	Units
Output Current		I _{LED}	VDD=3.7	100		400	mA
Supply Voltage		VDD	I _{LED} =100~400mA	2.7		5.5	V
Output Current Accuracy		ΔI _{LED} /I _{LED}	I _{LED} =100~400mA	-5		5	%
Load Regulation		LoadReg	VLED=0.2V ~ 1.3V, VDD=3.7V			5	mA/V
Line Regulation		LineReg	VDD=2.7V ~ 5V, VLED=0.5V			5	mA/V
Dropout Voltage		VDO	I _{LED} =100~400mA		150	200	mV
Supply Current		ISS	VDD=3.7V		140	200	uA
Low voltage protection threshold	MEL71XX-N	V _{th}		2.3	2.5	2.7	V
	MEL71XXB-N	V _{th}		1.1	1.5	1.8	V
Over temperature Protection		T _{limit}			140		°C

Type Characteristics (Ta=25°C, unless otherwise noted)

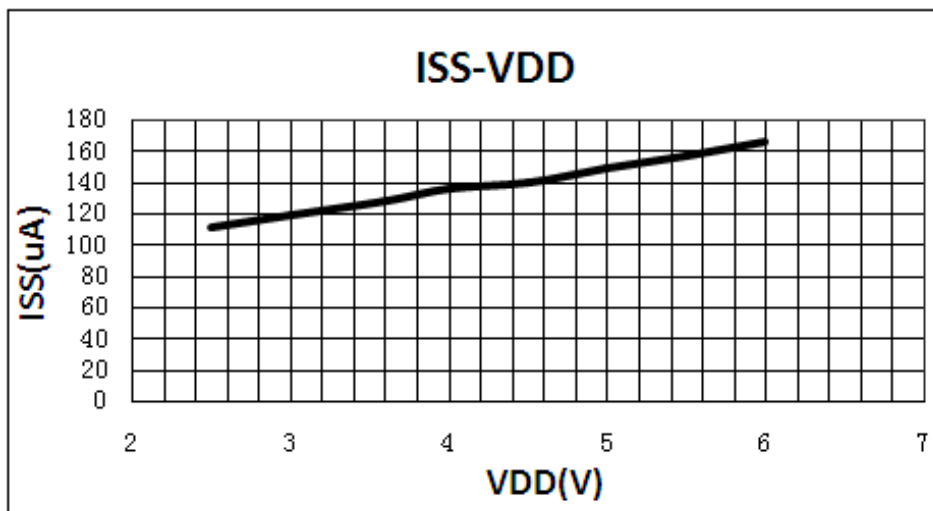
1、 Output Current VS. Input Voltage



2、 Output Current VS. LED Voltage

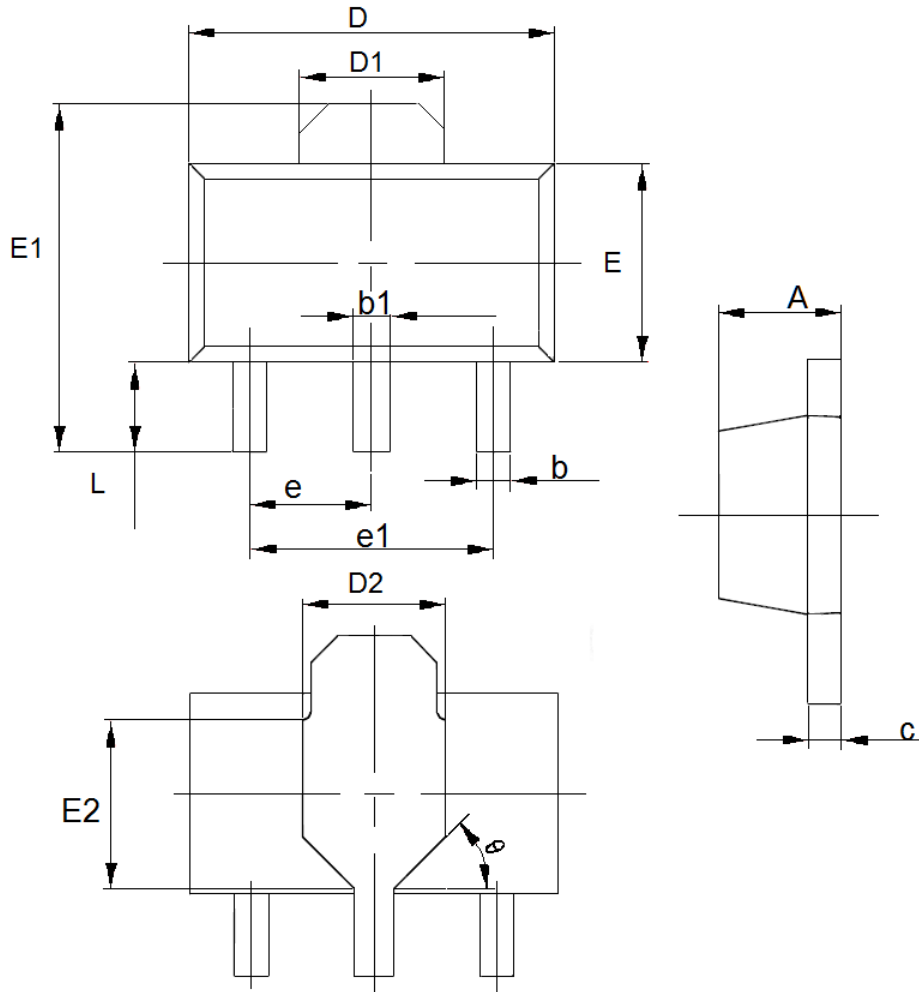


3、 Supply Current VS. Input Voltage



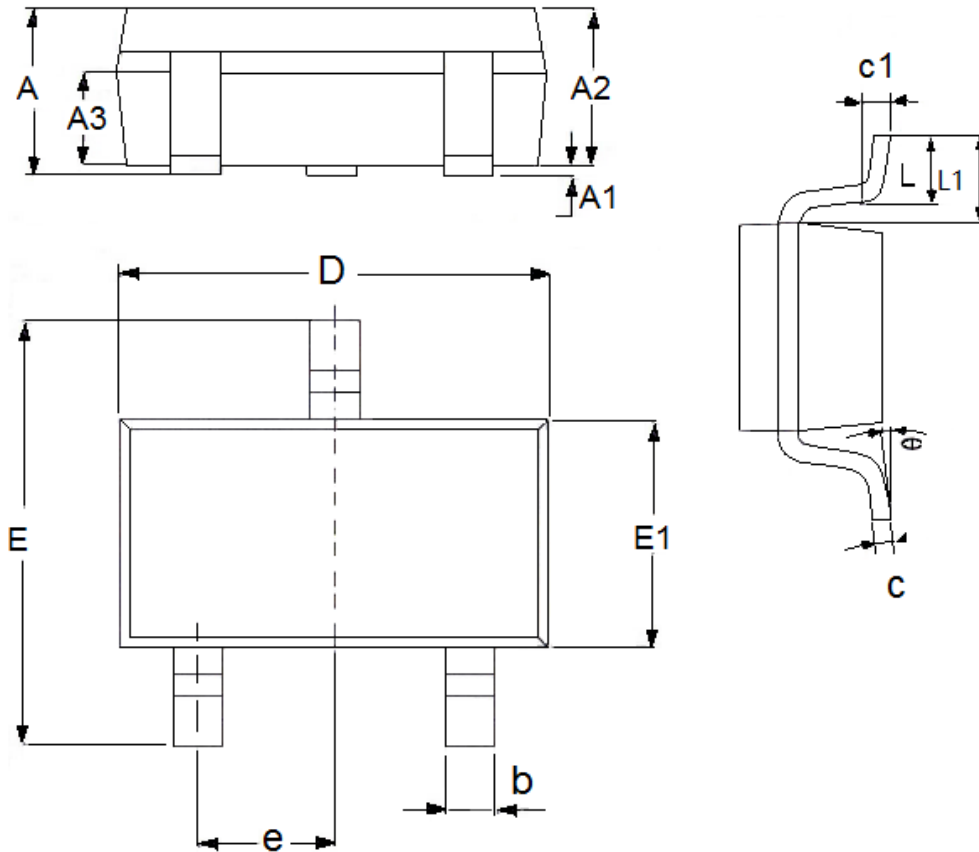
Packaging Information

- Packaging Type: SOT89-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.0177
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

● Packaging Type: SOT23-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

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