

## General Description

The EC4302 is a low dropout current regulator rated for 350mA/250mA constant sink current. The constant sink current will ensure that the same amount of power is applied to the power LED and consequently maintain the uniform brightness throughout the possible voltage variations from the power source. The IC also features low quiescent current and is typically at 212uA. This will minimize the power consumption from the IC itself. The IC has EN function built-in for applications where EN function or Dim function is needed. Please contact us directly if EN function is required. EC4302 is presently available in low profile SOT-89-3L and TO252 packages.

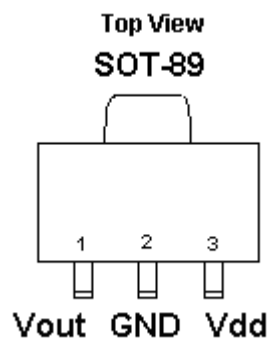
## Features

- No external component required.
- Constant 350mA/250mA constant sink current.
- Output short / open circuit protection.
- Low dropout voltage.
- Low quiescent current at 212uA typical.
- Build-in thermal protection.
- Supply voltage range 2.7V ~ 6V.
- 2KV HBM ESD protection.
- Advanced CMOS process.
- SOT89 and TO252 package.
- EN function is available upon request.

## Applications

- Power LED Driver.
- LED Flashlight Torch.
- LED Miner's Lamp.
- Lighting.

## Pin Configurations



**Ordering Information**

**EC4302 NX XX X**

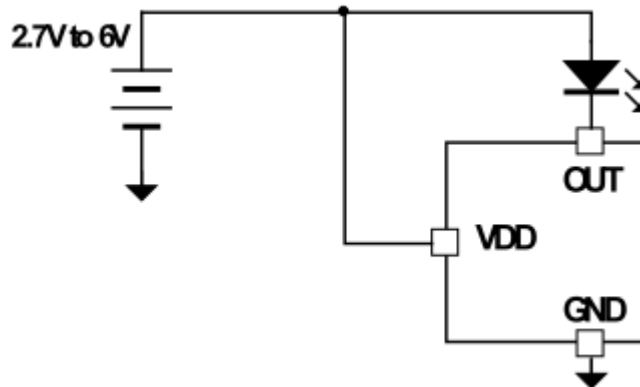
A : 350mA  
B : 250mA

B6 : SOT89-3

R : Tape & Reel

Part Number	Package	Marking	Marking Information
EC4302NAB6R	SOT89-3	EC4302 LLLLLA	LLLLL : Lot No
EC4302NBB6R		EC4302 LLLLLB	
EC4302NAA4R	TO252	EC4302 LLLLLA	
EC4302NBA4R		EC4302 LLLLLB	

**Applications Diagram**



## Absolute Maximum Ratings<sup>(1)</sup>

Parameter	Symbol	Maximum	Units
Input Voltage	V <sub>DD</sub>	-0.3~7V	V
Output Voltage	V <sub>OUT</sub>	-0.3 to 4.6	V
Output Sink Current	I <sub>OUT</sub>	400	mA
Thermal Resistance, Junction-to-Ambient (SOT89)	Θ <sub>JA</sub>	180	°C/W
Lead Temperature (Soldering, 5 sec.)		260	°C
Junction Temperature	T <sub>J</sub>	0 to +150	°C
Storage Temperature	T <sub>S</sub>	-40 to +150	°C

## Electrical Characteristics

V<sub>DD</sub> = 3.7V; No Load; T<sub>J</sub> = 25°C; unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
Output Sink Current	I <sub>SINK</sub>	V <sub>OUT</sub> =0.4V	4302NA	300	350	400	mA
			4302NB	200	250	300	
Load Regulation		V <sub>OUT</sub> =0.2V to 3V		22		mA / V	
Line Regulation		V <sub>DD</sub> =3V to 6V, V <sub>OUT</sub> =0.2V		1.88		mA / V	
Output Dropout Voltage <sup>(2)</sup>	V <sub>OUTL</sub>			150		mV	
Supply Current Consumption	I <sub>DD</sub>			212		μA	

**Note 1:** Exceeding the absolute maximum rating may damage the device.

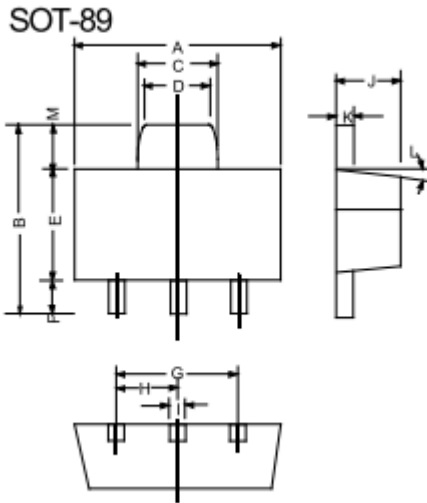
**Note 2:** Output dropout voltage: 90% x I<sub>OUT</sub> @ V<sub>OUT</sub>=200mV

## Thermal Considerations

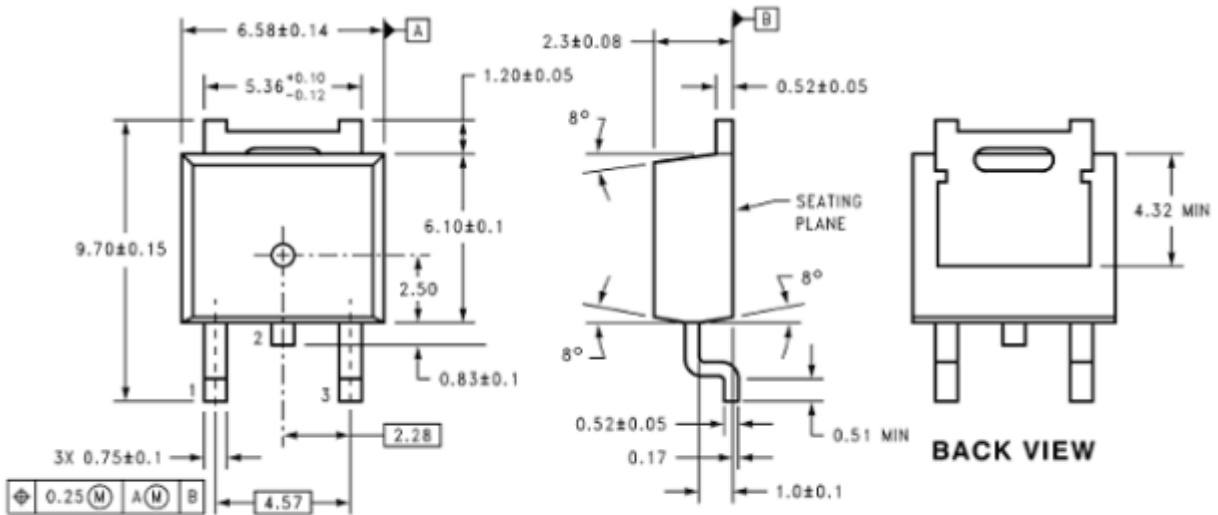
It is important that the thermal limit of the package is not exceeded. The EC4302 has built-in thermal protection. When the thermal limit is exceeded, the IC will enter protection, and V<sub>OUT</sub> will be pulled to ground. The power dissipation for a given application can be calculated as following:

The power dissipation (P<sub>D</sub>) is P<sub>D</sub> = I<sub>OUT</sub> \* [V<sub>IN</sub> – V<sub>OUT</sub>]

The thermal limit of the package is then limited to P<sub>D(MAX)</sub> = [T<sub>J</sub> – T<sub>A</sub>]/Θ<sub>JA</sub> where T<sub>J</sub> is the junction temperature, T<sub>A</sub> is the ambient temperature, and Θ<sub>JA</sub> is around 180°C/W for EC4302. EC4302 is designed to enter thermal protection at 150°C. For example, if T<sub>A</sub> is 25°C then the maximum P<sub>D</sub> is limited to about 0.7W. In other words, if I<sub>OUT(MAX)</sub> = 350mA, then [V<sub>IN</sub> – V<sub>OUT</sub>] cannot exceed 2V.

**350mA/250mA Advanced Current Regulator**
**Outline Drawing for SOT-89-3L**


DIM <sup>N</sup>	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.173	0.181	4.400	4.600
B	0.159	0.167	4.050	4.250
C	0.067	0.075	1.700	1.900
D	0.051	0.059	1.300	1.500
E	0.094	0.102	2.400	2.600
F	0.035	0.047	0.890	1.200
G	0.118REF		3.00REF	
H	0.059REF		1.50REF	
I	0.016	0.020	0.400	0.520
J	0.055	0.063	1.400	1.600
K	0.014	0.016	0.350	0.410
L	10°TYP		10°TYP	
M	0.028REF		0.70REF	

**Outline Drawing for TO252**


**DIMENSIONS ARE IN MILLIMETERS**  
3-Lead TO-252 Package