# ETC4362 Series
# Negative Voltage Regulators

## Description

The ETC4362 series is a group of negative voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS fabrication and laser trimming technologies.

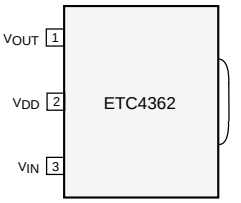
The ETC4362 consists of a high-precision voltage reference, an error correction circuit, and an output driver.

Standard output voltage options include -3.0V and -5.0V (±2% accuracy).

Available in the SOT-89 package.

## Pin Configuration

Top View




SOT-89

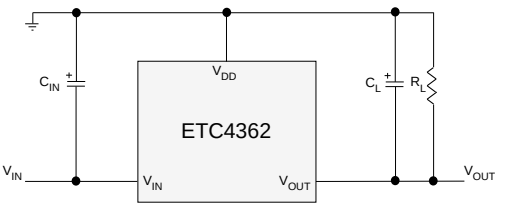
## Features

- Maximum Output Current: 100mA
- Standard Output Voltages: -3.0V, -5.0V
- High Accuracy: ±2%
- Low Power Consumption: 3.0μA typ.
- Line Regulation: 0.1%/V typ.
- Small Input-Output Voltage Differential: 0.12V typ. at 50mA, 0.38V typ. at 100mA ($V_{OUT}$ = -5.0V )
- Package: SOT-89

## Typical Applications

- GAsFET Bias Supply
- Battery Powered Equipment
- Reference Voltage Sources
- Cameras, Video Recorders
- Power Failure Detection
- PDAs

## Typical Operating Circuit



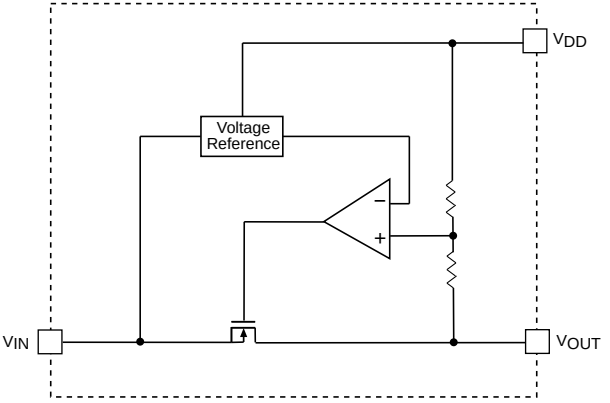

## Ordering Information

| Part | Voltage | Package |
|---|---|---|
| ETC4362C-30P | 3.0V | SOT-89 |
| ETC4362C-50P | 5.0V | SOT-89 |

## Pin Functions

| PIN NUMBER | PIN NAME | FUNCTION |
|---|---|---|
| 1 | VOUT | Regulated Output Voltage |
| 3 | VIN | Supply Voltage Input |
| 2 | VDD | Ground |

## Block Diagram



## Absolute Maximum Ratings

Input Voltage, $V_{IN}$ . . . . . -12V
Output Current, $I_{OUT}$ . . . . . 200mA
Output Voltage, $V_{OUT}$ . . ($V_{IN}$ - 0.3V) to ($V_{DD}$ + 0.3V)

Power Dissipation, SOT-23 . . . . . 150mW
Power Dissipation, SOT-89 . . . . . 500mW
Operating Temperature Range . . . . . -30°C to 80°C
Storage Temperature Range . . . . . .-40°C to 125°C

Stresses above those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent device failure. Functionality at or above these limits is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability. Operating ranges define those limits between which the functionality of the device is guaranteed.

## Electrical Characteristics - ETC4362C-50P

$V_{OUT}$= -5.0V, $T_A$ = 25ºC, unless otherwise noted.

| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$ | $V_{IN}$ = -7.0V, $I_{OUT}$ = 20mA | -4.90 | -5.00 | -5.10 | V |
| Maximum Output Current | $I_{OUT}$max | $V_{IN}$ = -7.0V, $V_{OUT} \leq -4.5V$ | 100 | | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$ = -7.0V, 1mA ≤ $I_{OUT}$ ≤ 50mA | | 40 | 80 | mV |
| Input-Output Voltage Differential | $V_{DIF}$ | $I_{OUT}$ = 50mA<br>$I_{OUT}$ = 100mA | | 120<br>380 | 300<br>600 | mV<br>mV |
| Supply Current | $I_{SS}$ | $V_{IN}$ = -7.0V | | 3.0 | 7.0 | µA |
| Line Regulation | Note 1 | $I_{OUT}$ = 20mA, -10.0V ≤ $V_{IN} \leq -7.0V$ | | 0.1 | 0.3 | %/V |
| Input Voltage | $V_{IN}$ | | -10.0 | | | V |

Note 1: Defined as $\Delta V_{OUT} / ( \Delta V_{IN} \times V_{OUT})$

## ETC4362C-30P

$V_{OUT}$= -3.0V, $T_A$ = 25ºC, unless otherwise noted.

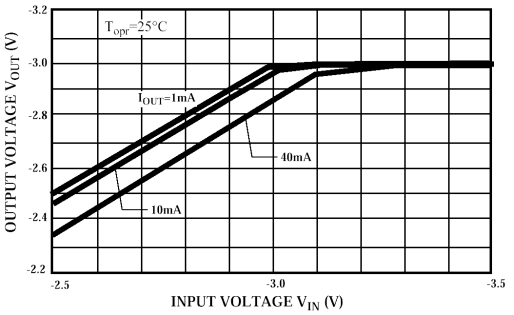
| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$ | $V_{IN}$ = -5.0V, $I_{OUT}$ = 20mA | -2.92 | -3.00 | -3.06 | V |
| Maximum Output Current | $I_{OUT}$max | $V_{IN}$ = -5.0V, $V_{OUT} \leq -2.7V$ | 100 | | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$ = -5.0V, 1mA ≤ $I_{OUT}$ ≤ 40mA | | 40 | 80 | mV |
| Input-Output Voltage Differential | $V_{DIF}$ | $I_{OUT}$ = 40mA<br>$I_{OUT}$ = 80mA | | 120<br>380 | 300<br>600 | mV<br>mV |
| Supply Current | $I_{SS}$ | $V_{IN}$ = -5.0V | | 2.5 | 6.0 | µA |
| Line Regulation | Note 1 | $I_{OUT}$ = 20mA, -10.0V ≤ $V_{IN} \leq -5.0V$ | | 0.1 | 0.3 | %/V |
| Input Voltage | $V_{IN}$ | | -10.0 | | | V |

Note 1: Defined as $\Delta V_{OUT} / ( \Delta V_{IN} \times V_{OUT})$

# ETC4362 Series
# Negative Voltage Regulators

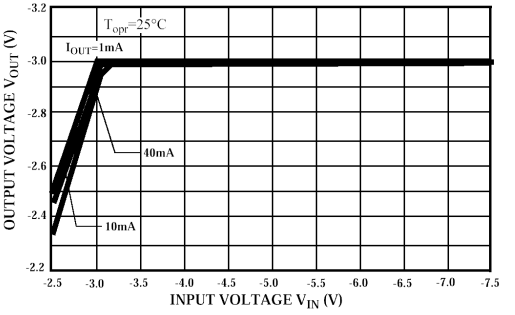
## ETC4362C-30P

OUTPUT VOLTAGE vs INPUT VOLTAGE



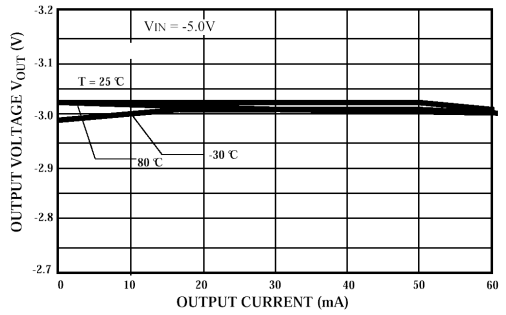

## ETC4362C-30P

OUTPUT VOLTAGE vs INPUT VOLTAGE



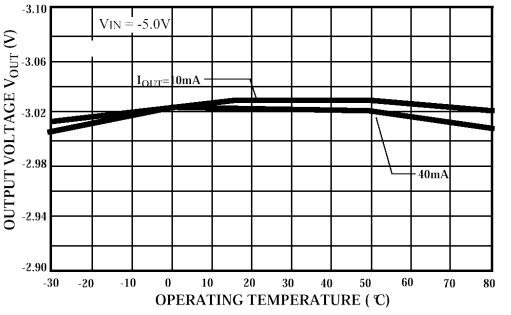

## ETC4362C-30P

OUTPUT VOLTAGE vs OUTPUT CURRENT



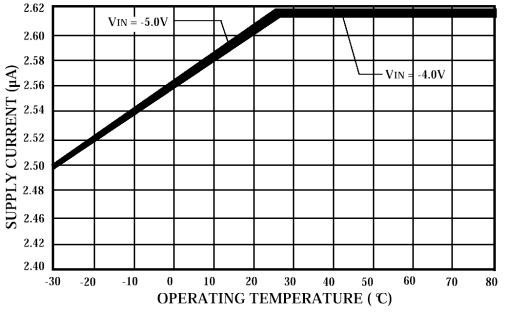

## ETC4362C-30P

OUTPUT VOLTAGE vs TEMPERATURE



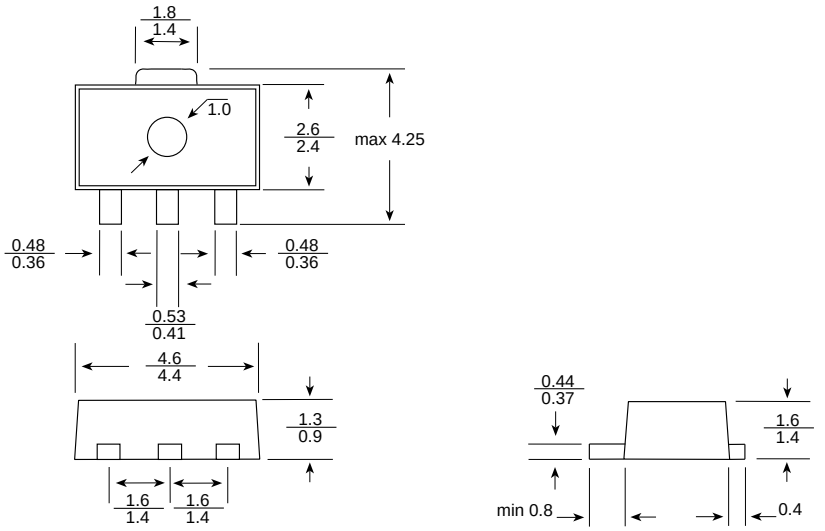

## ETC4362C-30P

SUPPLY CURRENT VERSUS TEMPERATURE



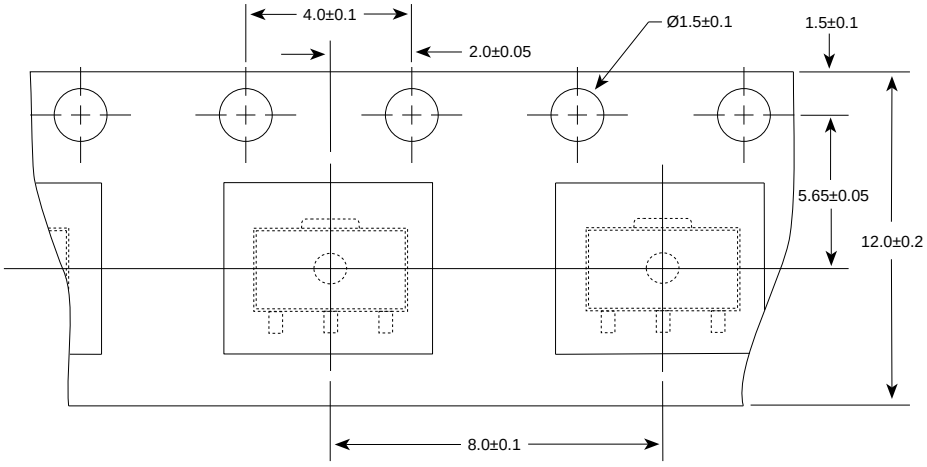
## Packaging Information

### P Package, SOT-89




Dimensions are in mm.

### SOT-89 Tape and Reel Information




Dimensions are in mm.