## Circuit Overview

The RZ7889 is a bidirectional DC motor driver for toys, automatic valves, electromagnetic door locks and similar applications. Two logic inputs control forward rotation, reverse rotation and braking. It offers high noise immunity, very low standby current, low output resistance and built-in diodes to suppress inductive load reverse-current spikes.

## Features

- Very low standby current: less than 2uA.
- Wide operating voltage: 3.0V to 15V.
- Emergency stop function
- Overtemperature protection
- Overcurrent limiting and short-circuit protection
- Package: SOP8

## Pin Functions

| Pin | Name | Function |
|---|---|---|
| 1 | BI | Reverse input |
| 2 | FI | Forward input |
| 3 | GND | Ground |
| 4 | Vcc | Power supply |
| 5, 6 | FO | Forward output |
| 7, 8 | BO | Reverse output |

## Input Truth Table

| Pin 2: Forward input | Pin 1: Reverse input | Pins 5,6: Forward | Pins 7,8: Reverse |
|---|---|---|---|
| H | L | H | L |
| L | H | L | H |
| H | H | L | L |
| L | L | Open | Open |

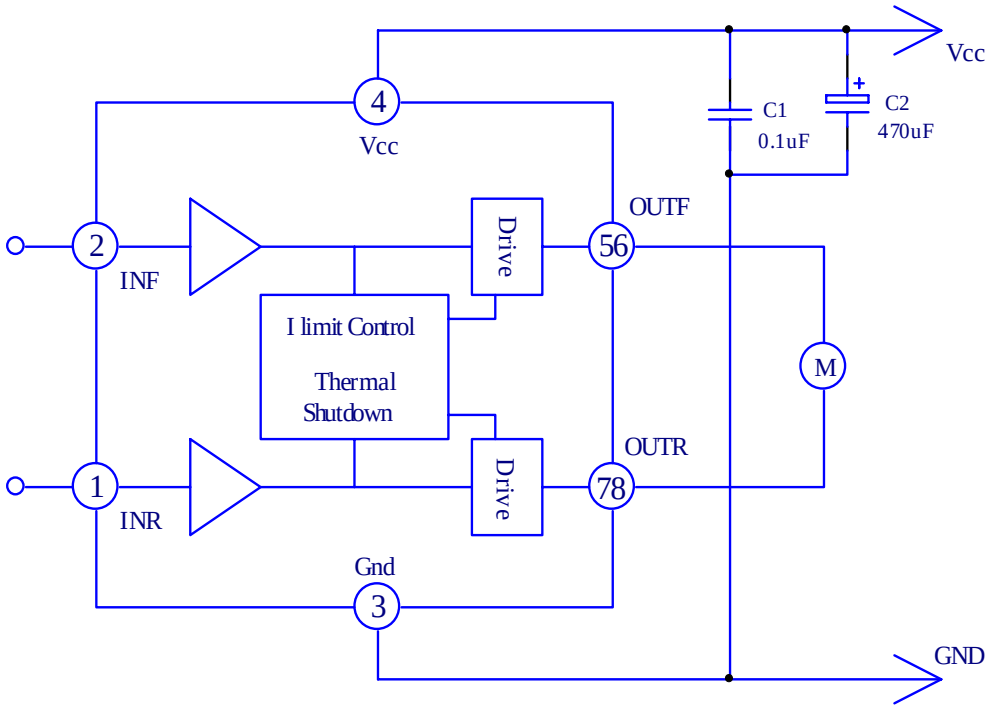
Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Supply voltage | Vcc | 18 | V |
| Output current | Iout | 5 | A |
| Operating temp. | Top | -25~+85 | ℃ |
| Storage temp. | Tstg | -55~+150 | ℃ |

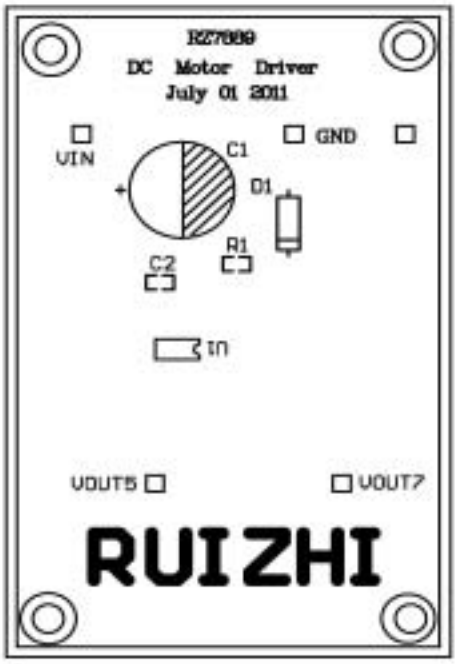
Electrical Characteristics (unless noted: Vcc = 6V, Ta = 25 C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Operating voltage | $V_{OPR}$ | | 3.0 | -- | 15 | V |
| Standby current | Is | Vcc = 9V Vi = 0 | | | 2 | uA |
| Quiescent current | Icc | Vcc = 6V V1 = 3V<br>No load | 2 | 4 | 7 | mA |
| Output high voltage | $VH_{OUT}$ | Vcc = 6V Io =3A | 5.5 | 5.7 | 5.9 | V |
| Output low voltage | $VL_{OUT}$ | Vcc = 6V Io = 3A | 0.05 | 0.12 | 0.3 | V |
| Input high voltage | ViH | | 2.2 | 3.5 | 6 | V |
| Input low voltage | ViL | | | 0.5 | 0.7 | V |
| Input current (2V) | Ii | Vcc = 6V Vi = 2V | | 70 | 100 | uA |
| Input current (3V) | Ii | Vcc = 6V Vi = 3V | | 100 | 150 | uA |
| Output current | Iout | SOP8: pins 5-8 need PCB copper area for heat dissipation. | | 3 | 4.2 | A |
| Thermal shutdown temp. | Totp | | | 130 | | ℃ |

Application Circuit



Application Test Board

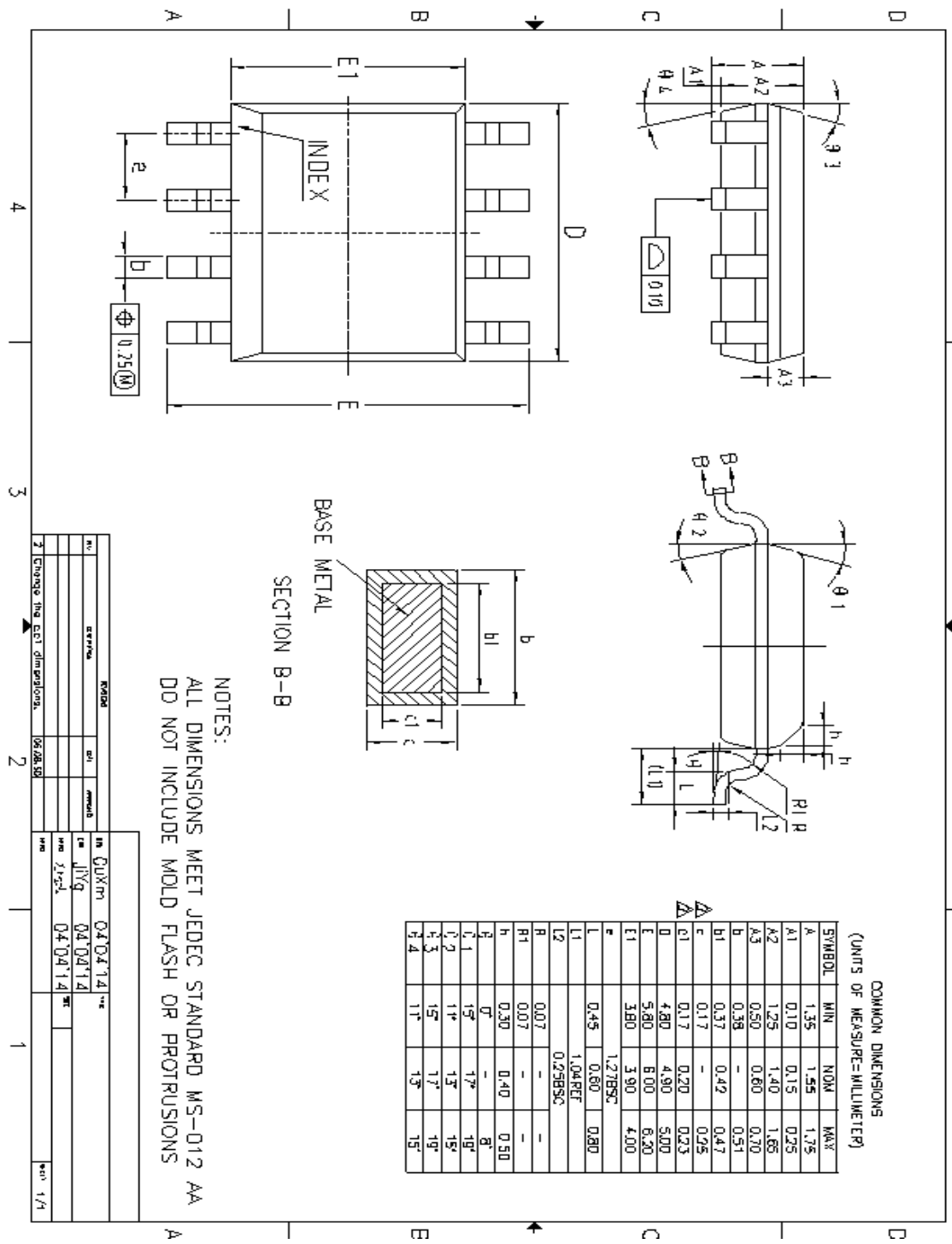







Package Outline Drawing

**Package Type SOP8**




| SYMBOL | MIN | NOM | MAX |
|---|---|---|---|
| A | 1.35 | 1.55 | 1.75 |
| A1 | 0.10 | 0.15 | 0.25 |
| A2 | 1.25 | 1.40 | 1.65 |
| A3 | 0.50 | 0.60 | 0.70 |
| b | 0.38 | - | 0.51 |
| b1 | 0.37 | 0.42 | 0.47 |
| c | 0.17 | - | 0.25 |
| c1 | 0.17 | 0.20 | 0.23 |
| D | 4.80 | 4.90 | 5.00 |
| E | 5.80 | 6.00 | 6.20 |
| E1 | 3.80 | 3.90 | 4.00 |
| e | | 1.27BSC | |
| L | 0.45 | 0.60 | 0.80 |
| L1 | | 1.04REF | |
| L2 | | 0.25BSC | |
| R | 0.07 | - | - |
| R1 | 0.07 | - | - |
| h | 0.30 | 0.40 | 0.50 |
| θ | 0° | - | 8° |
| θ1 | 15° | 17° | 19° |
| θ2 | 11° | 13° | 15° |
| θ3 | 15° | 17° | 19° |
| θ4 | 11° | 13° | 15° |