

### MTD1120

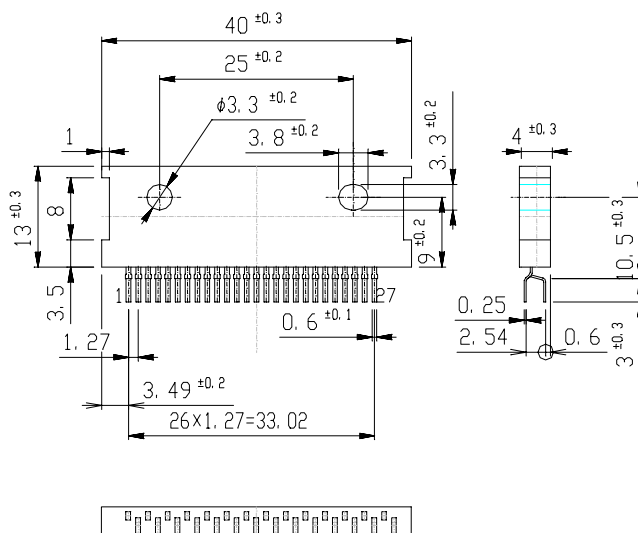
#### FEATURES

- Constant-current chopping function  
(Off time fixed, self-oscillation)
- 4-phase input  
(with inhibit for simultaneously turn ON)
- Built-in flywheel diodes

#### OUTLINE DIMENSIONS

Case : ZIP-27

(Unit : mm)



#### RATINGS

##### ● Absolute Maximum Ratings Ta=25°C

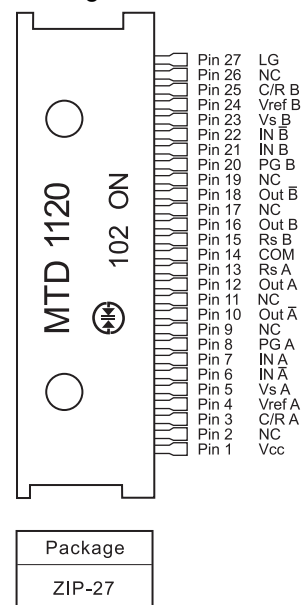
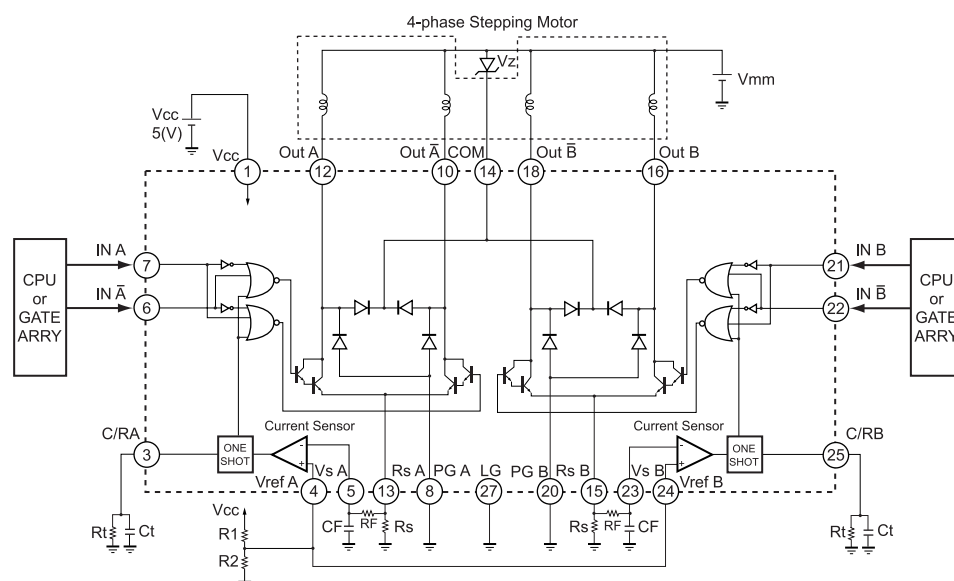
| Item                    | Symbol         | Ratings     | Unit |
|-------------------------|----------------|-------------|------|
| Output Voltage          | $V_{CEO(SUS)}$ | 80          | V    |
| Output Current          | $I_O$          | 1.2         | A    |
| Logic Supply Voltage    | $V_{CC}$       | 0~7         | V    |
| Logic Input Voltage     | $V_{IN}$       | 0~ $V_{CC}$ | V    |
| Total Power Dissipation | $P_T$          | 5           | W    |
| Junction Temperature    | $T_j$          | 150         | °C   |
| Storage Temperature     | $T_{stg}$      | -40~150     | °C   |

##### ● Electrical Characteristics Ta=25°C

| Item                          | Symbol        | Test Conditions           | min. | typ. | max.     | Unit    |
|-------------------------------|---------------|---------------------------|------|------|----------|---------|
| Output Saturation Voltage     | $V_{CE(sat)}$ | $I_O=0.9A$                |      | 1.1  | 1.4      | V       |
| Output Leakage Current        | $I_{CER}$     | $V_{CER}=80V$             |      |      | 10       | $\mu A$ |
| Logic Supply Current          | $I_{CC}$      | $V_{CC} = 5V$             |      | 30   | 70       | mA      |
| Input High Voltage            | $V_{INH}$     | $V_{CC} = 5V$             | 2.7  |      | $V_{CC}$ | V       |
| Input Low Voltage             | $V_{INL}$     | $V_{CC} = 5V$             | GND  |      | 1.0      | V       |
| Logic High Input Current      | $I_{INH}$     | $V_{CC} = 5V, V_{IN}=5V$  |      |      | 10       | $\mu A$ |
| Logic Low Input Current       | $I_{INL}$     | $V_{CC} = 5V, V_{IN}=0V$  |      | -10  | -50      | $\mu A$ |
| Reference Input Current       | $I_{ref}$     | $V_{CC} = 5V, V_{ref}=0V$ |      | -1   | -50      | $\mu A$ |
| Input Current(Current Sensor) | $I_{sense}$   | $V_{CC}=5V, V_S=0V$       |      | -1   | -50      | $\mu A$ |
| Maximum Sensing Voltage       | $V_S(max.)$   | $V_{CC}=5V$               |      |      | 1.0      | V       |

## ● Equivalent Circuit · Basic Application Circuit

## ● Pin Assignment



## ● True Table

| IN A or B | IN $\bar{A}$ or $\bar{B}$ | Out A or B | Out $\bar{A}$ or $\bar{B}$ |
|-----------|---------------------------|------------|----------------------------|
| L         | L                         | OFF        | OFF                        |
| L         | H                         | OFF        | ON                         |
| H         | L                         | ON         | OFF                        |
| H         | H                         | OFF        | OFF                        |

## ● Recommended Parts Value

| Symbol | Recommended Value            | Unit       |
|--------|------------------------------|------------|
| Rs     | 0.68                         | $\Omega$   |
| RF     | 1                            | k $\Omega$ |
| CF     | 3300                         | pF         |
| Rt     | 8.2                          | k $\Omega$ |
| Ct     | 3300                         | pF         |
| Vz     | $V_{mm} \times 1.2 \sim 1.5$ | V          |
| R1+R2  | <10                          | k $\Omega$ |

## ● Setting of Output Current and Fixed Off Time

Fig.1 shows constant current chopping wave form.

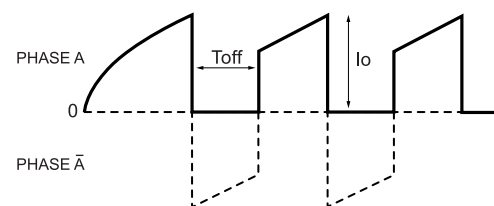
○ Output Current setting

$$I_o = \frac{R_2}{R_1 + R_2} \cdot \frac{V_{cc}}{R_s}$$

○ Fixed Off Time Setting

$$T_{off} = 0.69 \cdot C_t \cdot R_t$$

Fig.1 Constant current wave form (Motor current)



## ● Recommended Operating Conditions (Ta=25°C)

| Item                   | Symbol    | min. | typ. | max. | Unit |
|------------------------|-----------|------|------|------|------|
| Motor Supply Voltage   | $V_{mm}$  |      |      | 32   | V    |
| Output Voltage         | $V_{OUT}$ |      |      | 70   | V    |
| Output Current         | $I_o$     |      |      | 0.9  | A    |
| Output Emitter Voltage | $V_E$     |      |      | 1.0  | V    |
| Logic Supply Voltage   | $V_{cc}$  | 4.75 |      | 5.25 | V    |
| Chopping Frequency     | fchop     |      | 20   | 27   | kHz  |
| Operating Temperature  | Top       | -25  |      | 120  | °C   |