

MTD1110

FEATURES

- Constant-current chopping function (Off time fixed, self-oscillation)
- 4-phase input (with inhibit for simultaneously turn ON)
- An ENABLE function is provided
- Built-in overheating protection (Alarm + shutdown)
- Built-in flywheel diodes

RATINGS

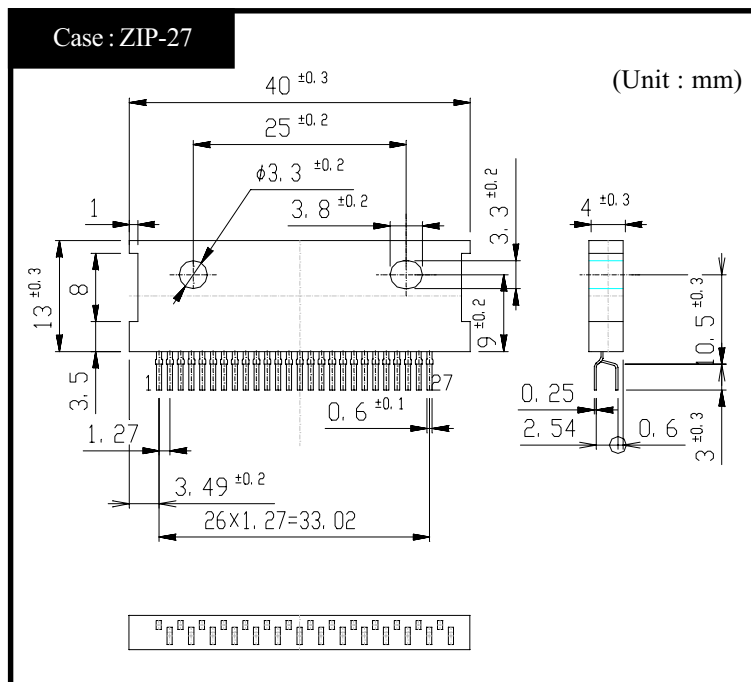
● Absolute Maximum Ratings (If Not Specified Ta=25°C)

Item	Symbol	Ratings	Unit
Output Voltage	$V_{CEO(SUS)}$	80	V
Output Current	I_O	2	A
Logic Supply Voltage	V_{CC}	0 to 7	V
Logic Input Voltage	V_{IN}	0 to V_{CC}	V
Total Power Dissipation	P_T	5	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-40 to 150	°C

● Electrical Characteristics (Ta=25°C)

Item	Symbol	Test Conditions	min.	typ.	max.	Unit
Output Saturation Voltage	$V_{CE(sat)}$	$I_O=1.5A$		1.1	1.4	V
Output Leakage Current	I_{CER}	$V_{CER}=80V$			10	μA
Logic Supply Current(Standby)	$I_{CC(OFF)}$	$V_{CC}=5V, V_{ENA}="H"$		20	40	mA
Logic Supply Current(All Circuit ON)	$I_{CC(ON)}$	$V_{CC}=5V, V_{ENA}="L"$		40	60	mA
Input High Voltage	V_{INH}	$V_{CC}=5V$	2.7		V_{CC}	V
	V_{ENAH}	$V_{CC}=5V$	2.7		V_{CC}	
Input Low Voltage	V_{INL}	$V_{CC}=5V$	GND		1.0	V
	V_{ENAL}	$V_{CC}=5V$	GND		1.0	
Logic High Input Current	I_{INH}	$V_{CC}=5V, V_{IN}=5V$			10	μA
	I_{ENAH}	$V_{CC}=5V, V_{ENA}=5V$			10	
Logic Low Input Current	I_{INL}	$V_{CC}=5V, V_{IN}=0V$		-10	-50	μA
	I_{ENAL}	$V_{CC}=5V, V_{ENA}=0V$		-10	-100	
Reference Input Current	I_{ref}	$V_{CC}=5V, V_{ref}=0V$		-1	-50	μA
Input Current(Current Sensor)	I_{sense}	$V_{CC}=5V, V_S=0V$		-1	-50	
Maximum Sensing Voltage	$V_S(max.)$	$V_{CC}=5V$			1.0	V
Thermal Alarm Cutoff Current	I_{ralm}	$V_{CC}=5V, V_{alm}=5V$			10	μA
Thermal Alarm Output Current	I_{alm}	$V_{CC}=5V, V_{alm}=0.5V$			2	mA
Thermal Alarm Temperature	T_{alm}			125		°C
Thermal Shutdown Temperature	T_{TSD}			150		°C

OUTLINE DIMENSIONS



● 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

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

● True Table

ENA	IN A or B	IN \bar{A} or \bar{B}	Out A or B	Out \bar{A} or \bar{B}
L	L	L	OFF	OFF
L	L	H	OFF	ON
L	H	L	ON	OFF
L	H	H	OFF	OFF
H	×	×	OFF	OFF

× : don't care

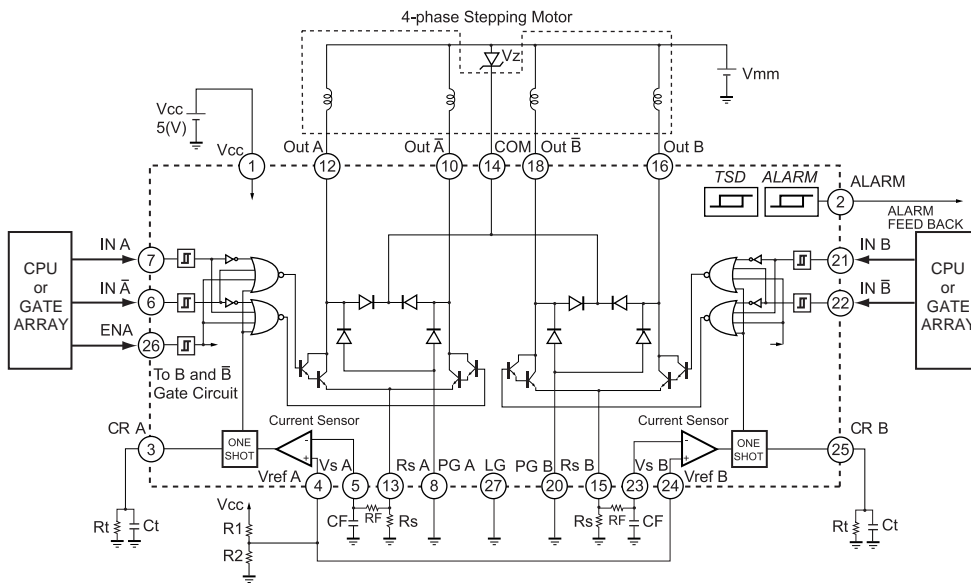
● Recommended Parts Value

Symbol	Recommended Value	Unit
R_s	0.68	Ω
RF	1	k Ω
CF	3300	pF
R_t	8.2	k Ω
C_t	3300	pF
V_z	$V_{mm} \times 1.2$ to 1.5	V
R_1+R_2	<10	k Ω

● 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			1.5	A
Output Emitter Voltage	V_E			1.0	V
Logic Supply Voltage	V_{CC}	4.75		5.25	V
Chopping Frequency	f_{chop}		20	27	kHz
Operating Temperature	T_{op}	-25		120	°C

Equivalent Circuit / Basic Application Circuit



Pin Assignment

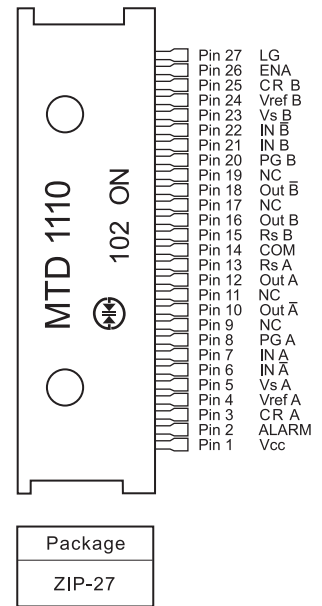


Fig.1 Constant current wave form (Motor current)

