SHINDENGEN

Stepping Motor Driver ICs

MTD Series

MTD1120F

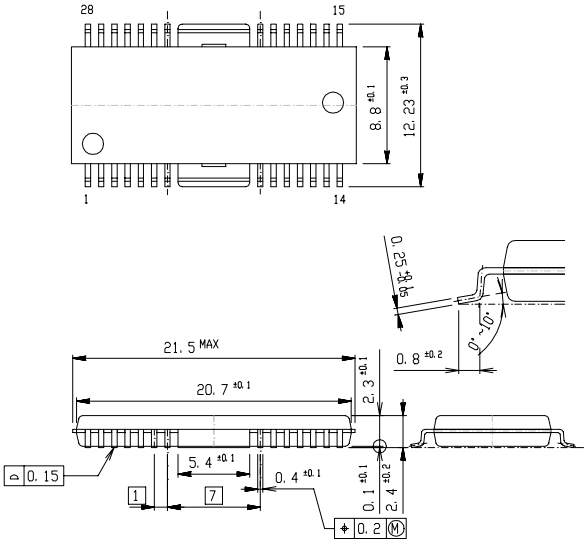
FEATURES

- ●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 : HSOP-28

(Unit : mm)



RATINGS

●Absolute Maximum Ratings (Ta=25℃)

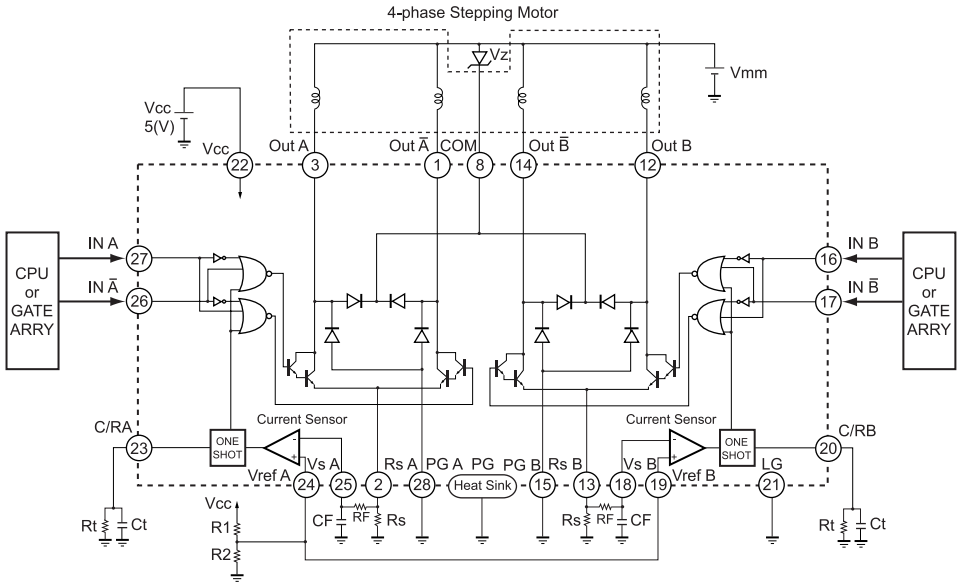
Item	Symbol	Ratings	Unit
Output Voltage	$V_{CEO(SUS)}$	80	V
Output Current	I_O	1.2	A
Logic Supply Voltage	V_{CC}	0～7	V
Logic Input Voltage	V_{IN}	0～V_{CC}	V
Total Power Dissipation	P_T	3	W
Junction Temperature	Tj	150	℃
Storage Temperature	Tstg	−40～150	℃

●Electrical Characteristics (Ta=25℃)

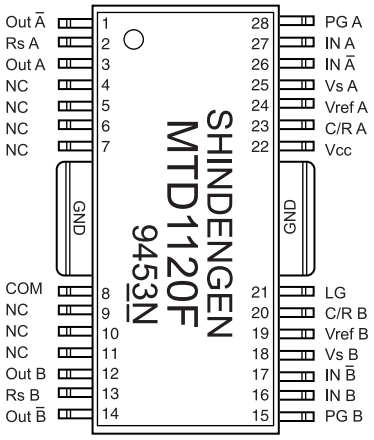
Item	Symbol	Test Conditions	min.	typ.	max.	Unit
Output Saturation Voltage	V_{CE}(sat)	Io=0.9A		1.1	1.4	V
Output Leakage Current	I_{CER}	V_{CER}=80V			10	μA
Logic Supply Current	I_{CC}	V_{CC} = 5V		30	70	mA
Input High Voltage	V_{INH}	V_{CC} = 5V	2.7		Vcc	V
Input Low Voltage	V_{INL}	V_{CC} = 5V	GND		1.0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

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● Equivalent Circuit・Basic Application Circuit



● Pin Assignment



Package
HSOP-28

● True Table

IN A or B	IN Ā or B̄	Out A or B	Out Ā or B̄
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	Ω
RF	1	kΩ
CF	3300	pF
Rt	8.2	kΩ
Ct	3300	pF
Vz	Vmm×1.2～1.5	V
R1+R2	<10	kΩ

● Setting of Output Current and Fixed Off Time

Fig.1 shows constant current chopping wave form.

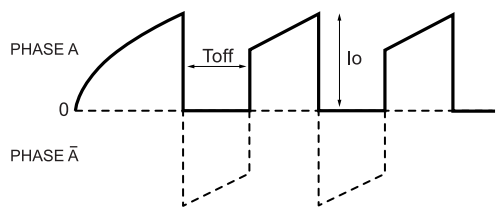
○Output Current setting

$$Io = \frac{R2}{R1+R2} \cdot \frac{Vcc}{Rs}$$

○Fixed Off Time Setting

Toff=0.69・Ct・Rt

Fig.1 Constant current wave form (Motor current)



● Recommended Operating Conditions （Ta=25℃）

Item	Symbol	min.	typ.	max.	Unit
Motor Supply Voltage	Vmm			32	V
Output Voltage	VOUT			70	V
Output Current	Io			0.5	A
Output Emitter Voltage	VE			1.0	V
Logic Supply Voltage	Vcc	4.75		5.25	V
Chopping Frequency	fchop		20	27	kHz
Operating Temperature	Top	−25		120	℃

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