MTD2018G

Dual Full-bridge Microstepping PWM Motor Driver

Features

- ●Dual full bridge for a bipolar stepper motor driver
- ●Load supply voltage 35V , Output current 0.8A
- ●Constant current control (Fixed OFF time PWM control)
- ●2-bit selectable current level (Full step/Half step/Quarter step)
- ●Logic supply 3.3V only
- ●Stand-by function
- ●Built-in flywheel and flyback diodes
- ●Under voltage lock out function
- ●Thermal shutdown with hysteresis
- ●Surface mount package with heat sink(HSOP24)



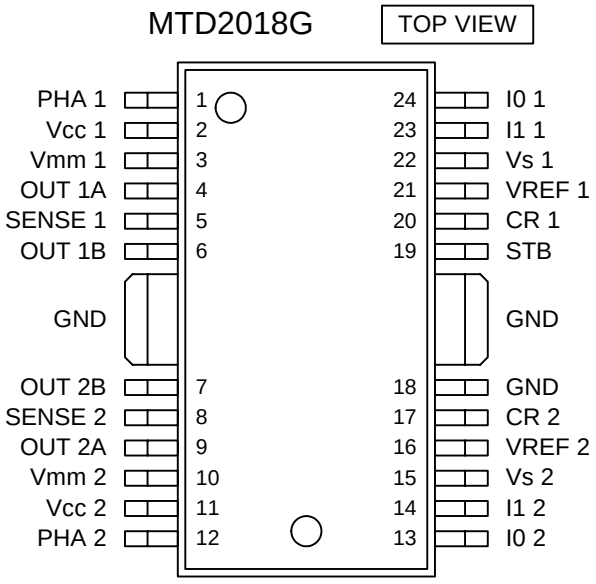
HSOP24

■Absolute maxmum ratings / Ta=25°C

Parameter	Symbol	Rating	Unit
Output voltage	Vmm	35	V
Output current	I_{OUT}	0.8	A
Logic supply	Vcc	0～3.6	V
Logic input	V_{LOGIC}	0～Vcc	V
Power dissipation	P_D *1	2.1	W
Storage temperature range	Tstg	-40～150	°C
Maximum Junction temperature	Tj	150	°C

*1 : 50.8×50.8×1mm³ Glass Epoxy Board(FR4),200mm² Cupper Pattern

■Pin Assignment



■Truth table

PHA 1 or 2	OUT A	OUT B
L	L	H
H	H	L

I0	I1	Output current ratio[%]	Vr[V] (at VREF=3.3V)
L	L	100	0.330±5%
H	L	67	0.221±8%
L	H	33	0.109±10%
H	H	0	-

STB	Mode
L	stand by
H	active

■Electrical Characteristics

Ta=25°C, Vcc=3.3V unless otherwise specified

item	symbol	condition	MIN	TYP	MAX	unit
Logic supply current (2circuit ON)	Icc(ON)			50.0	62.0	mA
Logic supply current (2circuit OFF)	Icc(OFF)	I0=I1=H		17.0	21.0	mA
Load supply current (2circuit OFF)	Imm(OFF)	Vmm=35V,I0=I1=H		5.0	7.4	mA
Logic supply current(STB)	Icc(STB)	STB=L		3.5	4.7	mA
Load supply current(STB)	Imm(STB)	Vmm=35V,STB=L			10.0	μA
PHA"H"input voltage	VPHA H		2.3	-	Vcc	V
PHA"L"input voltage	VPHA L		GND	-	0.6	V
PHA"H"input current	IPHA H	VPHA =3.3V	-	-	10.0	μA
PHA"L"input current	IPHA L	VPHA =0V	-	-1.0	-10.0	μA
I0,I1"H"input voltage	V(I0,I1) H	Vmm=12V	2.3	-	Vcc	V
I0,I1"L"input voltage	V(I0,I1) L	Vmm=12V	GND	-	0.6	V
I0,I1"H"input current	I(I0,I1) H	V(I0,I1)=3.3V	-	-	10.0	μA
I0,I1"L"input current	I(I0,I1) L	V(I0,I1)=0V	-	-2.0	-30.0	μA
STB"H"input voltage	VSTB H		2.3		Vcc	V
STB"L"input voltage	VSTB L		GND		0.6	V
Vref input voltage	VREF		1.0	-	3.6	V
Vref input current	IREF	VREF=0V	-1.0	-	10.0	μA
Vs input current	Is	Vs=0V	-1.0	-	10.0	μA
comparator threshold (100%)	Vs1	VREF=3.3V,I0=L,I1=L	0.314	0.330	0.347	V
comparator threshold (67%)	Vs2	VREF=3.3V,I0=H,I1=L	0.203	0.221	0.239	V
comparator threshold (33%)	Vs3	VREF=3.3V,I0=L,I1=H	0.098	0.109	0.120	V
Upper transistor saturation drop	Vce(SAT)H	Ic=0.8A	-	1.20	1.40	V
Lower transistor saturation drop	Vce(SAT)L	Ic=0.8A	-	0.70	1.00	V
Output leak current	Ir	Vmm=Vce(sus)V,Vout=0V	-	-	10.0	μA
Upper diode forward drop	VF H	If=0.8A	-	1.30	1.50	V
Lower diode forward drop	VF L	If=0.8A	-	1.40	1.60	V
One Shot OFF time	T OFF	Ct=3300pF,Rt=4.7KΩ	-	17.1	-	μS
UVLO threshold	Vuv		-	2.7	-	V
Thermal shutdown temperature	Tj_{TSD}		-	170	-	°C

■Recommended operation conditions

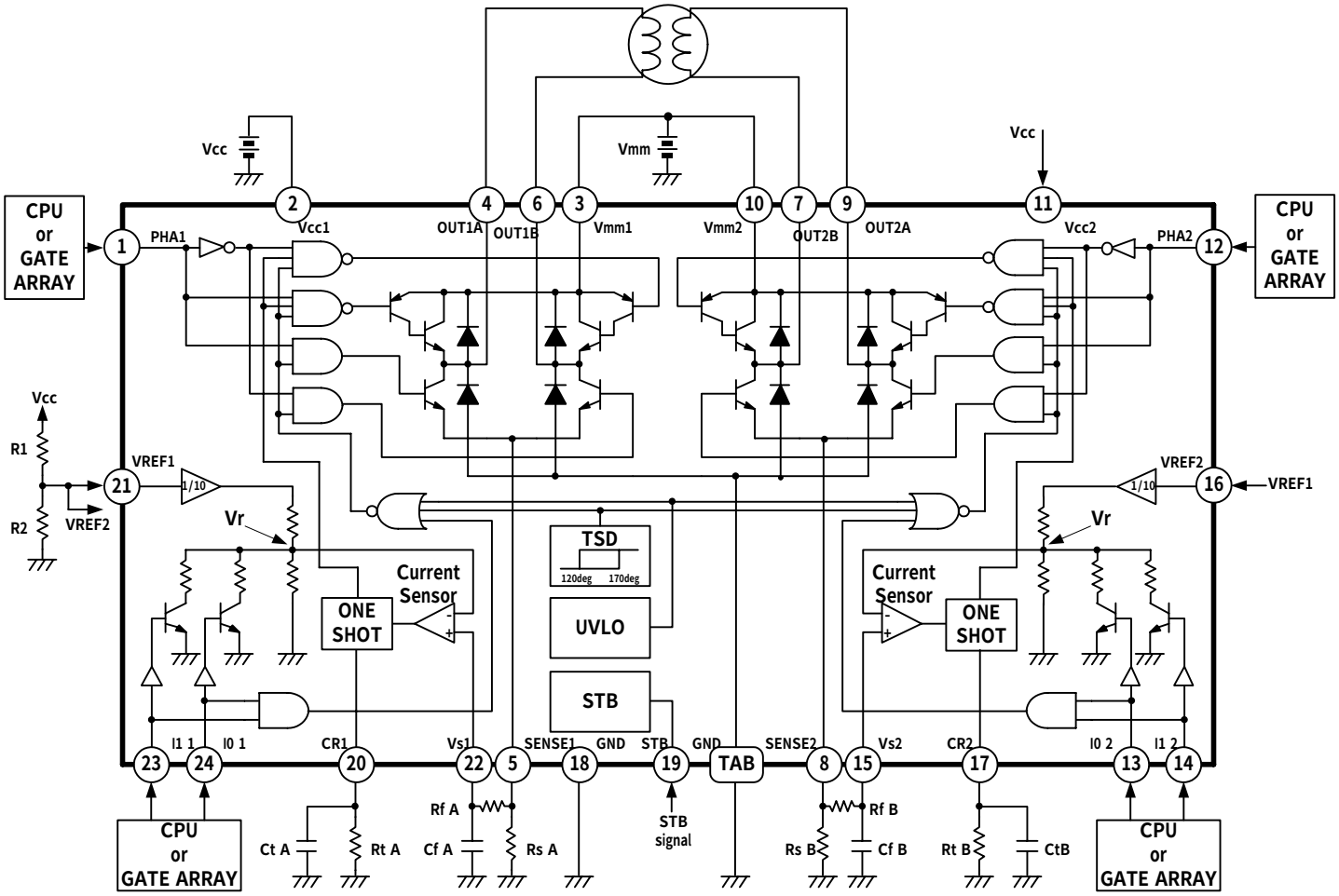
Parameter	Symbol	Recommendation	Unit
Junction temperature	Tj	-25～120	°C
Logic supply	Vcc	3.0～3.6	V
Load supply	Vmm	7～27	V

■Thermal resistance

Symbol	Rating	Unit
θja *1	58	°C/W

*1 : 50.8×50.8×1mm³ Glass Epoxy Board(FR4),200mm² Cupper Pattern

■Block diagram / Typical application



●Constant chopping current level

$$Ichop = \frac{VREF}{10Rs} - 0.015$$

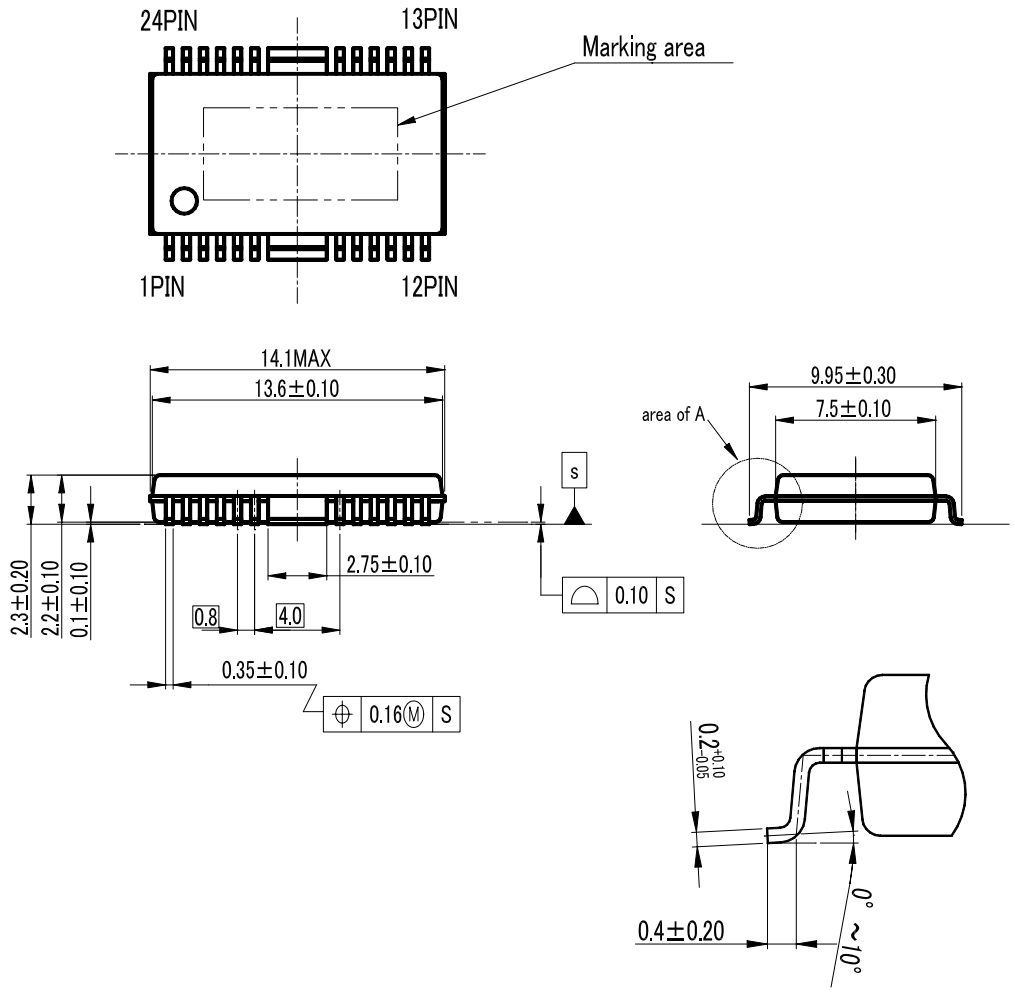
●ONE SHOT OFF TIME

$$Toff = 1.1CtRt$$

●Recommended component values

Symbol	Recommended component values	Unit
Ct	3300	pF
Rt	4.7	kΩ
Cf	820	pF
Rf	1.0	kΩ

■Outline Drawing



(Unit : mm)

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