

MTD2009J SPECIFICATION

Absolute maximum ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Logic	Logic supply	VCC	0~6
	Logic inputs	VIN, VENA	0~VCC
Output	Output voltage	VCEO(SUS)	35
	Output current	IC	1.2
Temperature	Storage temperature	Tstg	-40~150
	Junction temperature	TJ	150

Electrical characteristics(Ta=25°C)

Output stage

Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Motor supply	Vmm		5	-	35	V
Output leakage current	Ir	Vmm=35V,or Vout=35V	-	-	20	μA
Upper Tr saturation voltage	VCE(sat)H	Io=0.8A	-	1.20	1.50	V
Lower Tr saturation voltage	VCE(sat)L	Io=0.8A	-	0.70	1.00	V
Upper diode forward voltage drop	VFH	Io=0.8A	-	1.30	1.60	V
Lower diode forward voltage drop	VFL	Io=0.8A	-	1.30	1.50	V
Output stage supply current (ImmA+B or ImmC+D)	Imm(OFF)1	Vmm=24V,ENA=2.1V,no load	-	-	7	mA
Output stage supply current (ImmA+B+C+D)	Imm(OFF)2	Vmm=24V,ENA=2.1V,no load	-	-	14	mA

				MANAGER <i>T. Wakabayashi</i>	Type Name:	MTD2009J
1	Oct.23.1998	Y.I	Newly	CHKD <i>H. Higuchi</i>	Code No:	4002
	DATE	DEGD	DESCRIPTION	DEGD <i>Y. Ishida</i>	DWG. No:	1SK-97243
			SHINDENGEN ELECTRIC MFG.CO.,LTD JAPAN			EDIT - 1

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Logic part

Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Logic supply	Vcc		4.5	-	5.5	V
Logic supply current (Vcc1+Vcc2)	Icc(OFF)	Vcc=5V,ENA="H"	-	36	52	mA
	Icc(ON)	Vcc=5V,ENA="L"	-	95	135	mA
"Phase" input voltage	Vpha H	Vcc=5V	2.10	-	Vcc	V
	Vpha L	Vcc=5V	GND	-	0.80	V
"Phase" input current	Ipha H	Vcc=5V,PHA=5V	-	-	20	μA
	Ipha L	Vcc=5V,PHA=0V	-	-100	-200	μA
"ENA" input voltage	VENA H	Vcc=5V	2.10	-	Vcc	V
	VENA L	Vcc=5V	GND	-	0.80	V
"ENA" input current	IENA H	Vcc=5V,ENA=5V	-	-	20	μA
	IENA L	Vcc=5V,ENA=0V	-	-100	-200	μA
"DEC" input voltage	VDEC H	Vcc=5V	2.10	-	Vcc	V
	VDEC L	Vcc=5V	GND	-	0.80	V
"DEC" input current	IDEC H	Vcc=5V,DEC=5V	-	-	20	μA
	IDEC L	Vcc=5V,DEC=0V	-	-100	-200	μA
Oscillator charge current	ICR	Vcc=5V,VCR=2V	-	-1	-	mA
"Vref" input voltage	Vref	Vcc=5V	-	-	1.0	V
"Vref" input current	Iref	Vcc=5V,Vref=0V	-	-1	-10	μA
Blanking time	tb	Vcc=5V,Rt=30kΩ,Ct=1000pF	-	2.14	-	μs
Thermal shut down temperature		Vcc=5V	-	150	-	°C

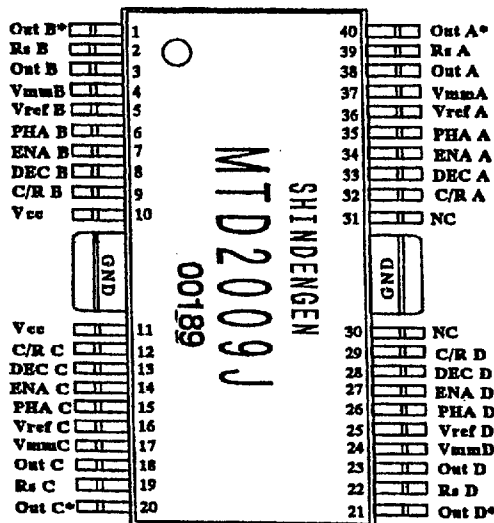
One shot off time

$$T_{off}=1.163 \cdot C_t \cdot R_t$$

Blanking time

$$t_b = C_t \cdot R_t \cdot \ln \frac{1-R_t/1000}{3-R_t/1000}$$

Pin configuration



Truth table

ENA A or B or C or D	PHA A or B or C or D	OUT A or B or C or D	OUT A* or B* or C* or D*
L	L	L	H
L	H	H	L
H	X	OFF	OFF

X : don't care

Decay mode selection

DECAY	Current decay mode
L	Fast decay
H	Slow decay

Slow decay should be usually selected.
Fast decay will be required in half step
or micro step application to avoid motor
current dragging.

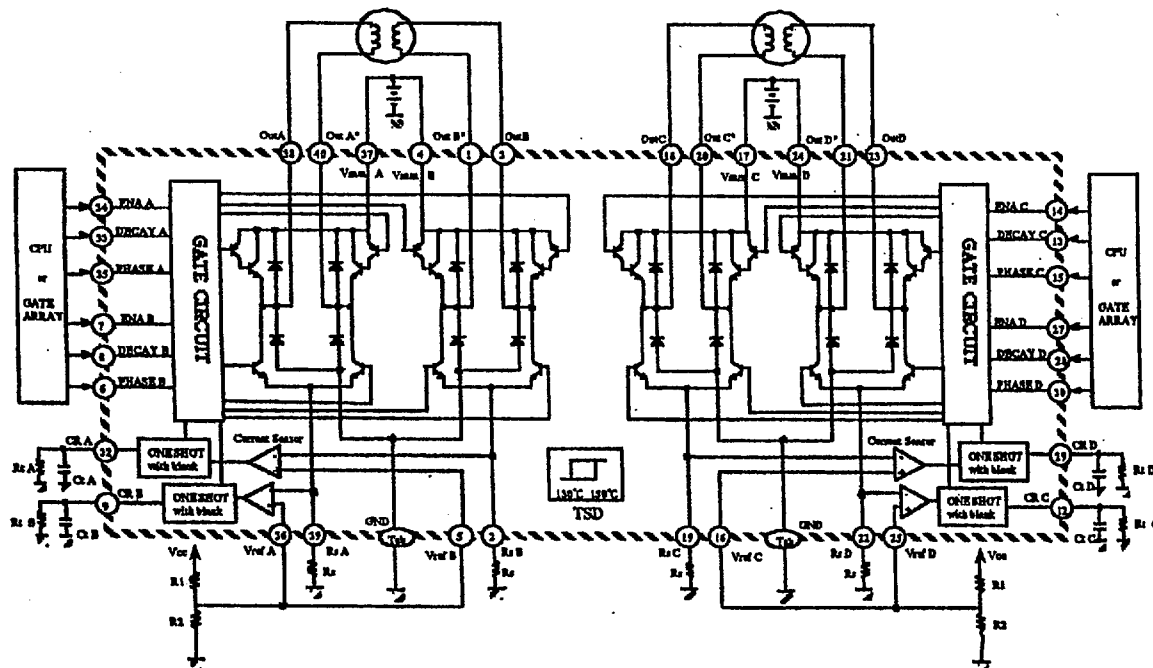
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Block diagram & Typical application



Recommended external component value

Symbol	Recommended value	Unit
R_s	0.68	Ω
R_t	30k	Ω
C_t	1000p	F
R_1+R_2	<10k	Ω

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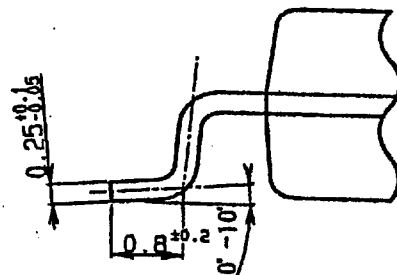
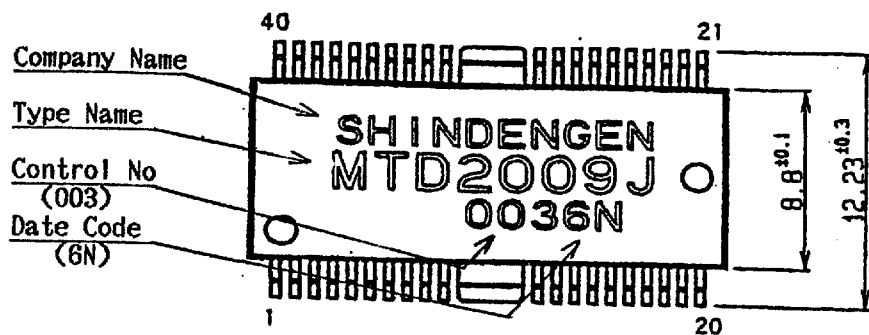
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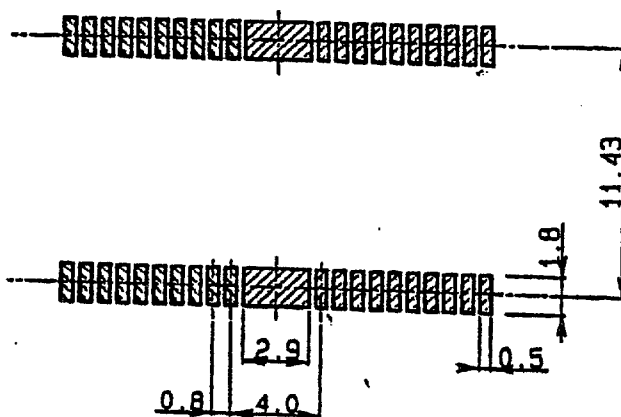
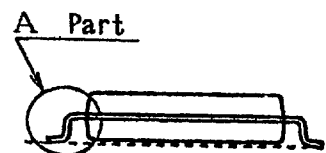
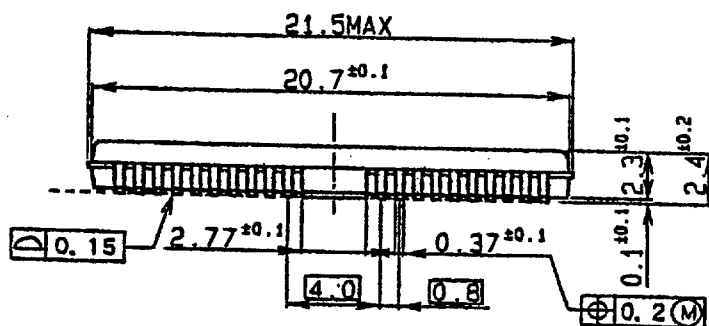
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Outline dimension



A Part S=12/1



Standard soldering pad

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