MTD2009J SPECIFICATION

Absolute maximum ratings(Ta=25℃)

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

Electrical characteristics(Ta=25℃)

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

8503

1/4 SHEET

8219387 0005103 86T

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	V ENA H	Vcc=5V	2.10	-	Vcc	V
	V ENA L	Vcc=5V	GND	-	0.80	V
"ENA" input current	I ENA H	Vcc=5V,ENA=5V	-	-	20	μA
	I ENA 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	-	℃

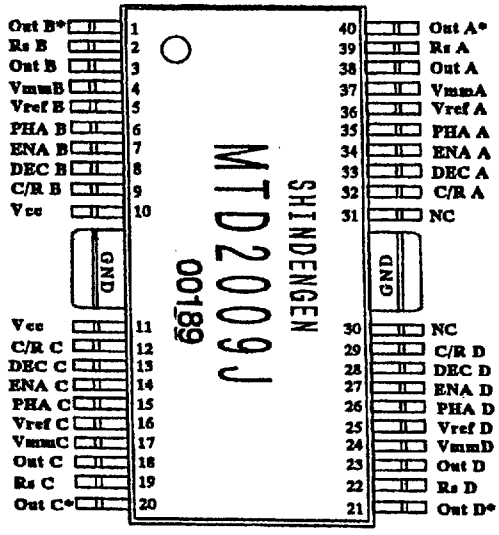
One shot off time

$$Toff=1.163*Ct*Rt$$

Blanking time

$$tb=Ct*Rt*\ln\frac{1-Rt/1000}{3-Rt/1000}$$

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	×	OFF	OFF

× : don't care

Decay mode selection

DECAY	Current decay mode
L	Fast decay
H	Slow decay

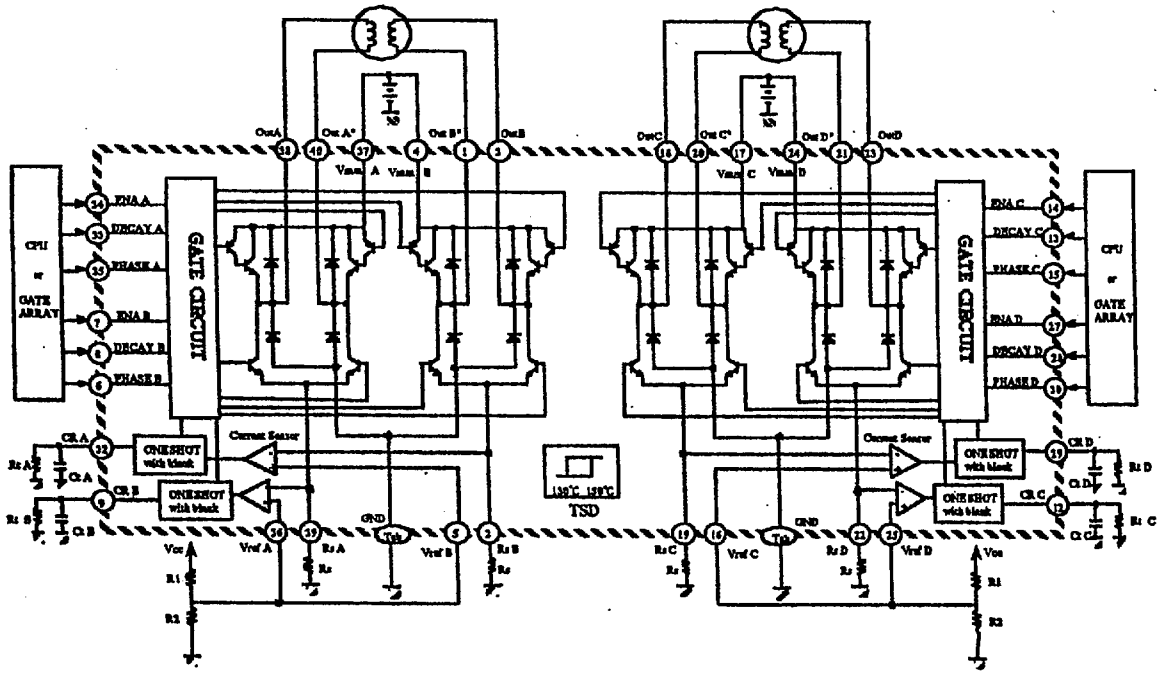
Slow decay should be usually selected. Fast decay will be required in half step or micro step application to avoid motor current dragging.

SHINDENGEN ELECTRIC MFG.CO.,LTD JAPAN	Type Name: MTD2009J	
	DWG. No: 1SK-97243	-1EDIT

8503

8219387 0005104 7T6

Block diagram & Typical application



Recommended external component value

Symbol	Recommended value	Unit
Rs	0.68	Ω
Rt	30k	Ω
Ct	1000p	F
R1+R2	<10k	Ω

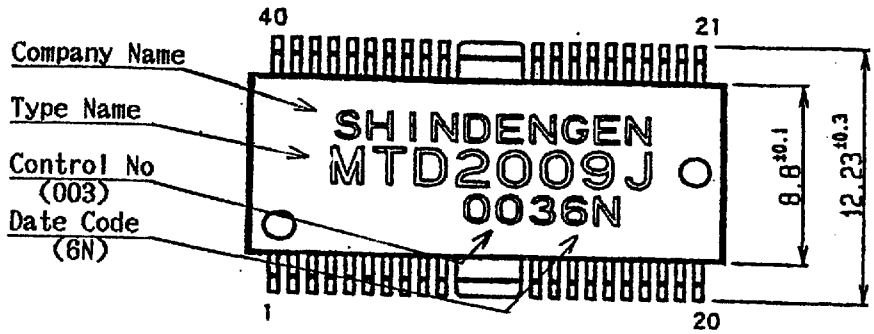
SHINDENGEN ELECTRIC MFG.CO.,LTD JAPAN	Type Name: MTD2009J	
	DWG. No: 1SK-97243	-1EDIT

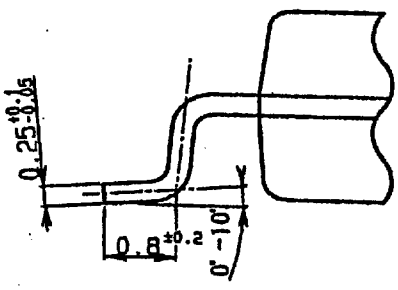
8503

8219387 0005105 632

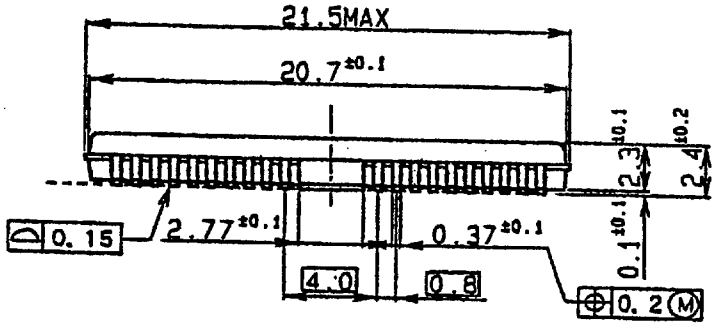
3/4 SHEET

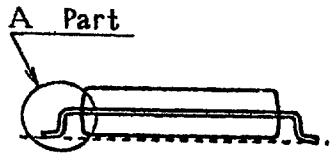
Outline dimension

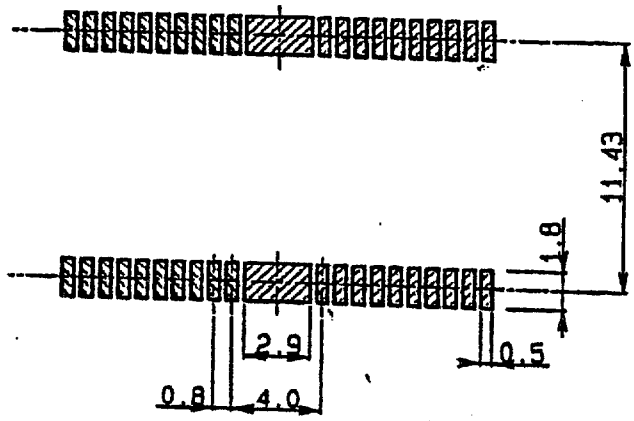




A Part S=12/1







Standard soldering pad

SHINDENGEN ELECTRIC MFG.CO.,LTD JAPAN	Type Name: MTD2009J	
	DWG. No: 1SK-97243	-1 EDIT
		4/4 SHEET

8503

8219387 0005106 579