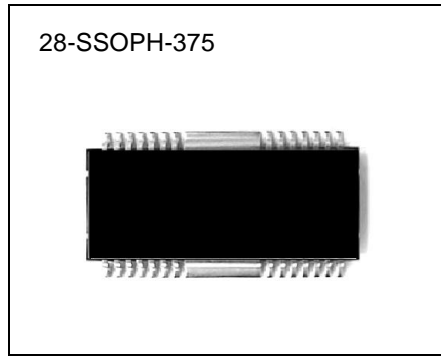


4-CH MOTOR DRIVER

The KA3022D is a monolithic integrated circuit, suitable for a 1-ch (forward.reverse) control DC motor driver and a 3-ch motor driver which drives the focus actuator, tracking actuator, and sled motor of a CD system.

FEATURES

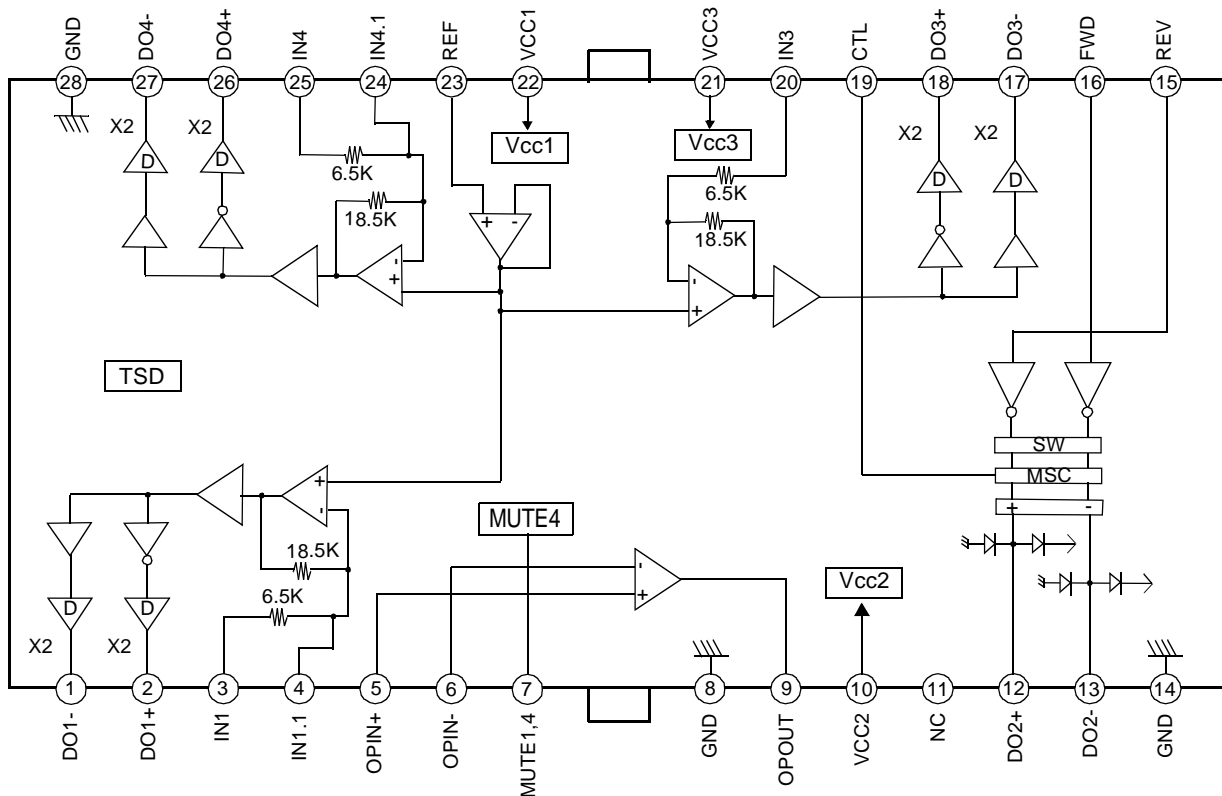
- 3-Channel BTL driver
- 1-Channel forward-Reverse control DC motor driver
- Built-in thermal shutdown circuit
- Built-in mute circuit
- Operating supply voltage: 4.5~13.2V
- Corresponds to 3.3V or 5V DSP



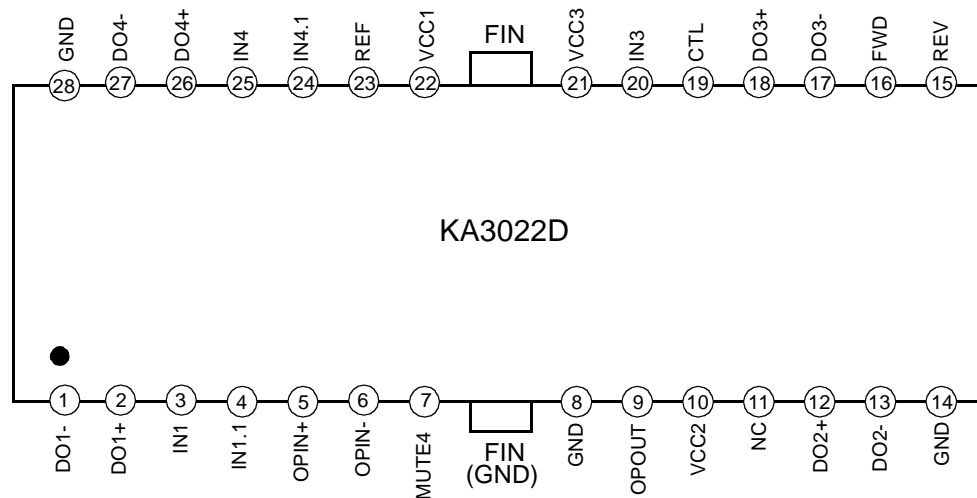
ORDERING INFORMATION

Device	Package	Operating Temperature
KA3022D	28-SSOPH-375	-35 °C ~ 85 °C

BLOCK DIAGRAM



PIN CONFIGURATION



PIN DESCRIPTION

Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	DO1-	O	Drive1 Output (-)	15	REV	I	CH2 Reverse
2	DO1+	O	Drive1 Output (+)	16	FWD	I	CH2 Forward
3	IN1	I	Drive1 Input	17	DO3-	O	Drive3 Output (-)
4	IN1.1	I	Drive1 Input, gain adjust.	18	DO3+	O	Drive3 Output (+)
5	OPIN+	I	OP-AMP Input (+)	19	CTL	I	CH2 Motor Speed Control
6	OPIN-	I	OP-AMP Input (-)	20	IN3	I	CH3 Input
7	MUTE1,4	I	CH4 Mute	21	VCC3	I	Power Supply for CH3
8	GND	-	Ground	22	VCC1	I	Power Supply for CH1
9	OPOUT	O	OP-Amp Output	23	REF	I	Bias Voltage Input
10	VCC2	I	Power Supply for CH2	24	IN4.1	I	Drive4 Input, gain adjust.
11	NC	-	No Connection	25	IN4	I	Drive4 Input
12	DO2+	O	Drive2 Output (+)	26	DO4+	O	Drive4 Output (+)
13	DO2-	O	Drive2 Output (-)	27	DO4-	O	Drive4 Output (-)
14	GND	-	Ground	28	GND	-	Ground

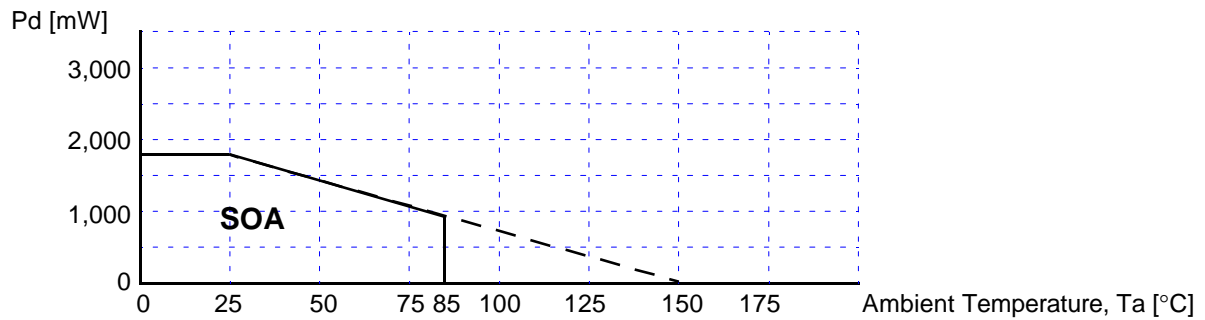
EQUIVALENT CIRCUITS

MUTE INPUT	POWER OUTPUT
SIGNAL REFERENCE INPUT	LOADING CONTROL INPUT
LOADING LOGIC INPUT	

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Characteristics	Symbol	Value	Unit
Maximum supply voltage	V_{CCmax}	15	V
Power dissipation	P_d	@1.7	W
Operating temperature range	T_{opr}	-35 ~ +85	°C
Storage temperature range	T_{stg}	-55 ~ +150	°C

- @ 1. When mounted on a 50mm × 50mm × 1mm PCB (Phenolic resin material).
 2. Power dissipation reduces 13.6mW/°C for using above Ta = 25°C
 3. Do not exceed PD and SOA(Safe operating area).



RECOMMENDED OPERATING CONDITIONS

Characteristics	Symbol	Value			Unit
		Min	Typ	Max	
Supply Voltage	Vcc	4.5	-	13.2	V

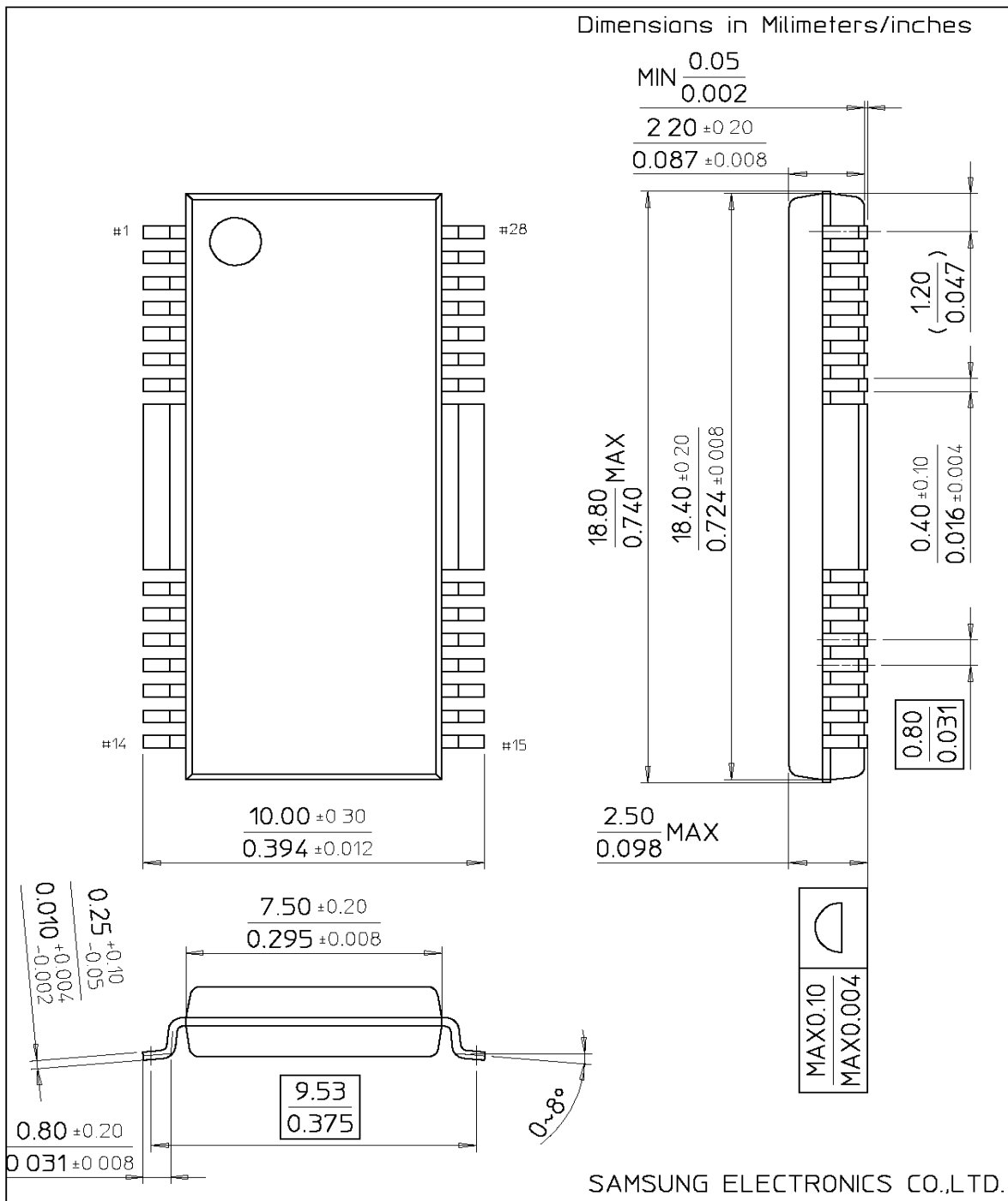
ELECTRICAL CHARACTERISTICS(Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$, $V_{CC} = V_{M12} = V_{M3,4} = 5\text{V}$)

Characteristics	Symbol	Conditions	Spec			Unit
			Min	Typ	Max	
Quiescent Current	I_{CC}	$V_{in} = 0\text{V}$	-	9.3	15	mA
Mute On Current	I_{mute}	Mute Pin = V_{CC}	-	7.9	9.5	mA
Mute On Voltage	V_{mon}		2.0	-	-	V
Mute Off Voltage	V_{moff}		-	-	0.5	V
DRIVE PART						
Output Offset Voltage	V_{oo}	$V_{in} = 2.5\text{V}$	-50	-	+50	mV
Maximum Output Voltage1	V_{om1}	$V_{CC} = 8\text{V}$, $R_L = 8\Omega$	5.4	6.0	-	V
Closed Loop Voltage Gain	G_{vc}	$f = 1\text{KHz}$, $V_{in} = 0.1\text{Vrms}$ (CH1,3, 4)	19.5	21.0	22.5	dB
Ripple Rejection Ratio	RR	$V_{in} = 0.1\text{Vrms}$, $f = 120\text{Hz}$	-	60	-	dB
Slew Rate	SR	$V_o = 2\text{Vp-p}$, $f = 120\text{KHz}$	-	0.8	-	V/us
TRAY DRIVE PART ($V_{CC} = V_{M34} = 8\text{V}$, $R_L = 45\Omega$)						
Input High Level Voltage	V_{ih}		2	-	-	V
Input Low Level Voltage	V_{il}		-	-	0.5	V
Output Voltage1	V_{o1}	$V_{CC} = 8\text{V}$, $V_{ctl} = 4.0\text{V}$	5.2	6	6.8	V
Output Voltage2	V_{o2}	$V_{CC} = 13\text{V}$, $V_{ctl} = 5.7\text{V}$	7.5	8.5	9.5	V
Output Load Regulation	ΔV_{RL}	$V_{CC} = 8\text{V}$, $V_{ctl} = 3.0\text{V}$	-	300	700	mV
Output Offset Voltage1	V_{oo1}	$V_{in} = 5\text{V}$, 5V	-10	-	+10	mV
Output Offset Voltage1	V_{oo2}	$V_{in} = 0\text{V}$, 0V	-10	-	+10	mV
GENERAL OP AMP PART						
Input Offset Voltage	V_{ofop}		-15	-	+15	mV
Input Bias Current	I_{bop}		-	-	300	nA
High Level Output Voltage	V_{ohop}	$V_{CC} = 5\text{V}$, $R_L = 1\text{K}\Omega$	3	4	-	V
Low Level Output Voltage	V_{olop}	$V_{CC} = 5\text{V}$, $R_L = 1\text{K}\Omega$	0.7	1	1.3	V
Output Sink Current	I_{sink}	$V_{CC} = 5\text{V}$, $R_L = 30\Omega$	10	20	-	mA
Output Source Current	I_{source}	$V_{CC} = 5\text{V}$, $R_L = 30\Omega$	10	20	-	mA
Open Loop Voltage Gain	G_{vo}	$V_{in} = -75\text{dB}$, $f = 1\text{KHz}$	-	75	-	dB
Ripple Rejection Ratio	RR_{op}	$V_{in} = -20\text{dB}$, $f = 120\text{Hz}$	-	65	-	dB

Characteristics	Symbol	Conditions	Spec			Unit
			Min	Typ	Max	
Slew Rate	SR _{op}	f = 120KHz, 2V _{p-p}	-	1	-	V/us
Common Mode Rejection Ratio	CMRR	V _{in} = -20dB, f = 1KHz	-	80	-	dB
Common Mode Input Range	V _{icm}	V _{cc} = 8V	-0.3	-	6.8	V

PACKAGE DIMENSIONS

28-SSOPH-375



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