FAN8047G3

4-CH Motor Driver (5 Input & 4 Output)

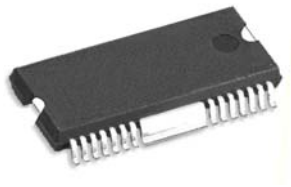
Features

- 4-CH Balanced transformerless (BTL) driver
- Optional input (CH4,5) for output CH4
- Operating supply voltage : 4.5 V ~ 14V
- Built-in thermal shut down circuit (TSD)
- Built-in channel mute circuit
- Built-in 3.3 volt regulator

Description

The FAN8047G3 is a monolithic integrated circuit suitable for a 4-ch motor driver which drives a tracking actuator, a focus actuator, a sled motor, a spindle motor, and a tray motor of the CDP/CAR-CD/DVDP systems.

28-SSOPH-375SG2



Typical Application

- Compact disk player
- Video compact disk player
- Car compact disk player
- Digital video disk player

Ordering information

DEVICE	PACKARE	OPERATING TEMP
FAN8047G3	28-SSOPH-375-SG2	-35°C ~ +85°C
FAN8047G3X[note1]	28-SSOPH-375-SG2	-35°C ~ +85°C
FAN8047G3_NL[note2]	28-SSOPH-375-SG2	-35°C ~ +85°C
FAN8047G3X_NL	28-SSOPH-375-SG2	-35°C ~ +85°C

Notes:

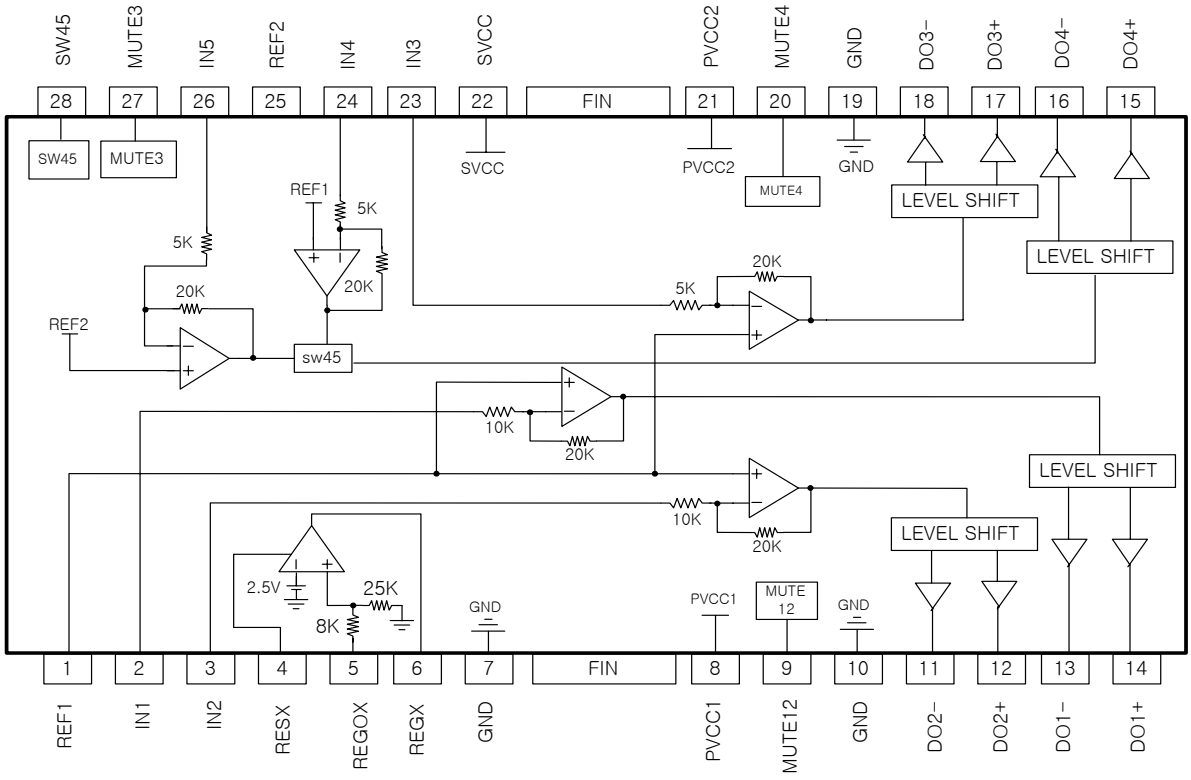
1. X : Tape&Reel
2. NL : Lead free

Pin assignments

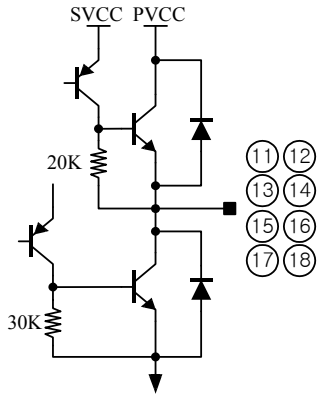
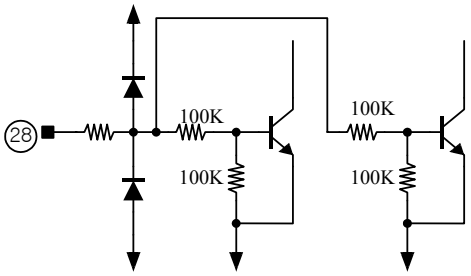
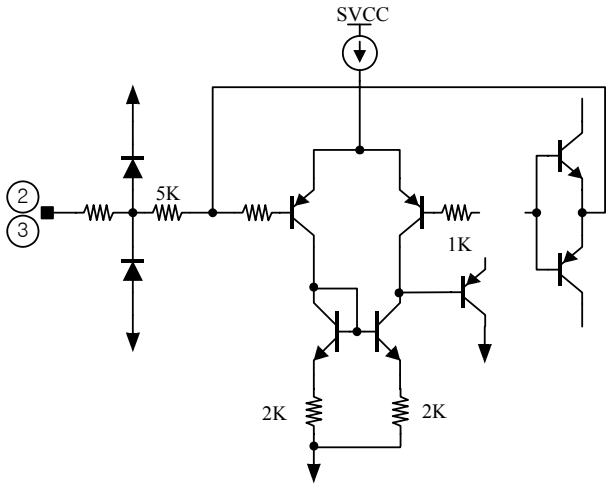
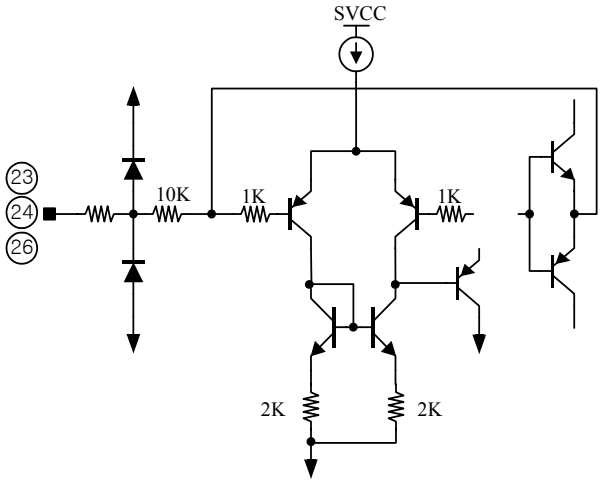
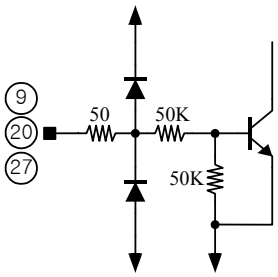
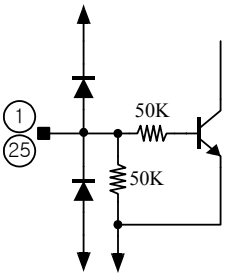
Pin definitions

PIN NUMBER	PIN NAME	I/O	PIN FUNCTION DESCRITION
1	REF1	I	Bias voltage input
2	IN1	I	CH1 Input
3	IN2	I	CH2 Input
4	RESX	I	Regulator reset
5	REGOX	I	Regulator feedback input
6	REGX	O	Regulator output
7	GND	-	Signal ground
8	PVcc1	-	Power Vcc (CH1,CH2)
9	MUTE12	I	Mute 1,2
10	GND	-	Power ground (CH1,CH2)
11	DO2-	O	CH2 Drive output (-)
12	DO2+	O	CH2 Drive output (+)
13	DO1-	O	CH1 Drive output (-)
14	DO1+	O	CH1 Drive output (+)
15	DO4+	O	CH4 Drive output (+)
16	DO4-	O	CH4 Drive output (-)
17	DO3+	O	CH3 Drive output (+)
18	DO3-	O	CH3 Drive output (-)
19	GND	-	Power ground (CH3,CH4)
20	MUTE4	I	Mute 4
21	PVcc2	-	Power Vcc (CH3,CH4)
22	SVcc	-	Signal Vcc
23	IN3	I	CH3 Input
24	IN4	I	CH4 Input
25	REF2	I	REF2
26	IN5	I	CH5 Input
27	MUTE3	I	Mute 3
28	SW45	I	Select switch for CH4,5

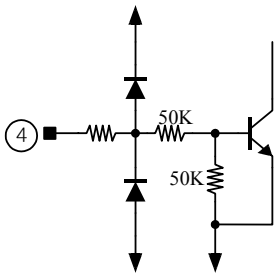
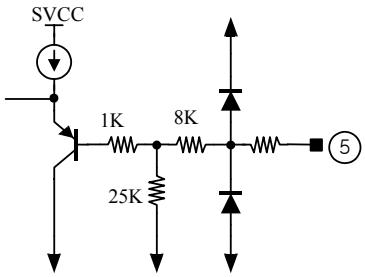
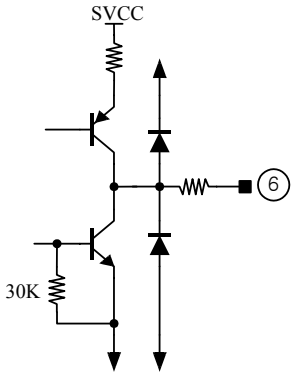
Internal block diagram



Equivalent circuits

BTL Driver output	SW45
	
BTL Input(CH1,2)	**BTL Input(CH3,4,5)**
	
Mute	**Reference**
	

Equivalent circuits(Continued)

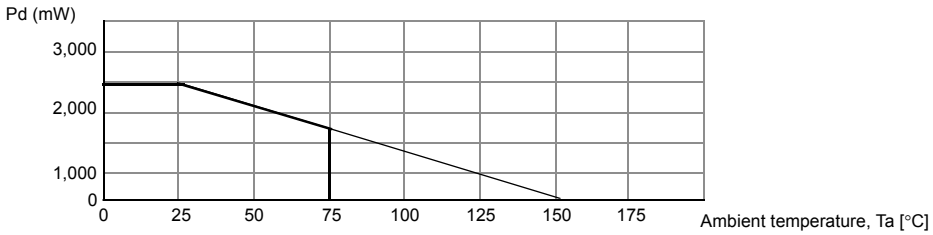
Regulator reset	Regulator feedback input
	
Regulator output	
	

Absolute maximum ratings (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Maximum supply voltage	$SVCC_{MAX}$	18	V
	$PVCC1_{MAX}$	18	V
	$PVCC2_{MAX}$	18	V
Power dissipation	P_D	2.5[note1,2,3]	W
Operating temperature	T_{OPR}	−35 ~ +85	°C
Storge temperature	T_{STG}	−55 ~ +150	°C
Maximum output current	I_{OMAX}	1	A

Notes:

1. When it is mounted on 70mm × 70mm × 1.6mm PCB.
2. Power dissipation decreases at the rate of 20mW/°C in T_A >25°C.
3. Do not exceed P_D and SOA.



Recommended operating conditions (Ta=25°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operating supply voltage	SVCC	4.5	-	14	V
	PVCC1	4.5	-	SVCC	V
	PVCC2	4.5	-	SVCC	V

Electrical characteristics

(SV_{CC} = PV_{CC2} = 12V, T_A = 25°C, PV_{CC1} = 5V, Ref1= 1.65V, Ref2 = 2.5V, RL = 8Ω)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Quiescent circuit current	I_{CC}	Under no-load	-	17	25	mA
BTL Driver circuit (R_L=8Ω)						
Output offset voltage(CH12)	V_{OOF1}	V_{IN}=1.65V	–50	-	+50	mV
Output offset voltage(CH34)	V_{OOF2}	V_{IN}=1.65V	–100	-	+100	mV
Output offset voltage(CH5)	V_{OOF3}	V_{IN}=2.5V	–100	-	+100	mV
Maximum output voltage(CH12)	V_{OM1}	PVcc1=5V, R_L=8Ω	3.6	4.0	-	V
Maximum output voltage(CH34)	V_{OM2}	PVcc2=12V, R_L=24Ω	9.6	10.5	-	V
Close-loop voltage gain(CH12)	A_{VF}	V_{IN}= 0.3V	15.5	17.5	19.5	dB
Close-loop voltage gain(CH34)	A_{VF}	V_{IN}= 0.3V	21.5	23.5	25.5	dB
Regulator circuit (SVCC,PVCC2=12V)						
Load regulation	ΔV_{RL}	I_L=0 →□ 200mA	-10	0	+10	mV
Line regulation	ΔV_{CC}	I_L=200mA, V=6V →□ 9V	-20	0	+30	mV
Regulator output voltage 1	V_{REG1}	I_L=100mA	3.135‘	3.3	3.465	V
Regulator reset on voltage	Reson	Pin4=Variation	-	-	0.5	V
Regulator reset off voltage	Resoff	Pin4=Variation	2	-	-	V
Mute and other function circuit						
Mute on voltage	V_{MON}	Pin9,20,27=Variation	-	-	0.5	V
Mute off voltage	V_{MOFF}	Pin9,20,27=Variation	2	-	-	V
SW on voltage	V_{SWL}	Pin28=Variation	-	-	0.5	V
SW off voltage	V_{SWH}	Pin28=Variation	2	-	-	V
Mute low level sink current	IMTL	VMUTE = 0V	-15	0	15	uA
Mute high level sink current	IMTH	VMUTE = 5V	-	85	170	uA
SW45 Low level sink current	ISWL45	SW45 = 0V	-15	0	15	uA
SW45 High level sink current	ISWH45	SW45 = 5V	-	85	170	uA
REF1 Sink current	IRL	REF1 = 1.65V	-	52	104	uA
REF2 Sink current	IRH	REF2 = 2.5V	-	85	170	uA

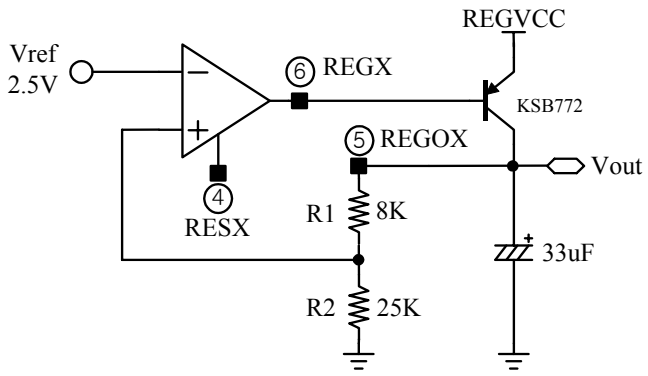
(* note) : Guaranteed field. (No EDS/ Final test .)

Application information

1. MUTE, REF & SW45 Function

INPUT						OUTPUT					
SW45	MUTE12	MUTE3	MUTE4	REF1	REF2	BTL			PRE-AMP		REG
						CH12	CH3	CH4	CH4	CH5	
H	H	H	-	H	-	ON	ON	IN4	ON	ON	ON
H	H	L	-	H	-	ON	OFF	IN4	ON	ON	ON
H	H	H	-	L	-	OFF	OFF	OFF	OFF	ON	ON
H	L	H	-	H	-	OFF	ON	OFF	ON	ON	ON
H	L	L	-	H	-	OFF	OFF	OFF	ON	ON	ON
L	-	-	L	-	-	OFF	OFF	OFF	OFF	ON	ON
L	-	-	H	-	H	OFF	OFF	IN5	OFF	ON	ON
L	-	-	H	-	L	OFF	OFF	OFF	OFF	ON	ON

2. Regulator & Reset function



- The external circuit is composed of the transistor, KSB772 and a capacitor, about 33uF.
- The capacitor is used as a ripple eliminator.
- The capacitor must have a good temperature characteristics.
- The regulator output voltage is decided as follows.

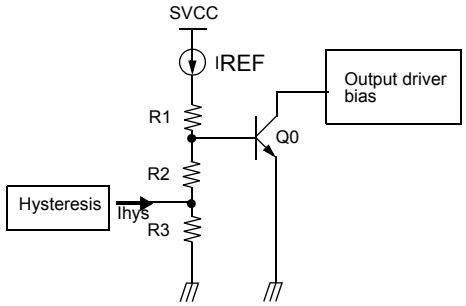
$$V_{out} = V_{ref} \times (1 + \frac{R1}{R2})$$

$$= 2.5 \times \frac{8K}{25K} = 3.3V$$

- When the voltage of the pin 4(RESX) is high, the regulator circuit operates normally. When the voltage of pin 4(RESX) is low, the regulator circuit is disabled.

3. TSD Function

- When the chip temperature reaches to 160°C by abnormal condition, the TSD circuit is activated.
- This makes the bias current of the output drivers shut down, and all the output drivers are on cut-off state. Therefore the chip temperature begins to decrease.
- When the chip temperature falls to 140°C, the TSD circuit is deactivated and the output drivers start to operate normally.
- The TSD function does not affect regulator operation.



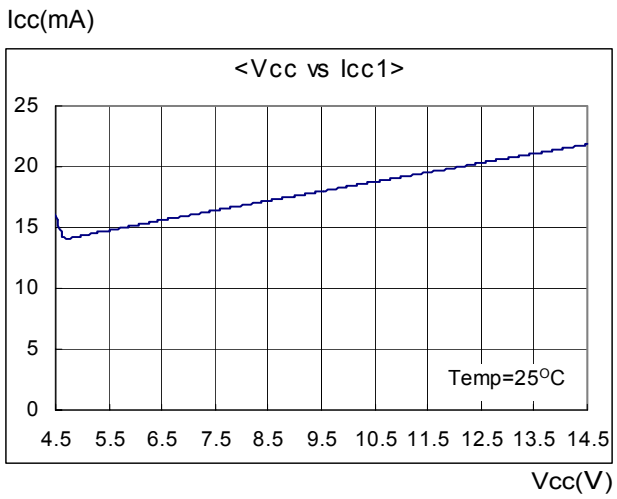
4. Notice

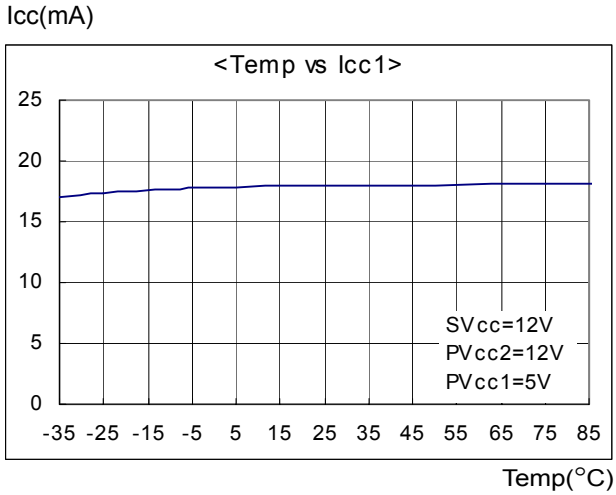
- When REF1(pin1) or REF2(pin25) is lower than 0.7V, BTL output is off.
- Under Voltage Protecton Function. (If SVcc is lower than 3.8V, Chip is disable. Hysterisis is 0.2V)
- Mute on BTL output voltage is as followed:
  - Mute ON BTL Output (CH1,2) = (PVcc1) / 2
  - Mute ON BTL Output (CH3,4) = ((PVcc2-0.6) / 2

Each output to output and output to GND short should be kept away.

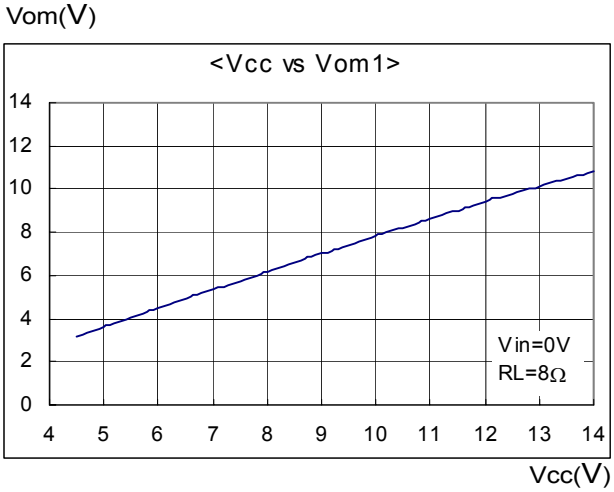
Typical performance characteristics

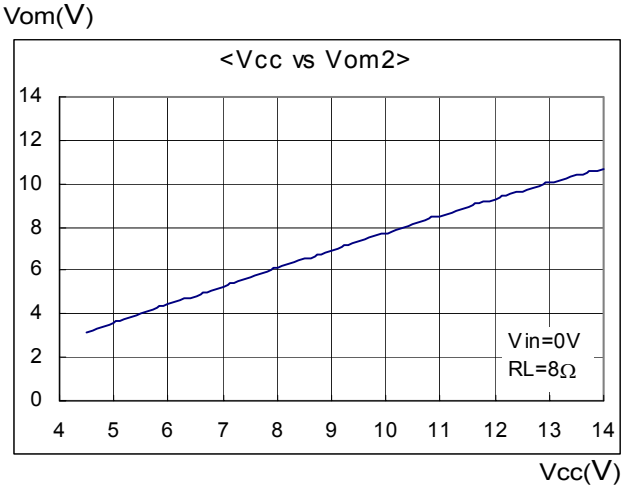
Total circuit

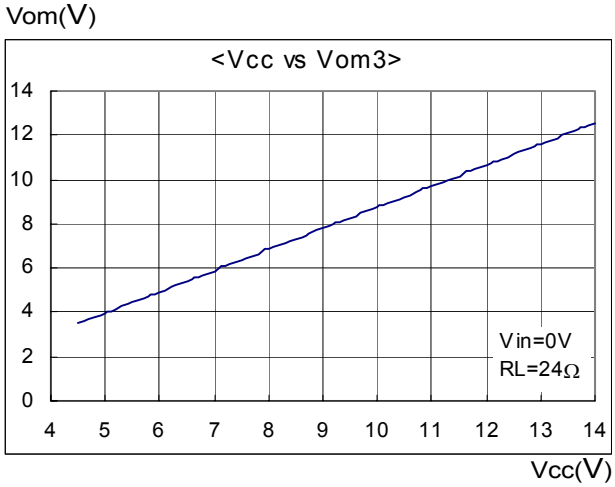


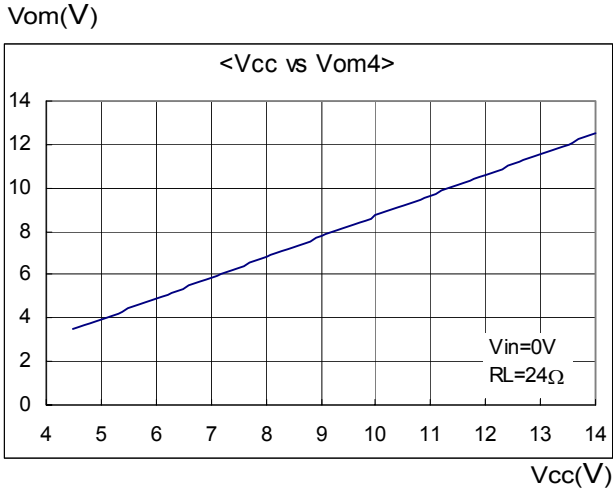


BTL Drive part

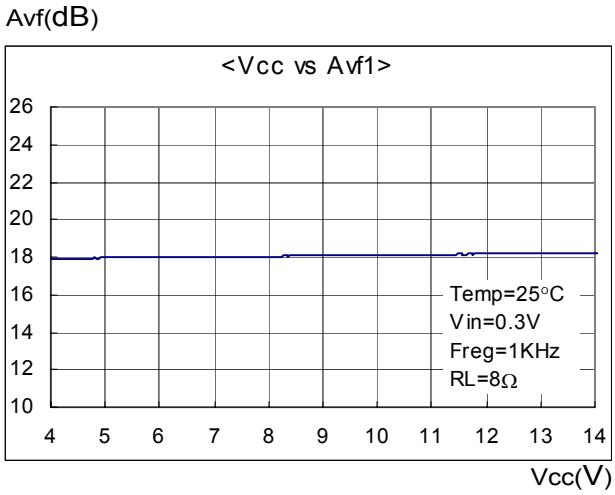


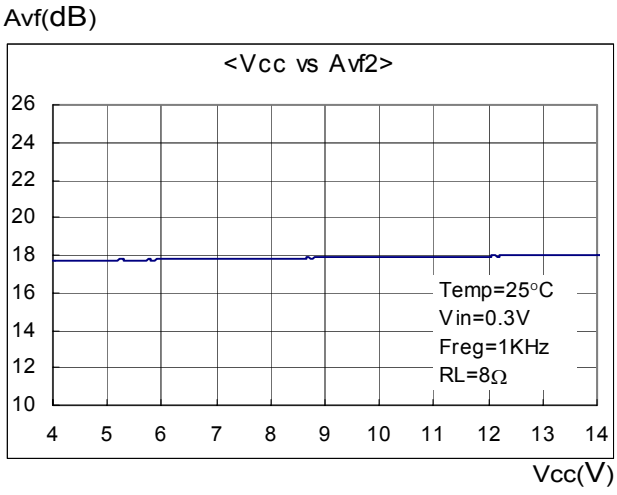


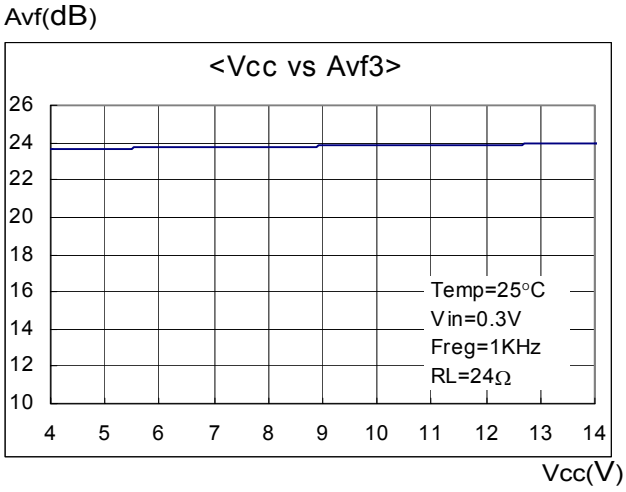


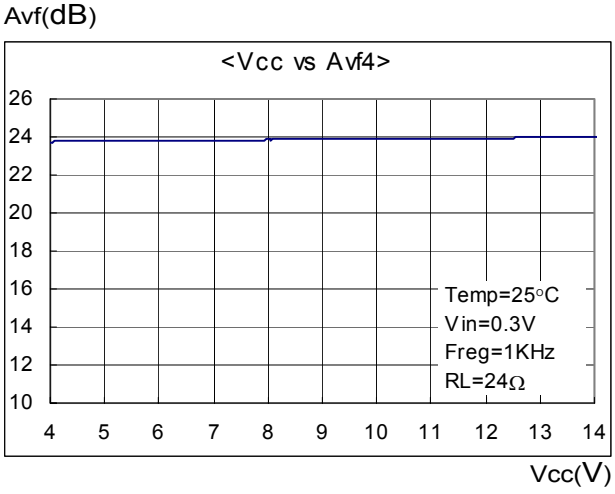


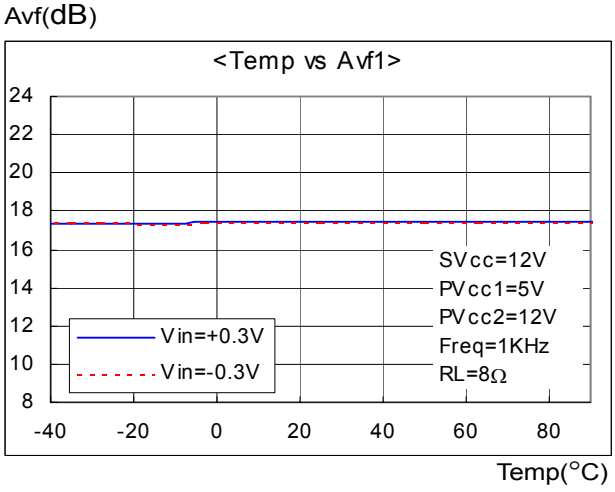
Typical performance characteristics (Continued)

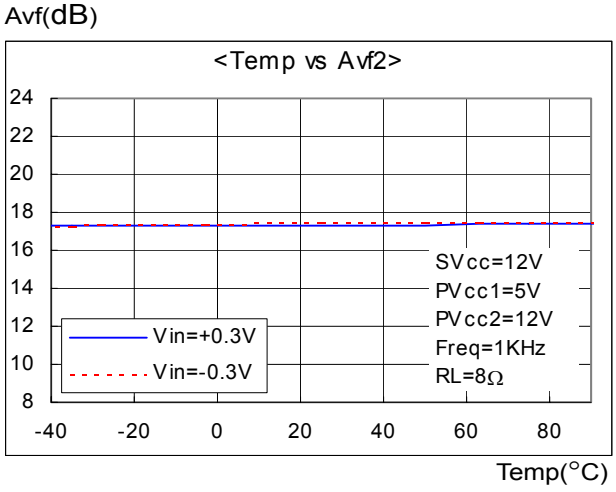




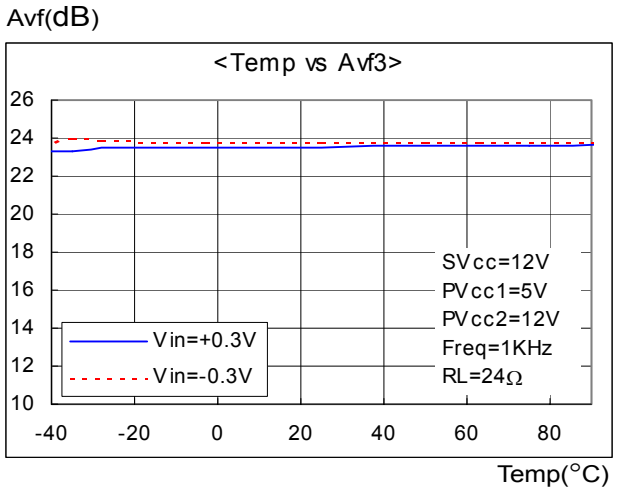


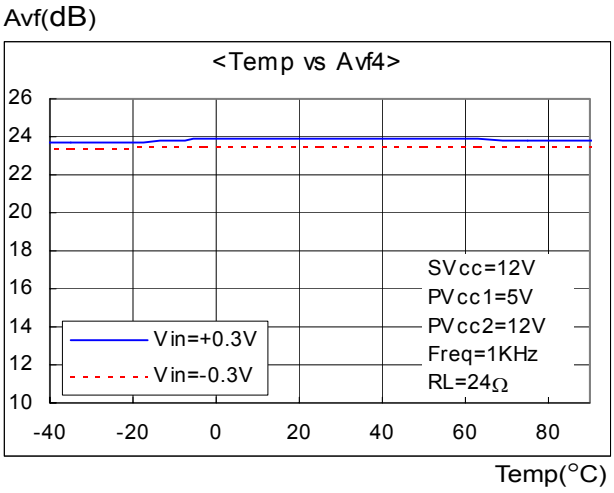




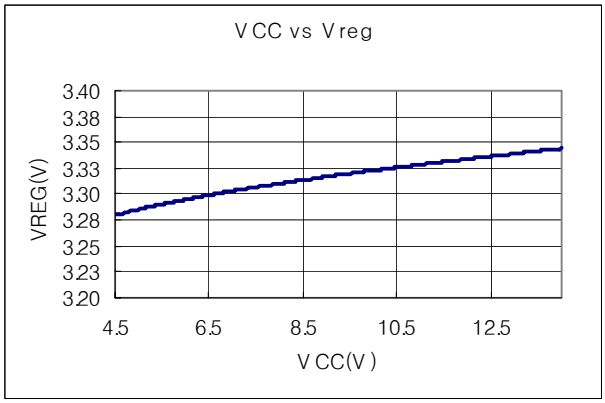


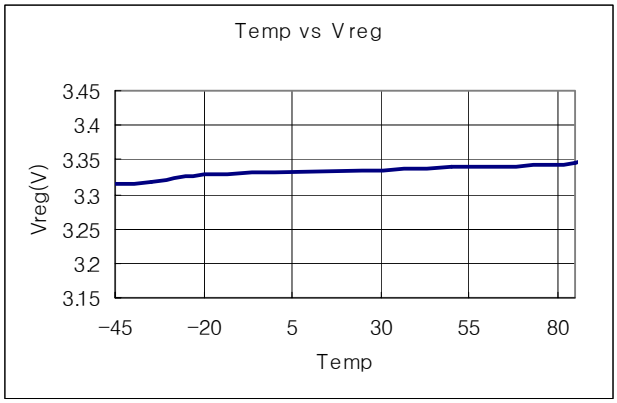
Typical performance characteristics (Continued)



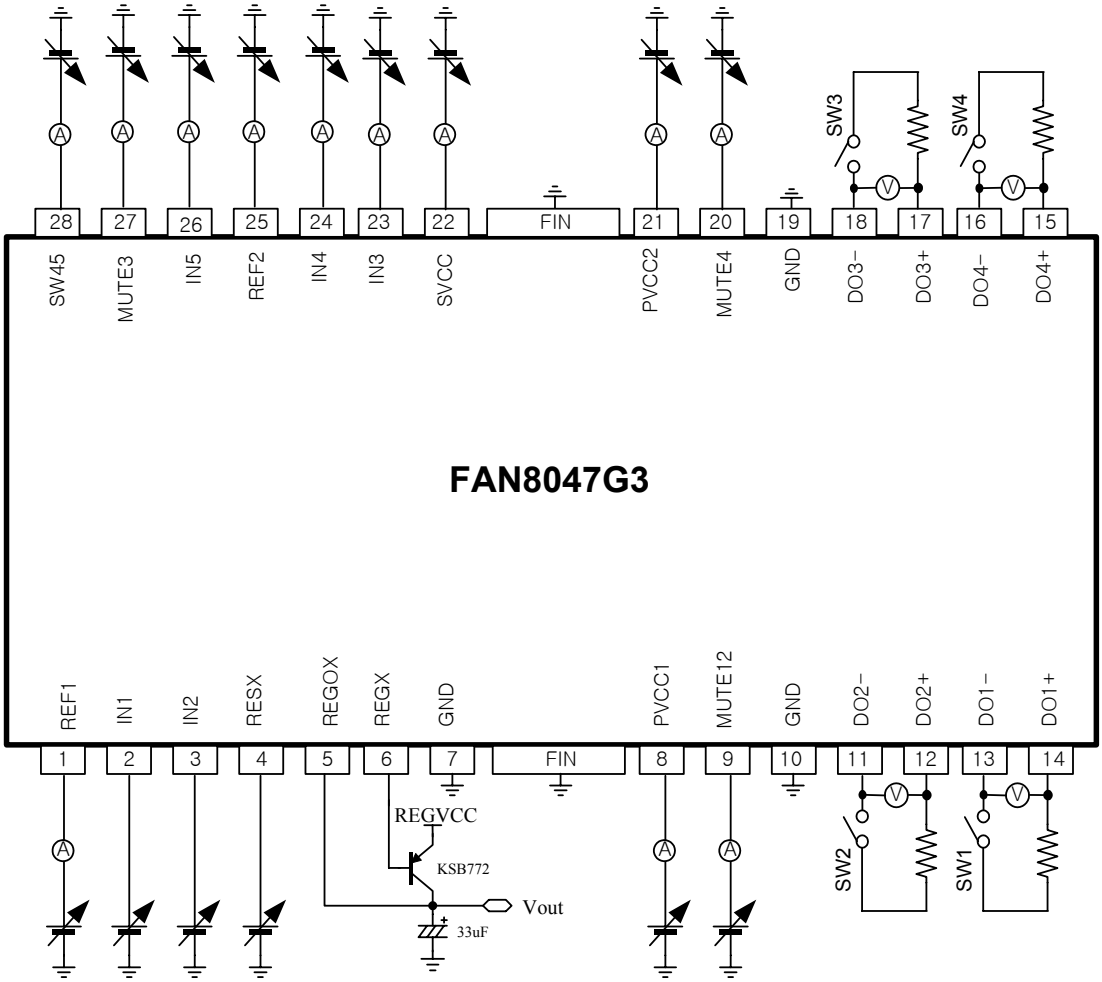


Regulator part

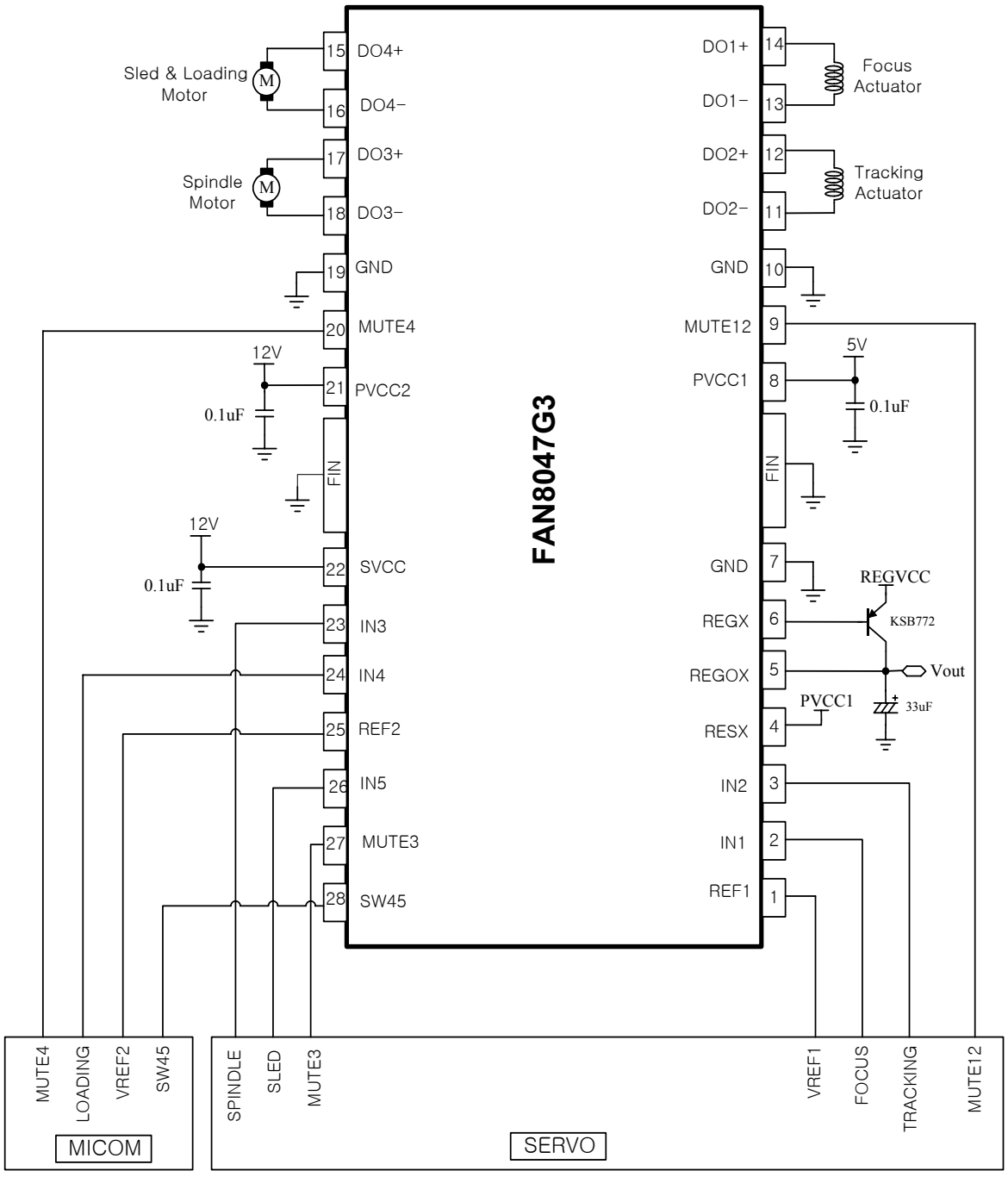




Test circuits

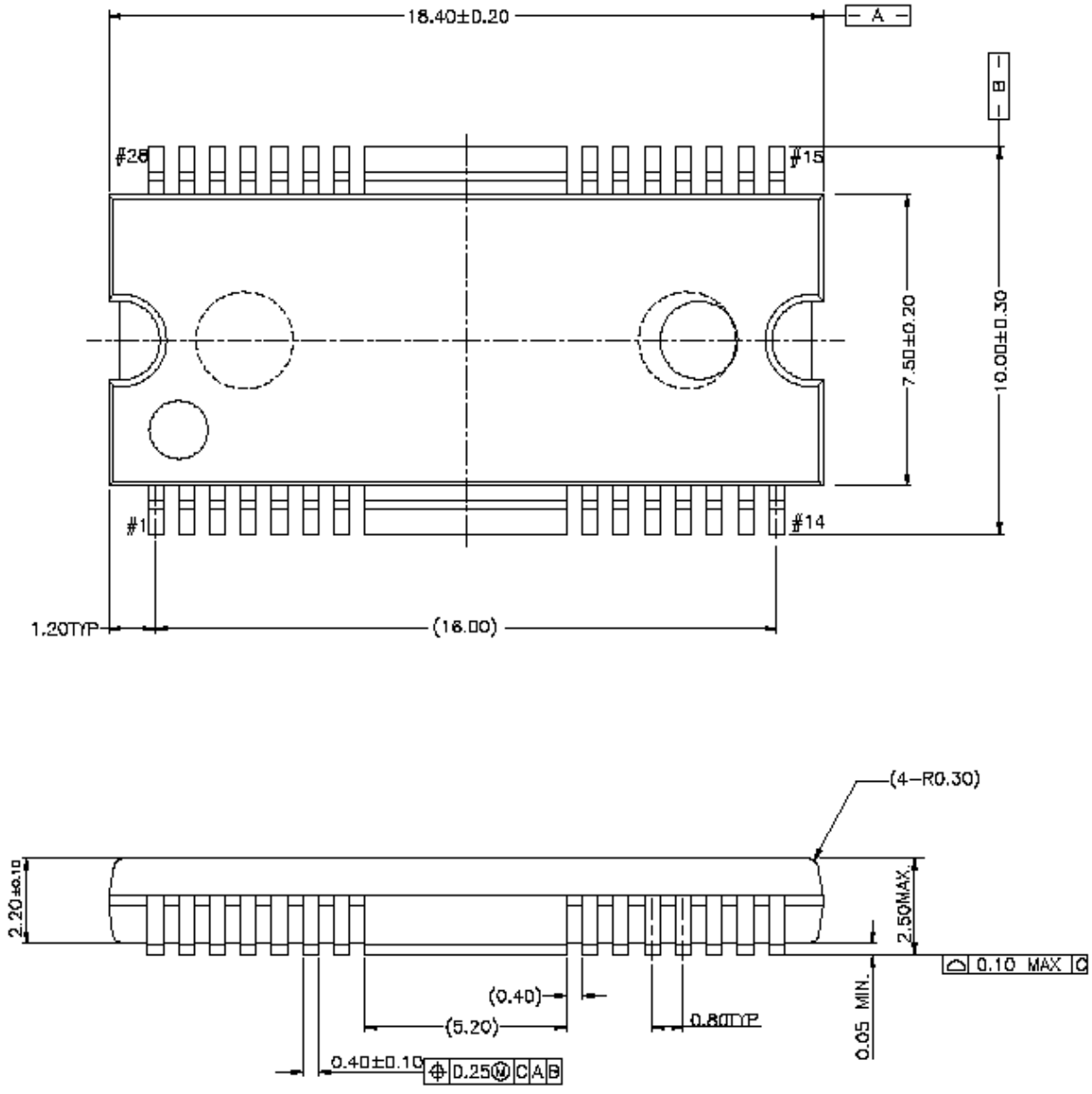


Typical application circuit



Package dimension

28-SSOPH-375-SG2



Unit : mm

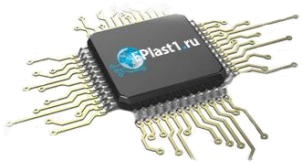
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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