

## IP9005

## 5-CH MOTOR DRIVE IC

## DESCRIPTIONS

IP9005 is a 5-CH motor driver for CD-P/VCDP/DVDP systems. It is composed of 2-CH BTL driver with 2-input OPAMP, 2-CH BTL driver and 1-CH forward/reverse controlled DC motor driver.



## FEATURES

- 2-CH BTL driver.
- 2-CH BTL driver with input OPAMP.
- 1-CH forward/reverse controlled DC motor driver.
- Built-in TSD (thermal shut down) circuit.
- Built-in mute circuit.
- Built-in power save circuit.
- Operating supply voltage (4.3V~13.2V).

\* L : Lead Free

\* TF : Tape & Reel packing

\* L-TF : Lead Free and Tape & Reel packing

## ORDER INFORMATION

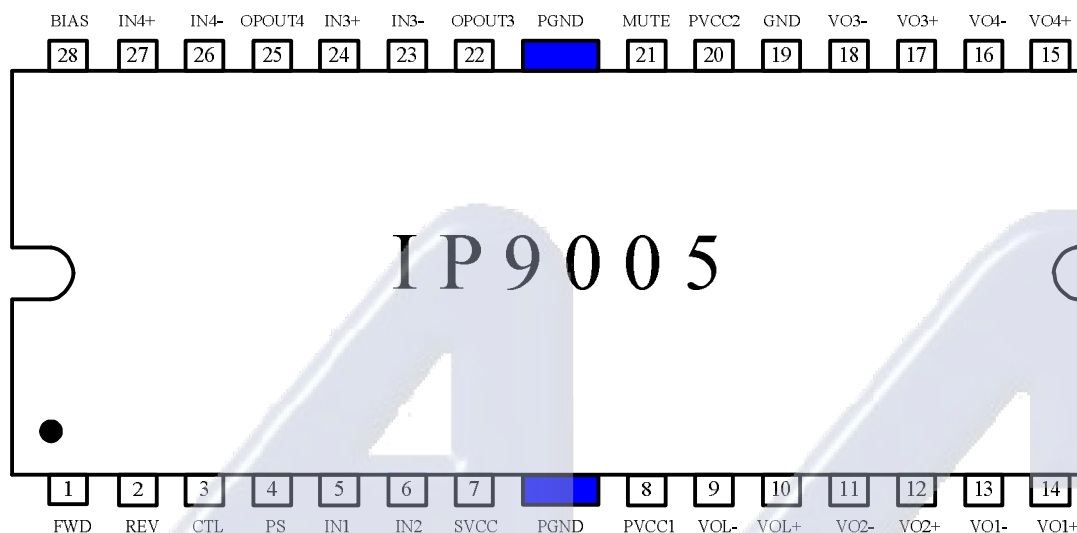
Device	Package	Operating Temp
IP9005	28SSOPH-375A	-35°C ~ +85°C
IP9005-TF	28SSOPH-375A	-35°C ~ +85°C
IP9005L	28SSOPH-375A	-35°C ~ +85°C
IP9005L-TF	28SSOPH-375A	-35°C ~ +85°C
IP9005	28SSOPH-375B	-35°C ~ +85°C
IP9005-TF	28SSOPH-375B	-35°C ~ +85°C
IP9005L	28SSOPH-375B	-35°C ~ +85°C
IP9005L-TF	28SSOPH-375B	-35°C ~ +85°C

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## PIN CONNECTIONS



## PIN DESCRIPTIONS

NO	SYMBOL	I/O	DESCRIPTION	NO	SYMBOL	I/O	DESCRIPTION
1	FWD	I	Loading motor forward input	15	VO4+	O	CH4 driver output(+)
2	REV	I	Loading motor reverse input	16	VO4-	O	CH4 driver output(-)
3	CTL	I	Loading motor speed control	17	VO3+	O	CH3 driver output(+)
4	PS	I	Power save	18	VO3-	O	CH3 driver output(-)
5	IN1	I	CH1 input	19	GND	-	Ground
6	IN2	I	CH2 input	20	PVCC2	-	Power supply 2
7	SVCC	-	Signal power supply	21	MUTE	I	Mute
8	PVCC1	-	Power supply 1	22	OPOUT3	O	CH3 OPAMP output
9	VOL-	O	Loading driver output(-)	23	IN3-	I	CH3 OPAMP input (-)
10	VOL+	O	Loading driver output(+)	24	IN3+	I	CH3 OPAMP input (+)
11	VO2-	O	CH2 driver output(-)	25	OPOUT4	O	CH4 OPAMP output
12	VO2+	O	CH2 driver output(+)	26	IN4-	I	CH4 OPAMP input (-)
13	VO1-	O	CH1 driver output(-)	27	IN4+	I	CH4 OPAMP input (+)
14	VO1+	O	CH1 driver output(+)	28	BIAS	I	Bias

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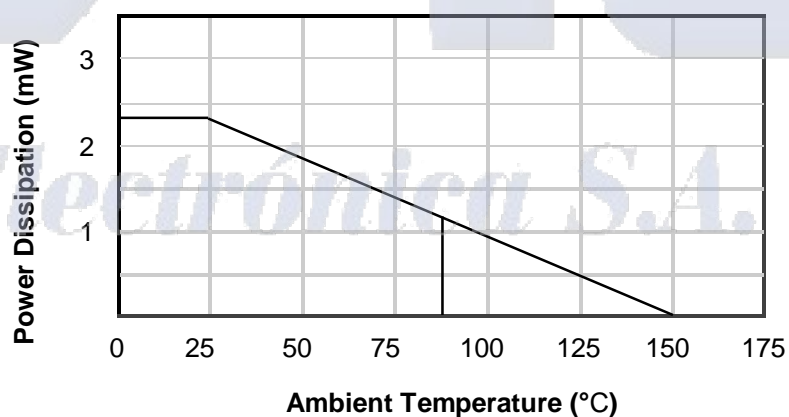
## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Maximum supply voltage	VCCmax	15	V
Power dissipation	Pd	2.3 *	W
Operating temperature	Topr	-35 ~ +85	°C
Storage temperature	Tstg	-55 ~ 150	°C

Note>

1. When mounted on 50mm X 50mm X 1mm PCB (Phenolic resin material).
2. Power dissipation reduces 18.4 mW/°C for using above Ta=25°C
3. Do not exceed Pd and SOA.

## POWER DISSIPATION CURVE



## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Signal supply Voltage	SVCC	4.3 ~ 13.2	V
Power supply Voltage 1	PVCC1	4.3 ~ SVCC	V
Power supply Voltage 2	PVCC2	4.3 ~ SVCC	V

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## ELECTRICAL CHARACTERISTICS

(SVCC=12.0V, PVCC1=PVCC2=5V, RL=8ohm, Bias=1.65V, Ta = 25°C unless otherwise specified.)

CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent circuit current	Icc	No Load	-	23	34	mA
Power save on current	Ips	Pin5=GND	-	0.5	2.0	mA
Power save on voltage	Vpson	Pin5=sweep	-	-	0.5	V
Power save off voltage	Vpsoff	Pin5=sweep	2.0	-	-	V
<b>[ BTL DRIVE PART ]</b>						
Output offset voltage	Voos	Vin=Vref	-80	-	+80	mV
Maximum output voltage	Voms	RL=8 ohm	3.6	4.0	-	V
Closed-loop voltage gain	Avfs	Vin=0.1Vrms, f=1kHz	17	19	21	dB
Mute on voltage	Vmon	Pin21=sweep	-	-	0.5	V
Mute off voltage	Vmoff	Pin21=sweep	1.5	-	-	V
Mute pin current	Imp	Pin21=5.0V	-	200	300	uA
Bias pin current	Ibias	Pin28=2.5V	-	80	120	uA
<b>[ CH3, CH4 INPUT OPAMP PART ]</b>						
Common mode input range	Vicm	Vbias=4.0V	0.5	-	10	V
Input bias current	Ib	-	-	-	300	nA
High level output voltage	Vohop	Pin28=6.0V	11.5	-	-	V
Low level output voltage	Volop	Pin28=6.0V	-	-	0.5	V
Output source current	Isrc	-	1	-	-	mA
Output sink current	Isnk	-	1	-	-	mA
Slew rate	Srop	100KHz pulse, Vout=2.0Vpp	-	1.0	-	V/uS

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**ELECTRICAL CHARACTERISTICS**

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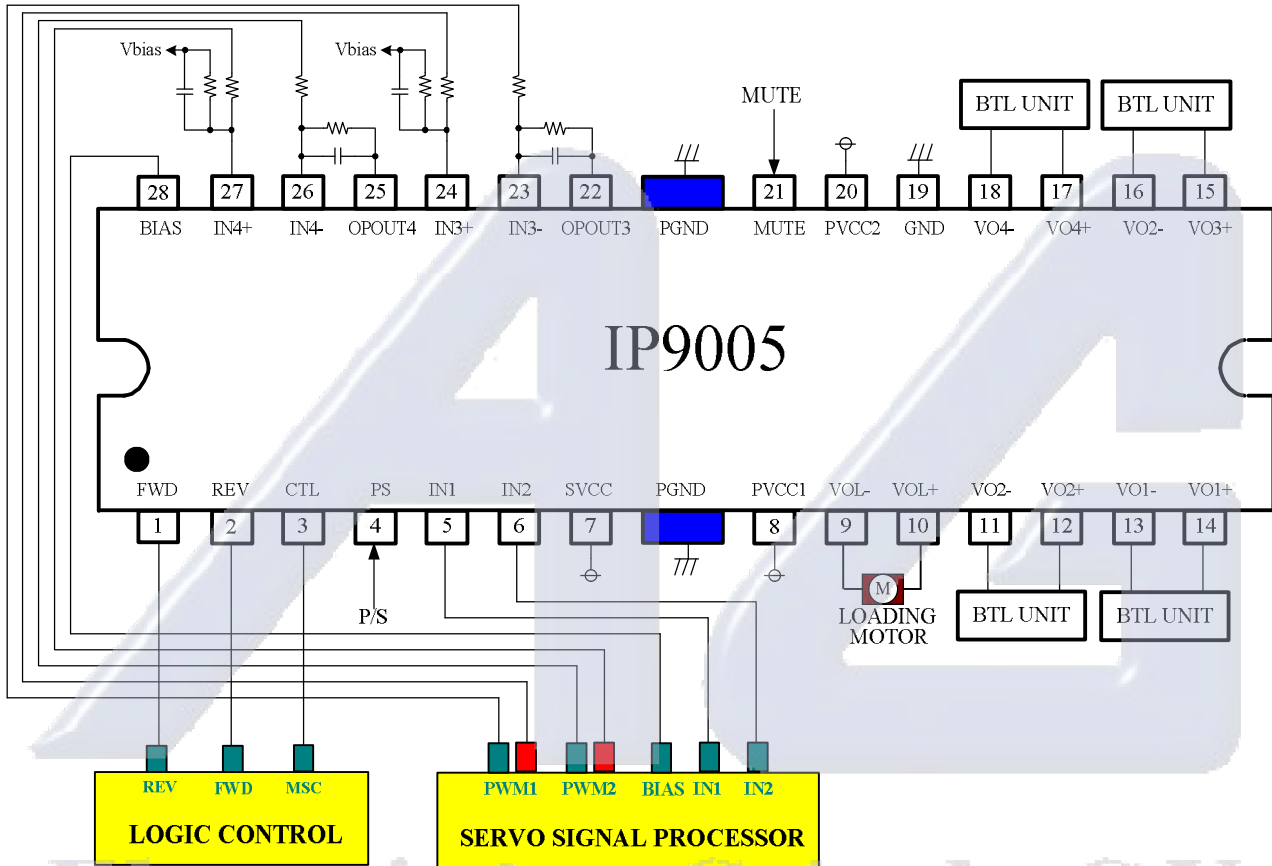
CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
<b>[LOADING DRIVER PART]</b>						
Input high level voltage	Vih	-	1.5	-	-	V
Input high level voltage	Vil	-	-	-	0.5	V
FWD/REV pin current	Iin	Pin1=Pin2=5.0V	-	200	300	uA
Maximum output voltage	Vo	RL=25 ohm	9.0	10	-	V
Voltage gain	Gvf	Pin3=sweep	7	9	11	dB

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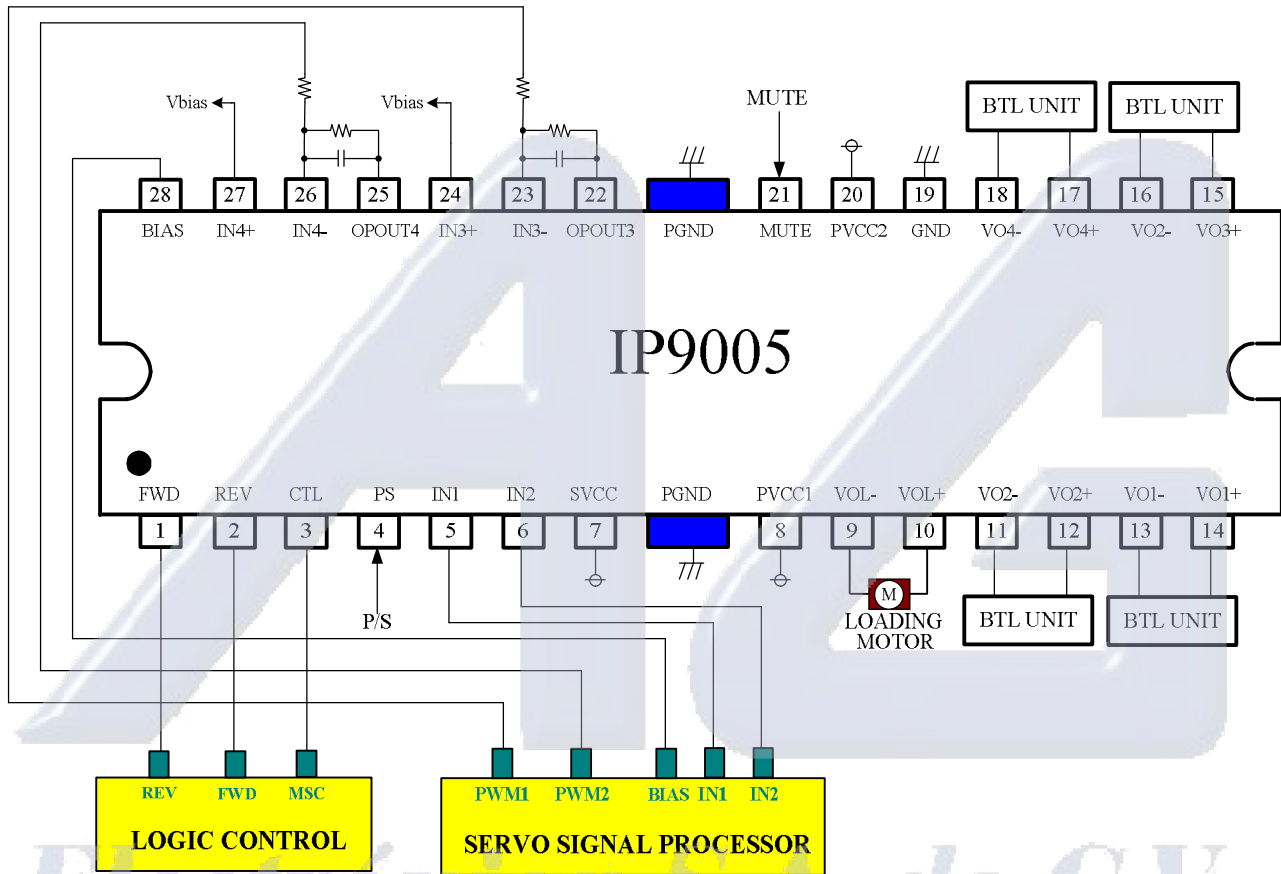
### TYPICAL APPLICATION CIRCUIT 1



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## 5-CH MOTOR DRIVE IC

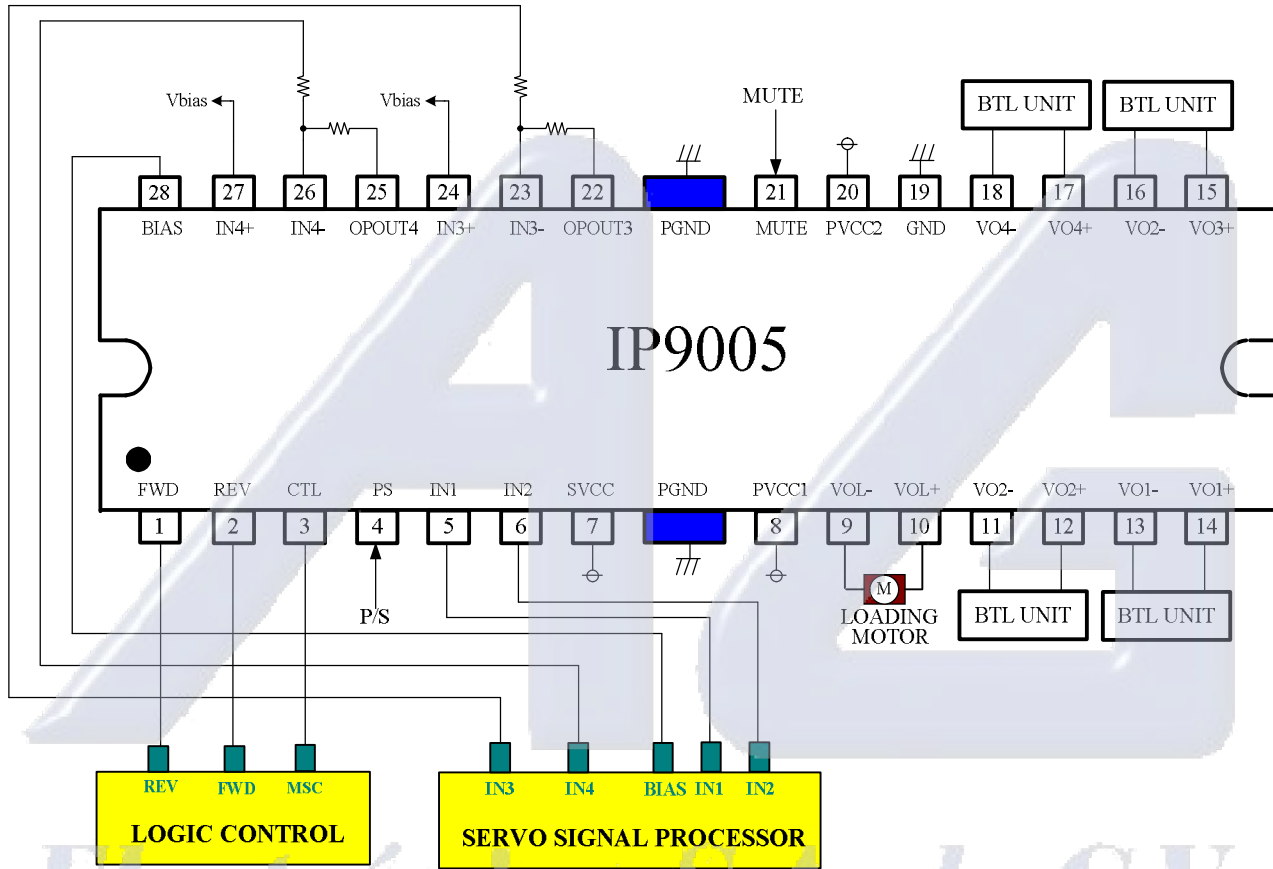
### TYPICAL APPLICATION CIRCUIT 2



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## 5-CH MOTOR DRIVE IC

### TYPICAL APPLICATION CIRCUIT 3



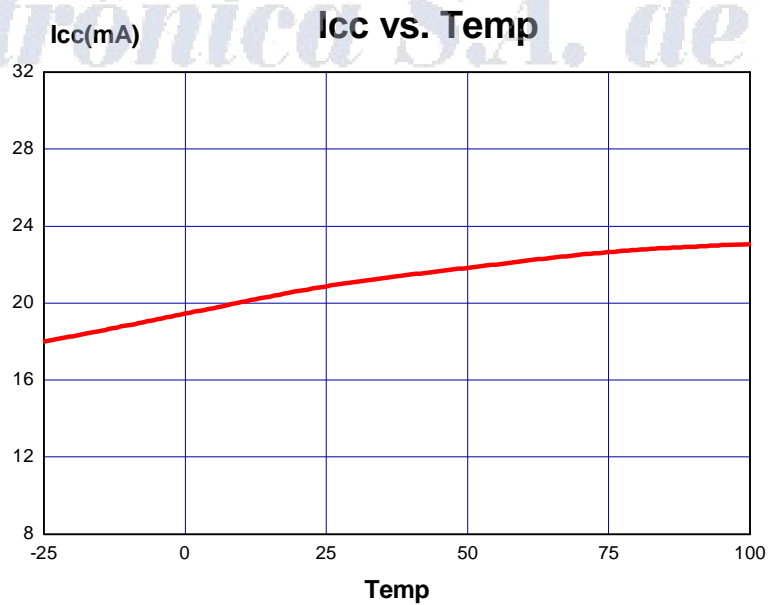
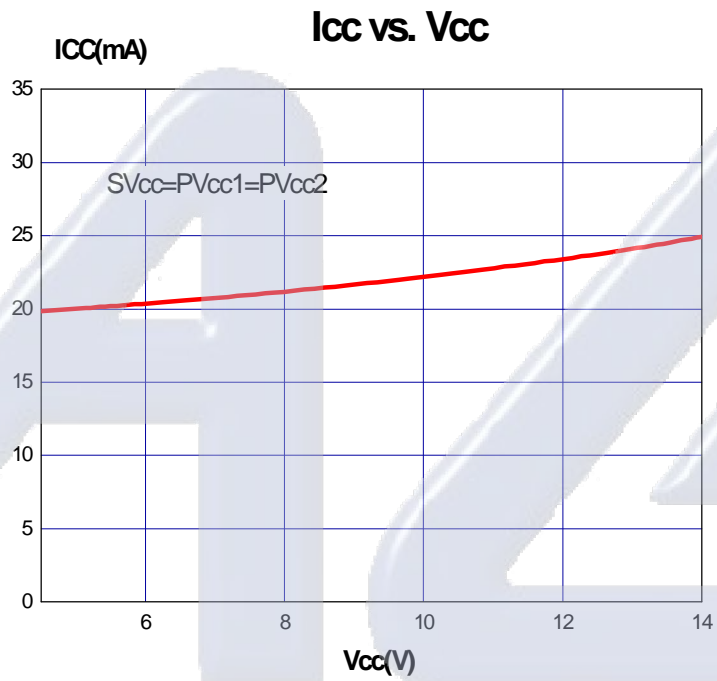
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### ELECTRICAL CHARACTERISTICS CURVES

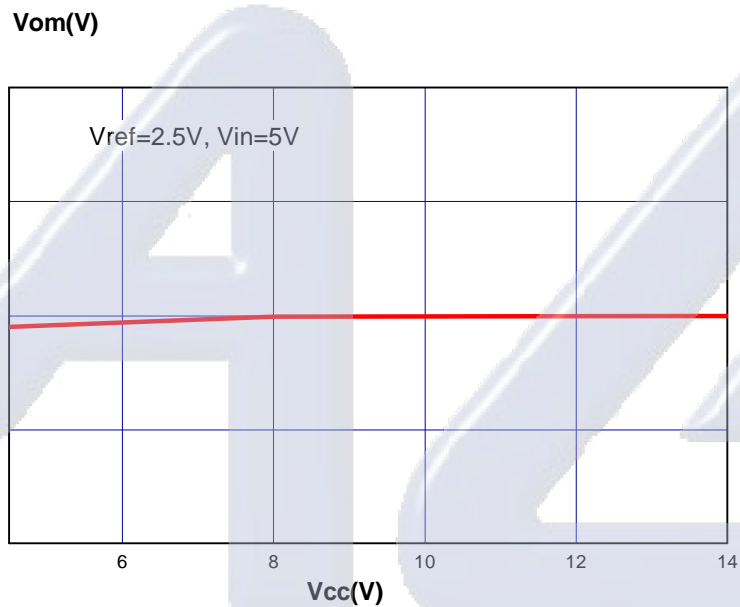


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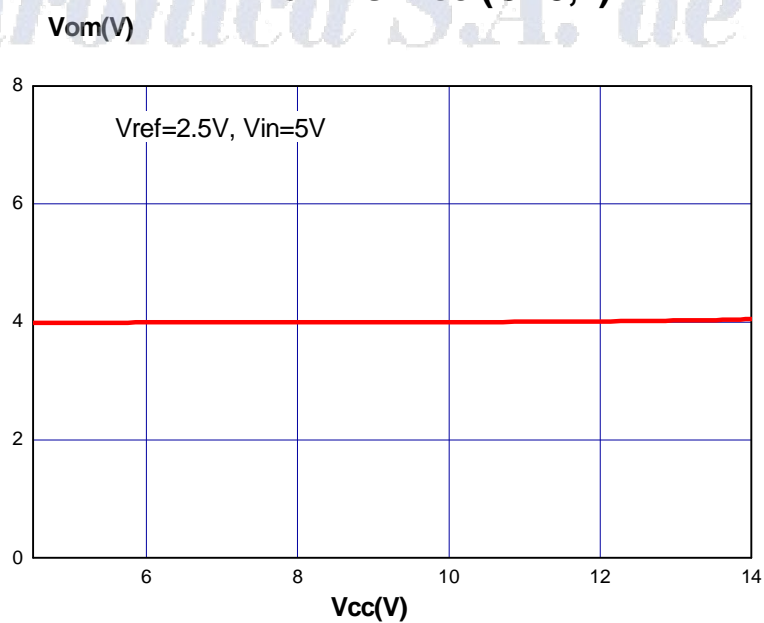
## 5-CH MOTOR DRIVE IC

## ELECTRICAL CHARACTERISTICS CURVES (Continued)

## Vom vs. Vcc (CH1,2)



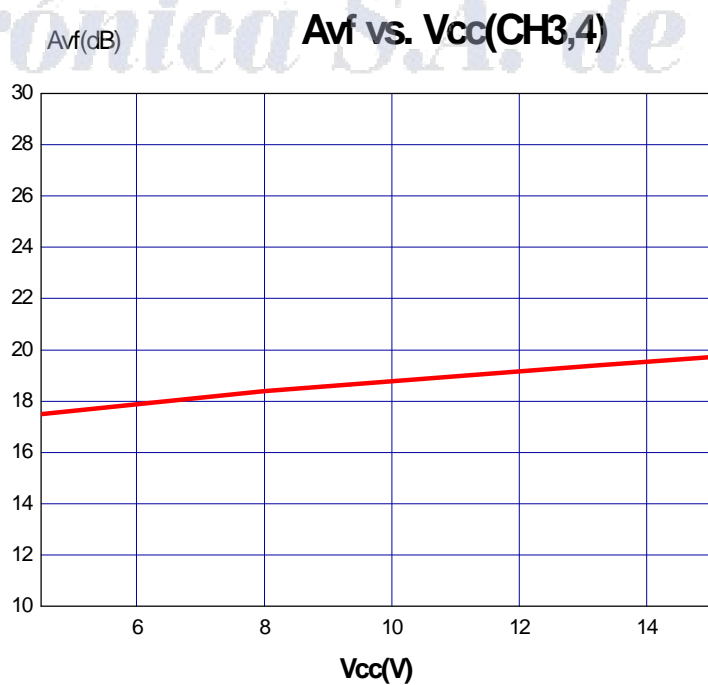
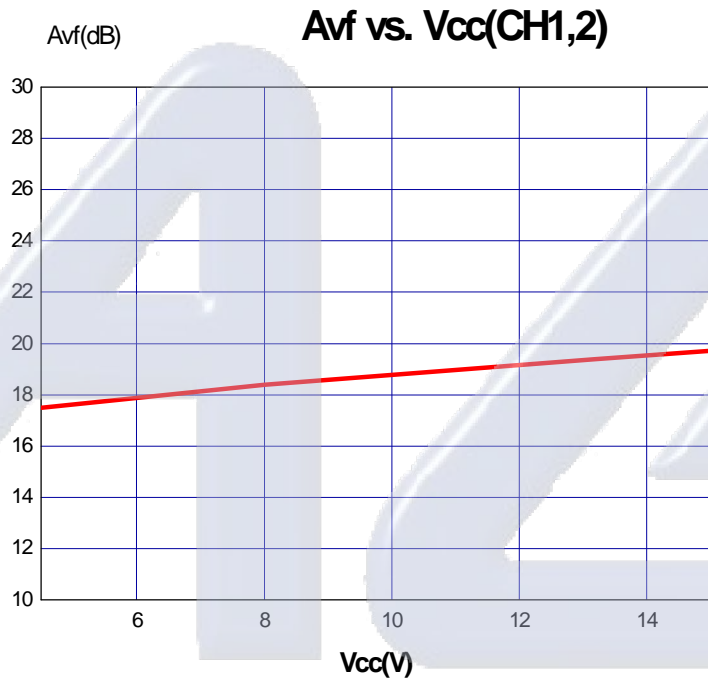
## Vom vs. Vcc (CH3,4)



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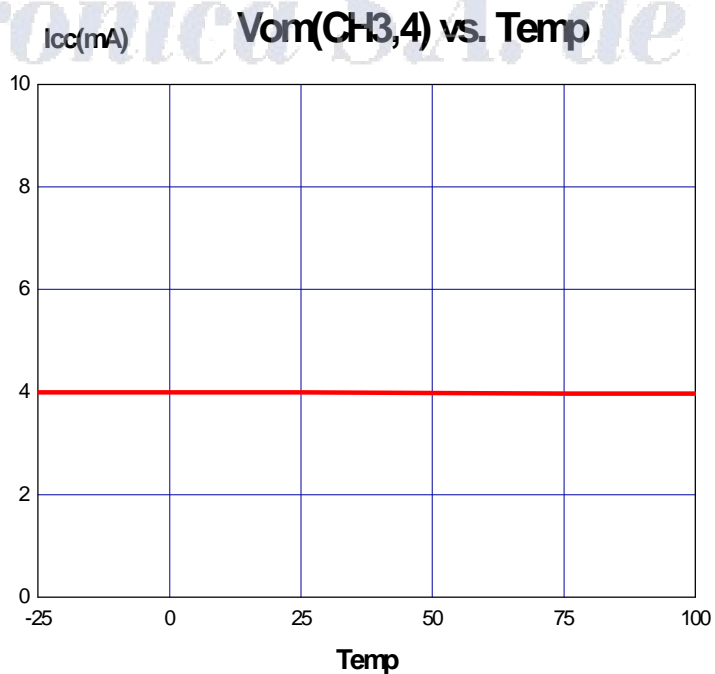
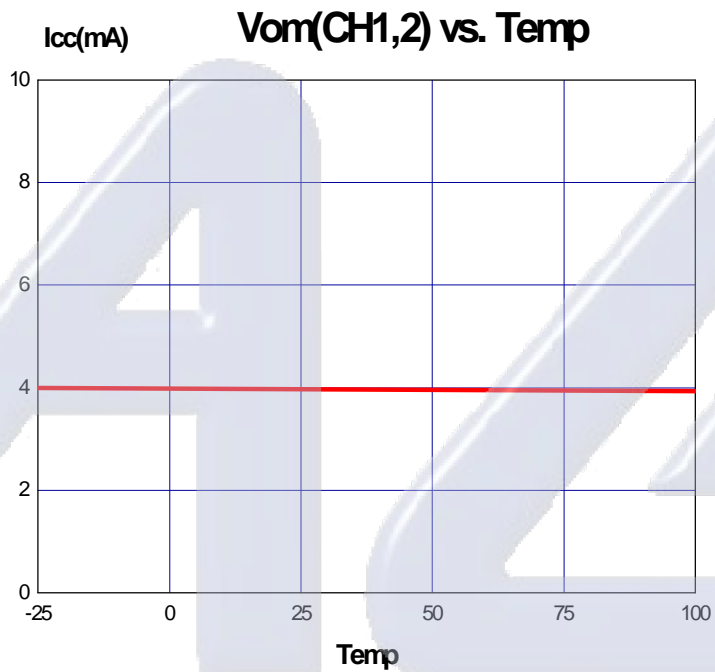
## ELECTRICAL CHARACTERISTICS CURVES (Continued)



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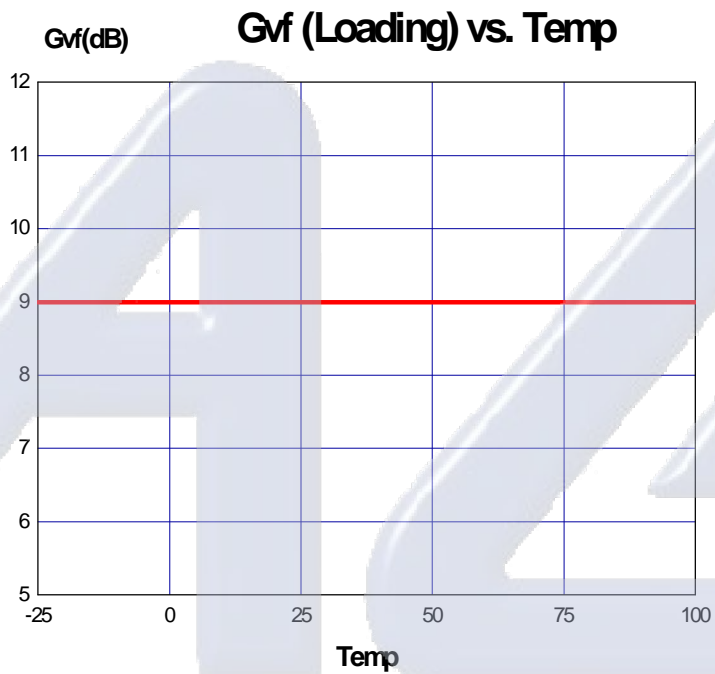
### ELECTRICAL CHARACTERISTICS CURVES (Continued)



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ELECTRICAL CHARACTERISTICS CURVES (Continued)



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### PACKAGE DIMENSION(28SSOPH-375A)

