

# Fan Speed Controller with Linear or PWM Mode

## Features

- SMBus Interface
- Linear or PWM Mode Speed Control
- Open or Close Loop Fan Speed Control
- Supply Voltage Range 3V~5.5V
- ADD0 Pin to Select 3 Different SMBus Addresses
- SMBus Alert # for G763
- Built-in Inverter for Crystal Oscillator for G763
- SOP-8/MSOP-8 for G762
- MSOP-10 for G763

## Applications

- Notebook PC
- Industrial PC
- LAN Switch
- Servers
- Telecom equipment
- Industrial Control

## General Description

The G762/3 is a single chip solution for fan speed control. It can be directly connected to the fan and performs close-loop or open-loop control. And there are two modes, PWM and linear, to drive the fan. It determined the current fan speed based on the fan rotation pulses and an externally supplied clock. The desired fan speed is programmed via the SMBus. The actual fan speed and fan status can be read via the SMBus. Short-circuit protection is implemented to prevent damages to the fan and the IC itself.

## Ordering Information

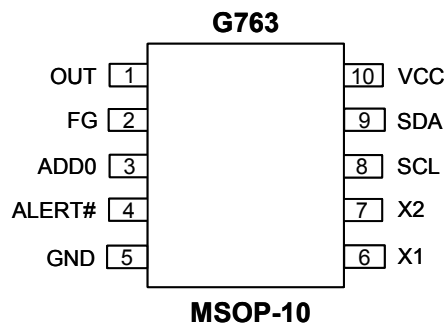
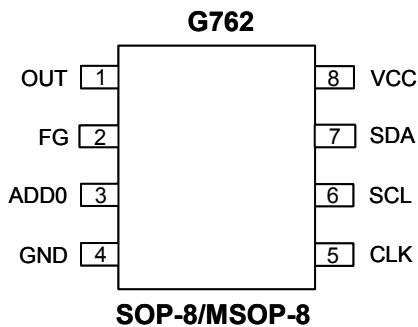
ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Pb free)
G762P11U	G762	-55°C to +125°C	SOP-8
G762P81U	G762	-55°C to +125°C	MSOP-8
G763P71U	G763	-55°C to +125°C	MSOP-10

Note: P1: SOP-8 P8: MSOP-8 P7:MSOP-10

1: Bonding Code

U: Tape & Reel

## Pin Configuration



**Absolute Maximum Ratings**

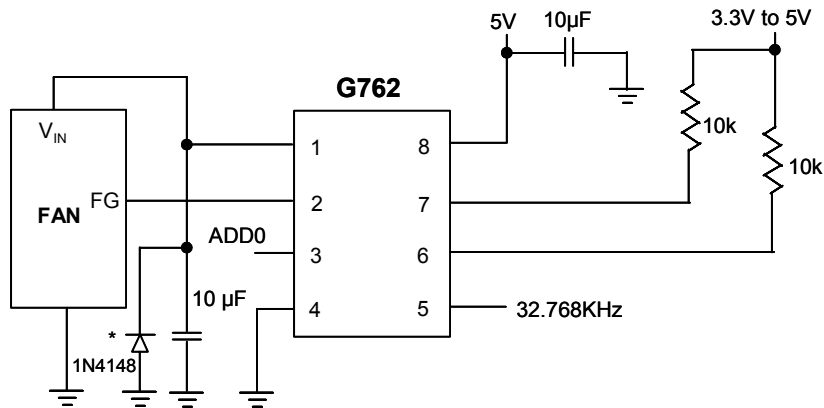
VCC to GND . . . . . -0.3V to +6V  
 SCL, SDA, FG, ADD0, X1, X2 to GND . . . . -0.3V to +6V  
 SDA Current . . . . . -1mA to +50mA  
 ESD Protection (human body model) . . . . . 2000V  
 Continuous Power Dissipation (T<sub>A</sub> = +70°C)  
 SOP(derate 8.30mW/°C above +70°C) . . . . . 667mW

Operating Temperature Range . . . . . -55°C to +125°C  
 Junction Temperature . . . . . +150°C  
 Storage temperature Range . . . . . -65°C to +165°C  
 Reflow Temperature (soldering, 10sec) . . . . . 260°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**Electrical Characteristics (T.B.D)**

**Application Circuit**

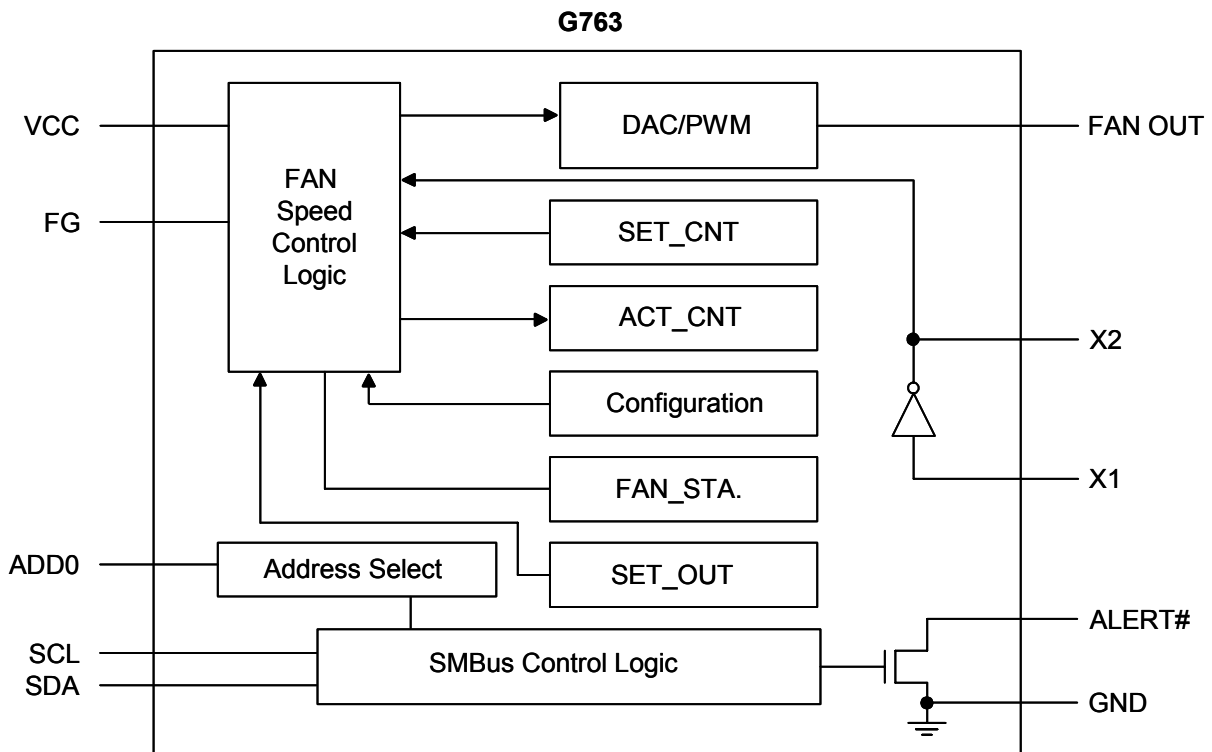


Diode 1N4148 is optional

**Pin Description**

PIN		NAME	DIRECTION	FUNCTION
SOP-8/MSOP-8	MSOP-10			
1	1	OUT	Output	Output connected to fan driver circuit
2	2	FG	Input	Fan pulse input
3	3	ADD0	In/Out	SMBus slave address selection pin. VCC : 7'b0111_110 Float: 7'b1001_000 GND: 7'b1001_001
4	5	GND	Supply	Ground
5	---	CLK	In/Out	The input terminal of the built-in inverter for driving crystal.
6	8	SCL	Input	SMBus serial clock input
7	9	SDA	In/Out	SMBus serial data input/output, open drain
8	10	VCC	Supply	Supply Voltage, 3.0V ~ 5.5V
---	4	Alert#	Output	SMBus Alert output, open drain
---	6	X1	In/Out	The input terminal of the built-in inverter for driving crystal.
---	7	X2	Output	The output terminal of the built-in inverter for driving crystal.

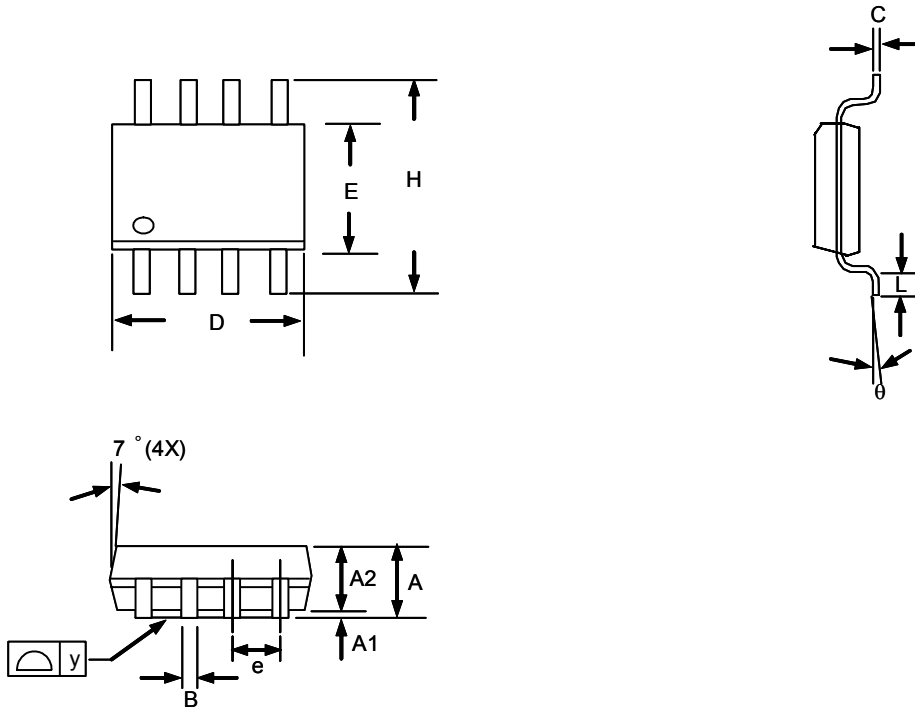
**Block Diagram**



**Function Description**

REGISTORS	COMMAND	POR	FUNCTION	R/W
FAN1_SET_CNT	00h	11111111	Set fan1 RPM in close loop control.	[7:0]R/W
FAN1_ACT_CNT	01h	11111111	Read fan1 RPM.	[7:0]R
STATUS	02h	xxxxxx01	Read status registers. bit 1: FAN1_FAIL: FAN1 fail bit 0: FAN1_OOC#: FAN1 out of control	[1:0]R
FAN1_SET_OUT	03h	00000000	Set fan1 output voltage/PWM duty in open loop control.	[7:0]R/W
FAN1_CMD1	04h	00010000	Read/Write FAN1 Configuration registers. <b>bit 7:</b> DET_FAN_FAIL . <b>bit 6:</b> DET_FAN_OOC <b>bit 5:</b> OUT_MODE 1:PWM , 0:DAC <b>bit 4:</b> FAN_MODE 1:close-loop 0:open-loop.  ID of clock which to count FG. <b>bit 3:</b> FG_CLK_ID1, <b>bit 2:</b> FG_CLK_ID0, [FG_CLK_ID1, FG_CLK_ID0] 00: Divide fan clock by 1 01: Divide fan clock by 2 10: Divide fan clock by 4 11: Divide fan clock by 8  PWM output polarity <b>bit 1:</b> PWM_PLARITY,1:negative duty, :positive duty  FG pulses count per revolution <b>bit 0:</b> FG_PLS_ID0, [FG_PLS_ID1, FG_PLS_ID0] 0:2 Pulses count per revolution. 1:4 Pulses count per revolution.	[7:0]R/W
FAN_CMD2	05h	xxx00001	Bit 4: Mask ALERT# for G763. Bit 3,2: FG_GEAR_MODE. 0,1,2 -> dT=Tfg/2,dT=Tfg,dT=2Tfg Bit 1,0: FAN_STARTV 0,1,2,3 -> 0,32,64,96 dac_code	[4:0]R/W

## Package Information

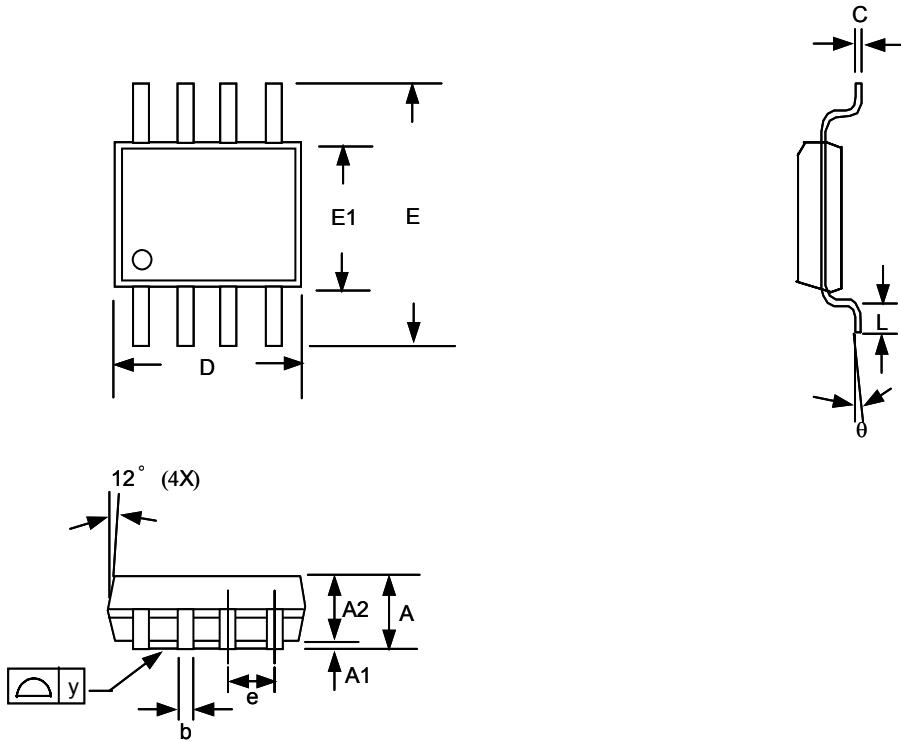


**SOP-8 Package**

**Note:**

1. Package body sizes exclude mold flash and gate burrs
2. Dimension L is measured in gage plane
3. Tolerance 0.10mm unless otherwise specified
4. Controlling dimension is millimeter converted inch dimensions are not necessarily exact.

SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.35	1.60	1.75	0.053	0.063	0.069
A1	0.10	-----	0.25	0.004	-----	0.010
A2	-----	1.45	-----	-----	0.057	-----
B	0.33	-----	0.51	0.013	-----	0.020
C	0.19	-----	0.25	0.007	-----	0.010
D	4.80	-----	5.00	0.189	-----	0.197
E	3.80	-----	4.00	0.150	-----	0.157
e	-----	1.27	-----	-----	0.050	-----
H	5.80	-----	6.20	0.228	-----	0.244
L	0.40	-----	1.27	0.016	-----	0.050
y	-----	-----	0.10	-----	-----	0.004
$\theta$	0°	-----	8°	0°	-----	8°

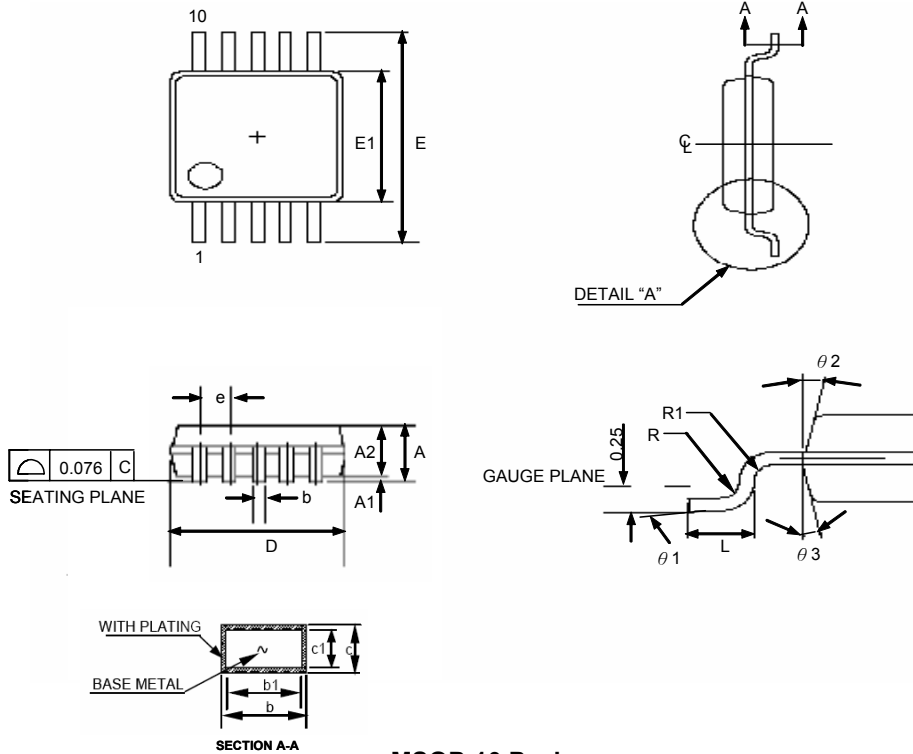


**MSOP-8 Package**

**Note:**

1. Package body sizes exclude mold flash and gate burrs
2. Dimension L is measured in gage plane
3. Tolerance 0.10mm unless otherwise specified
4. Controlling dimension is millimeter converted inch dimensions are not necessarily exact.
5. Followed from JEDEC MO-137

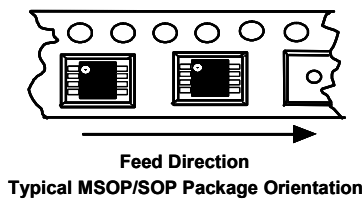
SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.81	1.02	1.22	0.032	0.040	0.048
A1	0.00	-----	0.20	0.000	-----	0.008
A2	0.76	0.86	0.97	0.030	0.034	0.038
b	0.28	0.30	0.38	0.011	0.012	0.015
C	0.13	0.15	0.23	0.005	0.006	0.009
D	2.90	3.00	3.10	0.114	0.118	0.122
E	4.80	4.90	5.00	0.189	0.193	0.197
E1	2.90	3.00	3.10	0.114	0.118	0.122
e	-----	0.65	-----	-----	0.026	-----
L	0.40	0.53	0.66	0.016	0.021	0.026
y	-----	-----	0.10	-----	-----	0.004
$\theta$	0°	-----	6°	0°	-----	6°



**MSOP-10 Package**

SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	----	----	1.10	----	----	0.043
A1	0.05	----	0.15	0.002	----	0.006
A2	0.81	0.86	0.91	0.032	0.034	0.036
b	0.15	----	0.30	0.006	----	0.012
b1	0.15	0.20	0.25	0.006	0.008	0.010
c	0.13	----	0.23	0.005	----	0.009
c1	0.13	0.15	0.18	0.005	0.006	0.007
D	2.90	3.00	3.10	0.114	0.118	0.122
E1	2.90	3.00	3.10	0.114	0.118	0.122
e	0.50 BSC			0.020 BSC		
E	4.90 BSC			0.193 BSC		
L	0.445	0.55	0.648	0.0175	0.0217	0.0255
θ 1	0°	----	6°	0°	----	6°
θ 2	12 REF			12 REF		
θ 3	12 REF			12 REF		
R	0.09	----	----	0.004	----	----
R1	0.09	----	----	0.004	----	----
JEDEC	MO-187BA					

**Taping Specification**



PACKAGE	Q'TY/BY REEL
SOP-8	2,500 ea
MSOP-8	2,500 ea
MSOP-10	2,500 ea

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