

# Design Change Notification

December 29th, 2021

To: Sanyo Denki America Cooling Distributors

Product: BLDC FAN MOTOR \_\_\_\_\_

Model: San Ace 60 (9LG) 60mm sq. x 25mm thick  
(Please refer Attached Sheet for a complete part number list.)SANYO DENKI CO., LTD.  
Design Dept., Cooling Systems Div.

Approved	Checked	Designed
		

SANYO DENKI America, Inc.  
Cooling Systems Division

No.	Contents	Before Change	After Change	Description
1	Motor drive IC, electronic parts, Motor Windings and PWB	Use motor drive IC manufactured by ON-Semiconductor.	Use motor drive IC manufactured by Toshiba, Rohm or New-Japan-Radio.	Change to the motor drive IC due to discontinuation of production by the semiconductor manufacturer. Also change to some electric parts except IC, Motor windings and PWB due to the change of the motor drive IC.
2	Specifications	See the Attached Sheet.	See the Attached Sheet.	
3	Implementation Date			Implementation Date: From December, 2022 production (Estimated). Please note that the changeover schedule to new IC may change according to the number of products in the inventory.

**No. A0052592 - Attached Sheet 1 – 1/1**

[MODEL LIST]

San Ace 60 (9LG) – 60mm x 25mm thick

MODEL	Change contents
9LG0612J4003 9LG0612J4D001 9LG0612J4D003	Attached Sheet 2
9LG0612H4001 9LG0612H4002 9LG0612H4005 9LG0612H4007-C 9LG0612M4005	Attached Sheet 3
9LG0612P4J001 9LG0612P4J003 9LG0612P4J004 9LG0612P4J005 9LG0612P4J006 9LG0612P4J008	Attached Sheet 4
9LG0612P4H001 9LG0612P4H003 9LG0612P4H004 9LG0612P4H006 9LG0612P4H007 9LG0612P4H008 9LG0612P4H009 9LG0612P4H010	Attached Sheet 5
9LG0612P4M001 9LG0612P4M003	Attached Sheet 6

MODEL	Change contents
9LG0624J4003 9LG0624J4D003 9LG0624H4001 9LG0624H4002 9LG0624H4003 9LG0624H4D001 9LG0624H4D003 9LG0624M4001 9LG0624M4002 9LG0624M4003 9LG0624M4004 9LG0624M4005 9LG0624M4D001	Attached Sheet 7
9LG0624P4J001 9LG0624P4J003 9LG0624P4JD001 9LG0624P4H001 9LG0624P4H001-C 9LG0624P4H003 9LG0624P4H005 9LG0624P4HD001 9LG0624P4M001 9LG0624P4M001-C	Attached Sheet 8

**No. A0052592 - Attached Sheet 2 - 1/1**

[MODEL]

9LG0612J4003,

9LG0612J4D001, 9LG0612J4D003

[Contents of change]

	Before Change	After Change
Motor drive IC	LB11660 By On-semiconductor	BD69730 or BD6973 By Rohm
Operating voltage	No change	
Electrical current	No change	
Speed	No change	
Operating temp.	No change	
Sound pressure level	No change	
Control terminal	Non-applicable	
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	Non-applicable	
Sensor spec.	No change	

**No. A0052592 - Attached Sheet 3 - 1/1**

[MODEL]

9LG0612H4001, 9LG0612H4002, 9LG0612H4005, 9LG0612H4007-C,  
9LG0612M4005

[Contents of change]

	Before Change	After Change
Motor drive IC	LB11970FV By On-semiconductor	TC78B002 By Toshiba
Operating voltage	No change	
Electrical current	No change	
Speed	No change	
Operating temp.	No change	
Sound pressure level	No change	
Control terminal	Non-applicable	
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	Non-applicable	
Sensor spec.	No change	

**No. A0052592 - Attached Sheet 4 - 1/2**

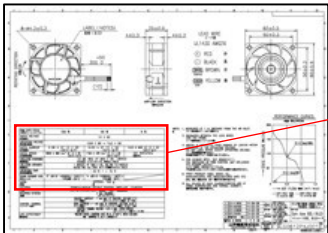
[MODEL]

9LG0612P4J001, 9LG0612P4J003, 9LG0612P4J004, 9LG0612P4J005, 9LG0612P4J006, 9LG0612P4J008

[Contents of change]


	Before Change	After Change
Motor drive IC	LB11660 By On-semiconductor	BD69730 or BD6973 By Rohm
Operating voltage	No change	
Electrical current	0.03[A] @ PWM 20% Refer to Fig.1	0.04[A] @ PWM 25% Refer to Fig.1
Speed	1150 +/- 345 [min <sup>-1</sup> ] @ PWM20% Refer to Fig.1	2100 +/- 630 [min <sup>-1</sup> ] @ PWM25% Refer to Fig.1
Operating temp.	No change	
Sound pressure level	14[dBA(A)] @ PWM 20% Refer to Fig.1	17[dBA(A)] @ PWM 25% Refer to Fig.1
Control terminal	No change	
Air flow – static pressure character	Refer to Fig.2	
PWM duty cycle - Speed characteristic	Refer to Fig.3	
Sensor spec.	No change	

**FIG. 1**



Before Change

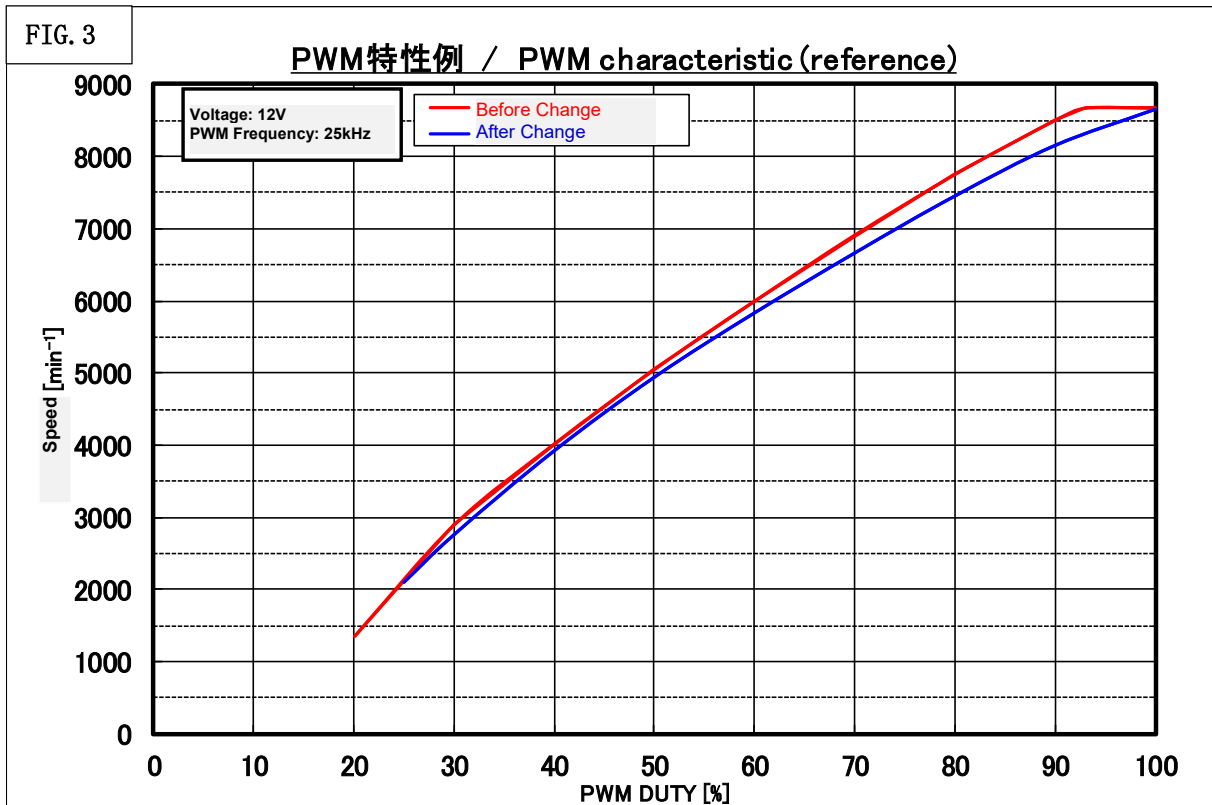
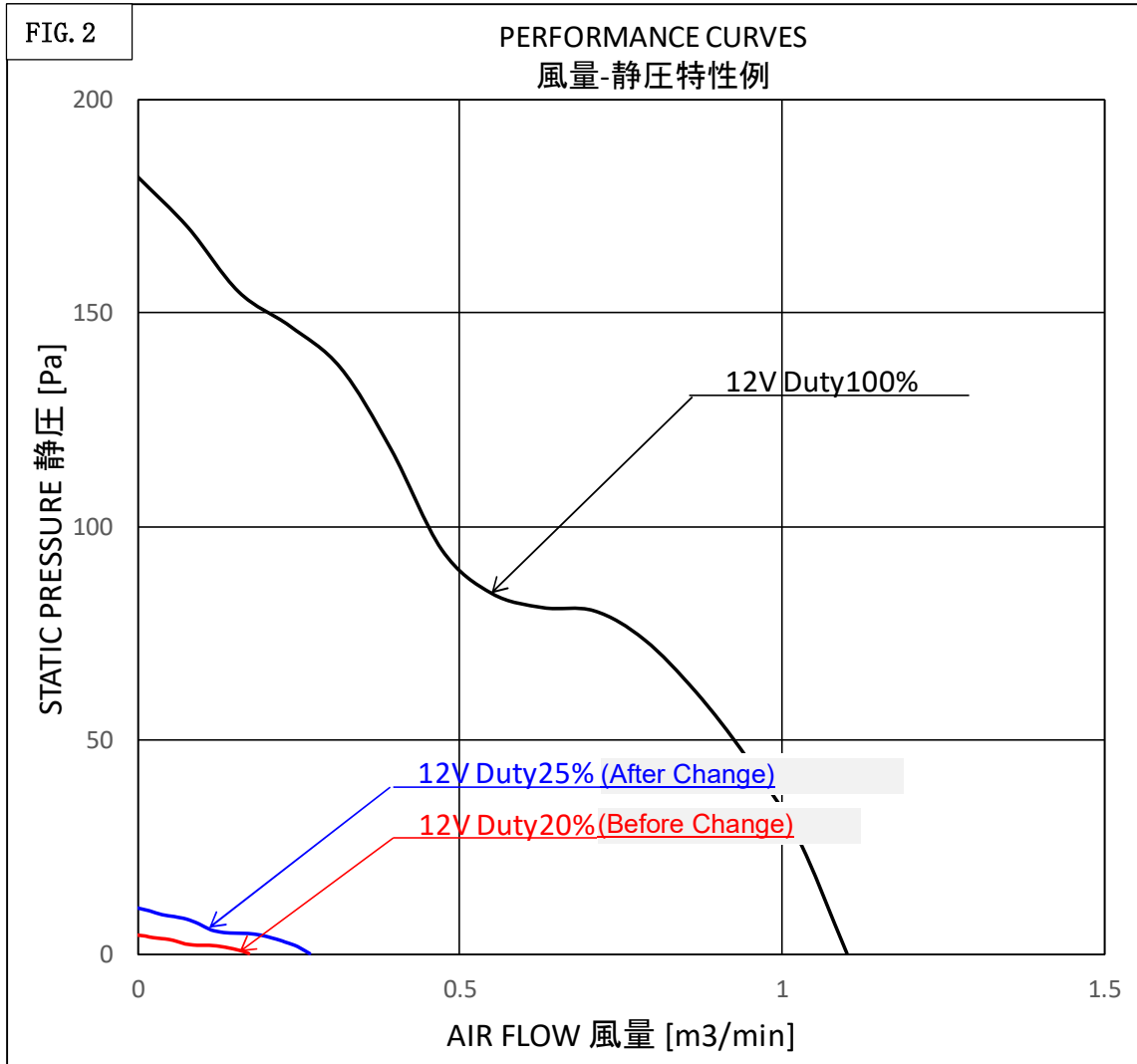
PWM DUTY CYCLE PWMフェーデイングレシオ	100 %	20 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.39 A AT 12 V DC (DC12 Vにて)	0.03 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	8650 ± 865 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	1150 ± 345 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 V×カーにて10 MΩ以上(注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz(NOTE2) AC50/60 Hz, 500 Vにて1分間耐えること(注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	47 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	14 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	



After Change

PWM DUTY CYCLE PWMフェーデイングレシオ	100 %	25 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.39 A AT 12 V DC (DC12 Vにて)	0.04 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	8650 ± 865 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	2100 ± 630 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 V×カーにて10 MΩ以上(注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz(NOTE2) AC50/60 Hz, 500 Vにて1分間耐えること(注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	47 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	17 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	

No. A0052592 - Attached Sheet 4 - 2/2



**No. A0052592 - Attached Sheet 5 - 1/2**

[MODEL]

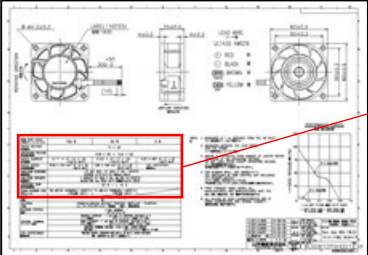
9LG0612P4H001, 9LG0612P4H003, 9LG0612P4H004, 9LG0612P4H006, 9LG0612P4H007, 9LG0612P4H008, 9LG0612P4H009, 9LG0612P4H010

[Contents of change]


	Before Change	After Change
Motor drive IC	LB11970FV By On-semiconductor	TC78B002 By Toshiba
Operating voltage	No change	
Electrical current	0.03[A] @ PWM 20% Refer to Fig.1	0.03[A] @ PWM 25% Refer to Fig.1
Speed	1350 +/- 405 [min <sup>-1</sup> ] @ PWM20% Refer to Fig.1	1350 +/- 405 [min <sup>-1</sup> ] @ PWM25% Refer to Fig.1
Operating temp.	No change	
Sound pressure level	14[dBA(A)] @ PWM 20% Refer to Fig.1	14[dBA(A)] @ PWM 25% Refer to Fig.1
Control terminal	No change	
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	Refer to Fig.2	
Sensor spec.	No change	

**FIG. 1**

**Before Change**

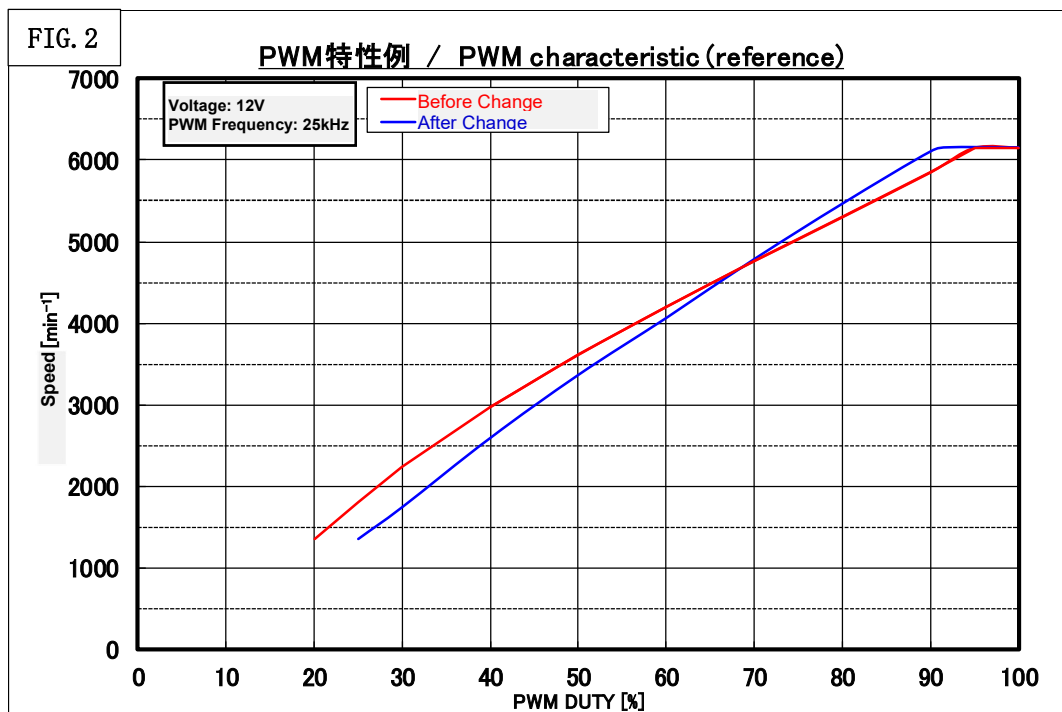


PWM DUTY CYCLE PWMデューティサイクル	100 %	20 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.17 A AT 12 V DC (DC12 Vにて)	0.03 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	6150 ± 615 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	1350 ± 405 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 Vノードにて10 MΩ以上(注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz (NOTE2) AC50/60 Hz, 500 Vにて1分間耐圧すること(注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	35 dB(A) (NOMINAL) (NOTE1) (中心値)(注1)	14 dB(A) (NOMINAL) (NOTE1) (中心値)(注1)	



**After Change**

PWM DUTY CYCLE PWMデューティサイクル	100 %	25 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.17 A AT 12 V DC (DC12 Vにて)	0.03 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	6150 ± 615 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	1350 ± 405 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 Vノードにて10 MΩ以上(注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz (NOTE2) AC50/60 Hz, 500 Vにて1分間耐圧すること(注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	35 dB(A) (NOMINAL) (NOTE1) (中心値)(注1)	14 dB(A) (NOMINAL) (NOTE1) (中心値)(注1)	

**No. A0052592 - Attached Sheet 5 - 2/2**



**No. A0052592 - Attached Sheet 6 - 1/2**

[MODEL]

9LG0612P4M001, 9LG0612P4M003

[Contents of change]

	Before Change	After Change
Motor drive IC	LB11970FV By On-semiconductor	TC78B002 By Toshiba
Operating voltage	No change	
Electrical current	0.03[A] @ PWM 20% Refer to Fig.1	0.03[A] @ PWM 25% Refer to Fig.1
Speed	900 +/- 270 [min <sup>-1</sup> ] @ PWM20% Refer to Fig.1	900 +/- 270 [min <sup>-1</sup> ] @ PWM25% Refer to Fig.1
Operating temp.	No change	
Sound pressure level	14[dBA(A)] @ PWM 20% Refer to Fig.1	14[dBA(A)] @ PWM 25% Refer to Fig.1
Control terminal	No change	
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	Refer to Fig.2	
Sensor spec.	No change	

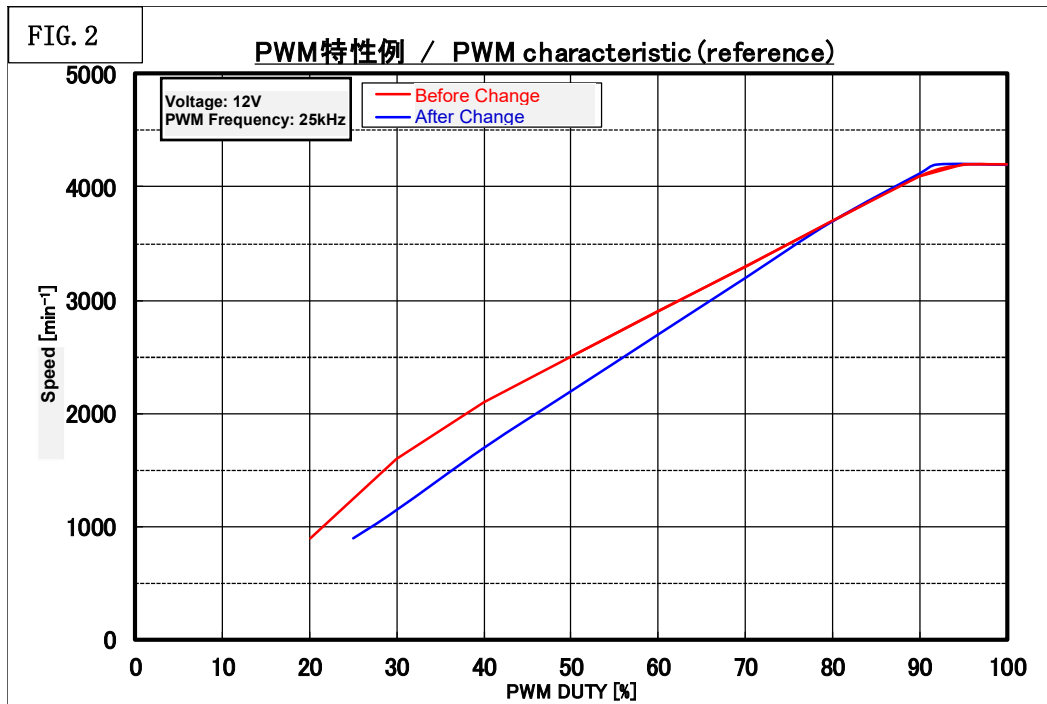
**FIG. 1**

Before Change

PWM DUTY CYCLE PWMフューチマサイクル	100 %	20 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.09 A AT 12 V DC (DC12 Vにて)	0.03 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	4200 ± 420 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	900 ± 270 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 Vで1分間に10 MΩ以上 (注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz (NOTE2) AC50/60 Hz, 500 Vにて1分間耐えること (注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	24 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	14 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	

After Change

PWM DUTY CYCLE PWMフューチマサイクル	100 %	25 %	0 %
RATED VOLTAGE 定格電圧	12 V DC		
OPERATING VOLTAGE 使用電圧範囲	10.8 V DC ~ 13.2 V DC		
RATED CURRENT 定格電流	0.09 A AT 12 V DC (DC12 Vにて)	0.03 A AT 12 V DC (DC12 Vにて)	0.03 A MAX AT 12 V DC (DC12 Vにて)
RATED SPEED 定格回転速度	4200 ± 420 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	900 ± 270 min <sup>-1</sup> AT 12 V DC (DC12 Vにて)	NO ROTATION 回転停止
INSULATION RESISTANCE 絶縁抵抗	10 MΩ MIN. AT 500 V DC (NOTE2) DC500 Vで1分間に10 MΩ以上 (注2)		
DIELECTRIC STRENGTH 絶縁耐圧	1 MINUTE AT 500 V AC, 50/60 Hz (NOTE2) AC50/60 Hz, 500 Vにて1分間耐えること (注2)		
OPERATING TEMP. 使用温度範囲	- 20 ℃ ~ + 70 ℃		
SOUND PRESSURE LEVEL 音圧レベル	24 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	14 dB(A) (NOMINAL) (NOTE1) (中心値) (注1)	

**No. A0052592 - Attached Sheet 6 - 2/2**

**No. A0052592 - Attached Sheet 7 - 1/1**

[MODEL]

9LG0624J4003, 9LG0624J4D003,

9LG0624H4001, 9LG0624H4002, 9LG0624H4003, 9LG0624H4D001, 9LG0624H4D003,

9LG0624M4001, 9LG0624M4002, 9LG0624M4003, 9LG0624M4004, 9LG0624M4005, 9LG0624M4D001

[Contents of change]

	Before Change	After Change
Motor drive IC	LV8860 By On-semiconductor	NJW4320 By New-Japan-Radio
Operating voltage	No change	
Electrical current	No change	
Speed	No change	
Operating temp.	No change	
Sound pressure level	No change	
Control terminal	No change	
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	No change	
Sensor spec.	No change	

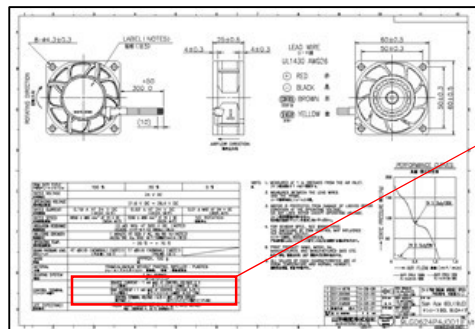
**No. A0052592 - Attached Sheet 8 - 1/1**

[MODEL]

9LG0624P4J001, 9LG0624P4J003, 9LG0624P4JD001,  
 9LG0624P4H001, 9LG0624P4H001-C, 9LG0624P4H003, 9LG0624P4H005, 9LG0624P4HD001,  
 9LG0624P4M001, 9LG0624P4M001-C

[Contents of change]

	Before Change	After Change
Motor drive IC	LV8860 By On-semiconductor	NJW4320 By New-Japan-Radio
Operating voltage	No change	
Electrical current	No change	
Speed	No change	
Operating temp.	No change	
Sound pressure level	No change	
Control terminal	Source current: <b>1 mA MAX.</b> Refer to below drawing	Source current: <b>2 mA MAX.</b> Refer to below drawing
Air flow – static pressure character	No change	
PWM duty cycle - Speed characteristic	No change	
Sensor spec.	No change	



Before Change

SOURCE CURRENT : <b>1 mA MAX.</b> AT CONTROL VOLTAGE 0 V ソース電流 : 以下 (コントロール電圧 0 V時)
SINK CURRENT : 1 mA MAX. AT CONTROL VOLTAGE 5.25 V シンク電流 : 以下 (コントロール電圧 5.25 V時)
CONTROL TERMINAL VOLTAGE : 5.25 V MAX. (OPEN CIRCUIT) 端子電圧 : 以下 (コントロール端子オープン時)



After Change

SOURCE CURRENT : <b>2 mA MAX.</b> AT CONTROL VOLTAGE 0 V ソース電流 : 以下 (コントロール電圧 0 V時)
SINK CURRENT : 1 mA MAX. AT CONTROL VOLTAGE 5.25 V シンク電流 : 以下 (コントロール電圧 5.25 V時)
CONTROL TERMINAL VOLTAGE : 5.25 V MAX. (OPEN CIRCUIT) 端子電圧 : 以下 (コントロール端子オープン時)