Dear Valued Customer

Doc. No.: 1023007
Issue date: Mrz 1.2023

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Group General Manager
AP Production Headquarters.
ROHM Co., Ltd.

Notification of Product/Process Change

This is an announcement of change(s) to the process of the products currently supplied by ROHM Co., Ltd.

We request your acknowledgement of the receipt of this notification within the given period.

Please provide your reply by Okt 1.2023

Title of change	Addition of High Efficiency Production Line for SOP-J8 IPD Device (LSI).	
Affected product(s)	Manufacturer part number	Customer part number
	See attachment	See attachment
Detailed description of change	Now	After
	・Present Production Line products	・Present Production Line products ・High Efficiency Production Line products
Reason for change	In order to strengthen the package production capacity, we will apply for the addition of product manufactured on a High Efficiency Production Line. the High Efficiency Production Line products use lead frames that produce large number of product per frame.	
Anticipated impact on quality	No impacts on quality.	
Identification of change	It is possible to identify present and High Efficiency Production Line products by ROHM internal device name in the label	

Planned first ship date : Mrz 1.2024			Sample available schedule : Mrz 1.2023		
Attachements (data, report)	YES	4M	1023007-2_4ME	Rlbl	1023007-2_Rlbl
Comments					

		Reply date	
Customer reply	☐ 1. Approved.	☐ 2. Accepted with conditions.	
Condition for approval / reason for rejection			
Comments			
Customer company name			
Customer signature		Department	
Customer signature		Department	

ROHM SEMICONDUCTOR

Electronics for the Future

ROBIN# 1023007

Addition of High Efficiency Production Line for SOP-J8 IPD Device (LSI)

March 1, 2023
AP Production Headquarters
LSI Production Department

<Report Contents>

1. Background of additional application of High Efficiency Production Line
2. 4M Comparison between present production line and High Efficiency Production Line
3. Comparison of product outer structure
4. How to identify present production line product from High Efficiency Production Line products
5. Reliability Evaluation Results

1. Background of additional application of High Efficiency Production Line

<Background>

Currently, we have received many orders for this product, and the load on the present production line is increasing. Therefore, in order to strengthen our production capacity, we will build a High Efficiency Production Line and carry out stable production.

<Purpose>

In order to strengthen the package production capacity, we will apply for the addition of product manufactured on a High Efficiency Production Line. the High Efficiency Production Line products use lead frames that produce large number of product per frame.

Package name in present line	Assembly Production Line	Test Process
SOP-J8	Present Production Line	Test Measurement Line

Package name after changing	Assembly Production Line	Test Process
SOP-J8	Present Production Line	Test Measurement Line (No Change)
	High Efficiency Production Line	

<Changing Schedule>

Shortly after received approval from customers, we are going to apply this change.

2. 4M Comparison between present production line and High Efficiency Production Line

For present production lines and High Efficiency Production Lines, the ROHM internal Device name, Machine types and Materials are changed but the production method is the same.

			Present production Line	High Efficiency Production Line	Changing point	Verification
Package name			SOP-J8	SOP-J8	None	None
ROHM external Device name			Please refer device list	Please refer device list	None	None
ROHM internal Device name			Please refer device list	Please refer device list	**Yes**	**Use Multi-label**
Factory	Assy	Factory	Rohm Philippine（REPI）	Same as left	None	None
		Country	Philippine	Same as present		
		Employee	4,000 people	Same as present		
		Clean level	Please refer below	Same as present		
		(DB~WB)	Class 10,000	Same as present		
		(Mold)	Class 10,000	Same as present		
	Test	Factory	Rohm Philippine（REPI）	Same as present	None	None
		Country	Philippine	Same as present		
Man	Assy		ROHM Certified Operator	Same as present	None	None
	Test		ROHM Certified Operator	Same as present		
Machine	Assy	Die bonding	Full auto die bonder machine	Same as present	**Yes**	**The Machine type of each process is different from current one. However, the method and grade is the same as current one and full auto. No problem.**
		Wire bonding	Full auto wire bonder machine	Same as present		
		Mold press	Full auto mold press	Same as present		
		Damber cut	Full auto dambar cut machine	Same as present		
		Plating	Full auto plating machine	Same as present		
		Marking	Full auto laser marking machine	Same as present		
		Lead forming	Full auto lead forming machine	Same as present		
	Test	Handler	Full auto handler	Same as present	None	None
		Tester	Full auto tester	Same as present		
	Taping	Taping Process	Full auto taping machine	Same as present		
Method	Assy	Die bonding	Solder bonding method	Same as present	None	None
		Wire bonding	Ultra sonic with thermal compression method	Same as present		
		Mold press	Transfer mold method	Same as present		
		Plating	Electro plating method	Same as present		
	Test	Test Process	Socket contact method	Same as present	None	None
Material	Assy		Please refer attachment	Please refer attachment	**Yes**	**Please refer attachment**

2. 4M Comparison between present production line and High Efficiency Production Line

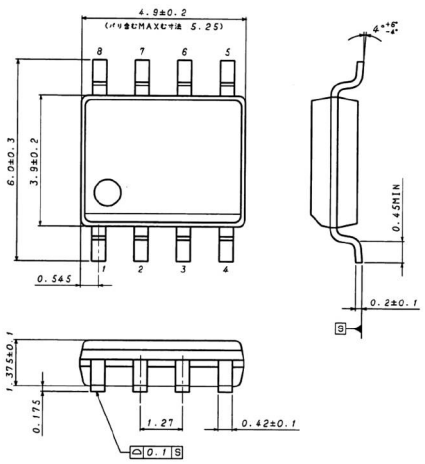
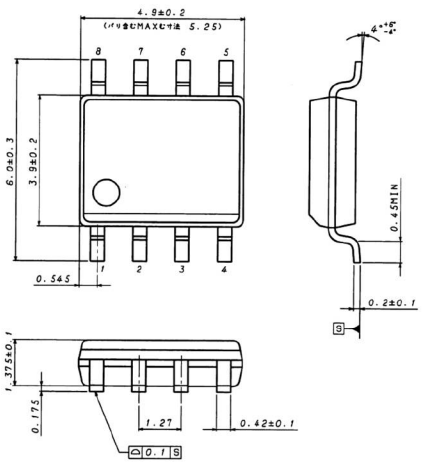
＜Material Comparison＞

The lead frame (frame size) is change in the High Efficiency Production Line. In addition, the mold resin will be changed along with the lead frame size change. We have verified these changes and confirmed there are no difference between present and High Efficiency Production Line.

		Present Production Line	High Efficiency Production Line	Changing point	Verification
Lead frame	Frame size	190.8mm x 43 mm	269.5mm x 83mm	**Yes**	**Conducting change point verification by changing the frame size**
	Inner design	Depends on device	Depends on device	None	Only Frame size is changed. Base metal material, surface plating and inner design isn't changed.
	Base metal material	Cu alloy	Cu alloy	None	
	Surface plating	Ag spot plating	Ag spot plating	None	
Die attach material		Solder type A	Solder type A	None	None
Wire material		Au	Au	None	None
Mold resin material		Halogen Free Epoxy typeA	Halogen Free Epoxy typeB	**Yes**	**Conducting verification at the point of change by changing the mold resin**
Outer plating material		100% Sn	100% Sn	None	None
Marking		Laser marking	Laser marking	None	None
Emboss tape		ROHM standard emboss tape	ROHM standard emboss tape	None	None
Shipping reel		ROHM standard reel	ROHM standard reel	None	None
Packing material for shipping		ROHM standard cardboard	ROHM standard cardboard	None	None

3. Comparison of product outer structure

There is no difference in terms of package outline.

Item	Present Production Line	High Efficiency Production Line
Package external outline PKG:SOP-J8	 (Unit : mm)	 (Unit : mm)

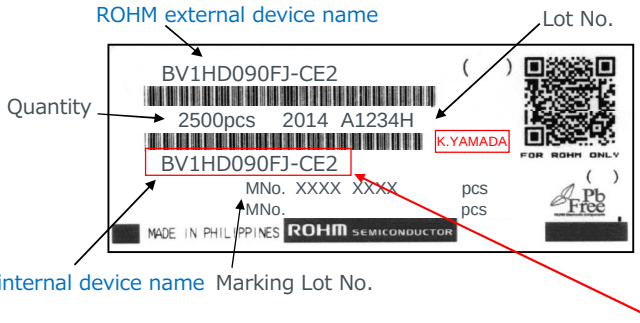
4. How to identify present production line product from High Efficiency Production Line products

It is possible to identify present and High Efficiency Production Line products by ROHM internal device name in the label as follows.

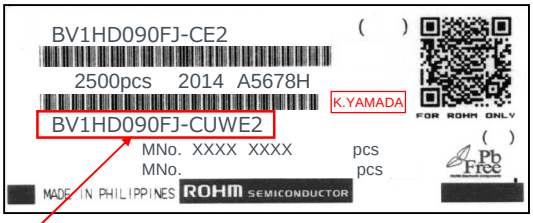
Identification Method: It is possible to identify by ROHM internal device name in the label as below.

- Present Production Line : BV1HD090FJ-CE2
- High Efficiency Production Line : BV1HD090FJ-CUWE2(Add UW)

<Present Production line>



< High Efficiency Production line >



It can be identified by the ROHM internal device name in the lower row.

5. Reliability Evaluation Results

We have performed reliability evaluation items based on AEC-Q100 and confirmed that there are no concerns about the results of each item.

【Objective Device】

Package: SOP-J8 (High Efficiency Production line)

Device: BV1HD090FJ-C (Representative device)

【Pretreatment Condition】

Storage condition (Pretreatment Condition)	JEDEC LEVEL 1
Drying	125℃ 24h
Humidification	85℃ 85% 168h
Reflow Profile	Pb free profile(260℃) 3times

【Summary of Reliability Evaluation Result】

Evaluation Items	Condition	Number of Sample (pcs)	Defective (pcs)	Judgement
Temperature cycling TC	-65℃/150℃ 30min/30min 500cyc	22	0	PASS
Pressure cooker AC	121℃ 100% 2atm 192h	22	0	PASS
Temperature humidity bias THB	85℃ 85%RH Bias 2000h	22	0	PASS
High Temperature storage HTSL	150℃ 2000h	22	0	PASS
Low temperature storage LTSL	-55℃ 2000h	22	0	PASS
Temperature humidity storage TH	85℃ 85%RH 2000h	22	0	PASS
High temperature operation life HTOL	125℃ Bias 2000h	22	0	PASS
Highly accelerated stress test HAST	130℃ 85%RH 192h	22	0	PASS

Electronics for the Future

Present Production Line		High Efficiency Production Line	
ROHM internal device name	ROHM external device name	ROHM internal device name	ROHM external device name
BV1HY090FJ-CE2	BV1HY090FJ-CE2	BV1HY090FJ-CUWE2	BV1HY090FJ-CE2
BV1HR090FJ-CE2	BV1HR090FJ-CE2	BV1HR090FJ-CUWE2	BV1HR090FJ-CE2
BV1HD090FJ-CE2	BV1HD090FJ-CE2	BV1HD090FJ-CUWE2	BV1HD090FJ-CE2
BV1LC300FJ-CE2	BV1LC300FJ-CE2	BV1LC300FJ-CUWE2	BV1LC300FJ-CE2
BV1LB300FJ-CE2	BV1LB300FJ-CE2	BV1LB300FJ-CUWE2	BV1LB300FJ-CE2
BV1LB150FJ-CE2	BV1LB150FJ-CE2	BV1LB150FJ-CUWE2	BV1LB150FJ-CE2
BV1LB085FJ-CE2	BV1LB085FJ-CE2	BV1LB085FJ-CUWE2	BV1LB085FJ-CE2
BV1LC105FJ-CE2	BV1LC105FJ-CE2	BV1LC105FJ-CUWE2	BV1LC105FJ-CE2
BM2LC300FJ-CE2	BM2LC300FJ-CE2	BM2LC300FJ-CUWE2	BM2LC300FJ-CE2
BM2LC120FJ-CE2	BM2LC120FJ-CE2	BM2LC120FJ-CUWE2	BM2LC120FJ-CE2
BM2LC105FJ-CE2	BM2LC105FJ-CE2	BM2LC105FJ-CUWE2	BM2LC105FJ-CE2