



## SANYO Semiconductors NEWS

Replace the SANYO Semiconductor NEWS No. 8003 with 8003A.

### **Announcement of Changes to Inner Box Markings and Pin Plating Associated with Switching to Lead-Free Specifications for IC Pins (Products Affected: BIP Through Hole Devices)**

Thank you for your continued use of our semiconductor products.

Please note that, as captioned above, SANYO is making the following changes.

Please make a note of this if you use these or related products.

#### **1. Changes**

- (1) The plating material used on the IC pins has been changed from SnPb plating to a SnBi (1 to 4% Bi by weight) material.
- (2) The words "LEAD FREE" have been added to the markings on the inner box (packing case) and the suffix "-E" has been added to the product number. (See the following page.)

#### **2. Affected Products**

See the BIP Trough Hole Devices table.

#### **3. Reason**

The SANYO Electric Group has established the "Action E21" environmental action plan to work together for continued improvement in SANYO's environmental performance. As part of these activities, SANYO Electric Semiconductor Company is progressing with its plan to eliminate all lead from lead pins by the end of 2005.

To move forward with its efforts, SANYO is informing its customers of these changes in devices for which lead-free specification environments (development of manufacturing locations for mass-production and achievement of required heat resistance characteristics) are already in place.

Changes only affect the material of lead pin plating for the targeted products. Therefore, the affected products will not experience any deviation electrically or in terms of their reliability. Furthermore, these changes will not affect current mounting processes used by customers. Device specifications fully support conversion of customer's existing manufacturing lines to lead-free lines.

#### **4. Implementation data**

Shipment of lead-free products will begin starting November, 2005. The change will be applied sequentially to different products. The exact date of the start of shipments may be slightly delayed because of stock conditions for some of the products. Please contact your SANYO sales representative if you have any questions or require more detailed information regarding this change.

Details (Continued on next page.)

- (1) Notes on the heat resistance of lead-free products
- (2) Examples of lead-free product labeling
- (3) Notes on solderability
- (4) Plated joint strength (reference data)

Continued on following page.

Continued from preceding page.

[Details]

(1) Notes on the heat resistance of lead-free products.

Heat resistance temperature profile of lead-free products

	Lead-free production	Non lead-free production (conventional)
Flow	260°C, 10s	260°C, 10s
Hand Solder	380°C, 3s	350°C, 3s

(2) Examples of lead-free product labeling

"-E" added to the end of type number

"LEAD FREE" indication

Indication

ASSEMBLY (DIFFUSION)

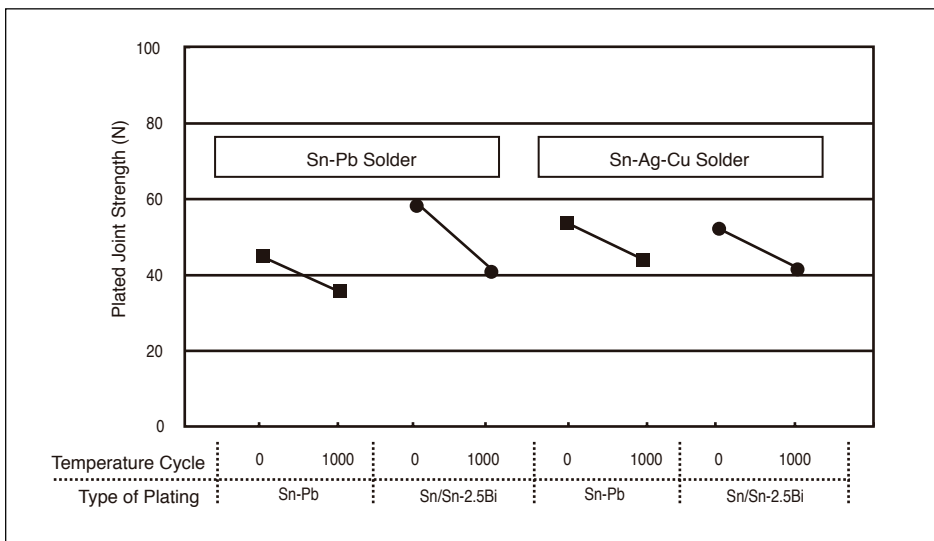
(3) Notes on solderability

Evaluation Sample: SIP-10 (Material: Cu) and SIP-16 (Material: 42 Alloy)

	Evaluation solder	Temperature/Time	Flux	Result *1
Sn-Pb (Current Product)	Sn-Pb	230°C/3s	Used (RMA type)	Passed
	Sn-3.0Ag-0.5Cu	245°C/3s	Used (RMA type)	Passed
Sn/Sn-Bi Plating (Lead-free Product)	Sn-Pb	230°C/3s	Used (RMA type)	Passed
	Sn-3.0Ag-0.5Cu	245°C/3s	Used (RMA type)	Passed

\*1: Acceptability criteria: More than 95% of bathing area must be wet with solder.

(4) Plated joint strength (reference data)



- Test equipment: Hooking extension tester
  - Evaluation board: Glass-epoxy resin
  - Temperature cycle condition: -40°C (30 minute hold) to +125°C (30 minute hold)
  - SANYO acceptance criteria: The joint strength after 1000 cycles must be at least 50% of the initial strength.
- Note: The results shown above are for reference and do not constitute a guarantee.

Lead-Free Specification Products (BIP Through Hole Devices table)

Package	Type No.	Package	Type No.	Package	Type No.		
DIP006	LA5527	DIP16 (300mil)	LA3433	DIP20 (300mil)	LB1247		
DIP8 (300mil)	LA4224		LA3600		LB1475		
	LA4524L		LA7220	DIP22(400mil)	LA7958		
	LA4525		LA7642N	DIP22S(300mil)	LA1265		
	LA5528N		LA7800		LA1265S		
	LA5692D		LB1211		LA1800		
	LA5693D		LB1212		LA7852		
	LA6082D		LB1213		LA7853		
	LA6358N		LB1214		LA7945N		
	LA6358NL		LB1215		DIP24S(300mil)	LA1266	
	LA6358NLL		LB1216			LA1267	
	LA6393D		LB1232	LA1267S			
	LA6393DL		LB1233	LA1802			
	LA6393DLL		LB1233L	LA1805			
	LA6393DS		LB1258	LA1823			
	LA6458D		LB1275	LA1824			
	LA6458DLL		LB1275T	LA1824HK			
	LA6517		LB1408	LA1824HKSP			
	LA8501		LB1710	LA1824L			
	DIP10S(300mil)		LB1267	DIP16F(300mil)		LB1205	LA1826
			LB1268			LB1205L	LA1832
LB1630			LB1235		LA1832S		
LB1639			LB1235L		LA1833N		
LB1660N			LB1650		LA1844		
LB1661			LB1650L		LA2232		
LB1969			LB1664N		LA3241		
LB8555D			LB1666		LA70001		
			LB1730		LA70001L		
		LB1731	LA70001LL				
		LB1731L	LA70011LL				
DIP12F(300mil)		LA4227	DIP18(300mil)		LA4303	LA7116	
	LA4227L	LB11988		LA75501			
	LA4627HK	LB11988A		LA75503			
	LA6520	LB11988N		LA7555			
	LA6523	LB1240		LA7565B			
	LB1648	LB1241		LA7565E			
	LB1648L	LB1246		LA7565N			
		LB1256		LA7566			
DIP14(300mil)	LA3220	DIP20H(500mil)	LB1257	LA7566S			
	LA6324N		LB1740L	LA7567B			
	LA6324NF		LB1745	LA7567N			
	LA6324NLL		DIP20(300mil)	LB1249H	LA7575		
	LA6339			LA1135M	LA7577		
	LA6339L			LA1137NM	LA7577L		
	LA6339LL			LA2650	LA7577NL		
	LB1407			LA3246	LA7577V		
DIP16(300mil)	LA1143	LA3607S		LA7578N			
	LA1260	LA7696		LV1100			
	LA2113	LA7850		LV1150			
	LA3361	LA7851	DIP28H(500mil)	LB11827			
	LA3361A	LA7856		LB11847			
		LA7916		LB11847L			
	LA8515	LB1824					
	LB11983	LB1845L					
	LB11983N	LB1847					
	LB1245	LB1847L					

Package	Type No.	Package	Type No.	Package	Type No.		
DIP28H(500mil)	LB1870	DIP54S(600mil)	LA76810	SIP9	LA5690S		
	LB1921		LA76810A		LA5691S		
	LB1924A		LA76810HA		LA5692S		
	LB1946		LA76810HAL		LA6358NS		
DIP28HE(500mil)	LB1872K		LA76810SB		LA6358NSL		
DIP28SD(400mil)	LA3450		LA76810SBL		LA6358NSLL		
	LA7337		LA76812		LA6393S		
	LA7337L		LA76814B		LA6393SL		
	LA7359		LA76814K		LA6393SLL		
	LB1845D		LA76814KL		LA6458SL		
DIP30SD(400mil)	LA1837		LA76818AL		LA7152		
	LA1838L		LA76818J		LA7221		
	LA6537		LA76818N		LA7808		
	LA6541D		LA76822		LA7910		
	LA6541DLL		LA76824N		LA7952		
	LA6548D		LA76824NL		LA7956		
	LA6548ND	LA76828	LB1403N				
	LA6558	LA76828A	LB1433N				
	LA6574D	LA76828N	LB1443N				
	LA7123	LA76828NL	SIP9Z	LA7058R			
	LA7124	LA76834	SIP10	LA6515			
	LA7520	LA76835		LA7210			
	LA7625	LA76835A		LA7890			
	LA7860	LA76835L		LA7950			
	LA7953	LA76837		LB1642B			
	LB11880	LA76843N		LB1643			
	LB1651D	LA76845		LB1643L			
	DIP36S(400mil)	LA76850		DIP64S(600mil)	LA7407	SIP10F	LB1943
		LB11691			LA7685J		LA4260
LV1017		SIP4H		L78MG	LA4261		
DIP42S(600mil)	LA2785L	SIP5	LA5003	LA4265			
	LA2786L		LA5004	LA4285HK			
	LA7195		LA5587	LA5644			
	LA7391AN	LA7213	LA6512				
	LA7395	LA7976	LB1640NS				
	LV1018	SIP5H	LA4225	LB1645N			
LV1117		LA4425A	SIP10H	LA4270			
DIP48S(600mil)	LA2787	SIP7H	LA7830		LA4601NL		
	LA7680		LA7832		LA7846		
DIP52S(600mil)	LA76070A		LA7833		LA7846N		
	LA76070N		LA7840K		LA7849		
	LA76075	LA7840L	LA7876				
	LA76075N	LA7841	SIP10HD	LA4263			
	LA76170L	LA7845N		LA4266			
	LA76170N	SIP8		LA4267			
	LA7670	LA1150		LA4268			
	LA7670K	LA3160		LA4273			
	LA7672	LA3160R		LA4276			
	LA7673	LA7016		LA4277			
	LA7674	LB8555S		LA7847			
LA7674K	SIP9	LA7848					
LA7687A	LA1177	LA7875N					
LA7687B	LA1178M	SIP10HZ	LA7846NZ				
LA7687N	LA1600		LA7876NZ				
LA7688B	LA3210		LA7876Z				
DIP54S(600mil)	LA76805		LA3210B				
			LA3335				
			LA4140	SIP12	LA2610		

Package	Type No.	Package	Type No.	Package	Type No.
SIP12	LA2610L	TO220-5H	L78MS05J	TP5H	L78LR05C
	LA7151L		L88R05D		L78LR05CL
	LA7222		L88R05DL		L78LR05D
SIP12H	LA42152	TO220-7H	LA6500		L78LR05DJ
	LA4282		LA6500LL		L78LR05DL
	LA44402		LA78040A		L78LR05E
	LA44403		LA78040		L78LR05EL
	LA4629		LA78040N		L78LR05F
	LA4633		LA78041		L78LR05G
	LA5618		LA78045		L78LR05GL
SIP13H	LA42071	TP3H	L78M05T		L78LR05H
	LA44401		L78M05TL		L88MS05T
	LA4485		L78M05TLL		L88MS05TL
	LA4631		L78M06T		L88MS05TLL
	LA5605		L78M06TL		L88MS06T
	LA5611		L78M06TLL		L88MS08T
	LA7835		L78M07T		L88MS09T
	LA7835S		L78M08T		L88MS09TL
	LA7836		L78M08TL		L88MS09TLL
	LA7838		L78M08TLL		L88MS12T
SIP13HJ	LB1947	L78M09T		L88MS12TL	
SIP13HK	LA4301	L78M09TL		L88MS33T	
SIP14H	LA4450L	L78M09TLL		L88MS33TL	
	LA4490NF	L78M10T		L88MS33TLL	
	LA5606N	L78M10TLL		LA5530P	
SIP14HZ	LA4625	L78M12T		LA5588	
	LA4628L	L78M12TL		LA6501	
	LA4663	L78M12TLL	HZIP25	LA4743J	
	LA4663A	L78M15T		LA4743K	
	LA4663L	L78M15TL		LA4743KL	
	LA4663T	L78M18T		LA47504	
	LA4725	L79M05T		LA47505	
	LA4728	L79M05TL		LA47507	
	LB11650	L79M05TLL		LA47511	
	LB11651	L79M06T		LA47512	
SIP16Z	LA1140	L79M08T			LA47512L
	LA1175	L79M08TLL			LA47514
	LA3370	L79M09TL		LA47515	
SIP18HS	LA4630N	L79M09TLL		LA47532	
	LA4708	L79M10T		LA47534	
SIP18Z	LA1145	L79M12T		LA47536	
SIP23HZ	LA4905	L79M12TL		LA4762	
	LA4905L	L88M05T			
TO220-5H	L780S09	L88M05TL			
	L780S10	L88M05TLL			
	L780S12L	L88M06T			
	L780S15	L88M09T			
	L780S18	L88M09TL			
	L78MR05	L88M12T			
	L78MR05L	L88M12TL			
	L78MR05LL	L88M12TLL			
	L78MR05LM	L88M33T			
	L78MR06	L88M33TL			
	L78MR08	L88M33TLL			
	L78MR12	L88M35T			
		L78LR05B			