

## Process Change Notification

This is to inform you that a design and/or process change will be implemented to the affected product(s) and this notification is for your information and concurrence. This change is planned to take effect in 90 calendar days from the date of this notification.

Please work with your local Taiwan Semiconductor Sales Representative to manage your inventory of unchanged product if your evaluation of this change will require more than 90 calendar days.

Please contact your local Taiwan Semiconductor Field Quality Service or Customer Quality Engineer within 45 days of receipt of this notification if you require any additional data or samples.

**PCN No: PCN23007 rev0**

**Title:** Additional Assembly & Test supplier for SOD-323F

**Issue Date:** 2023/7/12

If you have any questions concerning this change, please contact:

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**PCN Type:**

Additional Assembly & Test supplier for SOD-323F

**Effectivity:**

Expected 1st device shipment date: 2023/10/10

**Product Category (Description):**

Affected SOD-323F parts provided by Taiwan Semiconductor Co. Ltd. The full lists of products affected are listed in the "List of Affected Devices" section.

**Description of Change:**

This PCN is being issued to inform TSC customers of additional Assembly & Test supplier for affected SOD-323F devices.

This will ensure the continuity of supply and guarantee commitment on customer service and satisfaction.

| Item                              | From    | To                 | Remarks           |
|-----------------------------------|---------|--------------------|-------------------|
| Supplier<br>Code(factory<br>code) | 4999(B) | 4999(B)<br>4793(P) | Additional Source |

**Electrical Test Comparison:**

| PN:<br>1N4148WS | ITEM           | VR1    | VR2      | IR1     | IR2     | VF      |
|-----------------|----------------|--------|----------|---------|---------|---------|
|                 | TEST Condition | IR=5uA | IR=100uA | VR= 20V | VR= 75V | IF=10mA |
|                 | SPEC.          | >75 V  | >100 V   | <25nA   | <5uA    | < 1.00V |
| Current         | MIN            | 121.90 | 123.59   | 11.58   | 0.01    | 0.70    |
|                 | MAX            | 166.65 | 168.31   | 14.08   | 0.02    | 0.72    |
|                 | AVG.           | 145.89 | 147.48   | 12.86   | 0.02    | 0.71    |
|                 | CPK            | 3.66   | 2.44     | 10.18   | 1736.32 | 31.08   |
| Additional      | MIN            | 125.35 | 122.25   | 4.76    | 0.01    | 0.72    |
|                 | MAX            | 168.21 | 164.78   | 7.54    | 0.01    | 0.73    |
|                 | AVG.           | 161.06 | 157.10   | 6.49    | 0.01    | 0.73    |
|                 | CPK            | 4.15   | 2.76     | 15.98   | 4515.78 | 51.92   |

| PN:<br>B0530WS | ITEM           | VR       | IR1    | IR2     | IR3     | VF1      | VF2      |
|----------------|----------------|----------|--------|---------|---------|----------|----------|
|                | TEST Condition | IR=500uA | VR=15V | VR= 20V | VR= 30V | IF=100mA | IF=500mA |
|                | SPEC.          | >30 V    | < 80uA | <100uA  | <500uA  | < 360mV  | < 470mV  |
| Current        | MIN            | 45.00    | 5.21   | 12.90   | 28.81   | 329.92   | 425.30   |
|                | MAX            | 45.30    | 5.70   | 15.30   | 32.82   | 332.36   | 431.86   |
|                | AVG.           | 45.02    | 5.43   | 14.35   | 31.16   | 330.98   | 428.42   |
|                | CPK            | 76.55    | 209.82 | 38.55   | 157.16  | 15.68    | 8.13     |
| Additional     | MIN            | 41.47    | 17.58  | 23.49   | 46.56   | 283.50   | 394.50   |
|                | MAX            | 44.59    | 19.88  | 26.82   | 89.27   | 294.00   | 452.50   |
|                | AVG.           | 43.37    | 18.56  | 24.86   | 51.74   | 285.62   | 406.83   |
|                | CPK            | 24.65    | 28.85  | 24.42   | 16.69   | 9.24     | 10.57    |

| PN:<br>BZT52B18S | ITEM           | VZ(V)       | ZZT(mΩ)    | ZZK(mΩ)    | IR(nA)    | VF(V)   |
|------------------|----------------|-------------|------------|------------|-----------|---------|
|                  | TEST Condition | IZT=5.00mA  | IZT=5.00mA | IZK=1.00mA | VR= 12.6V | IF=10mA |
|                  | SPEC.          | 17.64~18.36 | <45000     | <212000    | <45       | <1.00   |
| Current          | MIN            | 17.96       | 6689.75    | 3483.43    | 0.41      | 0.77    |
|                  | MAX            | 18.01       | 8330.89    | 7988.14    | 0.51      | 0.77    |
|                  | AVG.           | 17.98       | 7277.15    | 5722.72    | 0.45      | 0.77    |
|                  | CPK            | 9.14        | 29.05      | 69.98      | 522.96    | 84.95   |
| Additional       | MIN            | 17.85       | 5000.00    | 1500.00    | 0.10      | 0.80    |
|                  | MAX            | 17.92       | 5600.00    | 7000.00    | 6.70      | 0.80    |
|                  | AVG.           | 17.89       | 5220.00    | 3666.67    | 1.07      | 0.80    |
|                  | CPK            | 4.99        | 85.12      | 55.68      | 6.80      | 90.45   |

| PN:<br>BZT52C10S | ITEM           | VZ(V)      | ZZT(Ω)     | ZZK(Ω)     | IR(nA)    | VF(V)   |
|------------------|----------------|------------|------------|------------|-----------|---------|
|                  | TEST Condition | IZT=5.00mA | IZT=5.00mA | IZK=1.00mA | VR= 7.00V | IF=10mA |
|                  | SPEC.          | 9.5~10.5   | <20        | <141       | <180      | <1.00   |
| Current          | MIN            | 10.00      | 3.60       | 85.32      | 0.76      | 0.77    |
|                  | MAX            | 10.03      | 3.92       | 87.76      | 1.06      | 0.78    |
|                  | AVG.           | 10.02      | 3.72       | 86.59      | 0.93      | 0.78    |
|                  | CPK            | 21.04      | 69.24      | 31.00      | 927.43    | 72.70   |
| Additional       | MIN            | 10.00      | 2.10       | 3.50       | 0.10      | 0.81    |
|                  | MAX            | 10.06      | 2.80       | 16.00      | 0.30      | 0.81    |
|                  | AVG.           | 10.01      | 2.40       | 6.57       | 0.17      | 0.81    |
|                  | CPK            | 11.47      | 37.35      | 15.02      | 813.22    | 74.81   |

| PN: 1SS355 | ITEM           | VBR(V)   | VF(V)    | IR(nA)  |
|------------|----------------|----------|----------|---------|
|            | TEST Condition | IR=100uA | IF=100mA | VR= 80V |
|            | SPEC.          | >80      | <1.2     | <100    |
| Current    | MIN            | 136.22   | 0.95     | 13.28   |
|            | MAX            | 148.34   | 0.97     | 14.56   |
|            | AVG.           | 141.47   | 0.96     | 14.00   |
|            | CPK            | 6.20     | 15.66    | 86.62   |
| Additional | MIN            | 152.86   | 0.88     | 8.05    |
|            | MAX            | 155.87   | 0.89     | 10.50   |
|            | AVG.           | 154.25   | 0.88     | 9.35    |
|            | CPK            | 28.15    | 74.44    | 59.71   |

| PN: RB500V-40 | ITEM           | VBR(V)   | VF(V)   | IR(uA)  |
|---------------|----------------|----------|---------|---------|
|               | TEST Condition | IR=100uA | IF=10mA | VR= 10V |
|               | SPEC.          | >45      | <0.45   | <1      |
| Current       | MIN            | 49.06    | 0.34    | 0.09    |
|               | MAX            | 50.51    | 0.34    | 0.09    |
|               | AVG.           | 49.85    | 0.34    | 0.09    |
|               | CPK            | 5.34     | 42.07   | 142.18  |
| Additional    | MIN            | 55.85    | 0.34    | 0.001   |
|               | MAX            | 59.92    | 0.36    | 0.12    |
|               | AVG.           | 57.01    | 0.35    | 0.06    |
|               | CPK            | 5.42     | 9.13    | 11.05   |

**Conclusion:** Additional assembly and test supplier does not affect product electrical performance and product reliability.

### Qualification and Reliability Result:

| NO. | Test                                    | Test Conditions/ Standard                                                                                                                            | No. of Lots | Sample Size | Result |
|-----|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|--------|
| 1   | Preconditioning                         | J-STD-020 MSL-1 (3x reflow at 260°C)                                                                                                                 | 10 lots     | 77          | PASS   |
| 2   | Temperature Cycling                     | JESD22-A104<br>-55(-10/+0)°C/15min to 150(+15/-0)°C/15min, 1000 cycles                                                                               | 10 lots     | 77          | PASS   |
| 3   | Unbiased Highly Accelerated Stress Test | JESD22-A118, Ta=130°C, 85%RH, 96hrs                                                                                                                  | 10 lots     | 77          | PASS   |
| 4   | Highly Accelerated Stress Test          | JESD22-A110, 130°C/85% RH; V=80% VR; 42V max, 96Hours                                                                                                | 10 lots     | 77          | PASS   |
| 5   | High Temperature Storage Life           | Ta=max TSTG, 1000Hours                                                                                                                               | 10 lots     | 77          | PASS   |
| 6   | Intermittent Operational Life           | MIL-STD-750<br>Ta=25°C; ΔTj=100°C; 2.0 min on/off 15000 cycles                                                                                       | 10 lots     | 77          | PASS   |
| 7   | Resistance to Solder Heat               | JESD22-A111 SMD<br>Pb free: 260(+5/-0)°C , 10+2-0 sec                                                                                                | 10 lots     | 10          | PASS   |
| 8   | High Temperature Reverse Bias           | MIL-STD-750-1 M1038 Tj=Tjmax, at least 80% rated Vr, 1000Hours                                                                                       | 8 lots      | 77          | PASS   |
| 9   | Steady State Operational                | MIL-STD-750-1, Rated IZ max, Tj max                                                                                                                  | 2 lots      | 77          | PASS   |
| 10  | Destructive Physical Analysis           | AEC-Q101-004 TC passed choose 1 lot 2pcs HAST or H3TRB passed choose 1lot 2 pcs; Visual inspection, SAM,X-ray, de-capsulation than Visual inspection | 10 lots     | 4           | PASS   |
| 11  | Cross-section + SEM                     | AEC-Q006, Post-TC, Post-HAST                                                                                                                         | 10 lots     | 2           | PASS   |
| 12  | Whisker                                 | JESD201, TC, RTHS & HTHS conditions, 15000 cys & 4000 hrs                                                                                            | 3 lots      | 9           | PASS   |
| 13  | Solderability                           | J-STD-002<br>245 °C ± 5 °C (Pb-free) 5 sec                                                                                                           | 7 lots      | 10          | PASS   |
| 14  | Wire Bond Shear                         | MIL-STD-750 per assembly spec                                                                                                                        | 8 lots      | 30          | PASS   |
| 15  | Wire Bond Pull                          | MIL-STD-750 per assembly spec                                                                                                                        | 8 lots      | 30          | PASS   |
| 16  | Thermal Resistance                      | JESD24 per product datasheet                                                                                                                         | 6 lots      | 5           | PASS   |
| 17  | Die Shear                               | MIL-STD-750-2 per assembly spec                                                                                                                      | 3 lots      | 5           | PASS   |

|    |                      |                              |        |    |             |
|----|----------------------|------------------------------|--------|----|-------------|
| 18 | ESD characterization | HBM, JS-001 per product spec | 8 lots | 30 | Cap 2KV~8KV |
|    |                      | CDM, JS-002 per product spec | 8 lots | 30 | Cap 1KV     |

**Conclusion:** Additional assembly and test supplier successfully passed consumer product reliability requirement.

**Identification and Traceability:**

| Item         | Identification                 |
|--------------|--------------------------------|
| Traceability | Product date code on the label |

**Effect of Change:**

There is no impact in product electrical specification, functionality, quality and reliability. This change will guarantee Taiwan Semiconductor commitment on customer service and satisfaction through continuous improvement.

**List of Affected Devices:**

| Package  | Part Number | Package  | Part Number |
|----------|-------------|----------|-------------|
| SOD-323F | 1N4148WS    | SOD-323F | BZT52B16S   |
| SOD-323F | 1N4448WS    | SOD-323F | BZT52B18S   |
| SOD-323F | 1N914BWS    | SOD-323F | BZT52B20S   |
| SOD-323F | B0530WS     | SOD-323F | BZT52B22S   |
| SOD-323F | BZT52B2V4S  | SOD-323F | BZT52B24S   |
| SOD-323F | BZT52B2V7S  | SOD-323F | BZT52B27S   |
| SOD-323F | BZT52B3V0S  | SOD-323F | BZT52B30S   |
| SOD-323F | BZT52B3V3S  | SOD-323F | BZT52B33S   |
| SOD-323F | BZT52B3V6S  | SOD-323F | BZT52B36S   |
| SOD-323F | BZT52B3V9S  | SOD-323F | BZT52B39S   |
| SOD-323F | BZT52B4V3S  | SOD-323F | BZT52B43S   |
| SOD-323F | BZT52B4V7S  | SOD-323F | BZT52B47S   |
| SOD-323F | BZT52B5V1S  | SOD-323F | BZT52B51S   |
| SOD-323F | BZT52B5V6S  | SOD-323F | BZT52B56S   |
| SOD-323F | BZT52B6V2S  | SOD-323F | BZT52B62S   |
| SOD-323F | BZT52B6V8S  | SOD-323F | BZT52B68S   |
| SOD-323F | BZT52B7V5S  | SOD-323F | BZT52B75S   |
| SOD-323F | BZT52B8V2S  | SOD-323F | BZT52C2V4S  |
| SOD-323F | BZT52B9V1S  | SOD-323F | BZT52C2V7S  |
| SOD-323F | BZT52B10S   | SOD-323F | BZT52C3V0S  |
| SOD-323F | BZT52B11S   | SOD-323F | BZT52C3V3S  |
| SOD-323F | BZT52B12S   | SOD-323F | BZT52C3V6S  |
| SOD-323F | BZT52B13S   | SOD-323F | BZT52C3V9S  |
| SOD-323F | BZT52B15S   | SOD-323F | BZT52C4V3S  |

| Package  | Part Number | Package  | Part Number |
|----------|-------------|----------|-------------|
| SOD-323F | BZT52C4V7S  | SOD-323F | BZT52C36S   |
| SOD-323F | BZT52C5V1S  | SOD-323F | BZT52C39S   |
| SOD-323F | BZT52C5V6S  | SOD-323F | BZT52C43S   |
| SOD-323F | BZT52C6V2S  | SOD-323F | BZT52C47S   |
| SOD-323F | BZT52C6V8S  | SOD-323F | BZT52C51S   |
| SOD-323F | BZT52C7V5S  | SOD-323F | BZT52C56S   |
| SOD-323F | BZT52C8V2S  | SOD-323F | BZT52C62S   |
| SOD-323F | BZT52C9V1S  | SOD-323F | BZT52C68S   |
| SOD-323F | BZT52C10S   | SOD-323F | BZT52C75S   |
| SOD-323F | BZT52C11S   | SOD-323F | 1SS355      |
| SOD-323F | BZT52C12S   | SOD-323F | RB500V-40   |
| SOD-323F | BZT52C13S   |          |             |
| SOD-323F | BZT52C15S   |          |             |
| SOD-323F | BZT52C16S   |          |             |
| SOD-323F | BZT52C18S   |          |             |
| SOD-323F | BZT52C20S   |          |             |
| SOD-323F | BZT52C22S   |          |             |
| SOD-323F | BZT52C24S   |          |             |
| SOD-323F | BZT52C27S   |          |             |
| SOD-323F | BZT52C30S   |          |             |
| SOD-323F | BZT52C33S   |          |             |