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Mar 15, 2022

**LFPCNUSA2022-002**

**Product Change Notification for Littelfuse**

MOSFET DISCRETE, IGBT DISCRETE, Thyristor and Diodes in TO-247 package add new manufacturing location

To whom it may concern,

Littelfuse would like to notify you of a change related to the TO-247 package

**DESCRIPTION OF CHANGE:** As a part of Littelfuse endeavors to improve the manufacturing footprint, it has been decided to introduce a new TO-247 backend manufacturing ASEWH in China for the affected part numbers listed below. With this additional capacity to support the upcoming customer demands.

Country of origin for TO247 will possibly be Korea, Philippines and China

**Form, fit, function changes:** No change in the silicon dice used. We would like to notify you on the differences between the existing manufacture and new manufacture.

1. POD – Package Outline Dimension
2. Package Marking
3. BOM
4. Label

Details can be seen in **APPENDIX A**.

Affected part number list can be found in **APPENDIX B**.

If you have any additional questions or concerns, please contact me or your Regional Sales Manager.

Best Regards,

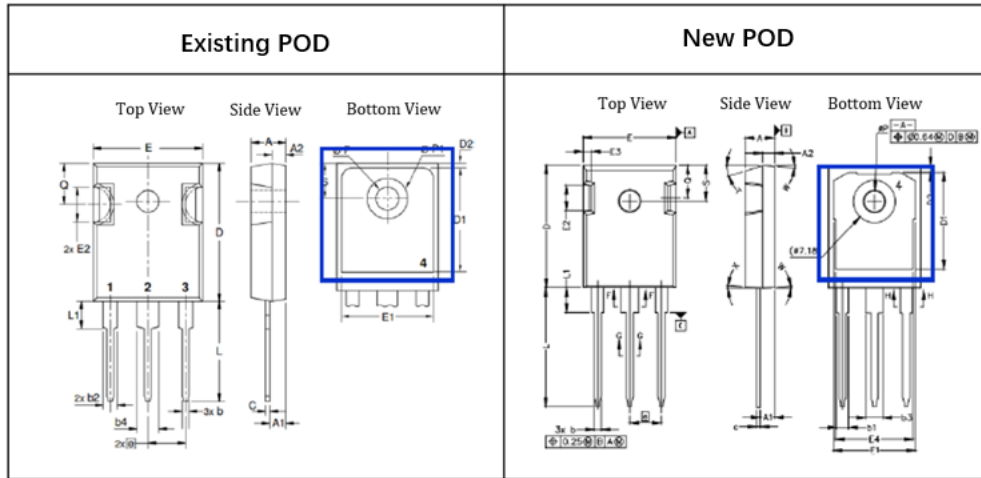
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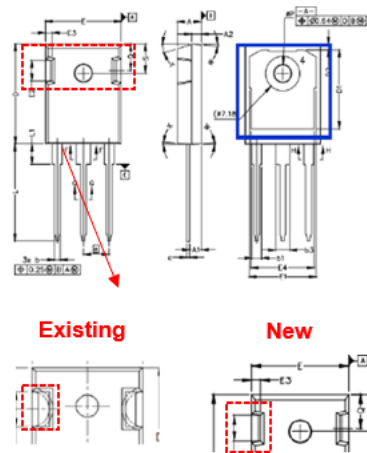
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**APPENDIX A:**

## 1. POD – Package Outline Dimension



| Items | Existing POD |       | New POD |       | Remark          |
|-------|--------------|-------|---------|-------|-----------------|
|       | Min          | Max   | Min     | Max   |                 |
| A     | 4.70         | 5.30  | 4.83    | 5.21  |                 |
| A1    | 2.21         | 2.59  | 2.29    | 2.54  |                 |
| A2    | 1.50         | 2.49  | 1.91    | 2.16  |                 |
| D     | 20.79        | 21.45 | 20.80   | 21.10 |                 |
| E     | 15.48        | 16.24 | 15.75   | 16.13 |                 |
| E2    | 4.31         | 5.48  | 3.68    | 5.10  | Body Notch Area |
| e     | 5.46BSC      |       | 5.44BSC |       |                 |
| L     | 19.80        | 20.30 | 19.81   | 20.32 | Lead Length     |
| L1    | -            | 4.49  | 4.10    | 4.40  |                 |
| ΦP    | 3.55         | 3.65  | 3.51    | 3.65  |                 |
| Q     | 5.38         | 6.19  | 5.49    | 6.00  |                 |
| S     | 6.14BSC      |       | 6.04    | 6.30  |                 |
| b     | 0.99         | 1.40  | 1.07    | 1.33  |                 |
| b2    | 1.65         | 2.39  | 1.91    | 2.41  |                 |
| b4    | 2.59         | 3.43  | 2.87    | 3.38  |                 |
| c     | 0.38         | 0.89  | 0.55    | 0.68  |                 |
| D1    | 13.07        | -     | 16.25   | 17.65 |                 |
| D2    | 0.51         | 1.35  | 0.95    | 1.25  |                 |
| E1    | 13.45        | -     | 12.38   | 13.43 |                 |
| ΦP1   | -            | 7.39  | 7.18BSC |       |                 |




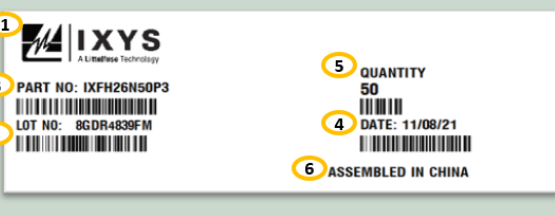


## 2. Package Marking

|        |   |                |   |   |
|--------|---|----------------|---|---|
| SPS    |    | PKG            | TO-247  | Physical marking  |
|        |   | Marking line 1 | IXYS logo   |    |
|        |   | Marking line 2 | Product name  |   |
|        |   | Marking line 3 | KOREA XXMMDDYY ( XX:Foundry code+Assy plan Code, MM:Month, DD:Day, YY:Year) |   |
|        |   | Marking line 4 | Wafer Lot no: XXXXXXXXXXX   |   |
| Remark | All marking lines align center except Date code                                     |                |   |   |
| ASE    |    | PKG            | TO-247  | Physical marking  |
|        |   | Marking line 1 | IXYS logo   |    |
|        |   | Marking line 2 | Product name  |   |
|        |   | Marking line 3 | CHINA XXMMDDYY ( XX:Foundry code+Assy plan Code, MM:Month, DD:Day, YY:Year) |   |
|        |   | Marking line 4 | Wafer Lot no: XXXXXXXXXXX   |   |
| Remark | All marking lines align center except Date code                                     |                |   |   |
| TPC    |   | PKG            | TO-247  | Physical marking  |
|        |   | Marking line 1 | IXYS logo   |   |
|        |   | Marking line 2 | Product name  |   |
|        |   | Marking line 3 | XXMMDDYY ( XX:Foundry code+Assy plan Code, MM:Month, DD:Day, YY:Year)       |   |
|        |   | Marking line 4 | Wafer Lot no: XXXXXXXXXXX   |   |
| Remark | All marking lines align center except Date code                                     |                |   |   |
| ASE    |  | PKG            | TO-247  | Physical marking  |
|        |   | Marking line 1 | IXYS logo   |  |
|        |   | Marking line 2 | Product name  |   |
|        |   | Marking line 3 | CHINA XXMMDDYY ( XX:Foundry code+Assy plan Code, MM:Month, DD:Day, YY:Year) |   |
|        |   | Marking line 4 | Wafer Lot no: XXXXXXXXXXX   |   |
| Remark | All marking lines align center except Date code                                     |                |   |   |

## 3. BOM

| BOM Information |                 | TO-247 BOM    |                   |                 |
|-----------------|-----------------|---------------|-------------------|-----------------|
|                 |                 | SP Semi       | TPC               | ASE-TO247       |
| EMC             | Green/Non-Green | Non-Green EMC | Non-Green EMC     | Green EMC       |
| Lead Finish     | Type            | Pure Tin      | Solder dip finish | Pure Tin Plated |

## 4. Label

| SPS   | ASE  |
|---|--|
|  <p>1. <u>Littelfuse+IXYS logo.</u><br/>           2. <u>LOT NO: Wafer Lot No+Barcode</u><br/>           3. <u>PART NO: PART NO+Barcode</u><br/>           4. <u>DATE CODE: DATE:MMDDYY+Barcode</u><br/>           5. <u>QTY: Total unit Qty of each Tueb/Reel/Box+Barcode</u><br/>           6. Test fixed <b>"ASSEMBLED IN Korea"</b></p>        |  <p>1. <u>Littelfuse+IXYS logo.</u><br/>           2. <u>LOT NO: Wafer Lot No+Barcode</u><br/>           3. <u>PART NO: PART NO+Barcode</u><br/>           4. <u>DATE CODE: DATE:MMDDYY+Barcode</u><br/>           5. <u>QTY: Total unit Qty of each Tueb/Reel/Box+Barcode</u><br/>           6. Test fixed <b>"ASSEMBLED IN CHINA"</b></p>  |
| TPC   | ASE  |
|  <p>1. <u>Littelfuse+IXYS logo.</u><br/>           2. <u>LOT NO: Wafer Lot No+Barcode</u><br/>           3. <u>PART NO: PART NO+Barcode</u><br/>           4. <u>DATE CODE: DATE:MMDDYY+Barcode</u><br/>           5. <u>QTY: Total unit Qty of each Tueb/Reel/Box+Barcode</u><br/>           6. Test fixed <b>"ASSEMBLED IN PHILIPPINES"</b></p> |  <p>1. <u>Littelfuse+IXYS logo.</u><br/>           2. <u>LOT NO: Wafer Lot No+Barcode</u><br/>           3. <u>PART NO: PART NO+Barcode</u><br/>           4. <u>DATE CODE: DATE:MMDDYY+Barcode</u><br/>           5. <u>QTY: Total unit Qty of each Tueb/Reel/Box+Barcode</u><br/>           6. Test fixed <b>"ASSEMBLED IN CHINA"</b></p> |

## Reliability test report:

| Reliability Test Result Summary: |               |                |  |                      |          |            |           |
|----------------------------------|---------------|----------------|--|----------------------|----------|------------|-----------|
| #                                | Abv           | Qual vehicle # | Condition  | Littelfuse Test Ref# | # of lot | Sample Qty | Results   |
| 1                                | Test          | 1              | Per Datasheet conditions   | 159178               | 2        | All        | 0 Failure |
| 2                                | EV            | 1              | Per JESD22B-101  | 159178               | 2        | All        | 0 Failure |
| 3                                | PV            | 1              | Per Datasheet conditions   | 159178               | 2        | 50         | 0 Failure |
| 4                                | HTRB          | 1              | TA=125°C,80% of rated VDS/VCES for 1008hrs                                 | 159178               | 2        | 60         | 0 Failure |
| 5                                | HTGB          | 1              | TA=150°C,100% of rated VGS/GES for 1008hrs                                 | 159178               | 2        | 60         | 0 Failure |
| 6                                | TC            | 1              | Temp=-55°C~150°C, for 1000Cycles   | 159178               | 2        | 60         | 0 Failure |
| 7                                | HAST          | 1              | Ta=130°C, 85% RH, 80% rated or 42V max voltage for 96hrs                   | 159178               | 2        | 60         | 0 Failure |
| 8                                | IOL           | 1              | Ta= 25C , Ton =Toff = 2 mins, Delta=>100°C, for 15000cycs                  | 159178               | 2        | 60         | 0 Failure |
| 9                                | AC/UHAST      | 1              | 121 °C, 29.7psia, 100% RH for 96hrs/<br>130 °C, 33.3psia, 85% RH for 96hrs | 159178               | 2        | 60         | 0 Failure |
| 10                               | RSH           | 1              | Tdwell=10 sec @ 260°C  | 162864               | 1        | 10         | 0 Failure |
| 11                               | Solderability | 1              | 5ea for method B(standard process, low temp) & method D                    | 162864               | 1        | 5          | 0 Failure |

| #  | Abrv          | Qual vehicle # | Condition   | Littelfuse Test Ref# | # of lot | Sample Qty | Results   |
|----|---------------|----------------|---|----------------------|----------|------------|-----------|
| 1  | Test          | 2              | Per Datasheet conditions  | 159437               | 2        | All        | 0 Failure |
| 2  | EV            | 2              | Per JESD22B-101   | 159437               | 2        | All        | 0 Failure |
| 3  | PV            | 2              | Per Datasheet conditions  | 159437               | 2        | 50         | 0 Failure |
| 4  | HTRB          | 2              | TA=125°C,80% of rated VDS/VGES for 1008hrs  | 159437               | 2        | 60         | 0 Failure |
| 5  | HTGB          | 2              | TA=150°C,100% of rated VGS/GES for 1008hrs  | 159437               | 2        | 60         | 0 Failure |
| 6  | TC            | 2              | Temp=-55°C~150°C, for 1000Cycles  | 159437               | 2        | 60         | 0 Failure |
| 7  | HAST          | 2              | Ta=130°C, 85% RH, 80% rated or 42V max voltage for 96hrs  | 159437               | 2        | 60         | 0 Failure |
| 8  | IOL           | 2              | Ta= 25C , Ton =Toff = 2 mins, Delta=>100°C, for 15000cycs   | 159437               | 2        | 60         | 0 Failure |
| 9  | AC/UHAST      | 2              | 121 °C, 29.7psia, 100% RH for 96hrs/<br>130 °C, 33.3psia, 85% RH for 96hrs  | 159437               | 2        | 60         | 0 Failure |
| 10 | RSH           | 2              | Tdwell=10 sec @ 260°C   | 162865               | 1        | 10         | 0 Failure |
| 11 | Solderability | 2              | 5ea for method B(standard process, low temp) & method D   | 162865               | 1        | 5          | 0 Failure |
| #  | Abrv          | Qual vehicle # | Condition   | Littelfuse Test Ref# | # of lot | Sample Qty | Results   |
| 1  | Test          | 3              | Per Datasheet conditions  | 159183               | 2        | All        | 0 Failure |
| 2  | EV            | 3              | Per JESD22B-101   | 159183               | 2        | All        | 0 Failure |
| 3  | PV            | 3              | Per Datasheet conditions  | 159183               | 2        | 50         | 0 Failure |
| 4  | HTRB          | 3              | TA=125°C,80% of rated VDS/VGES for 1008hrs  | 159183               | 2        | 60         | 0 Failure |
| 5  | HTGB          | 3              | TA=150°C,100% of rated VGS/GES for 1008hrs  | 159183               | 2        | 60         | 0 Failure |
| 6  | TC            | 3              | Temp=-55°C~150°C, for 1000Cycles  | 159183               | 2        | 60         | 0 Failure |
| 7  | H3TRB/HAST    | 3              | Ta=85°C, 85% RH, 80% rated or 100V max voltage for 1008hrs/<br>Ta=130°C, 85% RH, 80% rated or 42V max voltage for 96hrs | 159183               | 2        | 60         | 0 Failure |
| 8  | IOL           | 3              | Ta= 25C , Ton =Toff = 2 mins, Delta=>100°C, for 15000cycs   | 159183               | 2        | 60         | 0 Failure |
| 9  | AC/UHAST      | 3              | 121 °C, 29.7psia, 100% RH for 96hrs/<br>130 °C, 33.3psia, 85% RH for 96hrs  | 159183               | 2        | 60         | 0 Failure |
| 10 | RSH           | 3              | Tdwell=10 sec @ 260°C   | 162866               | 1        | 10         | 0 Failure |
| 11 | Solderability | 3              | 5ea for method B(standard process, low temp) & method D   | 162866               | 1        | 5          | 0 Failure |
| #  | Abrv          | Qual vehicle # | Condition   | Littelfuse Test Ref# | # of lot | Sample Qty | Results   |
| 1  | Test          | 4              | Per Datasheet conditions  | 159830               | 2        | All        | 0 Failure |
| 2  | EV            | 4              | Per JESD22B-101   | 159830               | 2        | All        | 0 Failure |
| 3  | PV            | 4              | Per Datasheet conditions  | 159830               | 2        | 50         | 0 Failure |
| 4  | HTRB          | 4              | TA=125°C,80% of rated VDS/VGES for 1008hrs  | 159830               | 2        | 60         | 0 Failure |
| 5  | HTGB          | 4              | TA=150°C,100% of rated VGS/GES for 1008hrs  | 159830               | 2        | 60         | 0 Failure |
| 6  | TC            | 4              | Temp=-55°C~150°C, for 1000Cycles  | 159830               | 2        | 60         | 0 Failure |
| 7  | HAST          | 4              | Ta=130°C, 85% RH, 80% rated or 42V max voltage for 96hrs  | 159830               | 2        | 60         | 0 Failure |
| 8  | IOL           | 4              | Ta= 25C , Ton =Toff = 2 mins, Delta=>100°C, for 15000cycs   | 159830               | 2        | 60         | 0 Failure |
| 9  | AC/UHAST      | 4              | 121 °C, 29.7psia, 100% RH for 96hrs/<br>130 °C, 33.3psia, 85% RH for 96hrs  | 159830               | 2        | 60         | 0 Failure |
| 10 | RSH           | 4              | Tdwell=10 sec @ 260°C   | 162869               | 1        | 10         | 0 Failure |
| 11 | Solderability | 4              | 5ea for method B(standard process, low temp) & method D   | 162869               | 1        | 5          | 0 Failure |

**APPENDIX B:**

| Part Number        | Product series       | Part Number  | Product series       | Part Number  | Product series  |
|--------------------|----------------------|--------------|----------------------|--------------|-----------------|
| CLA100E1200HB      | POWER THYRISTOR DISC | DSI45-16A    | POWER DIODE DISCRETE | IXFH60N65X2  | MOSFET DISCRETE |
| CLA30E1200HB       | POWER THYRISTOR DISC | DSP25-12A    | POWER DIODE DISCRETE | IXFH67N10    | MOSFET DISCRETE |
| CLA40E1200NHB      | POWER THYRISTOR DISC | DSP25-16A    | POWER DIODE DISCRETE | IXFH69N30P   | MOSFET DISCRETE |
| CLA50E1200HB       | POWER THYRISTOR DISC | DSP45-12A    | POWER DIODE DISCRETE | IXFH70N20Q3  | MOSFET DISCRETE |
| CLA60MT1200NHB     | POWER THYRISTOR DISC | DSP45-16A    | POWER DIODE DISCRETE | IXFH70N30Q3  | MOSFET DISCRETE |
| CLA80E1200HF       | POWER THYRISTOR DISC | DSP45-18A    | POWER DIODE DISCRETE | IXFH72N30X3  | MOSFET DISCRETE |
| CLA80MT1200NHB     | POWER THYRISTOR DISC | DSS40-0008D  | POWER DIODE DISCRETE | IXFH74N20P   | MOSFET DISCRETE |
| CLB30I1200HB       | POWER THYRISTOR DISC | DSS60-0045B  | POWER DIODE DISCRETE | IXFH75N10    | MOSFET DISCRETE |
| CLE40E1200HB       | POWER THYRISTOR DISC | DSSK30-018A  | POWER DIODE DISCRETE | IXFH75N10Q   | MOSFET DISCRETE |
| CMA50E1600HB       | POWER THYRISTOR DISC | DSSK30-01A   | POWER DIODE DISCRETE | IXFH76N07-11 | MOSFET DISCRETE |
| CMA60MT1600NHB     | POWER THYRISTOR DISC | DSSK40-0015B | POWER DIODE DISCRETE | IXFH76N07-12 | MOSFET DISCRETE |
| CMA80E1400HB       | POWER THYRISTOR DISC | DSSK40-006B  | POWER DIODE DISCRETE | IXFH76N15T2  | MOSFET DISCRETE |
| CMA80E1600HB       | POWER THYRISTOR DISC | DSSK40-008B  | POWER DIODE DISCRETE | IXFH80N20Q   | MOSFET DISCRETE |
| CMA80MT1600NHB     | POWER THYRISTOR DISC | DSSK50-0025B | POWER DIODE DISCRETE | IXFH80N25X3  | MOSFET DISCRETE |
| CS20-12IO1         | POWER THYRISTOR DISC | DSSK50-015A  | POWER DIODE DISCRETE | IXFH80N65X2  | MOSFET DISCRETE |
| CS20-14IO1         | POWER THYRISTOR DISC | DSSK50-01A   | POWER DIODE DISCRETE | IXFH86N30T   | MOSFET DISCRETE |
| CS20-14IO1-DIE-COA | POWER THYRISTOR DISC | DSSK60-0045A | POWER DIODE DISCRETE | IXFH88N30P   | MOSFET DISCRETE |
| CS20-16IO1         | POWER THYRISTOR DISC | DSSK60-0045B | POWER DIODE DISCRETE | IXFH90N20X3  | MOSFET DISCRETE |
| CS20-16IO1-DIE-COA | POWER THYRISTOR DISC | DSSK60-015A  | POWER DIODE DISCRETE | IXFH94N30P3  | MOSFET DISCRETE |
| CS30-12IO1         | POWER THYRISTOR DISC | DSSK60-02A   | POWER DIODE DISCRETE | IXFH94N30T   | MOSFET DISCRETE |
| CS30-14IO1         | POWER THYRISTOR DISC | DSSK70-0015B | POWER DIODE DISCRETE | IXFH96N15P   | MOSFET DISCRETE |
| CS30-14IO1-DIE-COA | POWER THYRISTOR DISC | DSSK70-003B  | POWER DIODE DISCRETE | IXFH96N20P   | MOSFET DISCRETE |

|                    |                      |              |                      |               |                 |
|--------------------|----------------------|--------------|----------------------|---------------|-----------------|
| CS30-16IO1         | POWER THYRISTOR DISC | DSSK70-008A  | POWER DIODE DISCRETE | IXFX180N07    | MOSFET DISCRETE |
| CS30-16IO1-DIE-COA | POWER THYRISTOR DISC | DSSK80-0008D | POWER DIODE DISCRETE | IXGH30N60C3D1 | IGBT DISCRETE   |
| CS45-08IO1         | POWER THYRISTOR DISC | DSSK80-0025B | POWER DIODE DISCRETE | IXGH48N60A3   | IGBT DISCRETE   |
| CS45-12IO1         | POWER THYRISTOR DISC | DSSK80-003B  | POWER DIODE DISCRETE | IXGH48N60B3D1 | IGBT DISCRETE   |
| CS45-16IO1         | POWER THYRISTOR DISC | DSSK80-0045B | POWER DIODE DISCRETE | IXGH48N60C3D1 | IGBT DISCRETE   |
| CS60-12IO1         | POWER THYRISTOR DISC | IXFH100N25P  | MOSFET DISCRETE      | IXGH60N60C3D1 | IGBT DISCRETE   |
| CS60-14IO1         | POWER THYRISTOR DISC | IXFH100N30X3 | MOSFET DISCRETE      | IXGH72N60A3   | IGBT DISCRETE   |
| CS60-16IO1         | POWER THYRISTOR DISC | IXFH102N15T  | MOSFET DISCRETE      | IXTH102N15T   | MOSFET DISCRETE |
| DFE25I600HA        | POWER DIODE DISCRETE | IXFH110N10P  | MOSFET DISCRETE      | IXTH10P50     | MOSFET DISCRETE |
| DFE60C600AHB       | POWER DIODE DISCRETE | IXFH110N15T2 | MOSFET DISCRETE      | IXTH10P50P    | MOSFET DISCRETE |
| DH20-18A           | POWER DIODE DISCRETE | IXFH110N25T  | MOSFET DISCRETE      | IXTH10P60     | MOSFET DISCRETE |
| DH40-18A           | POWER DIODE DISCRETE | IXFH120N15P  | MOSFET DISCRETE      | IXTH110N25T   | MOSFET DISCRETE |
| DH60-14A           | POWER DIODE DISCRETE | IXFH120N20P  | MOSFET DISCRETE      | IXTH11P50     | MOSFET DISCRETE |
| DH60-16A           | POWER DIODE DISCRETE | IXFH120N25T  | MOSFET DISCRETE      | IXTH120P065T  | MOSFET DISCRETE |
| DH60-18A           | POWER DIODE DISCRETE | IXFH120N25X3 | MOSFET DISCRETE      | IXTH12N65X2   | MOSFET DISCRETE |
| DHG20I1200HA       | POWER DIODE DISCRETE | IXFH120N30X3 | MOSFET DISCRETE      | IXTH130N10T   | MOSFET DISCRETE |
| DHG20I600HA        | POWER DIODE DISCRETE | IXFH12N50F   | MOSFET DISCRETE      | IXTH130N15X4  | MOSFET DISCRETE |
| DHG30I1200HA       | POWER DIODE DISCRETE | IXFH12N65X2  | MOSFET DISCRETE      | IXTH130N20T   | MOSFET DISCRETE |
| DHG30I600HA        | POWER DIODE DISCRETE | IXFH130N15X3 | MOSFET DISCRETE      | IXTH140P05T   | MOSFET DISCRETE |
| DHG40C1200HB       | POWER DIODE DISCRETE | IXFH140N10P  | MOSFET DISCRETE      | IXTH140P10T   | MOSFET DISCRETE |
| DHG40C600HB        | POWER DIODE DISCRETE | IXFH140N20X3 | MOSFET DISCRETE      | IXTH150N15X4  | MOSFET DISCRETE |
| DHG60C600HB        | POWER DIODE DISCRETE | IXFH14N60P   | MOSFET DISCRETE      | IXTH160N075T  | MOSFET DISCRETE |
| DHG60I1200HA       | POWER DIODE DISCRETE | IXFH150N15P  | MOSFET DISCRETE      | IXTH160N10T   | MOSFET DISCRETE |



|               |                      |              |                 |               |                 |
|---------------|----------------------|--------------|-----------------|---------------|-----------------|
| DHG60I600HA   | POWER DIODE DISCRETE | IXFH150N15X4 | MOSFET DISCRETE | IXTH160N15T   | MOSFET DISCRETE |
| DLA60I1200HA  | POWER DIODE DISCRETE | IXFH150N17T2 | MOSFET DISCRETE | IXTH16N10D2   | MOSFET DISCRETE |
| DMA30E1800HA  | POWER DIODE DISCRETE | IXFH150N20T  | MOSFET DISCRETE | IXTH16N20D2   | MOSFET DISCRETE |
| DMA30P1200HB  | POWER DIODE DISCRETE | IXFH150N25X3 | MOSFET DISCRETE | IXTH16N50D2   | MOSFET DISCRETE |
| DMA30P1600HB  | POWER DIODE DISCRETE | IXFH150N30X3 | MOSFET DISCRETE | IXTH16P60P    | MOSFET DISCRETE |
| DMA50I1200HA  | POWER DIODE DISCRETE | IXFH15N60    | MOSFET DISCRETE | IXTH180N10T   | MOSFET DISCRETE |
| DMA50I1600HA  | POWER DIODE DISCRETE | IXFH160N15T  | MOSFET DISCRETE | IXTH182N055T  | MOSFET DISCRETE |
| DMA50I800HA   | POWER DIODE DISCRETE | IXFH160N15T2 | MOSFET DISCRETE | IXTH1N200P3   | MOSFET DISCRETE |
| DMA50P1200HB  | POWER DIODE DISCRETE | IXFH16N50P   | MOSFET DISCRETE | IXTH200N10T   | MOSFET DISCRETE |
| DMA50P1600HB  | POWER DIODE DISCRETE | IXFH16N50P3  | MOSFET DISCRETE | IXTH20N50D    | MOSFET DISCRETE |
| DMA80IM1600HB | POWER DIODE DISCRETE | IXFH16N60P3  | MOSFET DISCRETE | IXTH20N60     | MOSFET DISCRETE |
| DPF30I600AHA  | POWER DIODE DISCRETE | IXFH170N10P  | MOSFET DISCRETE | IXTH20N65X    | MOSFET DISCRETE |
| DPF60C200HB   | POWER DIODE DISCRETE | IXFH170N15X3 | MOSFET DISCRETE | IXTH20N65X2   | MOSFET DISCRETE |
| DPF60C300HB   | POWER DIODE DISCRETE | IXFH170N25X3 | MOSFET DISCRETE | IXTH20P50P    | MOSFET DISCRETE |
| DPF60C600AHB  | POWER DIODE DISCRETE | IXFH180N20X3 | MOSFET DISCRETE | IXTH21N50     | MOSFET DISCRETE |
| DPF60I200HA   | POWER DIODE DISCRETE | IXFH18N60P   | MOSFET DISCRETE | IXTH22N50P    | MOSFET DISCRETE |
| DPF60IM400HB  | POWER DIODE DISCRETE | IXFH18N60X   | MOSFET DISCRETE | IXTH240N15X4  | MOSFET DISCRETE |
| DPF80C200HB   | POWER DIODE DISCRETE | IXFH18N65X2  | MOSFET DISCRETE | IXTH24N50     | MOSFET DISCRETE |
| DPG30C200HB   | POWER DIODE DISCRETE | IXFH20N50P3  | MOSFET DISCRETE | IXTH24N65X2   | MOSFET DISCRETE |
| DPG30C300HB   | POWER DIODE DISCRETE | IXFH20N60    | MOSFET DISCRETE | IXTH24P20     | MOSFET DISCRETE |
| DPG30C400HB   | POWER DIODE DISCRETE | IXFH20N60Q   | MOSFET DISCRETE | IXTH260N055T2 | MOSFET DISCRETE |
| DPG30I300HA   | POWER DIODE DISCRETE | IXFH21N50    | MOSFET DISCRETE | IXTH26N60P    | MOSFET DISCRETE |
| DPG30I400HA   | POWER DIODE DISCRETE | IXFH21N50F   | MOSFET DISCRETE | IXTH26P20P    | MOSFET DISCRETE |



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| DPG30I600AHA | POWER DIODE DISCRETE | IXFH220N06T3  | MOSFET DISCRETE | IXTH270N04T4  | MOSFET DISCRETE |
| DPG60C200HB  | POWER DIODE DISCRETE | IXFH220N20X3  | MOSFET DISCRETE | IXTH300N04T2  | MOSFET DISCRETE |
| DPG60C300HB  | POWER DIODE DISCRETE | IXFH22N50P    | MOSFET DISCRETE | IXTH30N50P    | MOSFET DISCRETE |
| DPG60C400HB  | POWER DIODE DISCRETE | IXFH22N60P    | MOSFET DISCRETE | IXTH30N60P    | MOSFET DISCRETE |
| DPG60C600AHB | POWER DIODE DISCRETE | IXFH22N60P3   | MOSFET DISCRETE | IXTH32N65X    | MOSFET DISCRETE |
| DPG60I300HA  | POWER DIODE DISCRETE | IXFH22N65X2   | MOSFET DISCRETE | IXTH32P20T    | MOSFET DISCRETE |
| DPG60I400HA  | POWER DIODE DISCRETE | IXFH230N075T2 | MOSFET DISCRETE | IXTH340N04T4  | MOSFET DISCRETE |
| DPG80C300HB  | POWER DIODE DISCRETE | IXFH230N10T   | MOSFET DISCRETE | IXTH34N65X2   | MOSFET DISCRETE |
| DPG80C400HB  | POWER DIODE DISCRETE | IXFH240N15X3  | MOSFET DISCRETE | IXTH360N055T2 | MOSFET DISCRETE |
| DSA30C100HB  | POWER DIODE DISCRETE | IXFH24N50     | MOSFET DISCRETE | IXTH36N50P    | MOSFET DISCRETE |
| DSA30C150HB  | POWER DIODE DISCRETE | IXFH24N50Q    | MOSFET DISCRETE | IXTH36P10     | MOSFET DISCRETE |
| DSA30C45HB   | POWER DIODE DISCRETE | IXFH24N60X    | MOSFET DISCRETE | IXTH36P15P    | MOSFET DISCRETE |
| DSA50C100HB  | POWER DIODE DISCRETE | IXFH26N50     | MOSFET DISCRETE | IXTH40N30     | MOSFET DISCRETE |
| DSA50C150HB  | POWER DIODE DISCRETE | IXFH26N50P    | MOSFET DISCRETE | IXTH440N055T2 | MOSFET DISCRETE |
| DSA60C45HB   | POWER DIODE DISCRETE | IXFH26N50P3   | MOSFET DISCRETE | IXTH44P15T    | MOSFET DISCRETE |
| DSA60C60HB   | POWER DIODE DISCRETE | IXFH26N50Q    | MOSFET DISCRETE | IXTH450P2     | MOSFET DISCRETE |
| DSA70C100HB  | POWER DIODE DISCRETE | IXFH26N60P    | MOSFET DISCRETE | IXTH460P2     | MOSFET DISCRETE |
| DSA70C150HB  | POWER DIODE DISCRETE | IXFH26N60Q    | MOSFET DISCRETE | IXTH48N65X2   | MOSFET DISCRETE |
| DSA70C200HB  | POWER DIODE DISCRETE | IXFH26N65X2   | MOSFET DISCRETE | IXTH48P20P    | MOSFET DISCRETE |
| DSA80C45HB   | POWER DIODE DISCRETE | IXFH270N06T3  | MOSFET DISCRETE | IXTH500N04T2  | MOSFET DISCRETE |
| DSA90C200HB  | POWER DIODE DISCRETE | IXFH28N60P3   | MOSFET DISCRETE | IXTH50N20     | MOSFET DISCRETE |
| DSB30C45HB   | POWER DIODE DISCRETE | IXFH30N50P    | MOSFET DISCRETE | IXTH50P10     | MOSFET DISCRETE |
| DSB60C30HB   | POWER DIODE DISCRETE | IXFH30N50Q3   | MOSFET DISCRETE | IXTH52N65X    | MOSFET DISCRETE |

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| DSB60C45HB  | POWER DIODE DISCRETE | IXFH30N60P    | MOSFET DISCRETE | IXTH52P10P   | MOSFET DISCRETE |
| DSB60C60HB  | POWER DIODE DISCRETE | IXFH30N60X    | MOSFET DISCRETE | IXTH62N65X2  | MOSFET DISCRETE |
| DSB80C45HB  | POWER DIODE DISCRETE | IXFH320N10T2  | MOSFET DISCRETE | IXTH64N65X   | MOSFET DISCRETE |
| DSDI60-14A  | POWER DIODE DISCRETE | IXFH32N50     | MOSFET DISCRETE | IXTH67N10    | MOSFET DISCRETE |
| DSDI60-16A  | POWER DIODE DISCRETE | IXFH32N50Q    | MOSFET DISCRETE | IXTH68P20T   | MOSFET DISCRETE |
| DSDI60-18A  | POWER DIODE DISCRETE | IXFH340N075T2 | MOSFET DISCRETE | IXTH6N50D2   | MOSFET DISCRETE |
| DSEC30-06A  | POWER DIODE DISCRETE | IXFH34N50P3   | MOSFET DISCRETE | IXTH75N10    | MOSFET DISCRETE |
| DSEC30-06B  | POWER DIODE DISCRETE | IXFH34N65X2   | MOSFET DISCRETE | IXTH76N25T   | MOSFET DISCRETE |
| DSEC30-12A  | POWER DIODE DISCRETE | IXFH36N50P    | MOSFET DISCRETE | IXTH76P10T   | MOSFET DISCRETE |
| DSEC60-06A  | POWER DIODE DISCRETE | IXFH36N60P    | MOSFET DISCRETE | IXTH7P50     | MOSFET DISCRETE |
| DSEC60-06B  | POWER DIODE DISCRETE | IXFH400N075T2 | MOSFET DISCRETE | IXTH80N65X2  | MOSFET DISCRETE |
| DSEC60-12A  | POWER DIODE DISCRETE | IXFH40N30     | MOSFET DISCRETE | IXTH86N20T   | MOSFET DISCRETE |
| DSEE30-12A  | POWER DIODE DISCRETE | IXFH40N30Q    | MOSFET DISCRETE | IXTH86N25T   | MOSFET DISCRETE |
| DSEI120-06A | POWER DIODE DISCRETE | IXFH40N50Q    | MOSFET DISCRETE | IXTH88N30P   | MOSFET DISCRETE |
| DSEI120-12A | POWER DIODE DISCRETE | IXFH40N55X2   | MOSFET DISCRETE | IXTH8P50     | MOSFET DISCRETE |
| DSEI30-06A  | POWER DIODE DISCRETE | IXFH42N20     | MOSFET DISCRETE | IXTH90N20X3  | MOSFET DISCRETE |
| DSEI30-10A  | POWER DIODE DISCRETE | IXFH42N50P2   | MOSFET DISCRETE | IXTH90P10P   | MOSFET DISCRETE |
| DSEI30-12A  | POWER DIODE DISCRETE | IXFH42N60P3   | MOSFET DISCRETE | IXTH96N20P   | MOSFET DISCRETE |
| DSEI60-02A  | POWER DIODE DISCRETE | IXFH44N50P    | MOSFET DISCRETE | IXTH96N25T   | MOSFET DISCRETE |
| DSEI60-06A  | POWER DIODE DISCRETE | IXFH44N50Q3   | MOSFET DISCRETE | IXTH96P085T  | MOSFET DISCRETE |
| DSEI60-10A  | POWER DIODE DISCRETE | IXFH46N30T    | MOSFET DISCRETE | IXXH100N60B3 | IGBT DISCRETE   |
| DSEI60-12A  | POWER DIODE DISCRETE | IXFH46N65X2   | MOSFET DISCRETE | IXXH110N65C4 | IGBT DISCRETE   |
| DSEK60-02A  | POWER DIODE DISCRETE | IXFH50N20     | MOSFET DISCRETE | IXXH150N60C3 | IGBT DISCRETE   |

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| DSEK60-06A | POWER DIODE DISCRETE | IXFH50N30Q3 | MOSFET DISCRETE | IXXH30N60B3D1 | IGBT DISCRETE |
| DSEK60-12A | POWER DIODE DISCRETE | IXFH50N50P3 | MOSFET DISCRETE | IXXH30N60C3D1 | IGBT DISCRETE |
| DSEP30-06A | POWER DIODE DISCRETE | IXFH50N60P3 | MOSFET DISCRETE | IXXH30N65B4   | IGBT DISCRETE |
| DSEP30-06B | POWER DIODE DISCRETE | IXFH50N60X  | MOSFET DISCRETE | IXXH50N60C3D1 | IGBT DISCRETE |
| DSEP30-12A | POWER DIODE DISCRETE | IXFH52N30P  | MOSFET DISCRETE | IXXH60N65B4H1 | IGBT DISCRETE |
| DSEP30-12B | POWER DIODE DISCRETE | IXFH52N30Q  | MOSFET DISCRETE | IXXH75N60B3D1 | IGBT DISCRETE |
| DSEP60-06A | POWER DIODE DISCRETE | IXFH52N50P2 | MOSFET DISCRETE | IXXH75N60C3D1 | IGBT DISCRETE |
| DSEP60-06B | POWER DIODE DISCRETE | IXFH56N30X3 | MOSFET DISCRETE | IXXH80N65B4H1 | IGBT DISCRETE |
| DSEP60-12A | POWER DIODE DISCRETE | IXFH58N20   | MOSFET DISCRETE | IXYH50N65C3D1 | IGBT DISCRETE |
| DSEP60-12B | POWER DIODE DISCRETE | IXFH58N20Q  | MOSFET DISCRETE | IXYH50N65C3H1 | IGBT DISCRETE |
| DSI45-08A  | POWER DIODE DISCRETE | IXFH60N50P3 | MOSFET DISCRETE | IXYH75N65C3D1 | IGBT DISCRETE |
| DSI45-12A  | POWER DIODE DISCRETE | IXFH60N60X  | MOSFET DISCRETE | IXYH75N65C3H1 | IGBT DISCRETE |