Diode

Emitter Controlled 4 Medium Power Technology
IDC73D120T8M

Data Sheet
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Diode Chip in Emitter Controlled 4 Medium Power Technology

Features:
- 1200V Emitter Controlled 4 technology
- 110μm chip
- Soft, fast switching
- Low reverse recovery charge
- Small temperature coefficient

Recommended for:
- Low / medium power modules

Applications:
- Low / medium power drives

<table>
<thead>
<tr>
<th>Chip Type</th>
<th>$V_R$</th>
<th>$I_{f_n}$</th>
<th>Die Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDC73D120T8M</td>
<td>1200V</td>
<td>150A</td>
<td>9.00mm x 8.15mm</td>
<td>Sawn on foil</td>
</tr>
</tbody>
</table>

Mechanical Parameters

- Die size: 9.00 x 8.15 mm²
- Area total: 73.35 mm²
- Anode pad size: 8.026 x 7.196 μm
- Silicon thickness: 110 μm
- Wafer size: 200 mm

Maximum possible chips per wafer: 358

- Passivation frontside: Photoimide
- Pad metal: 3200nm AlSiCu
- Backside metal: Ni Ag – system
- To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process
- Die bond: Electrically conductive epoxy glue and soft solder
- Wire bond: Al, ≤500μm
- Reject ink dot size: ∅ 0.65mm; max 1.2mm

Storage environment (<6 months)

- for original and sealed MBB bags: Ambient atmosphere air, temperature 17°C – 25°C
- for open MBB bags: Acc. IEC 62258-3; Section 9.4 Storage Environment.
Maximum Ratings
In general, from reliability and lifetime point of view, the lower the operation junction temperature and/or the applied voltage, the greater the expected lifetime of any semiconductor device.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak reverse voltage</td>
<td>$V_{RRM}$</td>
<td>$T_{vj}=25^\circ C$</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>Continuous forward current $^1$</td>
<td>$I_F$</td>
<td>-</td>
<td>-</td>
<td>A</td>
</tr>
<tr>
<td>Maximum repetitive forward current $^2$</td>
<td>$I_{FRM}$</td>
<td>-</td>
<td>300</td>
<td>A</td>
</tr>
<tr>
<td>Junction temperature</td>
<td>$T_{vj}$</td>
<td>-</td>
<td>-40...+175</td>
<td>°C</td>
</tr>
<tr>
<td>Operating junction temperature</td>
<td>$T_{vj,op}$</td>
<td>-</td>
<td>-40...+150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Static Characteristics (tested on wafer), $T_{vj}=25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse leakage current</td>
<td>$I_R$</td>
<td>$V_R=1200V$</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cathode-anode breakdown voltage</td>
<td>$V_{BR}$</td>
<td>$I_R=0.25mA$</td>
<td>1200</td>
<td>-</td>
</tr>
<tr>
<td>Forward voltage drop</td>
<td>$V_F$</td>
<td>$I_F=45A$</td>
<td>1.03</td>
<td>1.25</td>
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</tbody>
</table>

Electrical Characteristics $^2$

<table>
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<tr>
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<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage drop $T_{vj}=25^\circ C$</td>
<td>$V_F$</td>
<td>$I_F=150A$</td>
<td>1.35</td>
<td>2.05</td>
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<tr>
<td>Forward voltage drop $T_{vj}=150^\circ C$</td>
<td>$V_F$</td>
<td>$I_F=150A$</td>
<td>-</td>
<td>1.65</td>
</tr>
</tbody>
</table>

Further Electrical Characteristics
Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

Application example
FS150R12KT4
Rev. 2.1

$^1$ Depending on thermal properties of assembly.
$^2$ Not subject to production test - verified by design/characterization.
Chip Drawing

Die-Size 9000 µm x 8150 µm

A = Anode pad
**Bare Die Product Specifics**

Test coverage at wafer level cannot cover all application conditions. Therefore it is recommended to test all characteristics which are relevant for the application at package level, including RBSOA and SCOSA.

**Description**

AQL 0.65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

**Revision History**

<table>
<thead>
<tr>
<th>Revision</th>
<th>Subjects (major changes since last revision)</th>
<th>Date</th>
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<tbody>
<tr>
<td>2.0</td>
<td>Final data sheet</td>
<td>22.08.2016</td>
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**Relevant Application Notes**
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