# LIXYS

### DHG100X600NA

### **Sonic Fast Recovery Diode**

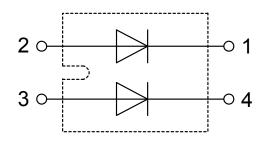
|                  |      | advanced |
|------------------|------|----------|
| $V_{RRM}$        | =    | 600V     |
| l <sub>fav</sub> | = 2x | 50 A     |
| t <sub>rr</sub>  | =    | 35 ns    |

High Performance Fast Recovery Diode Low Loss and Soft Recovery Parallel legs

### Part number DHG100X600NA



Backside: Isolated



#### Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviourAvalanche voltage rated for reliable
- operation • Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
- Power dissipation within the diode
- Turn-on loss in the commutating switch

#### **Applications:**

- Antiparallel diode for high frequency
- switching devices
- Antisaturation diode
- Snubber diode
   Free wheeling
- Free wheeling diode
  Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

#### Package: SOT-227B (minibloc)

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper
- internally DCB isolatedAdvanced power cycling

IXYS reserves the right to change limits, conditions and dimensions.

## LIXYS

### DHG100X600NA

#### advanced

| Fast Diode        |                                     |   |                         |      | Ratings |      |                |
|-------------------|-------------------------------------|---|-------------------------|------|---------|------|----------------|
| Symbol            | Definition                          | Conditions  |                         | min. | typ.    | max. | Unit           |
|                   | max. non-repetitive reverse blocki  | ng voltage  | $T_{VJ} = 25^{\circ}C$  |      |         | 600  | V              |
| V <sub>RRM</sub>  | max. repetitive reverse blocking ve | oltage  | $T_{VJ} = 25^{\circ}C$  |      |         | 600  | V              |
| I <sub>R</sub>    | reverse current, drain current      | $V_{R} = 600 V$   | $T_{VJ} = 25^{\circ}C$  |      |         | 200  | μA             |
|                   |                                     | $V_{R} = 600 V$   | $T_{VJ} = 125^{\circ}C$ |      |         | 4    | mA             |
| V <sub>F</sub>    | forward voltage drop                | I <sub>F</sub> = 50 A   | $T_{VJ} = 25^{\circ}C$  |      |         | 2.20 | V              |
|                   |                                     | I <sub>F</sub> = 100 A  |                         |      |         | 2.95 | V              |
|                   |                                     | I <sub>F</sub> = 50 A   | T <sub>vJ</sub> = 125°C |      |         | 2.18 | V              |
|                   |                                     | I <sub>F</sub> = 100 A  |                         |      |         | 3.10 | V              |
| I <sub>FAV</sub>  | average forward current             | $T_c = 60^{\circ}C$   | T <sub>vJ</sub> = 150°C |      |         | 50   | А              |
|                   |                                     | rectangular d = 0.5   |                         |      |         |      | <br> <br> <br> |
| V <sub>F0</sub>   | threshold voltage                   |   | T <sub>vJ</sub> = 150°C |      |         | 1.20 | V              |
| r <sub>F</sub>    | slope resistance                    | ss calculation only   |                         |      |         | 19   | mΩ             |
| R <sub>thJC</sub> | thermal resistance junction to case | 9   |                         |      |         | 0.6  | K/W            |
| R <sub>thCH</sub> | thermal resistance case to heatsin  | k   |                         |      | 0.10    |      | K/W            |
| P <sub>tot</sub>  | total power dissipation             |   | $T_c = 25^{\circ}C$     |      |         | 210  | W              |
|                   | max. forward surge current          | t = 10 ms; (50 Hz), sine; $V_R = 0 V$   | $T_{VJ} = 45^{\circ}C$  |      |         | 430  | Α              |
| C                 | junction capacitance                | V <sub>R</sub> = 400 V f= 1 MHz   | $T_{VJ} = 25^{\circ}C$  |      | 47      |      | pF             |
| I <sub>RM</sub>   | max. reverse recovery current       |   | $T_{vJ} = 25 ^{\circ}C$ |      | 20      |      | А              |
|                   |                                     | $I_{\rm F} = 50 \text{A};  V_{\rm R} = 400 \text{V}$                              | T <sub>vJ</sub> = 125°C |      | tbd     |      | Α              |
| t <sub>rr</sub>   | reverse recovery time               | I <sub>F</sub> = 50 A; V <sub>R</sub> = 400 V<br>-di <sub>F</sub> /dt = 1200 A/μs | $T_{VJ} = 25 \degree C$ |      | 35      |      | ns             |
|                   |                                     | )   | T <sub>vJ</sub> = 125°C |      | tbd     |      | ns             |

IXYS reserves the right to change limits, conditions and dimensions.

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### DHG100X600NA

advanced

| Package              | Package SOT-227B (minibloc) |                                      |                             |      | Ratings |      |      |      |
|----------------------|-----------------------------|--------------------------------------|-----------------------------|------|---------|------|------|------|
| Symbol               | Definition                  | Conditions                           |                             |      | min.    | typ. | max. | Unit |
| I <sub>RMS</sub>     | RMS current                 | per terminal                         |                             |      |         |      | 150  | Α    |
| T <sub>stg</sub>     | storage temperature         |                                      |                             |      | -40     |      | 150  | °C   |
| T <sub>VJ</sub>      | virtual junction temperatu  | ire                                  |                             |      | -40     |      | 150  | °C   |
| Weight               |                             |                                      |                             |      |         | 30   |      | g    |
| M <sub>D</sub>       | mounting torque             |                                      |                             |      | 1.1     |      | 1.5  | Nm   |
| Μ <sub>τ</sub>       | terminal torque             |                                      |                             |      | 1.1     |      | 1.5  | Nm   |
| d <sub>Spp/App</sub> | croopago distanco on su     | face   striking distance through air | terminal to terminal        | 10.5 | 3.2     |      |      | mm   |
| d <sub>Spb/Apb</sub> | creepage distance on sur    |                                      | terminal to backside        | 8.6  | 6.8     |      |      | mm   |
|                      | isolation voltage           | t = 1 second                         |                             |      | 3000    |      |      | V    |
|                      |                             | t = 1 minute                         | 50/60 Hz, RMS; Iıso∟ ≤ 1 mA |      | 2500    |      |      | V    |



| Logo → ∎IXYS    | XXXXX ®R      |
|-----------------|---------------|
| Zyyww           | abcd          |
| Assembly Line 🕇 | <b>↑</b>      |
| DateCode        | Assembly Code |

#### Part number

- D = Diode
- H = Sonic Fast Recovery Diode
- G = extreme fast
- 100 = Current Rating [A] X = Parallel legs
- 600 = Reverse Voltage [V]
- NA = SOT-227B (minibloc)

| Ordering | Part Number  | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|--------------|--------------------|---------------|----------|----------|
| Standard | DHG100X600NA | DHG100X600NA       | Tube          | 10       | 510840   |

| Equiv              | alent Circuits for | Simulation    | * on die level | T <sub>vJ</sub> = 150 °C |
|--------------------|--------------------|---------------|----------------|--------------------------|
|                    | $-R_{o}-$          | Fast<br>Diode |                |                          |
| V <sub>0 max</sub> | threshold voltage  | 1.2           |                | V                        |
| $R_{0 max}$        | slope resistance * | 17            |                | mΩ                       |

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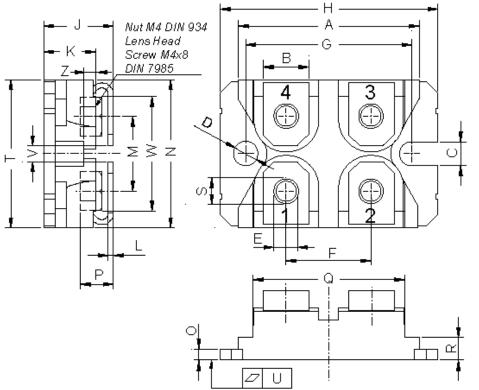
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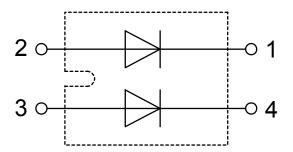
## DHG100X600NA

advanced

#### Outlines SOT-227B (minibloc)



| Millimeter         Inches           min         max         min         max           A         31.50         31.88         1.240         1.255           B         7.80         8.20         0.307         0.323           C         4.09         4.29         0.161         0.169           D         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.   |      | hdillir | notor | Inc   | hoe   |
|---|------|---------|-------|-------|-------|
| A         31.50         31.88         1.240         1.255           B         7.80         8.20         0.307         0.323           C         4.09         4.29         0.161         0.169           D         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         26.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.2   | Dim. |         |       |       |       |
| B         7.80         8.20         0.307         0.323           C         4.09         4.29         0.161         0.169           D         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.96         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.  |      |         |       |       |       |
| C         4.09         4.29         0.161         0.169           D         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.1   |      |         |       |       |       |
| D         4.09         4.29         0.161         0.169           E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0   | _    |         |       |       |       |
| E         4.09         4.29         0.161         0.169           F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002 <th< td=""><td>С</td><td>4.09</td><td>4.29</td><td>0.161</td><td>0.169</td></th<> | С    | 4.09    | 4.29  | 0.161 | 0.169 |
| F         14.91         15.11         0.587         0.595           G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126 <th< td=""><td>D</td><td>4.09</td><td>4.29</td><td>0.161</td><td>0.169</td></th<> | D    | 4.09    | 4.29  | 0.161 | 0.169 |
| G         30.12         30.30         1.186         1.193           H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780 <td< td=""><td>E</td><td>4.09</td><td>4.29</td><td>0.161</td><td>0.169</td></td<> | E    | 4.09    | 4.29  | 0.161 | 0.169 |
| H         37.80         38.23         1.488         1.505           J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | F    | 14.91   | 15.11 | 0.587 | 0.595 |
| J         11.68         12.22         0.460         0.481           K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | G    | 30.12   | 30.30 | 1.186 | 1.193 |
| K         8.92         9.60         0.351         0.378           L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | Н    | 37.80   | 38.23 | 1.488 | 1.505 |
| L         0.74         0.84         0.029         0.033           M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | J    | 11.68   | 12.22 | 0.460 | 0.481 |
| M         12.50         13.10         0.492         0.516           N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | К    | 8.92    | 9.60  | 0.351 | 0.378 |
| N         25.15         25.42         0.990         1.001           O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | L    | 0.74    | 0.84  | 0.029 | 0.033 |
| O         1.95         2.13         0.077         0.084           P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | M    | 12.50   | 13.10 | 0.492 | 0.516 |
| P         4.95         6.20         0.195         0.244           Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           WV         19.81         21.08         0.780         0.830  | N    | 25.15   | 25.42 | 0.990 | 1.001 |
| Q         26.54         26.90         1.045         1.059           R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           WV         19.81         21.08         0.780         0.830  | 0    | 1.95    | 2.13  | 0.077 | 0.084 |
| R         3.94         4.42         0.155         0.167           S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           WV         19.81         21.08         0.780         0.830  | Р    | 4.95    | 6.20  | 0.195 | 0.244 |
| S         4.55         4.85         0.179         0.191           T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | Q    | 26.54   | 26.90 | 1.045 | 1.059 |
| T         24.59         25.25         0.968         0.994           U         -0.05         0.10         -0.002         0.004           V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | R    | 3.94    | 4.42  | 0.155 | 0.167 |
| U         -0.05         0.10         -0.002         0.004           ∨         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | S    | 4.55    | 4.85  | 0.179 | 0.191 |
| V         3.20         5.50         0.126         0.217           W         19.81         21.08         0.780         0.830   | Т    | 24.59   | 25.25 | 0.968 | 0.994 |
| W 19.81 21.08 0.780 0.830   | U    | -0.05   | 0.10  |       | 0.004 |
| 11 10:01 21:00 0.000 0.000  | V    | 3.20    | 5.50  | 0.126 | 0.217 |
| Z 2.50 2.70 0.098 0.106   | W    | 19.81   | 21.08 | 0.780 | 0.830 |
|   | Ζ    | 2.50    | 2.70  | 0.098 | 0.106 |



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