

BYX56 SERIES

CONTROLLED AVALANCHE RECTIFIER DIODES

Silicon diodes in a DO-5 metal envelope, capable of absorbing transients and intended for power rectifier applications.

The series consists of the following types:

Normal polarity (cathode to stud): BYX56-600 to BYX56-1400.

Reverse polarity (anode to stud): BYX56-800R to BYX56-1400R.

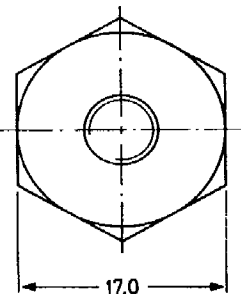
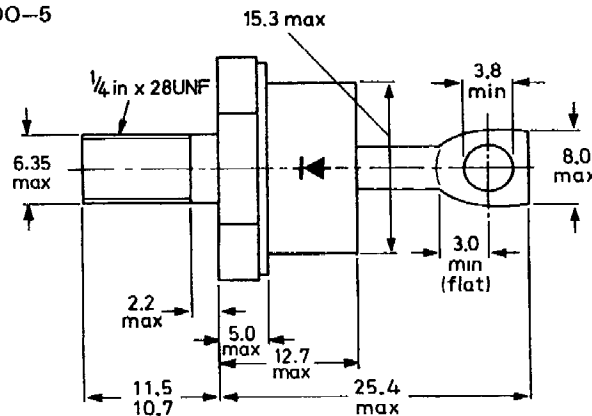
QUICK REFERENCE DATA

|   |                  | BYX56-600(R) | 800(R) | 1000(R) | 1200(R) | 1400(R) |    |
|---|------------------|--------------|--------|---------|---------|---------|----|
| Crest working reverse voltage                 | $V_{RWM}$ max.   | 600          | 800    | 1000    | 1200    | 1400    | V  |
| Reverse avalanche breakdown voltage           | $V_{(BR)R} >$    | 750          | 1000   | 1250    | 1450    | 1650    | V  |
| Average forward current                       | $I_{F(AV)}$ max. | 48           |        |         |         |         | A  |
| Non-repetitive peak forward current           | $I_{FSM}$ max.   | 800          |        |         |         |         | A  |
| Non-repetitive peak reverse power dissipation | $P_{RSM}$ max.   | 40           |        |         |         |         | kW |

MECHANICAL DATA

Dimensions in mm

Fig. 1 DO-5

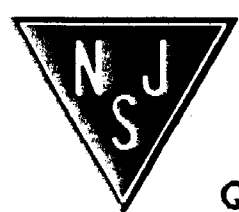


Net mass: 22 g  
Diameter of clearance hole: max. 6.5 mm  
Accessories supplied on request:  
see ACCESSORIES section  
Supplied with device: 1 nut, 1 lock washer.  
Nut dimensions across the flats: 11.1 mm.

Torque on nut:  
min. 1.7 Nm (17 kg cm),  
max. 3.5 Nm (35 kg cm). ←

The mark shown applies  
to normal polarity types.

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## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC134)

| Voltages*                     |           | BYX56-600(R) | 800(R) | 1000(R) | 1200(R) | 1400(R) |   |
|-------------------------------|-----------|--------------|--------|---------|---------|---------|---|
| Crest working reverse voltage | $V_{RWM}$ | max. 600     | 800    | 1000    | 1200    | 1400    | V |
| Continuous reverse voltage    | $V_R$     | max. 600     | 800    | 1000    | 1200    | 1400    | V |

### Currents

Average forward current

(averaged over any 20 ms period)

up to  $T_{mb} = 112\text{ }^\circ\text{C}$

at  $T_{mb} = 125\text{ }^\circ\text{C}$

|           |      |    |   |
|-----------|------|----|---|
| $I_F(AV)$ | max. | 48 | A |
| $I_F(AV)$ | max. | 40 | A |

R.M.S. forward current

|            |      |    |   |
|------------|------|----|---|
| $I_F(RMS)$ | max. | 75 | A |
|------------|------|----|---|

Repetitive peak forward current

|           |      |     |   |
|-----------|------|-----|---|
| $I_{FRM}$ | max. | 450 | A |
|-----------|------|-----|---|

Non-repetitive peak forward current

$t = 10\text{ ms}$  (half sine-wave);

$T_j = 175\text{ }^\circ\text{C}$  prior to surge;

with reapplied  $V_{RWMmax}$

|           |      |     |   |
|-----------|------|-----|---|
| $I_{FSM}$ | max. | 800 | A |
|-----------|------|-----|---|

$I^2t$  for fusing ( $t \leq 10\text{ ms}$ )

|        |      |      |        |
|--------|------|------|--------|
| $I^2t$ | max. | 3200 | $A^2s$ |
|--------|------|------|--------|

### Reverse power dissipation

Repetitive peak reverse power dissipation

$t = 10\text{ }\mu\text{s}$  (square-wave;  $f = 50\text{ Hz}$ );

$T_j = 175\text{ }^\circ\text{C}$

|           |      |     |    |
|-----------|------|-----|----|
| $P_{RRM}$ | max. | 6.5 | kW |
|-----------|------|-----|----|

Non-repetitive peak reverse power dissipation

$t = 10\text{ }\mu\text{s}$  (square-wave)

$T_j = 25\text{ }^\circ\text{C}$  prior to surge

$T_j = 175\text{ }^\circ\text{C}$  prior to surge

|           |      |     |    |
|-----------|------|-----|----|
| $P_{RSM}$ | max. | 40  | kW |
| $P_{RSM}$ | max. | 6.5 | kW |

### Temperatures

Storage temperature

|           |  |             |                  |
|-----------|--|-------------|------------------|
| $T_{stg}$ |  | -55 to +175 | $^\circ\text{C}$ |
|-----------|--|-------------|------------------|

Junction temperature

|       |      |     |                  |
|-------|------|-----|------------------|
| $T_j$ | max. | 175 | $^\circ\text{C}$ |
|-------|------|-----|------------------|

### THERMAL RESISTANCE

From junction to mounting base

|                |   |     |                    |
|----------------|---|-----|--------------------|
| $R_{th\ j-mb}$ | = | 0.8 | $^\circ\text{C/W}$ |
|----------------|---|-----|--------------------|

From mounting base to heatsink

|                |   |     |                    |
|----------------|---|-----|--------------------|
| $R_{th\ mb-h}$ | = | 0.2 | $^\circ\text{C/W}$ |
|----------------|---|-----|--------------------|

Transient thermal impedance;  $t = 1\text{ ms}$

|               |   |      |                    |
|---------------|---|------|--------------------|
| $Z_{th\ j-h}$ | = | 0.03 | $^\circ\text{C/W}$ |
|---------------|---|------|--------------------|

### CHARACTERISTICS

|  |             | BYX56--600(R) | 800(R) | 1000(R) | 1200(R) | 1400(R) |    |
|--|-------------|---------------|--------|---------|---------|---------|----|
| Forward voltage  |             |               |        |         |         |         |    |
| $I_F = 150 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$ | $V_F$       | < 1.8         | 1.8    | 1.8     | 1.8     | 1.8     | V* |
| Reverse avalanche breakdown voltage                    |             |               |        |         |         |         |    |
| $I_R = 5 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$  | $V_{(BR)R}$ | > 750         | 1000   | 1250    | 1450    | 1650    | V  |
|  |             | < 2400        | 2400   | 2400    | 2400    | 2400    | V  |
| Reverse current  |             |               |        |         |         |         |    |
| $V_R = V_{RWMmax}; T_j = 125 \text{ }^\circ\text{C}$   | $I_R$       | < 1.6         | 1.6    | 1.6     | 1.6     | 1.6     | mA |

### OPERATING NOTES

The top connector should neither be bent nor twisted; it should be soldered into the circuit so that there is no strain on it.

During soldering the heat conduction to the junction should be kept to a minimum by using a thermal shunt.

