

# RECTIFIERS

Fast Recovery, 0.5 Amp to 2 Amp

UTR10-UTR60

UTR01-UTR61

UTR02-UTR62

## FEATURES

- Continuous Rating: to 2A
- Controlled Avalanche
- Surge Rating: to 25A
- Fast Recovery 40kHz Operation
- PIV: to 600V
- Miniature Package

## DESCRIPTION

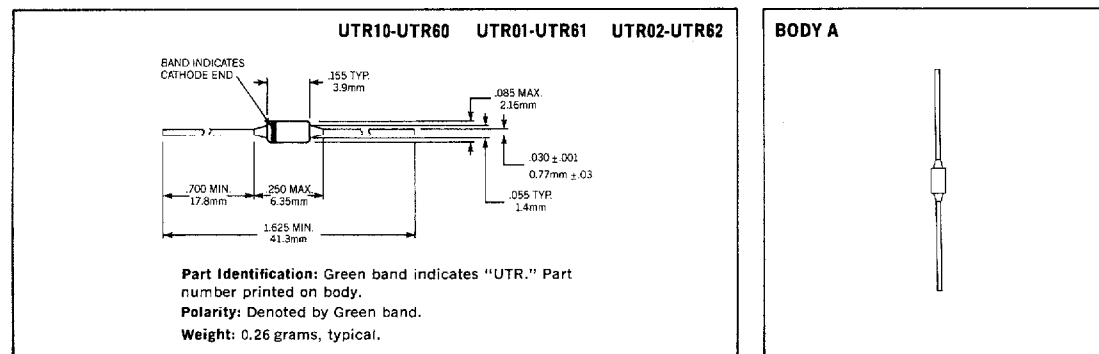
These miniature fast recovery rectifiers permit operation at full frequencies as high as 40kHz square wave. They have the unique Microsemi Fused in Glass construction.

## ABSOLUTE MAXIMUM RATINGS

| Peak Inverse Voltage | 1/2 Amp Series | 1 Amp Series | 2 Amp Series |
|----------------------|----------------|--------------|--------------|
| 50V                  |                | UTR01        | UTR02        |
| 100V                 | UTR10          | UTR11        | UTR12        |
| 200V                 | UTR20          | UTR21        | UTR22        |
| 300V                 | UTR30          | UTR31        | UTR32        |
| 400V                 | UTR40          | UTR41        | UTR42        |
| 500V                 | UTR50          | UTR51        | UTR52        |
| 600V                 | UTR60          | UTR61        | UTR62        |

|                                     | 1/2 AMP SERIES                               | 1 AMP SERIES | 2 AMP SERIES |
|-------------------------------------|----------------------------------------------|--------------|--------------|
| Maximum Average D.C. Output Current |                                              |              |              |
| @ $T_A = 25^\circ\text{C}$          | 0.5A                                         | 1.0A         | 2.0A         |
| @ $T_A = 100^\circ\text{C}$         | 0.25A                                        | 0.5A         | 1.0A         |
| Non-Repetitive Sinusoidal           |                                              |              |              |
| Surge Current (8.3ms)               | 15A                                          | 20A          | 25A          |
| Operating Temperature Range         | $-195^\circ\text{C}$ to $+175^\circ\text{C}$ |              |              |
| Storage Temperature Range           | $-195^\circ\text{C}$ to $+200^\circ\text{C}$ |              |              |
| Thermal Resistance                  | See lead temperature derating curves         |              |              |

## MECHANICAL SPECIFICATIONS



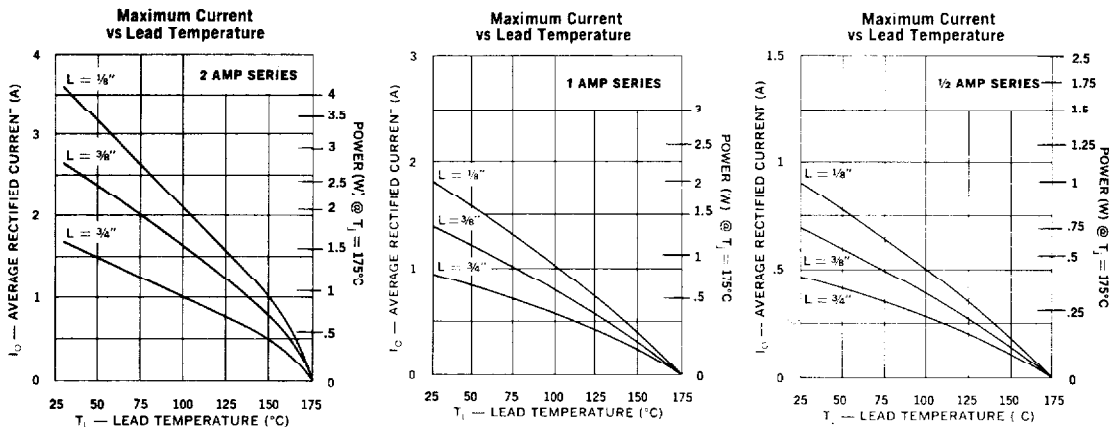
THESE DEVICES ALSO AVAILABLE IN SURFACE MOUNT PACKAGE. SEE SECTION 10

ELECTRICAL SPECIFICATIONS (at 25°C unless noted)

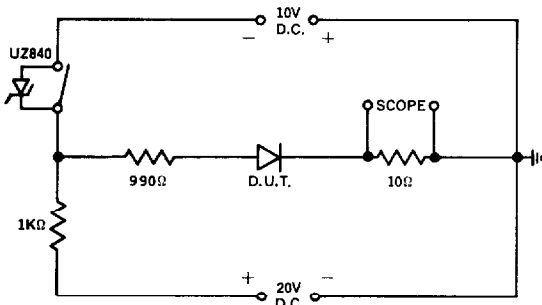
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| Type  | PIV  | Maximum Forward Voltage Drop | Maximum Leakage Current @ PIV |       | Maximum Reverse Recovery Time* | Maximum Junction Capacitance @ 25°C |      |
|-------|------|------------------------------|-------------------------------|-------|--------------------------------|-------------------------------------|------|
|       |      |                              | 25°C                          | 100°C |                                | 0V                                  | -10V |
| UTR02 | 50V  | 1.1V @ 1000mA                | 3μA                           | 100μA | 250ns                          | 150pf                               | 60pf |
| UTR12 | 100V |                              |                               |       | 250ns                          | 100pf                               | 40pf |
| UTR22 | 200V |                              |                               |       | 250ns                          | 80pf                                | 32pf |
| UTR32 | 300V |                              |                               |       | 300ns                          | 70pf                                | 28pf |
| UTR42 | 400V |                              |                               |       | 350ns                          | 60pf                                | 24pf |
| UTR52 | 500V |                              |                               |       | 400ns                          | 50pf                                | 20pf |
| UTR62 | 600V |                              |                               |       | 400ns                          | 40pf                                | 16pf |
| UTR01 | 50V  | 1.1V @ 500mA                 | 3μA                           | 100μA | 250ns                          | 150pf                               | 60pf |
| UTR11 | 100V |                              |                               |       | 250ns                          | 100pf                               | 40pf |
| UTR21 | 200V |                              |                               |       | 250ns                          | 80pf                                | 32pf |
| UTR31 | 300V |                              |                               |       | 300ns                          | 70pf                                | 28pf |
| UTR41 | 400V |                              |                               |       | 350ns                          | 60pf                                | 24pf |
| UTR51 | 500V |                              |                               |       | 400ns                          | 50pf                                | 20pf |
| UTR61 | 600V |                              |                               |       | 400ns                          | 40pf                                | 16pf |
| UTR10 | 100V | 1.1V @ 200mA                 | 3μA                           | 100μA | 250ns                          | 100pf                               | 40pf |
| UTR20 | 200V |                              |                               |       | 250ns                          | 80pf                                | 32pf |
| UTR30 | 300V |                              |                               |       | 300ns                          | 70pf                                | 28pf |
| UTR40 | 400V |                              |                               |       | 350ns                          | 60pf                                | 24pf |
| UTR50 | 500V |                              |                               |       | 400ns                          | 50pf                                | 20pf |
| UTR60 | 600V |                              |                               |       | 400ns                          | 40pf                                | 16pf |

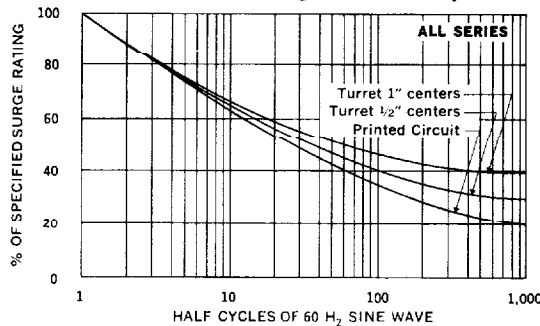
\*Recovery time is measured from 10.0mA to 10.0mA recovery to 5.0mA



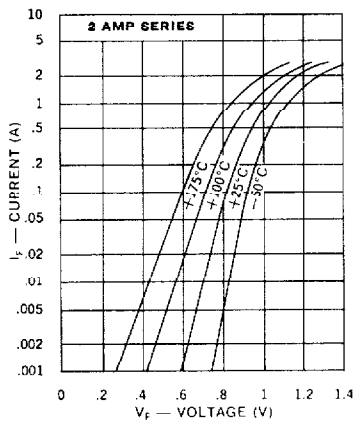
Reverse-Recovery Circuit



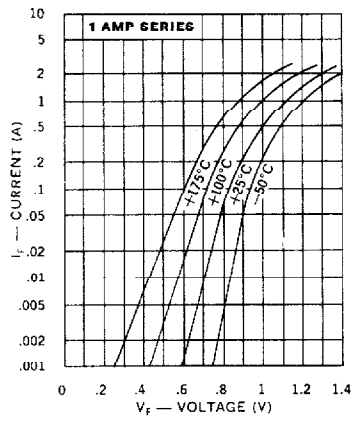
Allowable Forward Surge vs Number of Cycles



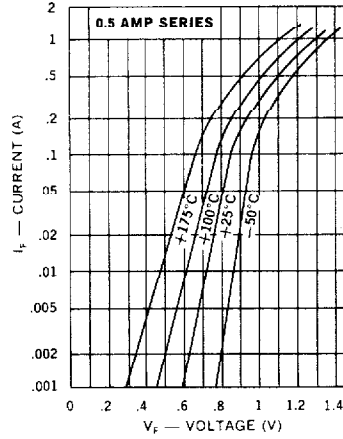
Typical Forward Current vs Forward Voltage



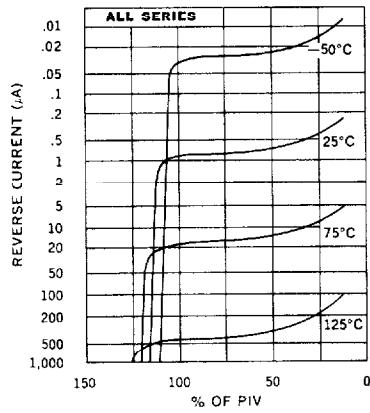
Typical Forward Current vs Forward Voltage



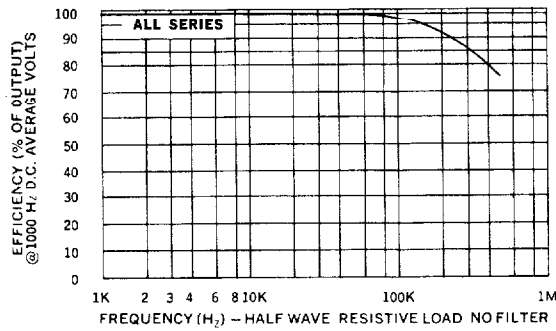
Typical Forward Current vs Forward Voltage



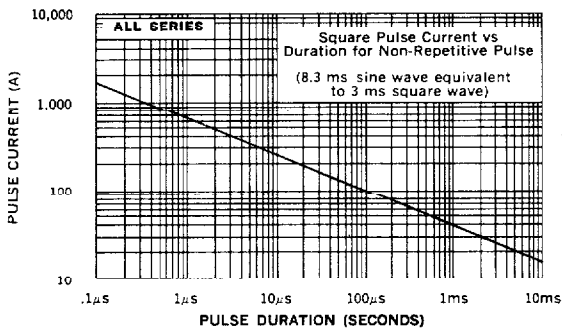
Typical Reverse Current vs PIV



Efficiency vs Frequency at Rated Current (Sine Wave)



Forward Pulse Current vs Pulse Duration



Reverse Pulse Power vs Pulse Duration

