

1N3889 thru 1N3893

Designers Data Sheet

**STUD MOUNTED
 FAST RECOVERY POWER RECTIFIERS**

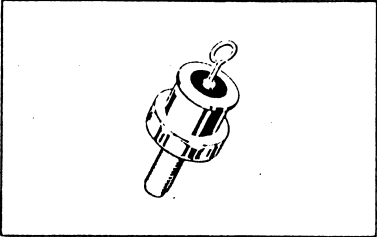
... designed for special applications such as dc power supplies, inverters, converters, ultrasonic systems, choppers, low RF interference, sonar power supplies and free wheeling diodes. A complete line of fast recovery rectifiers having typical recovery time of 100 nanoseconds providing high efficiency at frequencies to 250 kHz.

Designer's Data for "Worst Case" Conditions

The Designers Data sheets permit the design of most circuits entirely from the information presented. Limit curves — representing boundaries on device characteristics — are given to facilitate "worst case" design.

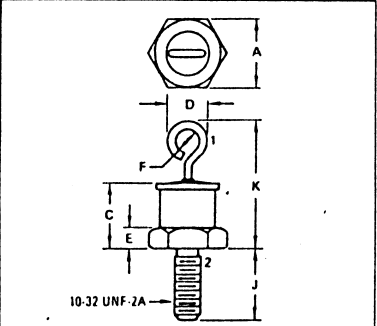
**FAST RECOVERY
 POWER RECTIFIERS**

**50-800 VOLTS
 12 AMPERES**



***MAXIMUM RATINGS**

| Rating | Symbol | 1N3889 | 1N3890 | 1N3891 | 1N3892 | 1N3893 | Unit |
|--|---------------------|----------------------------------|--------|--------|--------|--------|-------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 50 | 100 | 200 | 300 | 400 | Volts |
| Working Peak Reverse Voltage | V _{WRM} | | | | | | |
| DC Blocking Voltage | V _R | | | | | | Volts |
| Non-Repetitive Peak Reverse Voltage | V _{RSM} | 75 | 150 | 250 | 350 | 450 | Volts |
| RMS Reversal Voltage | V _{R(RMS)} | 35 | 70 | 140 | 210 | 280 | Volts |
| Average Rectified Forward Current (Single phase, resistive load, T _C = 100°C) | I _O | ←————— 12 —————→ | | | | | Amps |
| Non-Repetitive Peak Surge Current (Surge applied at rated load conditions) | I _{FSM} | ←————— 200 —————→ (one cycle) | | | | | Amp |
| Operating Junction Temperature Range | T _J | ←————— -65 to +150 —————→ | | | | | °C |
| Storage Temperature Range | T _{stg} | ←————— -65 to +175 —————→ | | | | | °C |



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 10.77 | 11.10 | 0.424 | 0.437 |
| C | — | 10.29 | — | 0.405 |
| D | — | 6.35 | — | 0.250 |
| E | 1.91 | 4.45 | 0.075 | 0.175 |
| F | 1.52 | — | 0.060 | — |
| J | 10.72 | 11.51 | 0.422 | 0.453 |
| K | — | 20.32 | — | 0.800 |

THERMAL CHARACTERISTICS

| Characteristics | Symbol | Max | Unit |
|--------------------------------------|------------------|-----|------|
| Thermal Resistance, Junction to Case | R _{θJC} | 2.0 | °C/W |

Material guarantees the listed value, although parts having higher values of thermal resistance will meet the current rating. Thermal resistance is not required by the JEDEC registration.

***ELECTRICAL CHARACTERISTICS**

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|----------------|-----|-----|-----|-------|
| Instantaneous Forward Voltage (I _F = 36 Amp, T _J = 150°C) | V _F | — | 1.2 | 1.5 | Volts |
| Forward Voltage (I _F = 12 Amp, T _C = 25°C) | V _F | — | 1.0 | 1.4 | Volts |
| Reverse Current (rated dc voltage) | I _R | — | 10 | 15 | μA |
| | | | 0.5 | .10 | mA |

***REVERSE RECOVERY CHARACTERISTICS**

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|----------------------|-----|-----|-----|------|
| Reverse Recovery Time (I _F = 1.0 Amp to V _R = 30 Vdc, Figure 16) (I _{FM} = 36 Amp, di/dt = 25 A/μs, Figure 17) | t _{rr} | — | 100 | 200 | ns |
| | | | 200 | 400 | |
| Reverse Recovery Current (I _F = 1.0 Amp to V _R = 30 Vdc, Figure 16) | I _{RM(REC)} | — | — | 2.0 | Amp |

MECHANICAL CHARACTERISTICS

Case: Welded, hermetically sealed

Finish: All external surface corrosion resistant and terminal leads are readily solderable

Polarity: Cathode to Case

Mounting Positions: Any

Stud Torque: 15 in/lb. Max

