

## HIGH RELIABILITY FAST RECOVERY RECTIFIER

Qualified per MIL-PRF-19500/304

- 175°C Junction Temperature
- VRRM 100 to 400 Volts
- 20 Amps Current Rating

### DEVICES

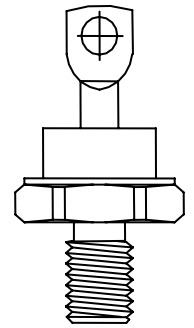
<b>1N3890</b>	<b>1N3890A</b>	<b>1N3890R</b>	<b>1N3890AR</b>
<b>1N3891</b>	<b>1N3891A</b>	<b>1N3891R</b>	<b>1N3891AR</b>
<b>1N3893</b>	<b>1N3893A</b>	<b>1N3893R</b>	<b>1N3893AR</b>

### LEVELS

<b>JAN</b>
<b>JANTX</b>
<b>JANTXV</b>

### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = +25°C unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Unit
Peak Repetitive Reverse Voltage 1N3890 / A / R / AR 1N3891 / A / R / AR 1N3893 / A / R / AR	V <sub>RWM</sub>	100 200 400	V
Peak Working Reverse Voltage 1N3890 / A / R / AR 1N3891 / A / R / AR 1N3893 / A / R / AR	V <sub>RRM</sub>	100 200 400	V
Average Forward Current, T <sub>C</sub> = 100°	I <sub>F</sub>	20	A
Peak Surge Forward Current @ t <sub>p</sub> = 8.3ms, half sinewave, T <sub>C</sub> = 100°C	I <sub>FSM</sub>	175 250	A
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1.5	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-65°C to 175°C	°C
Storage Temperature Range	T <sub>stg</sub>	-65°C to 175°C	°C



**DO-203AA (DO-4)**

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = +25°C, unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Forward Voltage I <sub>FM</sub> = 38A, T <sub>C</sub> = 25°C*	V <sub>FM</sub>		1.5	V
Forward Voltage I <sub>FM</sub> = 250A, T <sub>C</sub> = 150°C**	V <sub>FM</sub>		2.75	V
Reverse Current V <sub>RM</sub> = 100V, T <sub>C</sub> = 25°C V <sub>RM</sub> = 200V, T <sub>C</sub> = 25°C V <sub>RM</sub> = 400V, T <sub>C</sub> = 25°C	I <sub>RM</sub>		10	μA
Reverse Current V <sub>RM</sub> = 100V, T <sub>C</sub> = 150°C V <sub>RM</sub> = 200V, T <sub>C</sub> = 150°C V <sub>RM</sub> = 400V, T <sub>C</sub> = 150°C	I <sub>RM</sub>		2	mA
Reverse Recovery Time V <sub>RM</sub> = 30V, I <sub>F</sub> = 1A, T <sub>C</sub> = 55°C*	T <sub>rr</sub>		200 150	ns

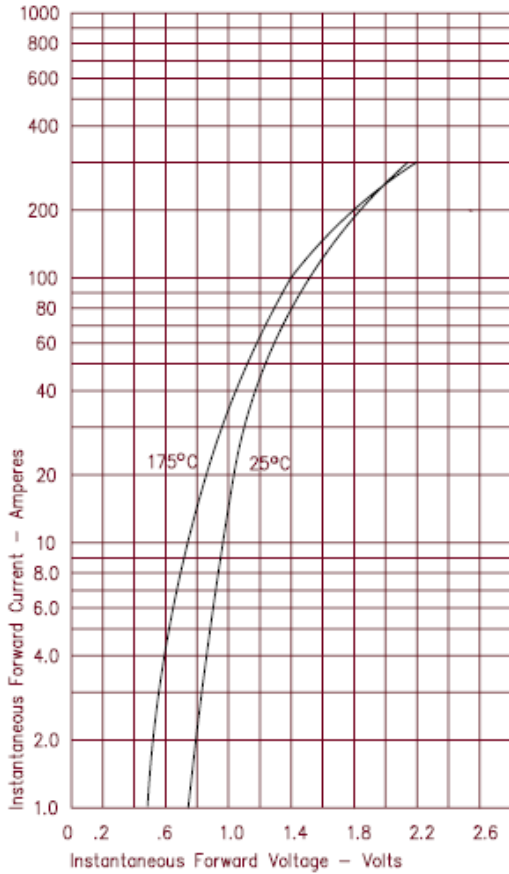
\* Pulse test: Pulse width 300 μsec, Duty cycle 2%

\*\* Pulse test: Pulse width 800 μsec

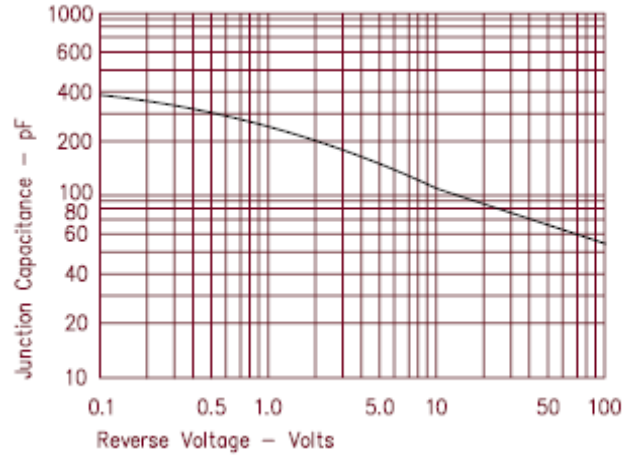
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### GRAPHS

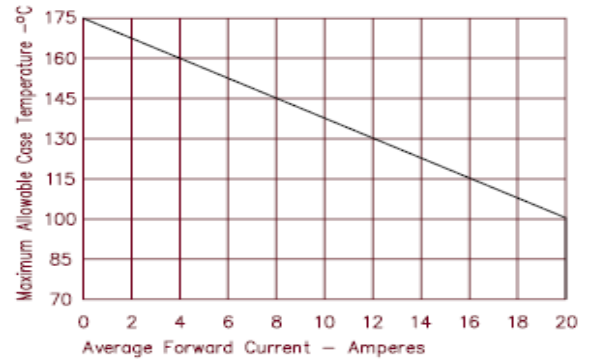
**FIGURE 1**  
**TYPICAL FORWARD CHARACTERISTICS**



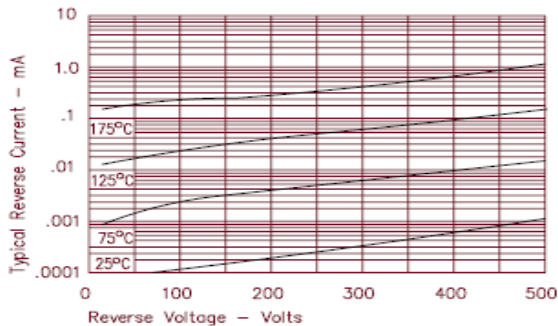
**FIGURE 3**  
**TYPICAL JUNCTION CAPACITANCE**



**FIGURE 4**  
**FORWARD CURRENT DERATING**

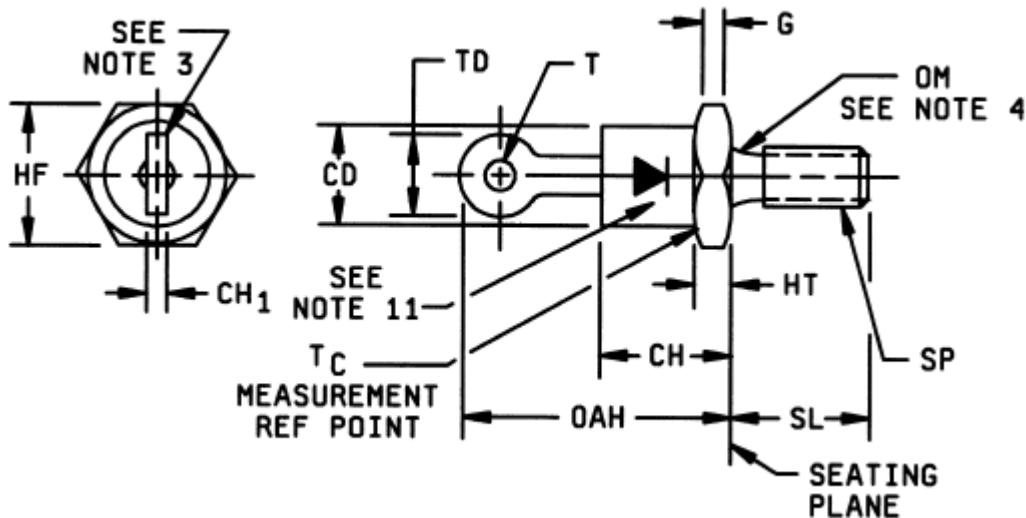


**FIGURE 2**  
**TYPICAL REVERSE CHARACTERISTICS**



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### PACKAGE DIMENSIONS



Physical dimensions of non-isolated types: (DO-4)

1N3890, 1N3890A, 1N3891, 1N3891A, 1N3893, 1N3893A, 1N3890R, 1N3890AR, 1N3891R, 1N3891AR, 1N3893R and 1N3893AR

#### NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Angular orientation of this terminal is undefined. Square or radius on end of terminals is optional.
4. Diameter variations within these limits are permitted.
5. The ANSI thread reference is 0.190-32 UNF-2A
6. Max pitch diameter of plated threads shall be basic pitch diameter 0.169 inch (4.29 mm) reference FED-STD-H28 (Screw Thread Standards for Federal Services).
7. Units must not be damaged by torque of 15 inch-pounds applied to 0.190-32 UNF-2B nut assembled on thread.
8. Complete threads to extend to within 0.078inch (1.98 mm) of the seating plane.
9. Terminal-end shape is unrestricted
10. Reversed (anode to stud) units shall be marked with an "R" following the last digit in the type number.
11. Forward polarity (cathode to stud) marking is shown.

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		0.250		6.35	3
CH		0.405		10.29	
CH1	0.020	0.065	0.51	1.65	
G	0.060		1.52		
HF	0.424	0.437	10.77	11.10	
HT	0.075	0.175	1.90	4.44	
OAH		0.800		20.32	
OM	0.163	0.189	4.14	4.80	
SL	0.422	0.453	10.72	11.50	
SP					5, 6, 7, 8
T	0.060		1.52		
TD		0.424		10.77	