

Pb Free Plating Product

## X4202S



20Amperes,200Volts Insulated Common Cathode Ultra Fast Recovery Rectifiers

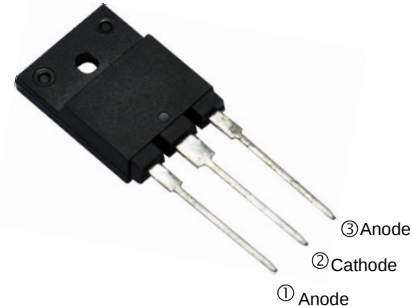
## APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

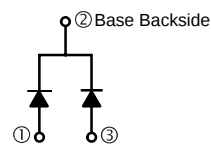
## PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

## TO-3PF(TO-3PML)



Internal Configuration



## GENERAL DESCRIPTION

X4202S using the latest FRED FAB process(planar passivation chip) with ultrafast and soft recovery characteristic.

## Absolute Maximum Ratings

| Parameter                                  | Symbol      | Test Conditions           | Values      | Units            |
|--------------------------------------------|-------------|---------------------------|-------------|------------------|
| Repetitive peak reverse voltage            | $V_{RRM}$   |                           | 200         | V                |
| Continuous forward current(total device)   | $I_{F(AV)}$ | $T_c = 110^\circ\text{C}$ | 20          | A                |
| Single pulse forward current(total device) | $I_{FSM}$   | $T_c = 25^\circ\text{C}$  | 200         |                  |
| Maximum repetitive forward current         | $I_{FRM}$   | Square wave, 20kHz        | 50          |                  |
| Operating junction                         | $T_j$       |                           | 175         | $^\circ\text{C}$ |
| Storage temperatures                       | $T_{stg}$   |                           | -55 to +175 | $^\circ\text{C}$ |

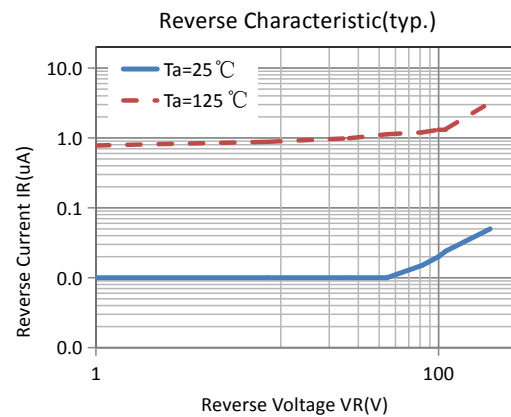
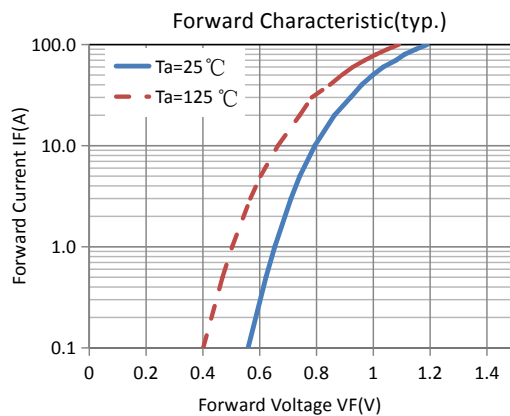
Electrical characteristics ( $T_a=25^\circ\text{C}$  unless otherwise specified)

| Parameter                             | Symbol        | Test Conditions                                                | Min | Typ. | Max. | Units         |
|---------------------------------------|---------------|----------------------------------------------------------------|-----|------|------|---------------|
| Breakdown voltage<br>Blocking voltage | $V_{BR}, V_R$ | $I_R=100\mu\text{A}$                                           | 200 |      |      | V             |
| Forward voltage<br>(Per Diode)        | $V_F$         | $I_F=10\text{A}$                                               |     | 0.88 | 1.20 |               |
|                                       |               | $I_F=10\text{A}, T_j=125^\circ\text{C}$                        |     | 0.78 | 1.15 |               |
| Reverse leakage current(Per Diode)    | $I_R$         | $V_R=V_{RRM}$                                                  |     |      | 10   | $\mu\text{A}$ |
|                                       |               | $T_j=150^\circ\text{C}, V_R=200\text{V}$                       |     |      | 100  |               |
| Reverse recovery time(Per Diode)      | $t_{rr}$      | $I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$          |     | 30   | 40   | ns            |
|                                       |               | $I_F=1\text{A}, V_R=30\text{V}, di/dt=200\text{A}/\mu\text{s}$ |     | 20   | 30   |               |

## Thermal characteristics

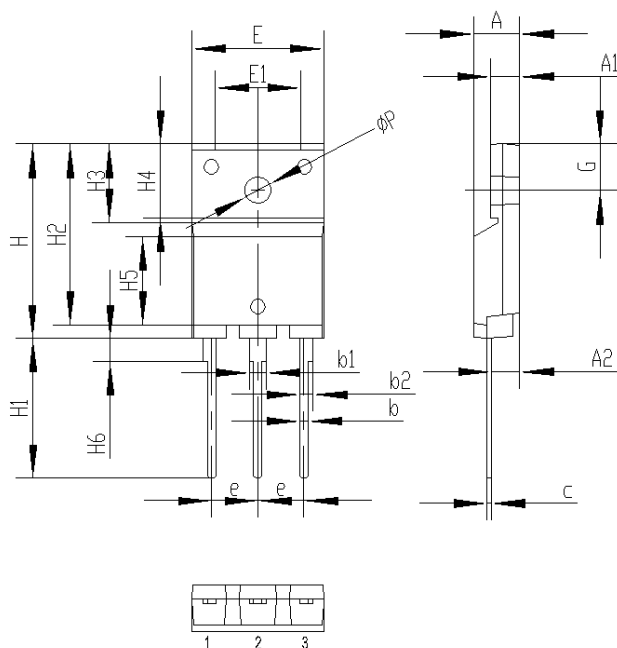
| Paramter         | Symbol          | Typ | Units                     |
|------------------|-----------------|-----|---------------------------|
| Junction-to-Case | $R_{\theta JC}$ | 1.2 | $^\circ\text{C}/\text{W}$ |

## Electrical performance (typical)



## Package Information

## TO-3PF PACKAGE



|    | mm    |       |       |
|----|-------|-------|-------|
|    | MIN   | NOM   | MAX   |
| A  | 5.3   | 5.5   | 5.7   |
| A1 | 3.25  | 3.45  | 3.65  |
| A2 | 3.15  | 3.35  | 3.55  |
| b  | 0.85  | 1.0   | 1.15  |
| b1 | 1.85  | 2.0   | 2.15  |
| b2 | 1.45  | 1.6   | 1.75  |
| c  | 0.4   | 0.5   | 0.6   |
| e  | 5.3   | 5.45  | 5.6   |
| E  | 15.40 | 15.60 | 15.80 |
| E1 | 10.00 | 10.20 | 10.40 |
| H  | 22.80 | 23.00 | 23.20 |
| H1 | 16.00 | 16.50 | 17.00 |
| H2 | 21.20 | 21.40 | 21.60 |
| H3 | 9.10  | 9.30  | 9.50  |
| H4 | 8.55  | 8.75  | 8.95  |
| H5 | 10.20 | 10.40 | 10.60 |
| H6 | 2.55  | 2.70  | 2.85  |
| G  | 5.3   | 5.5   | 5.7   |
| ØP | 3.05  | 3.2   | 3.35  |