

Pb Free Plating Product

X4202S



20Ampere,200Volt Insulated Fast Recovery Diode for Welding Machine

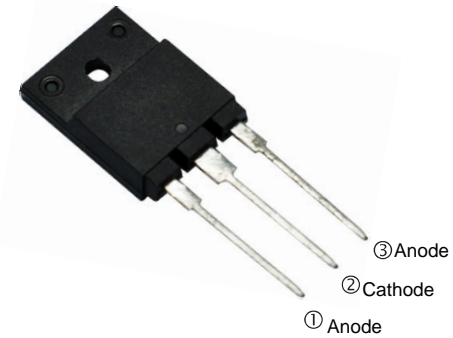
APPLICATION

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

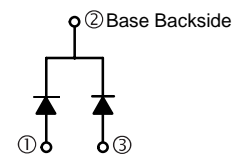
PRODUCT FEATURE

- 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 with ultrafast and soft recovery characteristic for welding machine.

ABSOLUTE MAXIMUM RATINGS

$T_C = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter/Test Conditions		Values	Unit
V_R	Maximum D.C. Reverse Voltage		210	V
V_{RRM}	Maximum Repetitive Reverse Voltage			
$I_{F(AV)}$	Average Forward Current	$T_C = 110^\circ\text{C}$, Per Diode	10	A
		$T_C = 110^\circ\text{C}$, Per Package	20	
$I_{F(RMS)}$	RMS Forward Current	$T_C = 110^\circ\text{C}$, Per Diode	14	
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J = 45^\circ\text{C}$, $t = 10\text{ms}$, 50Hz, Sine	100	
P_D	Power Dissipation		83	W
T_J	Junction Temperature		-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to +150	$^\circ\text{C}$
Torque	Module-to-Sink	Recommended (M3)	1.1	N·m
$R_{th(J-C)}$	Junction-to-Case Thermal Resistance, Per Diode		1.5	$^\circ\text{C/W}$
Weight			5.2	g

ELECTRICAL CHARACTERISTICS

$T_C = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{RM}	Maximum Reverse Leakage Current	$V_R = 220\text{V}$			10	μA
		$V_R = 220\text{V}$, $T_J = 125^\circ\text{C}$			10	mA
V_F	Forward Voltage	$I_F = 10\text{A}$		0.9	1.1	V
		$I_F = 10\text{A}$, $T_J = 125^\circ\text{C}$		0.8	0.95	
t_{rr}	Reverse Recovery Time ($I_F = 1\text{A}$, $di_F/dt = -200\text{A}/\mu\text{s}$, $V_R = 30\text{V}$)			17		ns
t_{rr}	Reverse Recovery Time			32		ns
I_{RRM}	Maximum Reverse Recovery Current			2.1		A
t_{rr}	Reverse Recovery Time			45		ns
I_{RRM}	Maximum Reverse Recovery Current			5		A

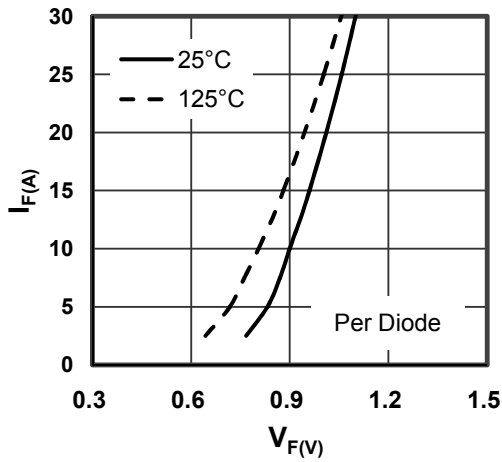


Figure 1. Forward Voltage Drop vs Forward Current

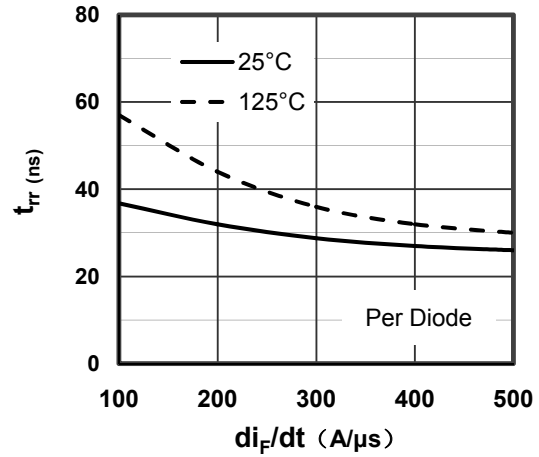


Figure 2. Reverse Recovery Time vs diF/dt

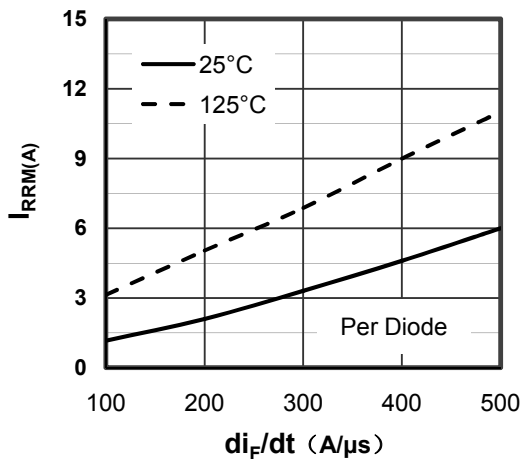


Figure 3. Reverse Recovery Current vs diF/dt

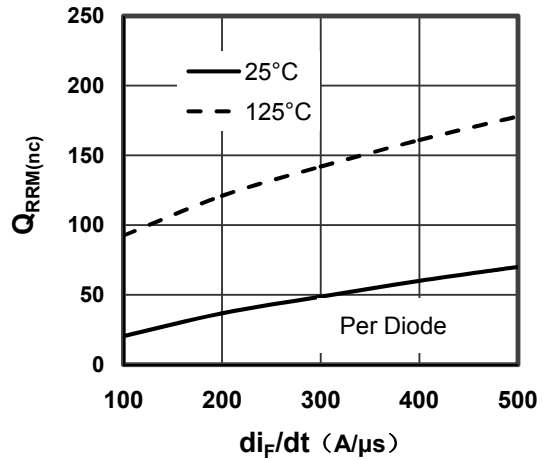


Figure 4. Reverse Recovery Charge vs diF/dt

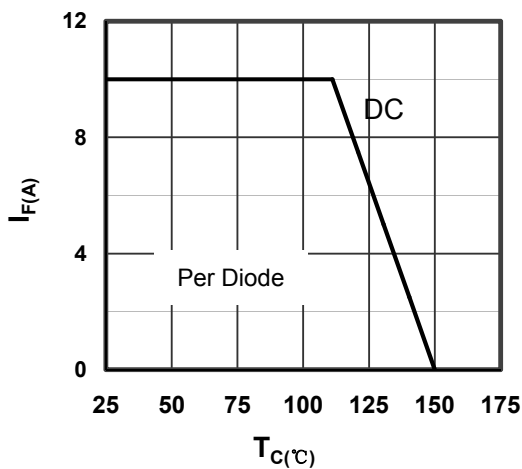


Figure 5. Forward current vs Case temperature

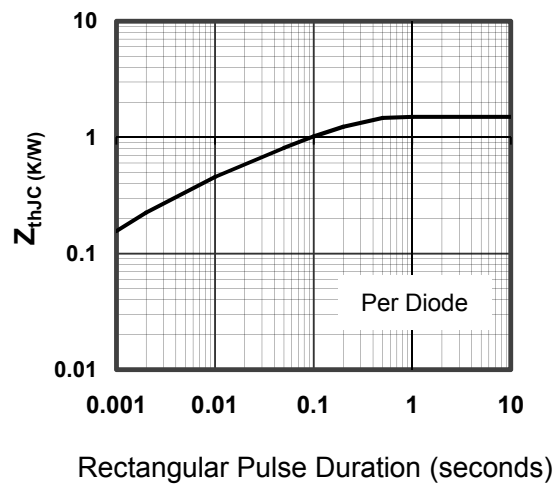


Figure 6. Transient Thermal Impedance

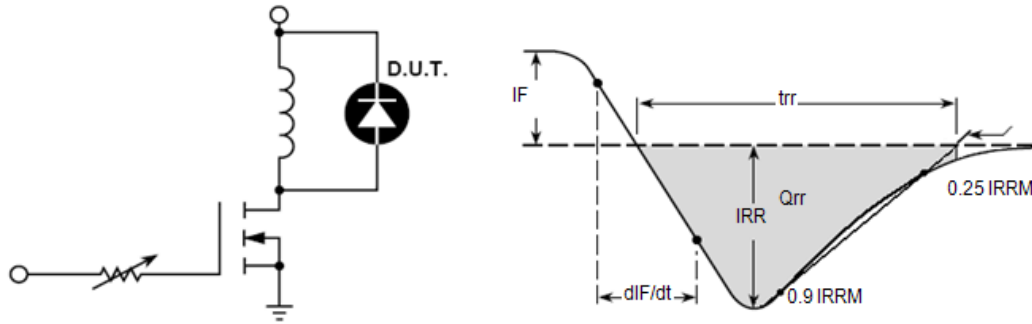
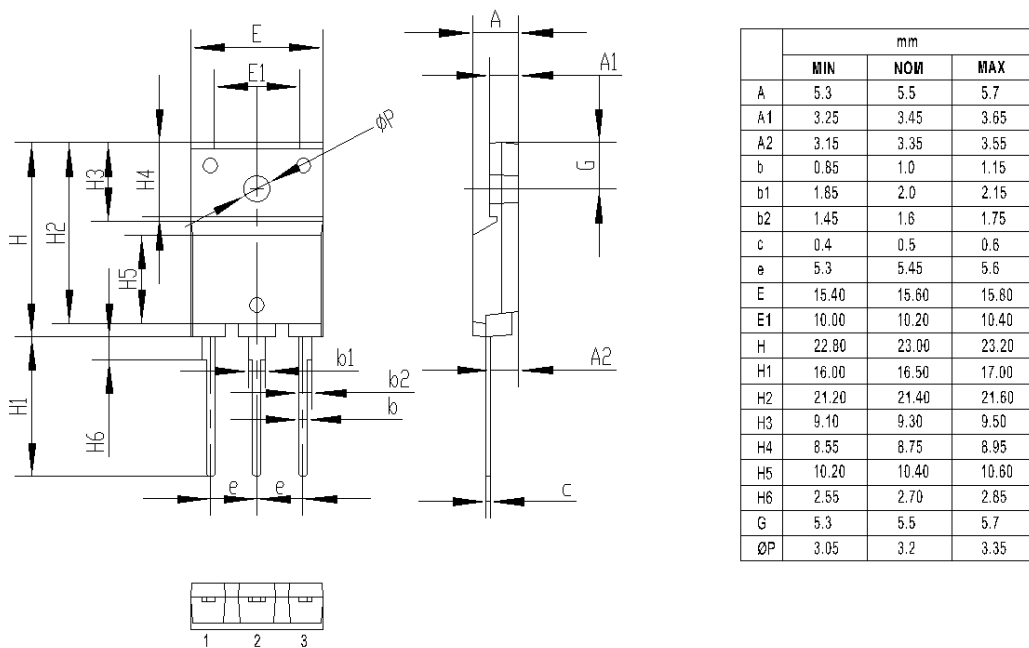


Figure 7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters
Fig8. Package Outline