

Pb Free Plating Product

FMX32S



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

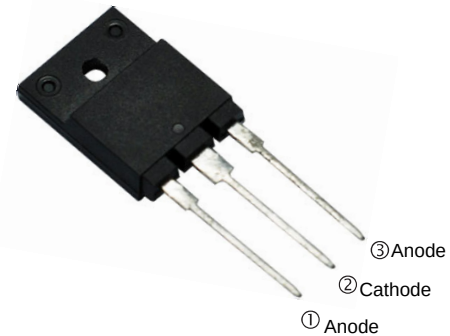
APPLICATION

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

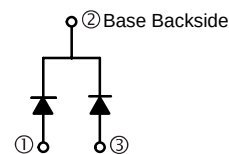
PRODUCT FEATURE

- 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

FMX32S 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	$I_F = 10\text{A}, V_R = 100\text{V}$		32		ns
I_{RRM}	Maximum Reverse Recovery Current	$di_F/dt = -200\text{A}/\mu\text{s}$		2.1		A
t_{rr}	Reverse Recovery Time	$I_F = 10\text{A}, V_R = 100\text{V}$		45		ns
I_{RRM}	Maximum Reverse Recovery Current	$di_F/dt = -200\text{A}/\mu\text{s}, T_J = 125^\circ\text{C}$		5		A

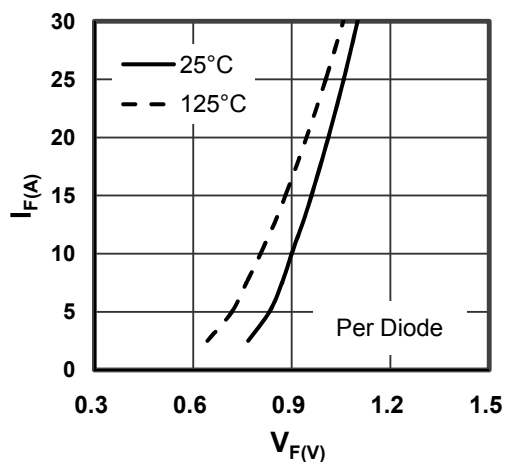


Figure 1. Forward Voltage Drop vs Forward Current

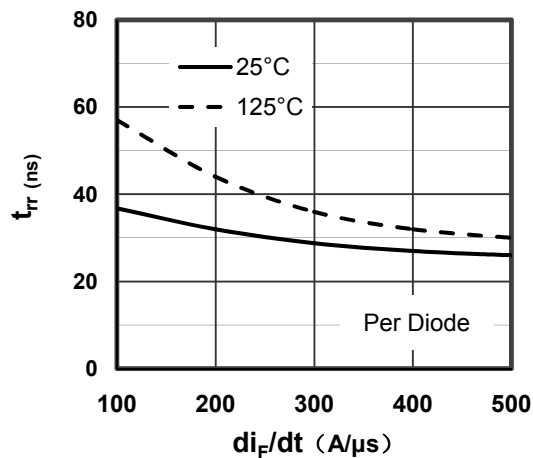


Figure 2. Reverse Recovery Time vs diF/dt

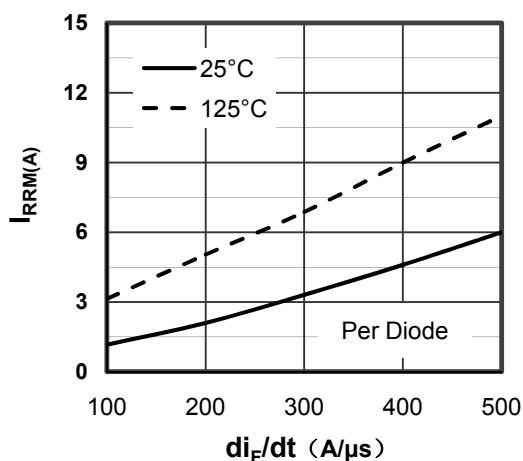


Figure 3. Reverse Recovery Current vs diF/dt

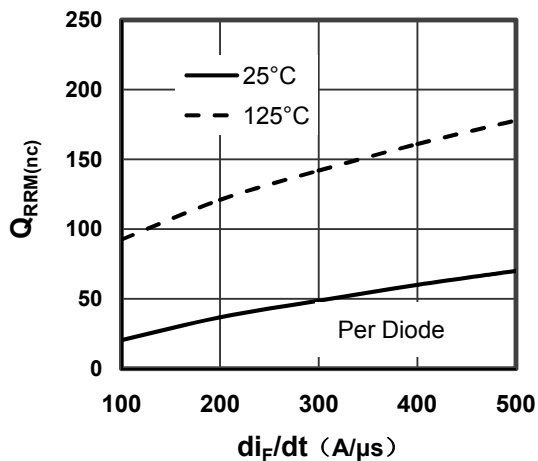


Figure 4. Reverse Recovery Charge vs diF/dt

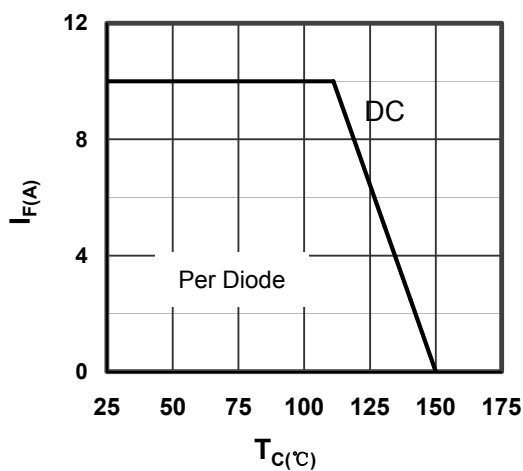
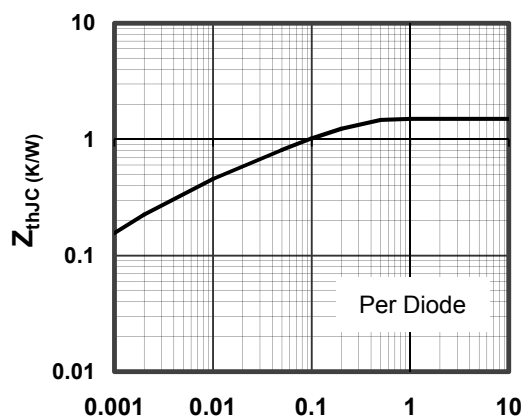


Figure 5. Forward current vs. Case temperature



Rectangular Pulse Duration (seconds)

Figure 6. Transient Thermal Impedance

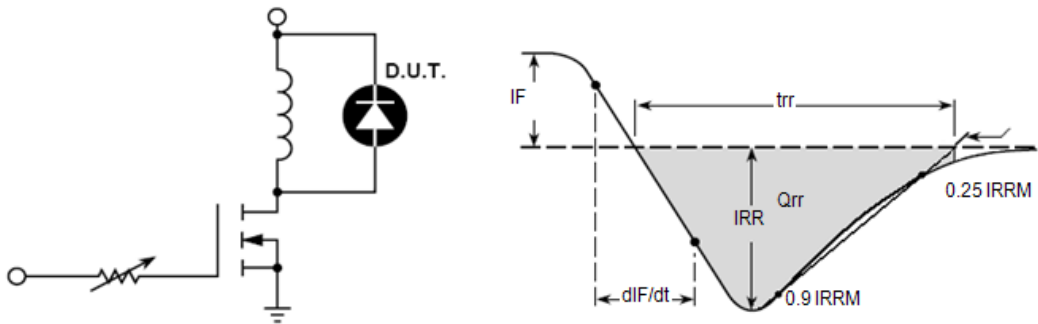
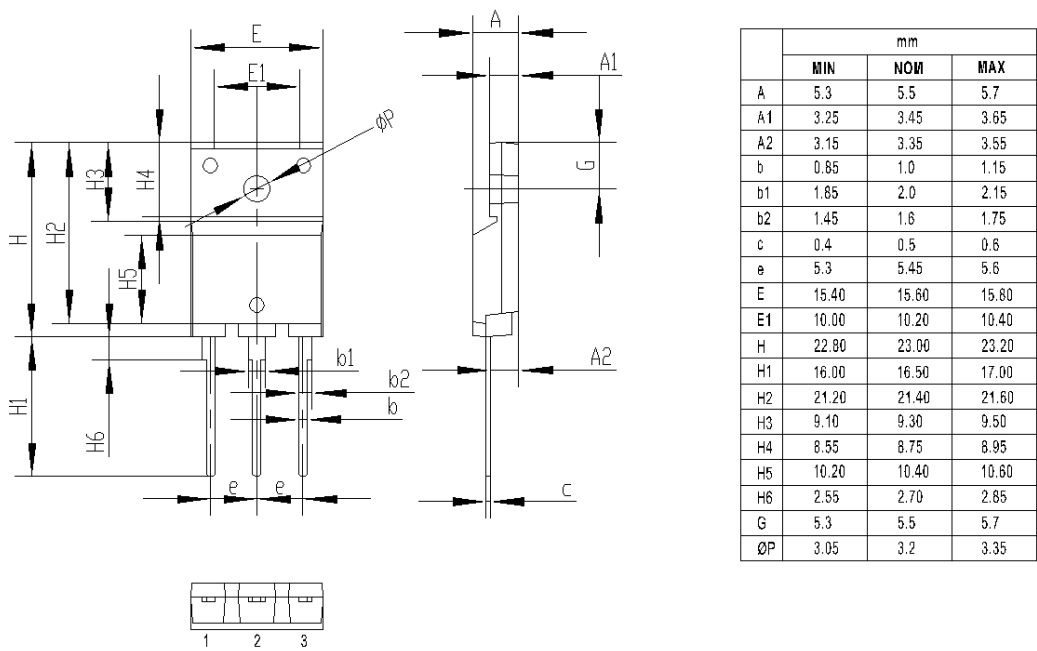


Figure 7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters
Fig8. Package Outline