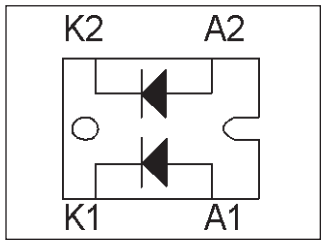
Preliminary Data Sheet I27950 08/97

International
IOR Rectifier

*QUIET**IR*** Series
SA120FA60

FAST RECOVERY RECTIFIER DIODE

V_F < 1.2V @ 60A
t_{rr} = 150ns
V_{RRM} 200 to 600V



Description/Features

The SA120FA..series combines:

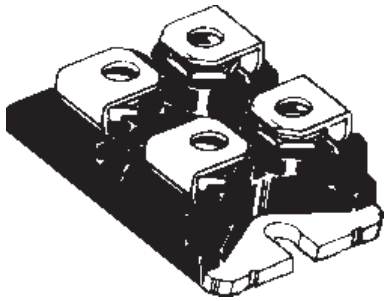
- Fast soft recovery QUIET-IR Rectifiers
- In an industry standard SOT 227 isolated module package
- The QUIET-IR Rectifiers series has been optimized for combined short reverse recovery time and low forward voltage drop.
- The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.
- The direct bonded copper internal structure garantees isolation exceeding standard requirements

Typical application are :

- Output rectification and freewheeling in inverters, chopper and welders.
- Input rectification where severe restriction on conducted EMI shall be met.

Major Ratings and Characteristics

Characteristics	SA120FA60	Units
$I_{F(AV)}$ Sinusoidalwaveform	60	A
V_{RRM}	600	V
I_{FSM}	1300	A
V_F @60A, T_J=25°C	1.2	V
t_{rr} @1A, -100A/µs	150	ns
T_J	-40 to 150	°C



SOT 227

Voltage Ratings

Part Number	V_{RRM}, maximum peak reverse voltage V	V_{RSM}, maximum non repetitive peak reverse voltage V	I_{RRM} 150°C mA
SA120FA60	600	700	20

Absolute Maximum Ratings

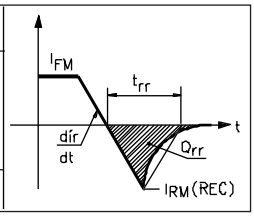
	Parameters	SA120FA60	Units	Conditions
$I_{F(AV)}$	Max. Average Forward Current	60	A	@ T_C = 98° C, 180° conduction half sine wave
I_{FSM}	Max. Peak One Cycle Non-Repetitive	1100	A	10ms Sine pulse, rated V_{RRM} applied
	Surge Current	1300		10ms Sine pulse, no voltage reapplied
I^2t	Max. I^2t for fusing	6050	A^2s	10ms Sine pulse, rated V_{RRM} applied
		8550		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for fusing	60500	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied

Electrical Specifications

	Parameters	SA120FA60	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	1.2	V	@ 60A, T_J = 25°C	
r_t	Forward slope resistance	4.2	mΩ	T_J = 150°C	
$V_{F(TO)}$	Threshold voltage	0.742	V		
Vins	RMS isolation voltage	3000	V	T_J = 25 °C all terminal shorted f=50Hz, t=1s	
I_{RM}	Max. Reverse Leakage Current	0.1	mA	T_J = 25 °C	V_R = rated V_{RRM}
		20		T_J = 150	

Recovery Characteristics

	Parameters	SA120FA60	Units	Conditions
t_{rr}	Reverse Recovery Time	190	ns	I_F @ 60Apk
I_{rr}	Reverse Recovery Current	3.4	A	@ 25A/ µs
Q_{rr}	Reverse Recovery Charge	0.5	µC	@ 25°C
S	Snap Factor	0.5		



Thermal-Mechanical Specifications

	Parameters		SA120FA60	Units	Conditions
T_J	Max. Junction Temperature Range		-40 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-40 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		0.5	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.1	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		30	g	
T	Mounting Torque	Min.	1.3	Kg-cm	
		Max.	1.5		