

**FAST RECOVERY
RECTIFIER DIODE**

Description/Features

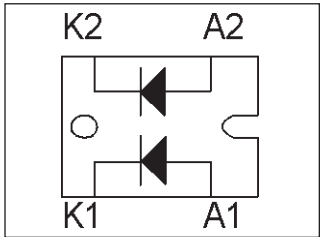
The SA120FA..series combines:

- 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 guarantees isolation exceeding standard requirements

$$V_F < 1.2V @ 60A$$

$$t_{rr} = 150ns$$

$$V_{RRM} 200 \text{ to } 600V$$

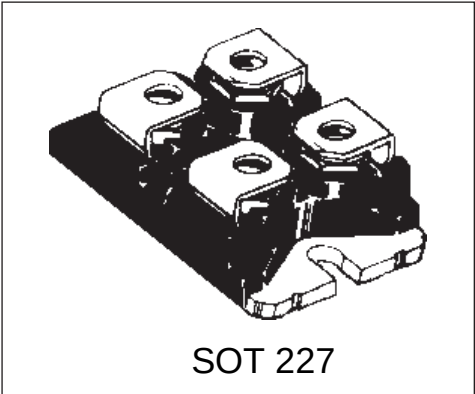


Typical application are :

- 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
$I_{F(AV)}$ Sinusoidal waveform	60	A
V_{RRM}	600	V
I_{FSM}	1300	A
V_F @ 60A, $T_J = 25^\circ C$	1.2	V
t_{rr} @ 1A, -100A/ μs	150	ns
T_J	-40 to 150	$^\circ C$



SOT 227

SA120FA60

Preliminary Data Sheet I27950 08/97

International
IOR Rectifier

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

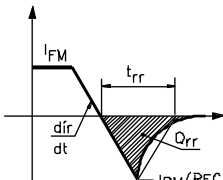
Parameters	SA120FA60	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	60	A	@ $T_C = 98^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	1100	A	10ms Sine pulse, rated V_{RRM} applied
	1300		10ms Sine pulse, no voltage reapplied
I^2t Max. 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, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	4.2	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.742	V	
V_{ins} RMS isolation voltage	3000	V	$T_J = 25^\circ\text{C}$ all terminal shorted $f=50\text{Hz}$, $t=1s$
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	20		$T_J = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

Recovery Characteristics

Parameters	SA120FA60	Units	Conditions
t_{rr} Reverse Recovery Time	190	ns	
I_{rr} Reverse Recovery Current	3.4	A	
Q_{rr} Reverse Recovery Charge	0.5	μC	
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	