Solid State Devices, Inc.
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SDR20JF thru SDR20MF
Series

20 AMP
FAST RECOVERY CONTROLLED AVALANCHE RECTIFIER
600 – 1000 VOLTS, 250 ns typical

Designer's Data Sheet

Part Number/Ordering Information [1/]

SDR20 ___ ___ ___

- **Screening** [2/]
  - __ = Not Screened
  - TX = TX Level
  - TXV = TXV
  - S = S Level
- **Package Type**
  - __ = Axial Leaded
  - SMS = Surface Mount Square Tab
- **Voltage/Family**
  - JF = 600V
  - KF = 800V
  - MF = 1000V

FEATURES:
- Fast Reverse Recovery
- PIV to 1000 Volts
- Repetitive High Reverse Energy Rated (> 500 µJ at I_{PK} max = 200 mA)
- Hermetically Sealed
- Low Reverse Leakage Current
- Replaces Larger DO-4 Rectifiers
- Low Thermal Resistance
- Available in Axial & Square Tab Versions
- TX, TXV, and S-Level Screening Available [2/]

BENEFITS / APPLICATIONS:
- Unmatched standards of reliability for PRV's up to 1000 V, as well as at lower voltages
- Protection of other circuit components against overvoltage through rigidly specified maximum / minimum avalanche characteristics
- Simplified series operation of rectifiers in high voltage applications – no shunting resistors necessary for Controlled Avalanche Rectifiers; makes possible compact high voltage assemblies
- Can operate in the avalanche breakdown region at high voltages

MAXIMUM RATINGS [3/]		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage and DC Blocking Voltage	SDR20JF SDR20KF SDR20MF	V_{RRM} V_{RWM} V_R	600 800 1000	V
Average Rectified Forward Current Resistive load, 60 Hz, sine wave, T_A = 25°C		I_O	20	A
Peak Surge Current 8.3 ms pulse, half sine wave, superimposed on Io, allow junction to reach equilibrium between pulses, T_A = 25°C		I_{FSM}	190	A
Reverse Power Surge Non-repetitive, ≤ 10 usec, square wave $T_C \leq 125°C$ Repetitive, ≤ 10 µsec, square wave $T_C \leq 125°C$		 P_{RSM} P_{RSR}	 2.4 0.6	kW
Average DC Reverse Power in Breakdown Region	$T_C \leq 125°C$	$P_{R(AV)}$	4.3	W
Operating Temperature		T_J	-65 to +175	°C
Storage Temperature		T_{STG}	-65 to +200	°C
Thermal Resistance	Junction to Lead for Axial, L =.125" Junction to End Tab for Surface Mount	$R_{\theta JL}$ $R_{\theta JE}$	6.0 3.0	°C/W

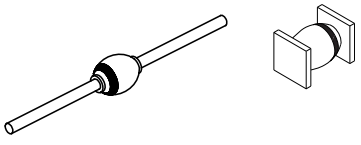
NOTES: 1/ For ordering information, price, operating curves, and availability- contact factory.

2/ Screening based on MIL-PRF-19500. Screening flows available on request.

3/ Unless otherwise specified, all electrical characteristics @25ºC.

4/ I_F = 500mA, I_R = 1A, I_{RR} = 250mA, T_A = 25°C

Axial Leaded **SMS**



NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.	DATA SHEET #: RC0193D	DOC

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ELECTRICAL CHARACTERISTICS [3/]

CHARACTERISTICS		SYMBOL	VALUE			UNIT
			MIN	TYP	MAX	
Instantaneous Forward Voltage Drop (pulsed) T_A = 25°C	I_F = 3.0 Adc I_F = 9.0 Adc I_F = 20 Adc	V_{F1} V_{F2} V_{F3}	-- -- --	0.92 1.07 1.22	1.00 1.15 1.30	V
Instantaneous Forward Voltage Drop (pulsed) T_A = -55°C	I_F = 9.0 Adc	V_{F4}	--	1.18	1.30	V
Reverse Leakage Current Rated V_R, 300µs pulse minimum	T_A = +25°C T_A =+100°C T_A =+150°C	I_{R1} I_{R2} I_{R3}	-- -- --	0.30 15 100	2.0 40 150	uA
Avalanche Breakdown Voltage 5 mA test current at T_J = 25°C	SDR20JF SDR20KF SDR20MF	B_{VR}	650 850 1050	-- -- --	900 1100 1400	V
Junction Capacitance V_R = 10 Vdc, f = 1MHz, T_A = 25°C		C_J	--	50	70	pF
Reverse Recovery Time I_F = 500mA, I_R = 1A, I_{RR} = 250mA, T_A = 25°C		t_{RR}	--	250	350	ns

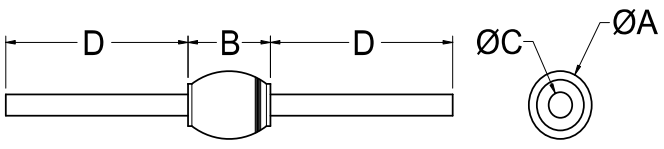
Package Outlines:

DIMENSIONS (inches)		
DIM.	Minimum	Maximum
A	---	.168
B	.135	.155
C	.047	.052
D	1.00	---

DIMENSIONS (inches) *		
DIM.	Minimum	Maximum
A	.172	.180
B	.180	.220
C	.020	.028
D	.002	---

* Dimensions prior to solder finish

AXIAL



SMS