



Solid State Devices, Inc.

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Designer's Data Sheet

Part Number/Ordering Information^{1/}

SDR20 _ UF _ _

L Screening^{2/}

_ = Not Screened
 TX = TX Level
 TXV = TXV Level
 S = S Level

Package Type

_ = Axial Leaded
 SMS = Surface Mount Square Tab
 BT = Cathode Base
 BTR = Anode Base

Voltage/Family

C = 150V
 D = 200V
 E = 250V

SDR20CUF thru SDR20EUF Series

20 AMP ULTRAFAST RECOVERY RECTIFIER

150 to 250 VOLTS, 30 ns typical

FEATURES:

- Ultrafast Reverse Recovery: 40 ns max
- Low Forward Voltage Drop: 0.92 V typ
- Low Reverse Leakage Current
- High Surge Current: 400 A maximum
- Hermetically Sealed
- Void Free Ceramic Frit Glass Construction
- Replaces Larger DO-4 Rectifiers
- Low Thermal Resistance
- Available in Axial, SMS & Button Tab Versions
- TX, TXV, and S-Level Screening Available^{2/}

MAXIMUM RATINGS ^{3/}		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage and DC Blocking Voltage	SDR20CUF	V_{RRM}	150	V
	SDR20DUF	V_{RWM}	200	
	SDR20EUF	V_R	250	
Average Rectified Forward Current (Resistive load, 60Hz, sine wave, $T_L = 55^\circ\text{C}$, $T_C = 100^\circ\text{C}$)		I_O	20	A
Peak Surge Current (8.3 ms pulse, half sine wave, superimposed on I_O , allow junction to reach equilibrium between pulses, $T_A = 25^\circ\text{C}$)		I_{FSM}	400	A
Operating Temperature		T_J	-65 to +175	$^\circ\text{C}$
Storage Temperature		T_{STG}	-65 to +200	$^\circ\text{C}$
Thermal Resistance	BT Button	$R_{\theta JC1}$	2.2	$^\circ\text{C/W}$
	BTR Button	$R_{\theta JC2}$	2.4	
	SMS	$R_{\theta JE}$	3.0	
	Axial @ 0.125"	$R_{\theta JL}$	6.0	

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 @25°C.

Axial Leaded SMS Button



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

DATA SHEET #: RC0198A

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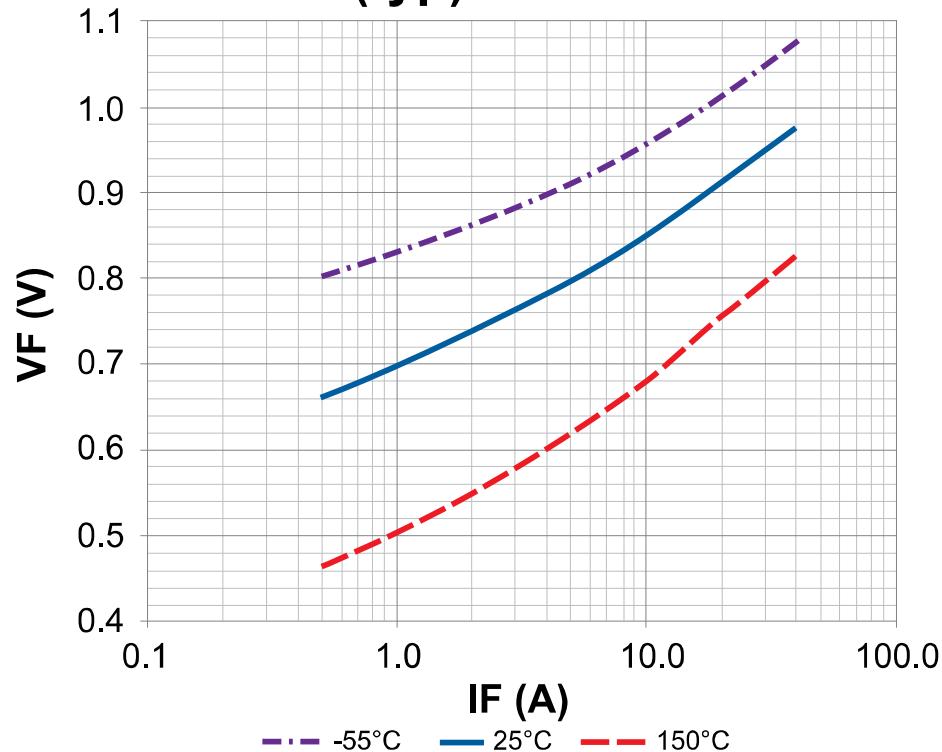
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SDR20CUF thru SDR20EUF Series

ELECTRICAL CHARACTERISTICS^{3/}

CHARACTERISTICS		SYMBOL	VALUE			UNIT
			MIN	TYP	MAX	
Instantaneous Forward Voltage Drop (Pulsed, $T_A = 25^\circ\text{C}$)	$I_F = 5 \text{ Adc}$	V_{F1}	--	0.80	0.86	V
	$I_F = 10 \text{ Adc}$	V_{F2}	--	0.85	0.91	
	$I_F = 20 \text{ Adc}$	V_{F3}	--	0.92	0.98	
Instantaneous Forward Voltage Drop (Pulsed, $T_A = -55^\circ\text{C}$)	$I_F = 10 \text{ Adc}$	V_{F4}	--	0.96	1.10	V
Reverse Leakage Current (Rated V_R , 300 μs pulse minimum)	$T_A = +25^\circ\text{C}$	I_{R1}	--	0.20	2.0	μA
	$T_A = +125^\circ\text{C}$	I_{R2}	--	5	30	
	$T_A = +150^\circ\text{C}$	I_{R3}	--	20	120	
Avalanche Breakdown Voltage (5 mA test current at $T_J = 25^\circ\text{C}$)	SDR20CUF	B_{VR}	150	190	--	V
	SDR20DUF		200	240		
	SDR20EUF		250	280		
Junction Capacitance ($V_R = 10 \text{ Vdc}$, $f = 1 \text{ MHz}$, $T_A = 25^\circ\text{C}$)		C_J	--		135	pF
Reverse Recovery Time ($I_F = 500 \text{ mA}$, $I_R = 1 \text{ A}$, $I_{RR} = 250 \text{ mA}$, $T_A = 25^\circ\text{C}$)		t_{RR}	--	30	40	ns

VF (typ) vs IF vs TC



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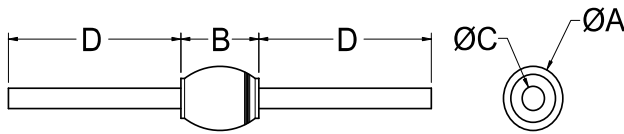
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SDR20CUF thru SDR20EUF Series

Package Outlines:

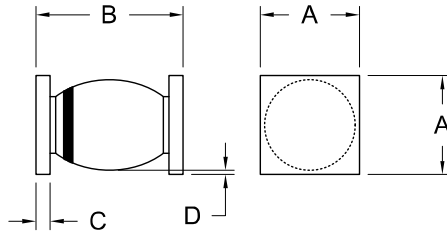
Axial (□)



DIMENSIONS (in.)

DIM	MIN	MAX
A	---	.168"
B	.135"	.155"
C	.047"	.052"
D	1.00"	---

Surface Mount Square Tab (SMS)

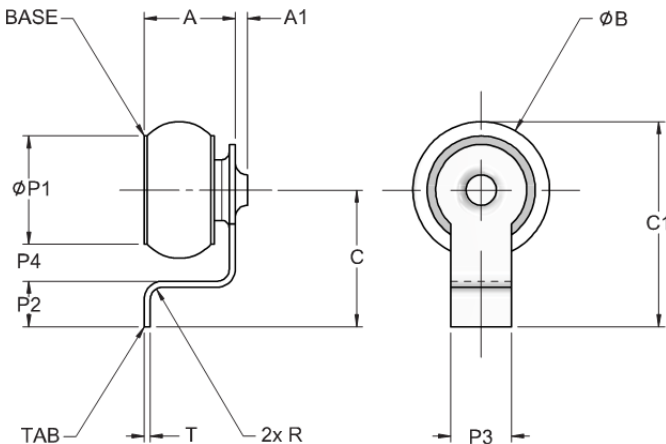


DIMENSIONS (in.)*

DIM	MIN	MAX
A	.172"	.180"
B	.180"	.220"
C	.020"	.028"
D	.002"	---

*Dimensions prior to solder finish

Button (BT, BTR)



DIMENSIONS (in.)

DIM	MIN	MAX
A	.150"	.168"
A1	---	.020"
ØB	.135"	.168"
C	.190"	.210"
C1	.280" REF	
ØP1	.110"	.130"
P2	.055"	.075"
P3	.100"	.120"
P4	.065"	---
T	.008"	.015"
R	.015" REF	