



**Solid State Devices, Inc.**

14701 Firestone Blvd \* La Mirada, Ca 90638  
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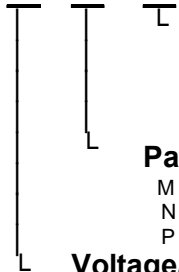
**SDR50U080 thru SDR50U120 Series**

**50 AMP  
 Ultra Fast Recovery  
 Rectifier  
 800 -1200 Volts  
 50 nsec**

**DESIGNER'S DATA SHEET**

**Part Number / Ordering Information <sup>1/</sup>**

SDR50U



**Screening <sup>2/</sup>**

- = Not Screened
- TX = TX Level
- TXV = TXV Level
- S = S Level

**Package Type**

- M = TO-254
- N = TO-258
- P = TO-259

**Voltage/Family**

- 080 = 800V
- 090 = 900V
- 100 = 1000V
- 110 = 1100V
- 120 = 1200V

**Features:**

- Ultra Fast Recovery: 45 nsec typical
- High Surge Rating
- Low Reverse Leakage Current
- Low Forward Voltage Drop
- Low Junction Capacitance
- Hermetically Sealed Package
- Gold Eutectic Die Attach available
- Ultrasonic Aluminum Wire Bonds
- Ceramic Seals for improved hermeticity available
- TX, TXV, Space Level Screening Available Consult Factory. <sup>2/</sup>

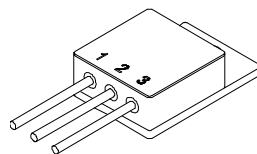
Maximum Ratings		Symbol	Value	Units
<b>Peak Repetitive Reverse and DC Blocking Voltage</b>	SDR50U080	$V_{RRM}$	800	<b>Volts</b>
	SDR50U090		900	
	SDR50U100	$V_{RWM}$	1000	
	SDR50U110		1100	
	SDR50U120	$V_R$	1200	
<b>Average Rectified Forward Current</b> (Resistive Load, 60 Hz Sine Wave, $T_A = 25^\circ C$ ) <sup>3/</sup>		$I_o$	50	<b>Amps</b>
<b>Peak Surge Current</b> (8.3 ms Pulse, Half Sine Wave, Allow Junction to Reach Equilibrium Between Pulses, $T_A = 25^\circ C$ ) <sup>3/</sup>		$I_{FSM}$	500	<b>Amps</b>
<b>Operating &amp; Storage Temperature</b>		<b>Top &amp; Tstg</b>	-65 to +200	<b>°C</b>
<b>Maximum Thermal Resistance</b> Junction to End Tab <sup>3/</sup>		$R_{\theta JE}$	1.0	<b>°C/W</b>

<sup>1/</sup> For ordering information, price, operating curves, and availability - Contact factory.

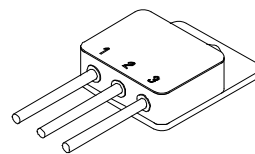
<sup>2/</sup> Screening based on MIL-PRF-19500. Screening flows available on request.

<sup>3/</sup> Pins 2 & 3 connected.

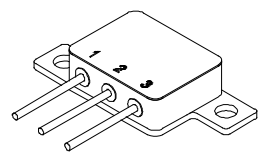
TO-254 (M)



TO-258 (N)



TO-259 (P)



<b>NOTE:</b> All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.	<b>DATA SHEET #: RU0117E</b>	<b>DOC</b>
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**SDR50U080 thru SDR50U120  
Series**

Electrical Characteristics		Symbol	Typ	Max	Units	
<b>Instantaneous Forward Voltage Drop</b> ( $T_A = 25^\circ\text{C}$ , 300 $\mu\text{sec}$ pulse)	$I_F = 20\text{A dc}$	$V_{F1}$	1.60	--	Volts	
	$I_F = 50\text{A dc}$		1.75	1.9		
	$I_F = 100\text{A dc}$		1.90	2.3		
<b>Instantaneous Forward Voltage Drop</b>	$T_A = -55^\circ\text{C}$	$V_{F2}$	1.65	--	Volts	
	$T_A = -55^\circ\text{C}$		$I_F = 20\text{A dc}$	1.80		1.95
	$T_A = 100^\circ\text{C}$		$I_F = 50\text{A dc}$	1.30		--
	$T_A = 100^\circ\text{C}$		$I_F = 20\text{A dc}$	1.55		1.7
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 25^\circ\text{C}$ , 300 $\mu\text{sec}$ pulse minimum)		$I_{R1}$	50	100	$\mu\text{A}$	
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 100^\circ\text{C}$ , 300 $\mu\text{sec}$ pulse minimum) (Rated $V_R$ , $T_A = 125^\circ\text{C}$ , 300 $\mu\text{sec}$ pulse minimum) (Rated $V_R$ , $T_A = 150^\circ\text{C}$ , 300 $\mu\text{sec}$ pulse minimum)		$I_{R2}$	2.50	10	mA	
			8.0	--		
			23	--		
<b>Junction Capacitance</b> ( $V_R = 5\text{ Vdc}$ , $T_A = 25^\circ\text{C}$ , $f = 1\text{MHz}$ ) ( $V_R = 10\text{ Vdc}$ , $T_A = 25^\circ\text{C}$ , $f = 1\text{MHz}$ )		$C_J$	95	--	pF	
			90	150		
<b>Reverse Recovery Time</b> ( $I_F = 500\text{ mA}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$ ) ( $I_F = 500\text{ mA}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$ ) ( $I_F = 10\text{ A}$ , $di_F/dt = 100\text{A/us}$ ) ( $I_F = 10\text{ A}$ , $di_F/dt = 100\text{A/us}$ ) ( $I_F = 10\text{ A}$ , $di_F/dt = 100\text{A/us}$ ) ( $I_F = 10\text{ A}$ , $di_F/dt = 100\text{A/us}$ )	$T_A = 25^\circ\text{C}$	$t_{rr1}$	45	50	nsec	
	$T_A = 100^\circ\text{C}$	$t_{rr2}$	110	--	nsec	
	$T_A = 25^\circ\text{C}$	$t_{rr3}$	55	--	nsec	
	$T_A = 25^\circ\text{C}$	$I_{RM3}$	4.0	--	A	
	$T_A = 100^\circ\text{C}$	$t_{rr4}$	140	--	nsec	
	$T_A = 100^\circ\text{C}$	$I_{RM4}$	7.0	--	A	

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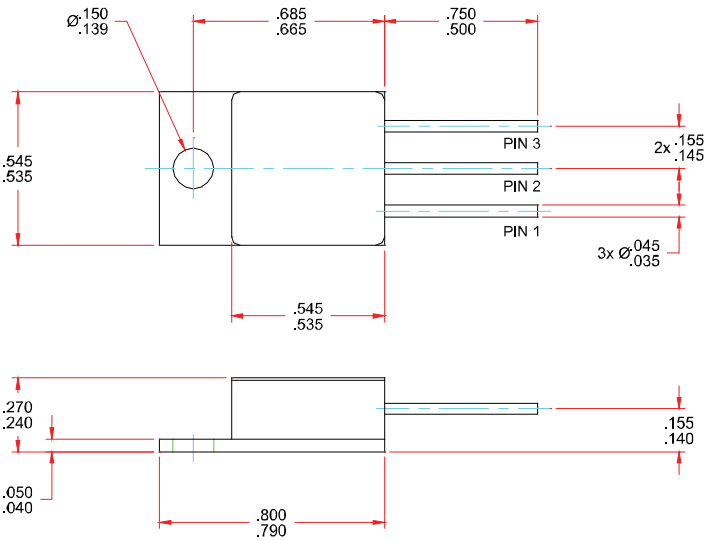
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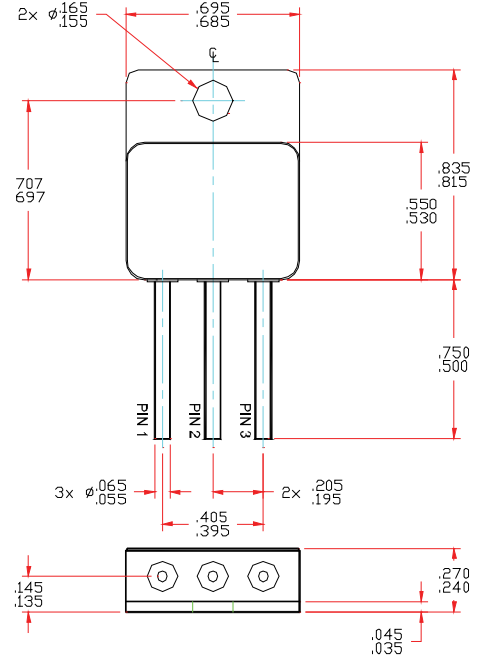
## Case Outline: TO-254

**Pin1: Cathode**  
**Pin2: Anode**  
**Pin3: Anode**



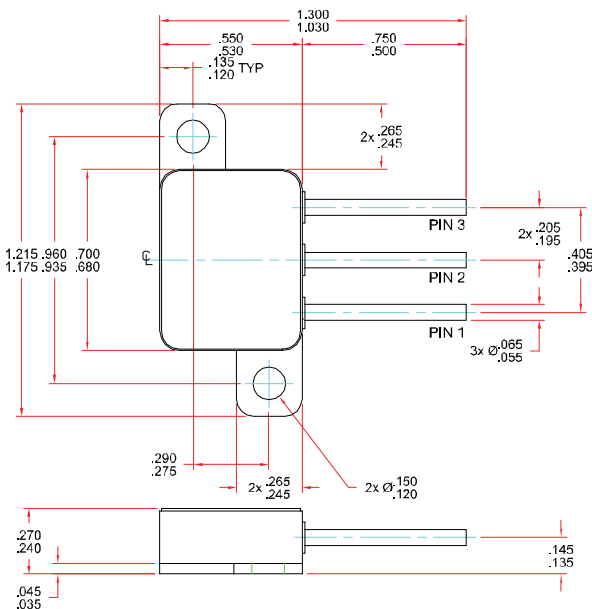
## Case Outline: TO-258

**Pin1: Cathode**  
**Pin2: Anode**  
**Pin3: Anode**



## Case Outline: TO-259

**Pin1: Cathode**  
**Pin2: Anode**  
**Pin3: Anode**



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