



**Solid State Devices, Inc.**

14701 Firestone Blvd \* La Mirada, Ca 90638  
 Phone: (562) 404-4474 \* Fax: (562) 404-1773  
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**SDR643CTS1  
 thru  
 SDR647CTS1**

**50 AMP  
 300-700 Volts  
 35 nsec  
 Ultra Fast  
 Centertap Rectifier**

**DESIGNER'S DATA SHEET**

SDR64 CT

Screening <sup>2/</sup>  
 \_\_\_ = Not Screened  
 TX = TX Level  
 TXV = TXV  
 S = S Level

Package  
 S1= SMD1

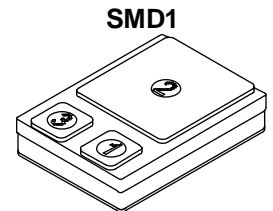
Voltage/Family  
 3 = 300 V  
 4 = 400 V  
 5 = 500 V  
 6 = 600 V  
 7 = 700 V

- Features:**
- Ultra Fast Recovery: 25 nsec typical
  - High Surge Rating
  - Low Reverse Leakage Current
  - Low Junction Capacitance
  - Hermetically Sealed Power Surface Mount Package
  - Ceramic Seals Available
  - Higher Currents & Voltages Available – Contact Factory
  - TX, TXV, and S-Level Screening Available<sup>2/</sup>

Maximum Ratings		Symbol	Value	Units
Peak Repetitive Reverse and DC Blocking Voltage	SDR643CTS1 SDR644CTS1 SDR645CTS1 SDR646CTS1 SDR647CTS1	$V_{RRM}$ $V_{RWM}$ $V_R$	300 400 500 600 700	Volts
Average Rectified Forward Current note 3 (Resistive Load, 60 Hz Sine Wave, $T_A = 25^\circ\text{C}$ )		$I_o$	50	Amps
Peak Surge Current note 3 (8.3 ms Pulse, Half Sine Wave Superimposed on $I_o$ , Allow Junction to Reach Equilibrium Between Pulses, $T_A = 25^\circ\text{C}$ )		$I_{FSM}$	500	Amps
Operating & Storage Temperature		Top & Tstg	-65 to +200	$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case, each individual diode Junction to Case, note 3		$R_{\theta JC}$	2.00 1.20	$^\circ\text{C/W}$

- 1/** For Ordering Information, Price, Operating Curves, and Availability- Contact Factory.  
**2/** Screened to MIL-PRF-19500; contact factory for screening flow.  
**3/** Both legs tied together

\*Also available in other packages: TO-254, TO-254Z, TO-257, and 28 Pin CLCC – Consult Factory





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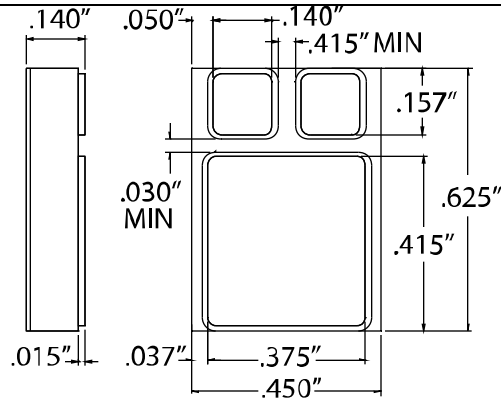
**SDR643CTS1  
 thru  
 SDR647CTS1**

**Electrical Characteristics (Per Leg)**

Characteristics	Symbol	Typical	Maximum	Unit
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 5\text{A}$ dc, $T_A = 25^\circ\text{C}$ , 300 msec pulse) ( $I_F = 10\text{A}$ dc, $T_A = 25^\circ\text{C}$ , 300 msec pulse) ( $I_F = 15\text{A}$ dc, $T_A = 25^\circ\text{C}$ , 300 msec pulse) ( $I_F = 20\text{A}$ dc, $T_A = 25^\circ\text{C}$ , 300 msec pulse) ( $I_F = 30\text{A}$ dc, $T_A = 25^\circ\text{C}$ , 300 msec pulse)	$V_{F1}$	0.94	-	<b>Volts</b>
	$V_{F2}$	1.0	-	
	$V_{F3}$	1.05	1.35	
	$V_{F4}$	1.07	-	
	$V_{F5}$	1.1	1.5	
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 15\text{A}$ dc, $T_A = 100^\circ\text{C}$ , 300 msec pulse) ( $I_F = 30\text{A}$ dc, $T_A = 100^\circ\text{C}$ , 300 msec pulse) ( $I_F = 15\text{A}$ dc, $T_A = -55^\circ\text{C}$ , 300 msec pulse) ( $I_F = 30\text{A}$ dc, $T_A = -55^\circ\text{C}$ , 300 msec pulse)	$V_{F6}$	0.93	1.25	<b>Volts</b>
	$V_{F7}$	1.00	-	
	$V_{F8}$	1.15	1.5	
	$V_{F9}$	1.20	-	
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 25^\circ\text{C}$ , 300 msec pulse min)	SDR647CTS1 ALL OTHER $I_{R1}$	30 10	150 50	$\mu\text{A}$
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 100^\circ\text{C}$ , 300 msec pulse min) (Rated $V_R$ , $T_A = 125^\circ\text{C}$ , 300 msec pulse min) (Rated $V_R$ , $T_A = 150^\circ\text{C}$ , 300 msec pulse min)	$I_{R2}$	2	10	<b>mA</b>
	$I_{R3}$	8	-	
	$I_{R4}$	25	-	
<b>Junction Capacitance</b> ( $V_R = 10\text{V}$ dc, $T_A = 25^\circ\text{C}$ , $f = 1\text{MHz}$ )	$C_J$	60	120	<b>pF</b>
<b>Reverse Recovery Time</b> ( $I_F = 0.5\text{A}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$ , $T_A = 25^\circ\text{C}$ ) ( $I_F = 0.5\text{A}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$ , $T_A = 100^\circ\text{C}$ ) ( $I_F = 10\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$ , $T_A = 25^\circ\text{C}$ )  ( $I_F = 10\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$ , $T_A = 100^\circ\text{C}$ )	$t_{rr1}$	25	35	<b>nsec</b>
	$t_{rr2}$	70	-	<b>nsec</b>
	$t_{rr3}$	35	-	<b>nsec</b>
	$I_{RM3}$	2.7	-	<b>A</b>
	$t_a/t_b$	1.83	-	-
	$t_{rr4}$	80	-	<b>nsec</b>
	$I_{RM4}$	3.6	-	<b>A</b>
	$t_a/t_b$	1.0	-	-

**Case Outline: SMD1**

**PIN OUT:**  
**PIN 1: ANODE 1**  
**PIN 2: CATHODE**  
**PIN 3: ANODE 2**



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

**DATA SHEET #: RU0087C**

**DOC**