



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, CA 90638
 Phone: (562) 404-4474 * Fax: (562) 404-1773
 ssdi@ssdi-power.com * www.ssdi-power.com

**SDR75010U
 thru
 SDR75020U**

Designer's Data Sheet

Part Number/Ordering Information ^{1/}

SDR75 _ U _ _ _

- Screening ^{2/}
 - _ = Not Screened
 - TX = TX Level
 - TXV = TXV Level
 - S = S Level
- Lead Bend Options (TO-254, Z)
 - DB = Down Bend
 - UB = Up Bend
- Package
 - S1 = SMD1
 - M = TO-254
 - Z = TO-254Z
- Recovery Time
 - U = Ultra Fast

Family/Voltage 010 = 100V
 015 = 150V
 020 = 200V

**75 AMP
 ULTRAFAST RECTIFIER
 100 - 200 VOLTS
 50 nsec**

- FEATURES:**
- Ultra Fast Recovery: 45 ns typical
 - High Surge Rating
 - Low Reverse Leakage Current
 - Low Junction Capacitance
 - Hermetically Sealed Package, isolated (TO-254, Z) or hot case (SMD1)
 - Gold Eutectic Die Attach Available
 - Ultrasonic Aluminum Wire Bonds
 - TX, TXV, or Space Level Screening Available

| Maximum Ratings | | Symbol | Value | Units |
|---|----------|-------------------------|-------------|--------------------|
| Peak Repetitive Reverse and DC Blocking Voltage ^{3/} | SDR75010 | V_{RRM} | 100 | Volts |
| | SDR75015 | V_{RWM} | 150 | |
| | SDR75020 | V_R | 200 | |
| Average Rectified Forward Current ^{4/} (Resistive Load, 60 Hz Sine Wave, $T_C = 100^\circ\text{C}$) | | I_o | 75 | Amps |
| Peak Surge Current (8.3 ms Pulse, Half Sine Wave, $T_A = 25^\circ\text{C}$, per leg) | | I_{FSM} | 350 | Amps |
| Operating & Storage Temperature | | $T_{OP} \ \& \ T_{STG}$ | -65 to +200 | $^\circ\text{C}$ |
| Maximum Total Thermal Resistance Junction to Case, SMD1 Junction to Case, TO-254, Z | | $R_{\theta JC}$ | 1.0 | $^\circ\text{C/W}$ |
| | | | 1.2 | |

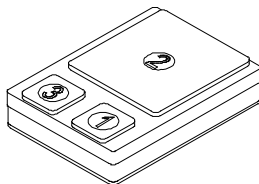
NOTES:

^{1/} For ordering information, price, and availability, contact factory.

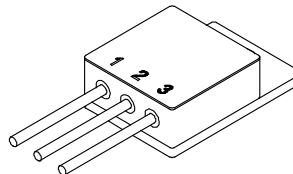
^{2/} Screening based on MIL-PRF-19500. Screening flows available on request.

^{3/} Higher voltages available.

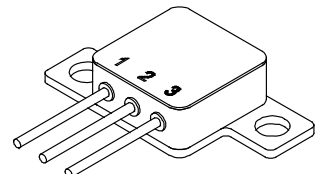
SMD1



TO-254



TO-254Z



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

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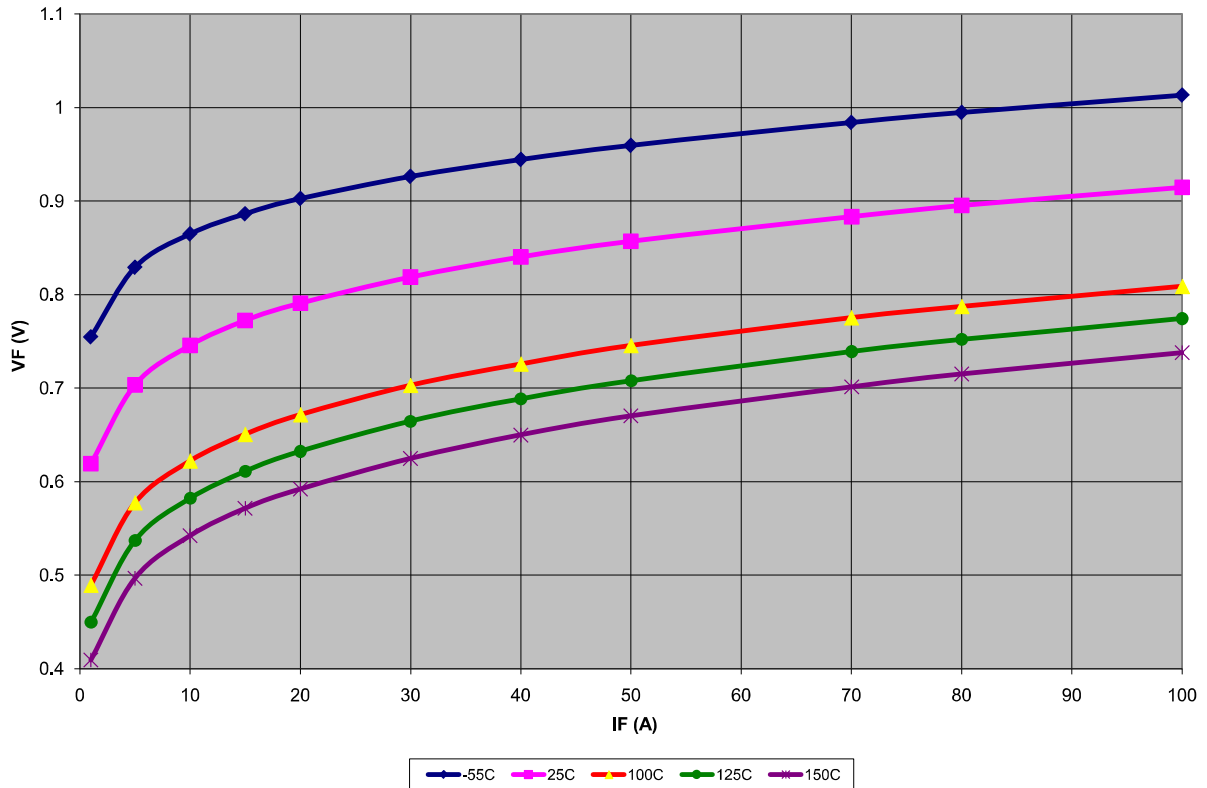
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| Electrical Characteristic | | Symbol | Typ | Max | Units |
|---|---------------------------|-----------|------|------|---------------|
| Instantaneous Forward Voltage Drop ($T_A = 25^\circ\text{C}$, 300 – 500 μsec Pulse) | $I_F = 20\text{ A}$ | V_{F1} | 0.80 | 0.95 | V_{DC} |
| | $I_F = 50\text{ A}$ | V_{F2} | 0.84 | 0.98 | |
| | $I_F = 80\text{ A}$ | V_{F3} | 0.88 | 1.10 | |
| Instantaneous Forward Voltage Drop ($T_A = -55^\circ\text{C}$, 300 – 500 μsec Pulse) | $I_F = 20\text{ A}$ | V_{F4} | 0.90 | 1.1 | V_{DC} |
| | $I_F = 50\text{ A}$ | V_{F5} | 0.95 | 1.15 | |
| | $I_F = 80\text{ A}$ | V_{F6} | 0.98 | 1.2 | |
| Instantaneous Forward Voltage Drop ($T_A = 125^\circ\text{C}$, 300 – 500 μsec Pulse) | $I_F = 20\text{ A}$ | V_{F7} | 0.64 | 0.80 | V_{DC} |
| | $I_F = 50\text{ A}$ | V_{F8} | 0.70 | 0.86 | |
| | $I_F = 80\text{ A}$ | V_{F9} | 0.74 | 0.90 | |
| Reverse Leakage Current (100% of rated V_R , 300 μs pulse min.) | $T_A = 25^\circ\text{C}$ | I_{R1} | 0.3 | 25 | μA |
| | $T_A = 100^\circ\text{C}$ | I_{R2} | 5 | - | |
| | $T_A = 125^\circ\text{C}$ | I_{R3} | 20 | 250 | |
| | $T_A = 150^\circ\text{C}$ | I_{R4} | 75 | - | |
| Reverse Recovery Time ($I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{RR} = 0.25\text{ A}$, $T_A = 25^\circ\text{C}$) | | t_{RR1} | 45 | 50 | nsec |
| Reverse Recovery Time ($I_F = 10\text{ A}$, $di_F/dt = 100\text{ A/us}$) | $T_A = 25^\circ\text{C}$ | t_{RR2} | 45 | - | nsec |
| | | I_{RM2} | 3.5 | - | A |
| Junction Capacitance ($T_A = 25^\circ\text{C}$, $f = 1\text{ MHz}$) | $V_R = 5\text{ V}_{DC}$ | C_J | 970 | - | pF |
| | $V_R = 10\text{ V}_{DC}$ | | 760 | 900 | |

$V_{Fave} = f(I_F, T)$



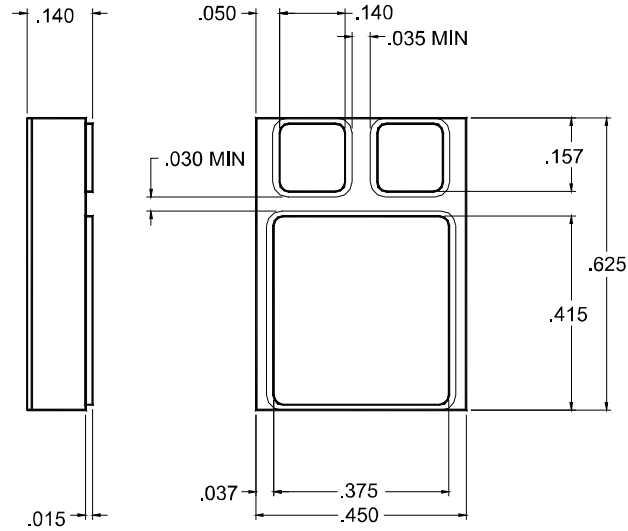


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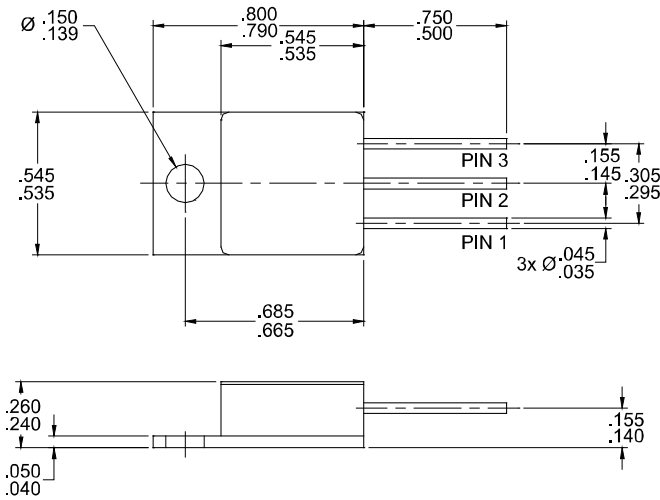
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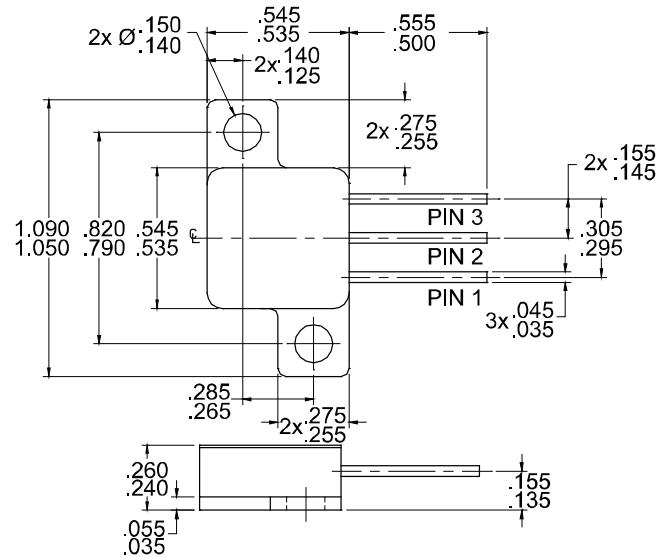
CASE OUTLINE: SMD1



CASE OUTLINE: TO-254

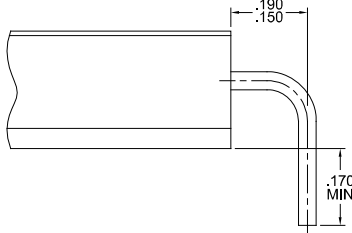


CASE OUTLINE: TO-254Z

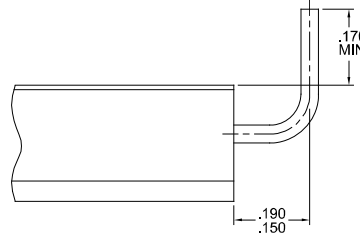


Optional Lead Bent Configuration

Down Bent (DB Suffix)



Up Bent (UB Suffix)



Pin Assignment

| Package | Pin 1 | Pin 2 | Pin 3 |
|---------|---------|---------|-------|
| SMD1 | Anode | Cathode | Anode |
| TO-254 | Cathode | Anode | Anode |
| TO-254Z | Cathode | Anode | Anode |

For information on curves, contact the Factory Representative for Engineering Assistance.

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