

Dual Schottky Diode

20CJQ100

100V / 2A

DATASHEET

OEM – International Rectifier

Source: International Rectifier Databook 1995

International Rectifier

PD - 2.480A

20CJQ100

SCHOTTKY RECTIFIER

2 Amp

Major Ratings and Characteristics

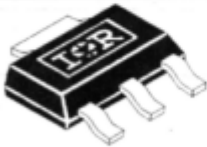
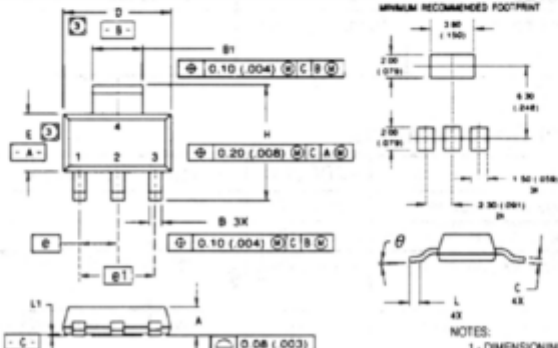
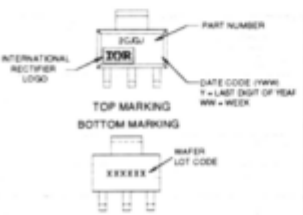
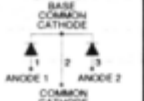
| Characteristics | 20CJQ100 | Units |
|---|------------|------------|
| $I_{F(AV)}$ Rectangular waveform | 2.0 | A |
| V_{RRM} | 100 | V |
| I_{FSM} @ $t_p = 5\mu s$ sine | 380 | A |
| V_F @ 1.0Apk, $T_J = 125^\circ C$ (per leg) | 0.67 | V |
| T_J | -55 to 175 | $^\circ C$ |

Description / Features

The 20CJQ100 surface-mount Schottky rectifier has been designed for applications requiring very low forward drop and very small foot prints. Typical applications are in portables, switching power supplies, converters, automotive systems, free-wheeling diodes, battery charging and reverse battery protection.

- Small footprint, surface mountable
- Low profile
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long-term reliability
- Common Cathode

SOT-223

| CASE STYLE | CASE OUTLINE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-----------|------|-------------|--|--------|--|-----|-----|-----|-----|---|------|------|------|------|---|------|------|------|------|----|------|------|------|------|---|------|------|------|------|---|------|------|------|------|---|------|------|------|------|---|----------|-----------|--|--|----|----------|----------|--|--|---|------|------|------|------|---|------|---|------|---|----|-----------|-----------|--|--|---|---|-----|---|-----|
|  |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <h4>PART MARKING</h4>  | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">DIM</th> <th colspan="2">MILLIMETERS</th> <th colspan="2">INCHES</th> </tr> <tr> <th>MIN</th> <th>MAX</th> <th>MIN</th> <th>MAX</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1.55</td> <td>1.80</td> <td>.061</td> <td>.071</td> </tr> <tr> <td>B</td> <td>0.65</td> <td>0.85</td> <td>.026</td> <td>.033</td> </tr> <tr> <td>B1</td> <td>2.95</td> <td>3.15</td> <td>.116</td> <td>.124</td> </tr> <tr> <td>C</td> <td>0.25</td> <td>0.35</td> <td>.010</td> <td>.014</td> </tr> <tr> <td>D</td> <td>6.30</td> <td>6.70</td> <td>.248</td> <td>.264</td> </tr> <tr> <td>E</td> <td>3.30</td> <td>3.70</td> <td>.130</td> <td>.146</td> </tr> <tr> <td>e</td> <td>2.30 BSC</td> <td>.0905 BSC</td> <td></td> <td></td> </tr> <tr> <td>e1</td> <td>4.60 BSC</td> <td>.181 BSC</td> <td></td> <td></td> </tr> <tr> <td>H</td> <td>6.71</td> <td>7.29</td> <td>.267</td> <td>.284</td> </tr> <tr> <td>L</td> <td>0.91</td> <td>—</td> <td>.036</td> <td>—</td> </tr> <tr> <td>L1</td> <td>0.061 BSC</td> <td>.0024 BSC</td> <td></td> <td></td> </tr> <tr> <td>S</td> <td>—</td> <td>10°</td> <td>—</td> <td>10°</td> </tr> </tbody> </table> | | DIM | MILLIMETERS | | INCHES | | MIN | MAX | MIN | MAX | A | 1.55 | 1.80 | .061 | .071 | B | 0.65 | 0.85 | .026 | .033 | B1 | 2.95 | 3.15 | .116 | .124 | C | 0.25 | 0.35 | .010 | .014 | D | 6.30 | 6.70 | .248 | .264 | E | 3.30 | 3.70 | .130 | .146 | e | 2.30 BSC | .0905 BSC | | | e1 | 4.60 BSC | .181 BSC | | | H | 6.71 | 7.29 | .267 | .284 | L | 0.91 | — | .036 | — | L1 | 0.061 BSC | .0024 BSC | | | S | — | 10° | — | 10° |
| DIM | MILLIMETERS | | | INCHES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | MAX | MIN | MAX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 1.55 | 1.80 | .061 | .071 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0.65 | 0.85 | .026 | .033 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B1 | 2.95 | 3.15 | .116 | .124 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0.25 | 0.35 | .010 | .014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 6.30 | 6.70 | .248 | .264 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 3.30 | 3.70 | .130 | .146 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e | 2.30 BSC | .0905 BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e1 | 4.60 BSC | .181 BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | 6.71 | 7.29 | .267 | .284 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | 0.91 | — | .036 | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L1 | 0.061 BSC | .0024 BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | — | 10° | — | 10° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <h4>CIRCUIT</h4>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTES:
 1 - DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
 2 - CONTROLLING DIMENSION: INCH
 3 - DIMENSIONS DO NOT INCLUDE MOLD FLASH
 4 - CONFORMS TO JEDEC OUTLINE TO-261AA

20CJQ100

Voltage Ratings

| | |
|--|----------|
| Part number | 20CJQ100 |
| V _R Max. DC Reverse Voltage (V) | 100 |
| V _{RWM} Max. Working Peak Reverse Voltage (V) | |

Absolute Maximum Ratings

| Parameters | 20CJQ | Units | Conditions |
|---|-------|-------|--|
| I _{F(AV)} Max. Average Forward Current See Fig. 5 | 2.0 | A | 50% duty cycle @ T _C = 152°C, rectangular waveform |
| | 4.0 | | 50% duty cycle @ T _C = 132°C, rectangular waveform |
| I _{FSM} Max. Peak One Cycle Non - Repetitive Surge Current (Per Leg) See Fig. 7 | 380 | A | 5μs Sine or 3μs Rect. pulse |
| | 22 | | 10ms Sine or 6ms Rect. pulse |
| E _{AS} Non - Repetitive Avalanche Energy (Per Leg) | 13 | mJ | T _J = 25°C, I _{AS} = 1.0A, L = 26mH |
| I _{AR} Repetitive Avalanche Current (Per Leg) | 1.0 | A | Current decaying linearly to zero in 1μsec Frequency limited by T _J max. V _A = 1.5 X V _R typical |

Electrical Specifications

| Parameters | 20CJQ | Units | Conditions |
|--|--------|-------|---|
| V _{FM} Max. Forward Voltage Drop (Per Leg) See Fig. 1 ⊕ | 0.79 | V | @ 1.0A |
| | 0.89 | V | @ 2.0A |
| | 0.67 | V | @ 1.0A |
| | 0.76 | V | @ 2.0A |
| I _{RM} Max. Reverse Leakage Current (Per Leg) See Fig. 2 ⊕ | 0.1 | mA | T _J = 25°C |
| | 1.0 | mA | T _J = 125°C |
| C _T Max. Junction Capacitance (Per Leg) | 45 | pF | V _R = 5V _{DC} , (test signal range 100KHz to 1MHz) 25°C |
| L _S Typical Series Inductance (Per Leg) | 6.0 | nH | Measured lead to lead 5mm from package body |
| dv/dt Max. Voltage Rate of Change (Rated V _R) | 10,000 | V/μs | |

Thermal-Mechanical Specifications

| Parameters | 20CJQ | Units | Conditions |
|--|-------------|---------|----------------------------|
| T _J Max. Junction Temperature Range | -55 to 175 | °C | |
| T _{STG} Max. Storage Temperature Range | -55 to 175 | °C | |
| R _{θJA} Max. Thermal Resistance, Junction to Ambient | 65 | °C/W | DC operation |
| R _{θJL} Max. Thermal Resistance, Junction to Lead | 25 | °C/W | DC operation — see Fig. 4. |
| wt Approximate Weight | 0.13(.0045) | g (oz.) | |
| Case Style | SOT-223 | | |

⊕ Pulse Width < 300μs, Duty Cycle < 2%

20CJQ100

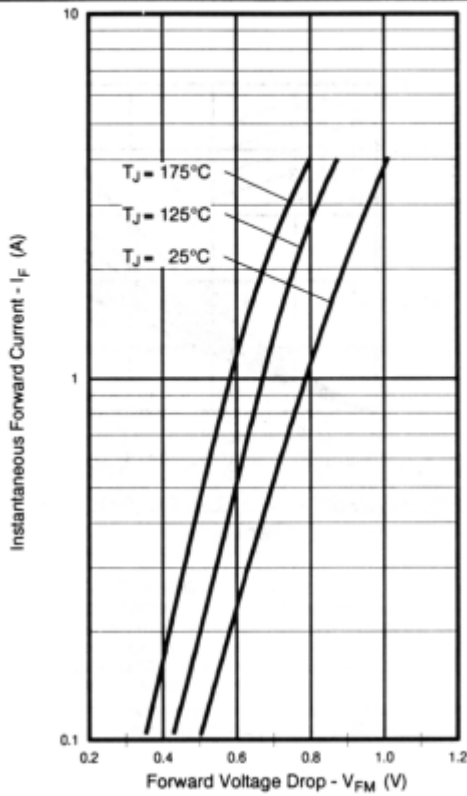


Fig. 1 Max. Forward Voltage Drop Characteristics (Per Leg)

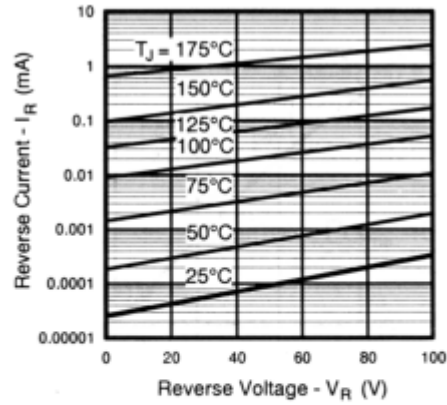


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

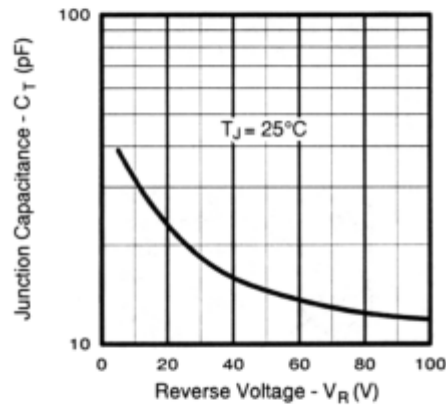


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

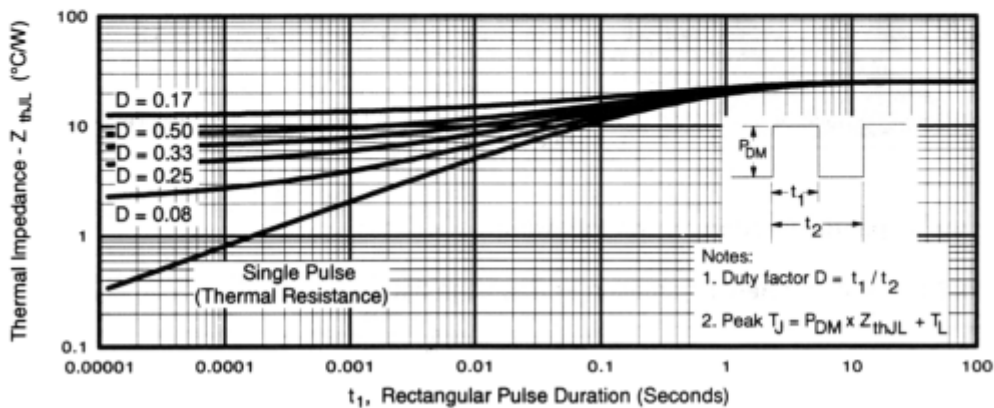


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics (Per Leg)

20CJQ100

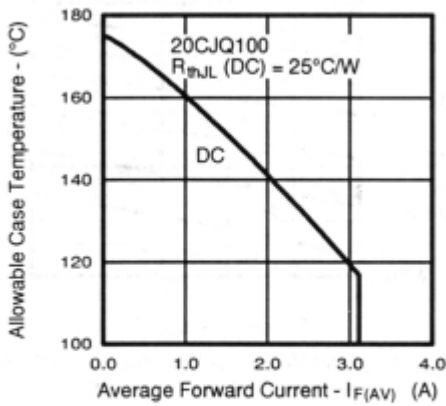


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

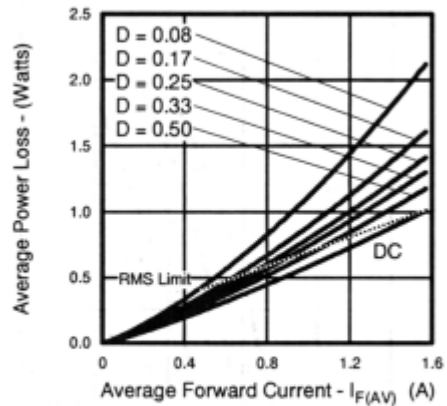


Fig. 6 Forward Power Loss Characteristics (Per Leg)

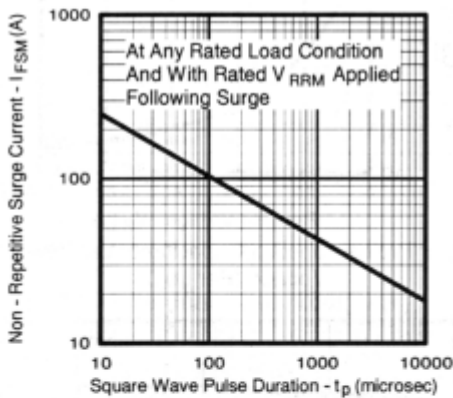


Fig.7 Max. Non-Repetitive Surge Current (Per Leg)

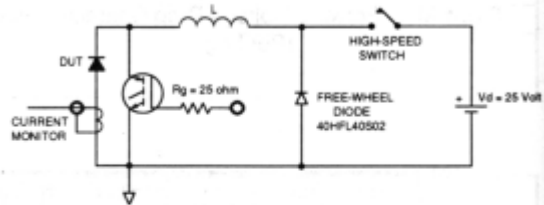


Fig. 8 Unclamped Inductive Test Circuit

Refer to the Appendix Section for the following:

Appendix D: Tape and Reel Information — See page 340.