

200V, 20A ULTRAFast DUAL RECTIFIERS

Features

- Low forward voltage drop and leakage current
- Ultrafast reverse recovery time ($t_{rr} < 25\text{ns}$)
- Low power loss and high efficiency
- Dual common cathode rectifier construction
- Full lead (Pb)-free and RoHS compliant device

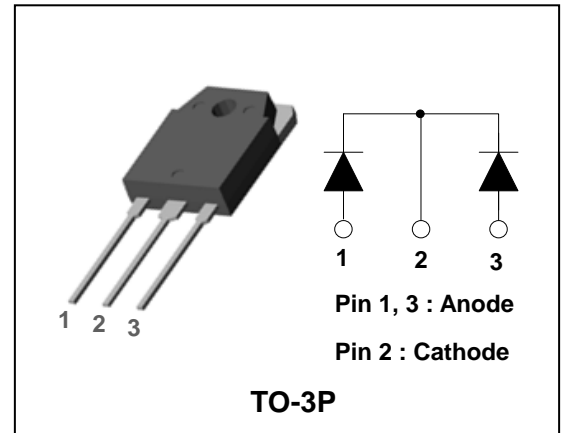
Applications

- Switching power supply
- Power inverters
- Free-wheeling diode
- Power conversion system
- Motor drives

Description

The SFN20W200CI is an ultrafast rectifier. It has a low forward voltage drop and reverse recovery time ($t_{rr} < 25\text{ns}$). The planar structure and the platinum doper life time control guarantee the best overall performance, ruggedness and reliability characteristics.

The device is intended for use as a free wheeling, clamping rectifier in a variety of switching power supplies and other power switching applications.



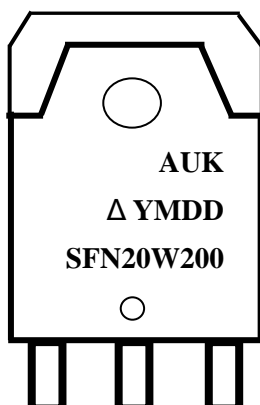
Product Characteristics

| | |
|-------------------|---------|
| $I_{F(AV)}$ | 2 X 10A |
| V_{RRM} | 200V |
| V_{FM} at 125°C | 0.88V |
| t_{rr} | 25ns |

Ordering Information

| Device | Marking Code | Package | Packaging |
|-------------|--------------|---------|-----------|
| SFN20W200CI | SFN20W200 | TO-3P | Tube |

Marking Information



- AUK = Manufacture Logo
- Δ = Control Code of Manufacture
- YMDD = Date Code Marking
 - . Y = Year Code
 - . M = Monthly Code
 - . DD = Daily Code
- SFN20W200 = Specific Device Code

Absolute Maximum Ratings (Limiting Values)

| Characteristic | | Symbol | Value | Unit |
|---|--------------|---------------------------------|-------------|------|
| Maximum repetitive reverse voltage Maximum working peak reverse voltage Maximum DC blocking voltage | | V_{RRM} V_{RWM} V_R | 200 | V |
| Maximum average forward rectified current | per diode | $I_{F(AV)}$ | 10 | A |
| | total device | | 20 | |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per diode | | I_{FSM} | 120 | A |
| Storage temperature range | | T_{stg} | -45 to +150 | °C |
| Maximum operating junction temperature | | T_j | 150 | |

Thermal Characteristics

| Characteristic | | Symbol | Value | Unit |
|---|--------------|---------------|-------|------|
| Maximum thermal resistance junction to case | per diode | $R_{th(j-c)}$ | 2.5 | °C/W |
| | total device | | 2.0 | |

Electrical Characteristics (Per Diode)

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit | |
|---------------------------|----------------|-------------------------------|---------------------|------|------|------|---|
| Peak forward voltage drop | $V_{FM}^{(1)}$ | $I_{FM} = 10A$ | $T_j = 25^\circ C$ | - | - | 0.98 | V |
| | | | $T_j = 125^\circ C$ | - | - | 0.88 | |
| Reverse leakage current | $I_{RM}^{(2)}$ | $V_R = V_{RRM}$ | - | - | 10 | uA | |
| Reverse recovery time | t_{rr} | $I_F = 1A, di/dt = -100 A/us$ | - | - | 25 | ns | |
| Junction capacitance | C_j | $V_R = 5V_{DC}, f=1MHz$ | - | 150 | - | pF | |

Note : (1) Pulse test : $t_p \leq 380us$, Duty cycle $\leq 2\%$

(2) Pulse test : $t_p \leq 20ms$, Duty cycle $\leq 2\%$

Rating and Characteristic Curves (Per Diode)

Fig. 1 $V_F - I_F$

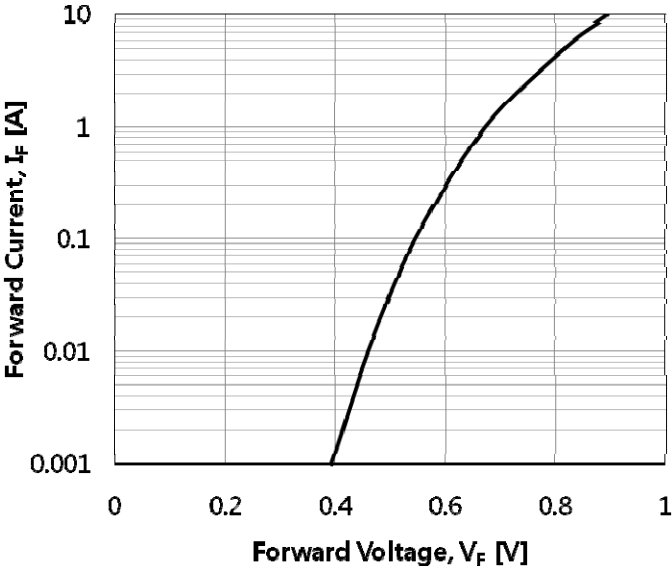


Fig. 2 $I_R - V_R$

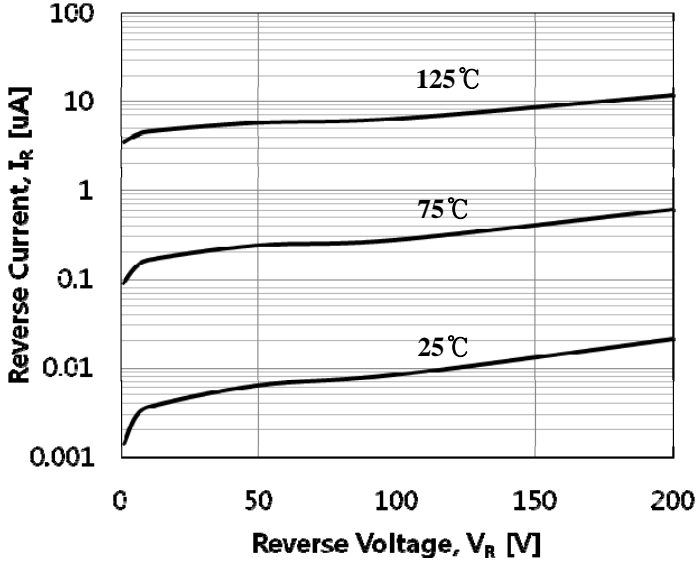


Fig. 3 $I_O - P_F$

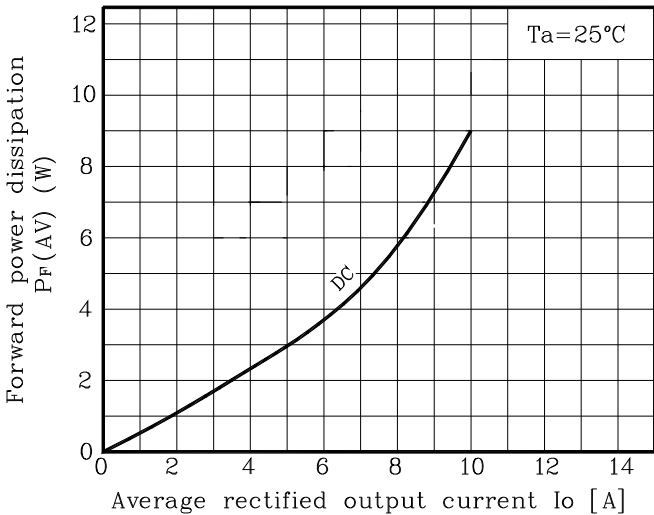


Fig. 4 $C_T - V_R$

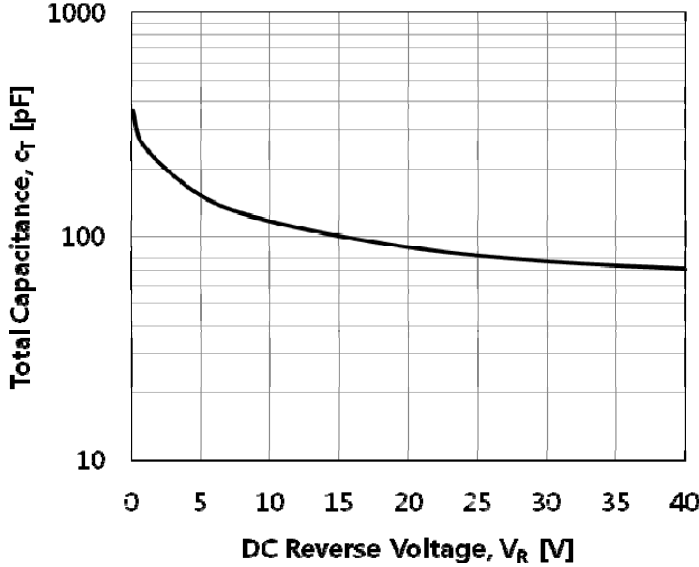


Fig. 5 $I_{FSM} - \text{Number of cycle}$

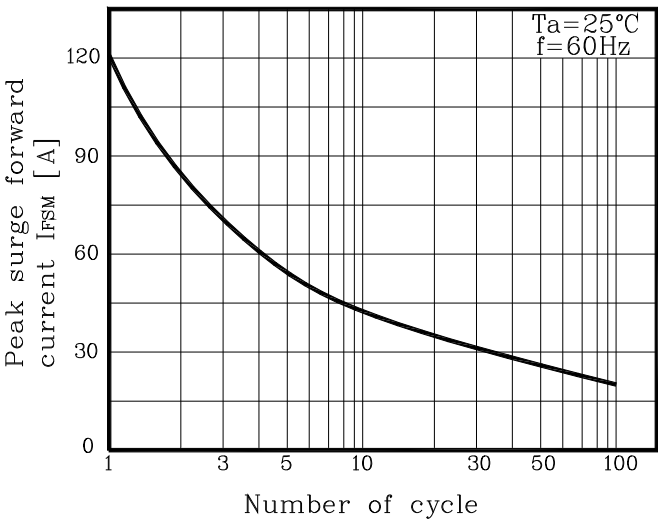
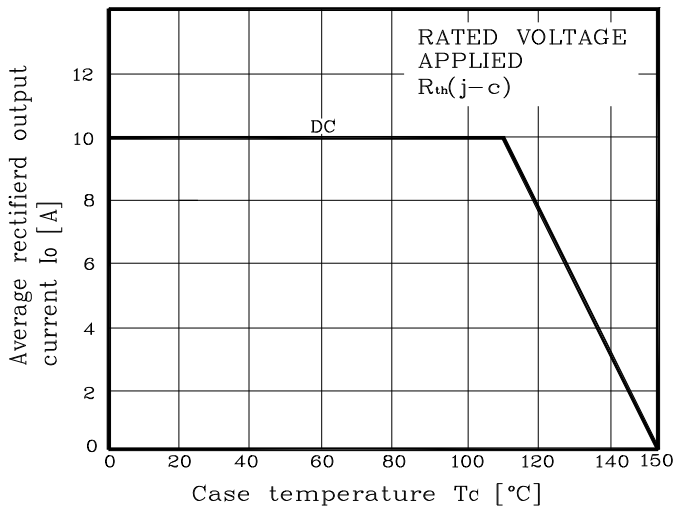
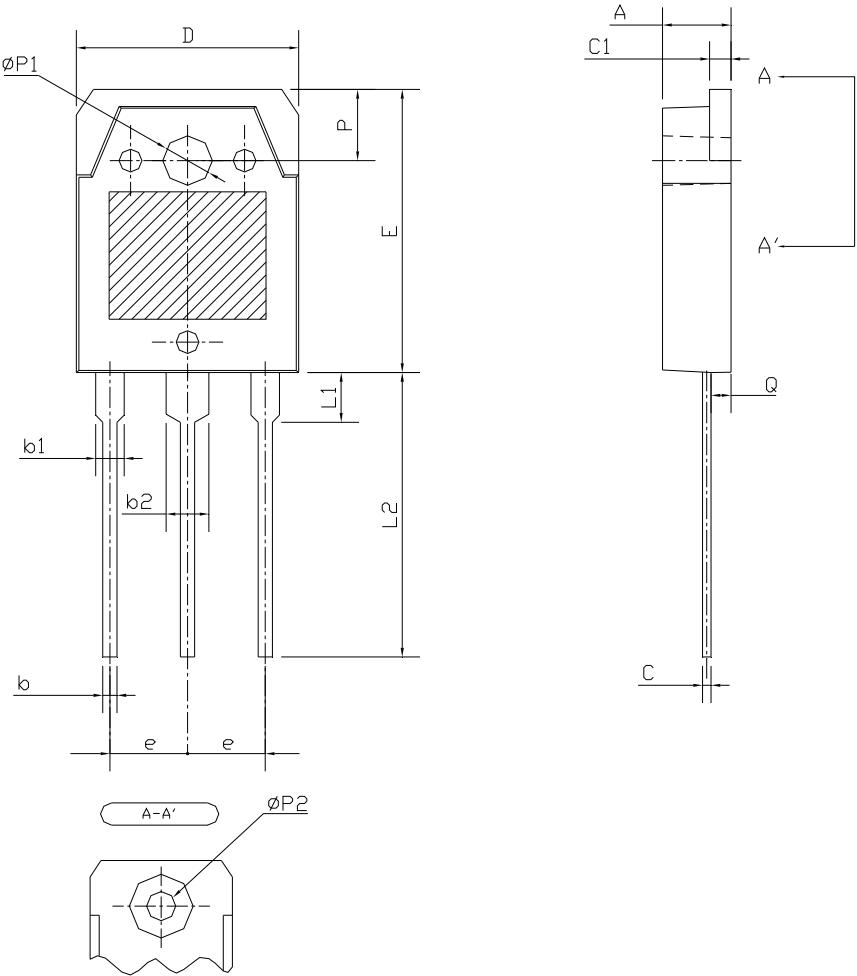


Fig. 6 I_O derating - T_C



Package Outline Dimension (Unit: mm)



| SYMBOL | MIN | NOM | MAX |
|-----------|--------|-------|-------|
| A | 4.60 | 4.80 | 5.00 |
| b | 0.80 | 1.00 | 1.20 |
| b1 | 1.80 | 2.00 | 2.20 |
| b2 | 2.80 | 3.00 | 3.20 |
| C | 0.55 | 0.60 | 0.75 |
| C1 | 1.45 | 1.50 | 1.65 |
| D | 15.40 | 15.60 | 15.80 |
| E | 19.70 | 19.90 | 20.10 |
| e | 5.15 | 5.45 | 5.75 |
| L1 | 3.30 | 3.50 | 3.70 |
| L2 | 19.80 | 20.00 | 20.20 |
| P | 4.80 | 5.00 | 5.20 |
| $\phi P1$ | 3.30 | 3.40 | 3.50 |
| $\phi P2$ | (3.20) | | |
| Q | 1.20 | 1.40 | 1.60 |

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