

SB2020FCT THRU SB20200FCT

List

| | |
|---------------------------------------------------------|---|
| List..... | 1 |
| Package outline..... | 2 |
| Features..... | 2 |
| Mechanical data..... | 2 |
| Maximum ratings | 2 |
| Rating and characteristic curves..... | 3 |
| Pinning information..... | 4 |
| Marking..... | 4 |
| Tube packing..... | 4 |
| Suggested thermal profiles for soldering processes..... | 5 |
| High reliability test capabilities..... | 6 |

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20A Power Schottky Barrier Rectifiers - 20V-200V

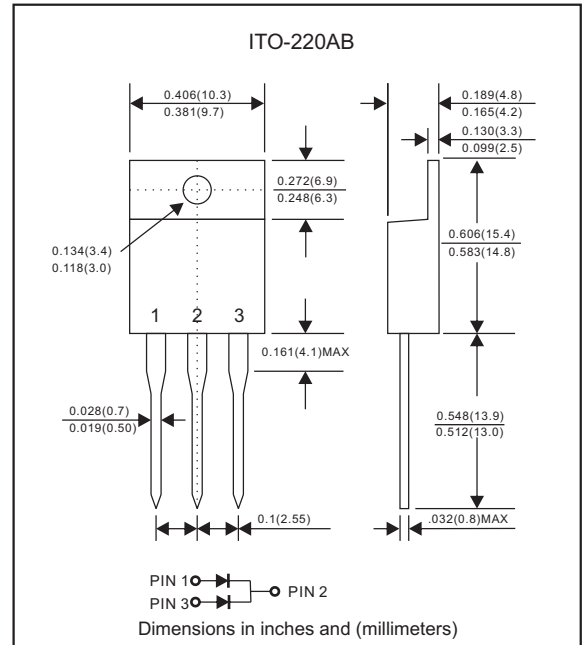
Features

- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- Offer 10A half wave and 20A full wave rectification.
- Low power loss, high efficiency.
- High current capability, low forward voltage drop.
- High surge capability.
- Guardring for overvoltage protection.
- Ultra high-speed switching.
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free parts, ex. SB2020FCT-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC ITO-220AB molded plastic body over passivated chip
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: As marked
- Mounting Position : Any
- Weight : Approximated 1.70 gram

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOLS | SB 2020FCT | SB 2040FCT | SB 2045FCT | SB 2050FCT | SB 2060FCT | SB 2080FCT | SB 20100FCT | SB 20150FCT | SB 20200FCT | UNIT |
|----------------------------------------------------------------------|-----------|-------------|------------|------------|-------------|------------|------------|-------------|-------------|-------------|------------------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 20 | 40 | 45 | 50 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 14 | 28 | 31.5 | 35 | 42 | 56 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 20 | 40 | 45 | 50 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum average forward rectified current | I_o | 20 | | | | | | | | | A |
| Peak forward surge current 8.3ms single half sine-wave(JEDEC method) | I_{FSM} | 200 | | | | | | | | | A |
| Operating junction temperature range | T_J | -55 to +125 | | | -55 to +150 | | | | | | $^\circ\text{C}$ |
| Storage temperature range | T_{STG} | -65 to +175 | | | | | | | | | $^\circ\text{C}$ |

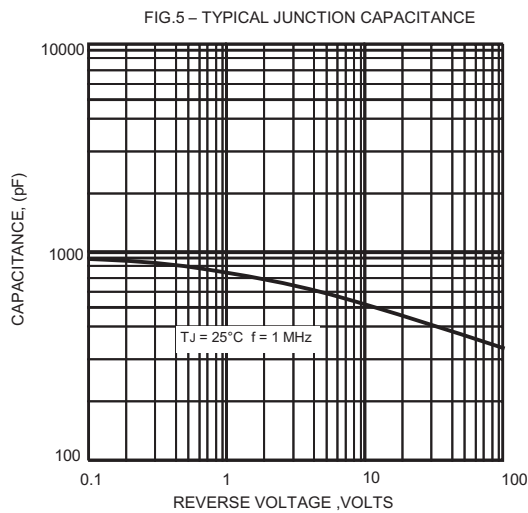
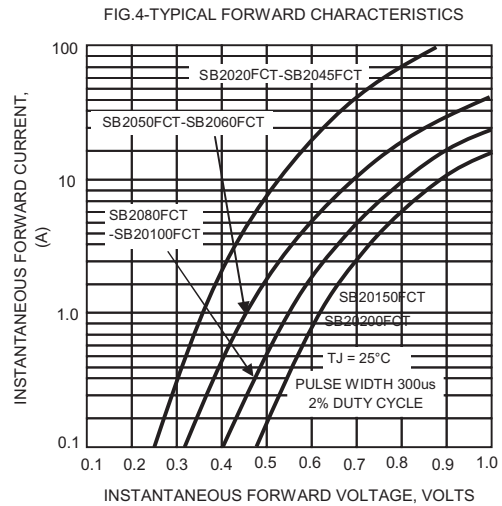
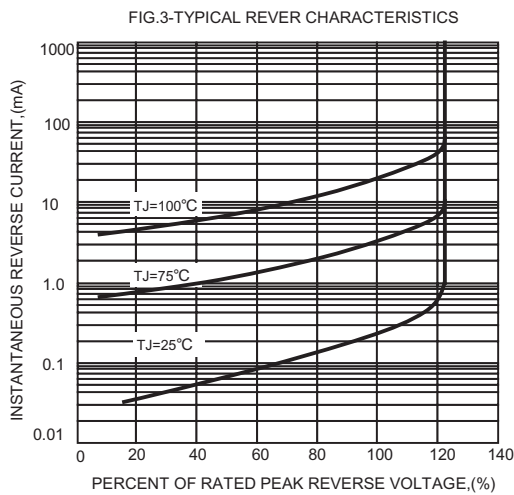
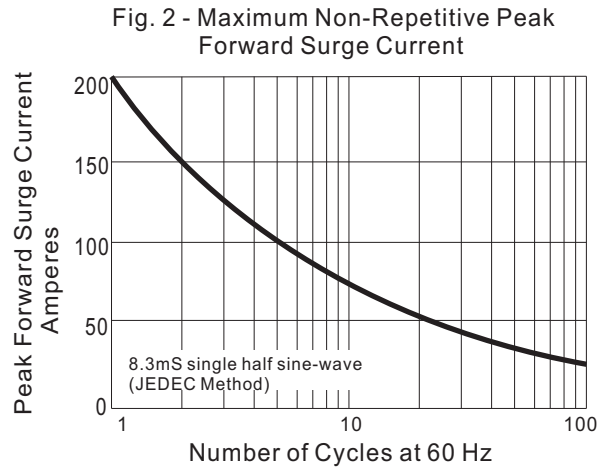
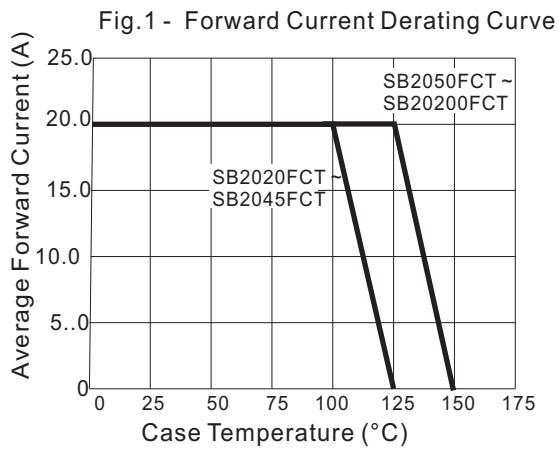
Electrical Characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOLS | SB 2020FCT | SB 2040FCT | SB 2045FCT | SB 2050FCT | SB 2060FCT | SB 2080FCT | SB 20100FCT | SB 20150FCT | SB 20200FCT | UNIT | |
|----------------------------------------------------------------------------------------------------------------------|---------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|------|----------|
| Maximum forward voltage per leg at $I_F=10\text{A}$ | V_F | 0.55 | | | 0.75 | | 0.85 | | 0.90 | | 0.92 | V |
| Maximum DC reverse current at $T_J=25^\circ\text{C}$ at rated DC blocking voltage at $T_J=100^\circ\text{C}$ per leg | I_R | 0.5 | | | | | | 50 | | | | mA mA |

Thermal Characteristics

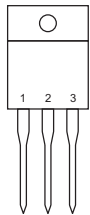
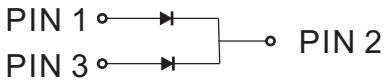
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|-----------------------------------------------------|-----------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|---------------------------|
| Typical thermal resistance junction to case per leg | $R_{\theta JC}$ | 2.0 | | | | | | | | | $^\circ\text{C}/\text{W}$ |

Rating and characteristic curves (SB2020FCT THRU SB20200FCT)



SB2020FCT THRU SB20200FCT

Pinning information

| Pin | Simplified outline | Symbol |
|------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pin1 anode Pin2 cathode Pin3 anode |  |  |

Marking

| Type number | Marking code |
|-------------|--------------|
| SB2020FCT | SB2020FCT |
| SB2040FCT | SB2040FCT |
| SB2045FCT | SB2045FCT |
| SB2050FCT | SB2050FCT |
| SB2060FCT | SB2060FCT |
| SB2080FCT | SB2080FCT |
| SB20100FCT | SB20100FCT |
| SB20150FCT | SB20150FCT |
| SB20200FCT | SB20200FCT |

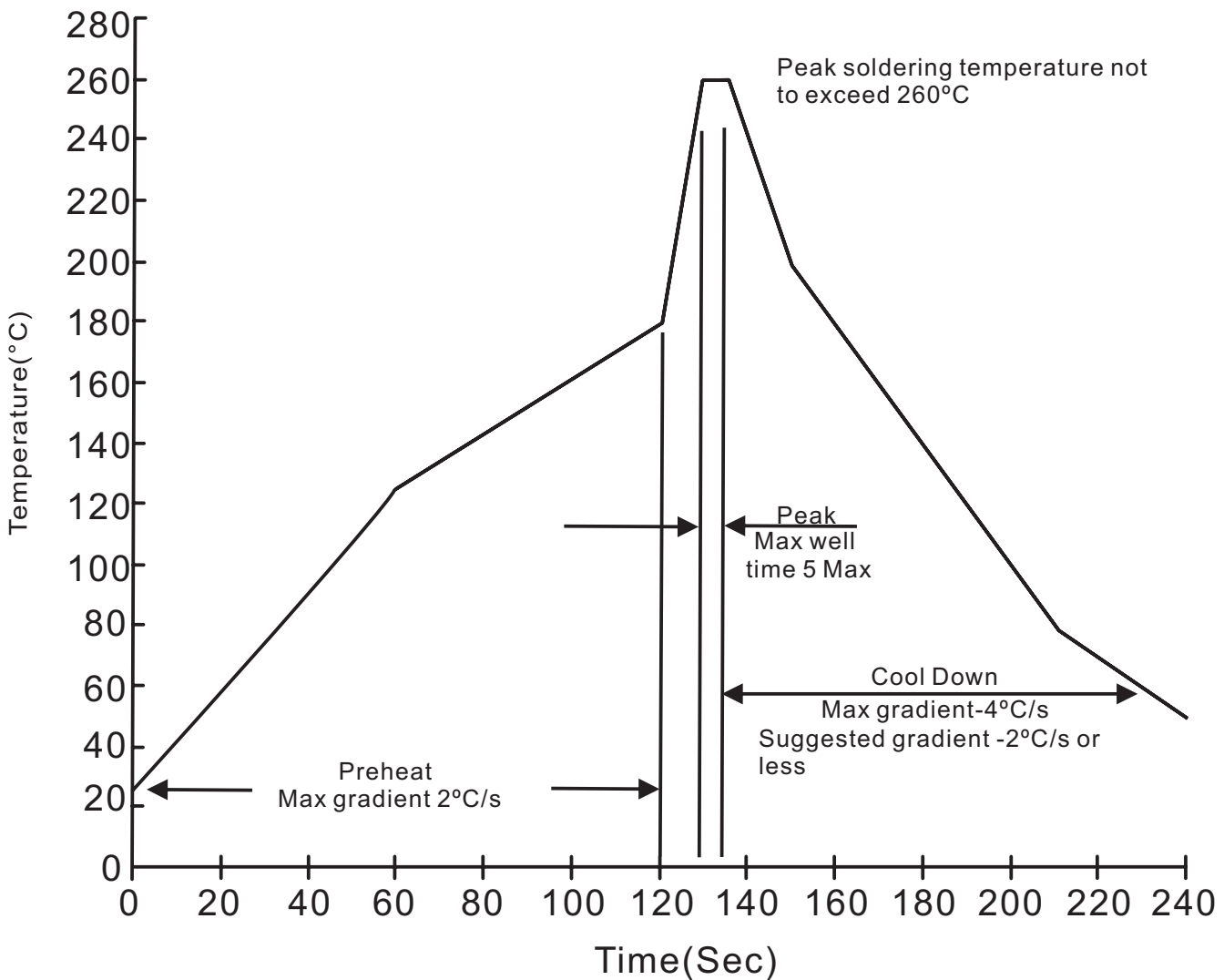
Tube packing

| PACKAGE | TUBE (pcs) | TUBE SIZE (m/m) | BOX (pcs) | INNER BOX (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|-----------|---------------|--------------------|--------------|-----------------------|-------------------------|-----------------|---------------------------------|
| ITO-220AB | 50 | 525*32*7.0 | 1000 | 555*150*40 | 580*230*175 | 5,000 | 15.0 |

SB2020FCT THRU SB20200FCT

Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



SB2020FCT THRU SB20200FCT**High reliability test capabilities**

| Item Test | Conditions | Reference |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. Solder Resistance | at $260\pm 5^{\circ}\text{C}$ for $10\pm 2\text{sec.}$ immerse body into solder $1/16''\pm 1/32''$ | MIL-STD-750D METHOD-2031 |
| 2. Solderability | at $245\pm 5^{\circ}\text{C}$ for 5 sec. | MIL-STD-202F METHOD-208 |
| 3. High Temperature Reverse Bias | $V_R=80\%$ rate at $T_J=125^{\circ}\text{C}$ for 168 hrs. | MIL-STD-750D METHOD-1038 |
| 4. Forward Operation Life | Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs. | MIL-STD-750D METHOD-1027 |
| 5. Intermittent Operation Life | $T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles. | MIL-STD-750D METHOD-1036 |
| 6. Pressure Cooker | $15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs. | JESD22-A102 |
| 7. Temperature Cycling | -55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles. | MIL-STD-750D METHOD-1051 |
| 8. Forward Surge | 8.3ms single half sine-wave , one surge. | MIL-STD-750D METHOD-4066-2 |
| 9. Humidity | at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs. | MIL-STD-750D METHOD-1021 |
| 10. High Temperature Storage Life | at 175°C for 1000 hrs. | MIL-STD-750D METHOD-1031 |