

SB1020CT THRU SB10200CT

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SB1020CT THRU SB10200CT

10A Power Schottky Barrier Rectifiers - 20V-200V

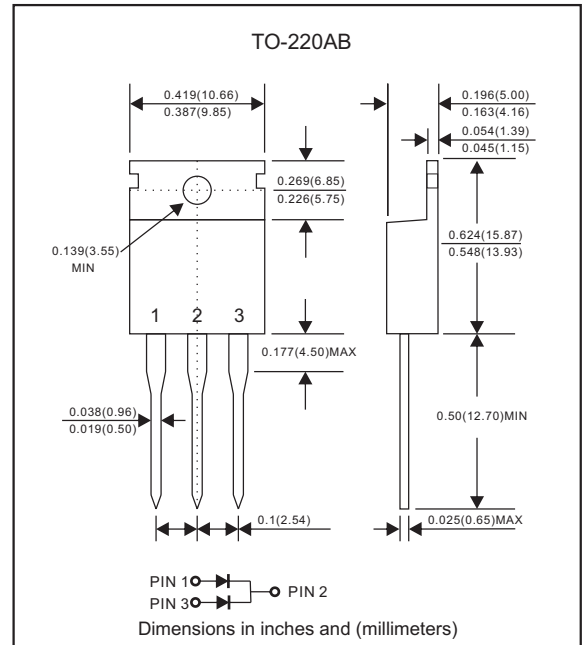
Features

- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- Offer 5.0A half wave and 10A 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 part, ex. SB1020CT-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC TO-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 2.10 gram

Package outline



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

PARAMETER	SYMBOLS	SB 1020CT	SB 1040CT	SB 1045CT	SB 1060CT	SB 1080CT	SB 10100CT	SB 10150CT	SB 10200CT	UNIT	
Maximum repetitive peak reverse voltage	V_{RRM}	20	40	45	60	80	100	150	200	V	
Maximum RMS voltage	V_{RMS}	14	28	31.5	42	56	70	105	140	V	
Maximum DC blocking voltage	V_{DC}	20	40	45	60	80	100	150	200	V	
Maximum average forward rectified current	I_o	10								A	
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	125								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 1020CT	SB 1040CT	SB 1045CT	SB 1060CT	SB 1080CT	SB 10100CT	SB 10150CT	SB 10200CT	UNIT	
Maximum forward voltage per leg at $I_F=5A$	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 per leg at $T_J=100^\circ\text{C}$	I_R	0.5				50					mA mA

Thermal Characteristics

PARAMETER	SYMBOLS	SB 1020CT	SB 1040CT	SB 1045CT	SB 1060CT	SB 1080CT	SB 10100CT	SB 10150CT	SB 10200CT	UNIT	
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	3.0									$^\circ\text{C}/\text{W}$

Rating and characteristic curves (SB1020CT THRU SB10200CT)

Fig.1 - Forward Current Derating Curve

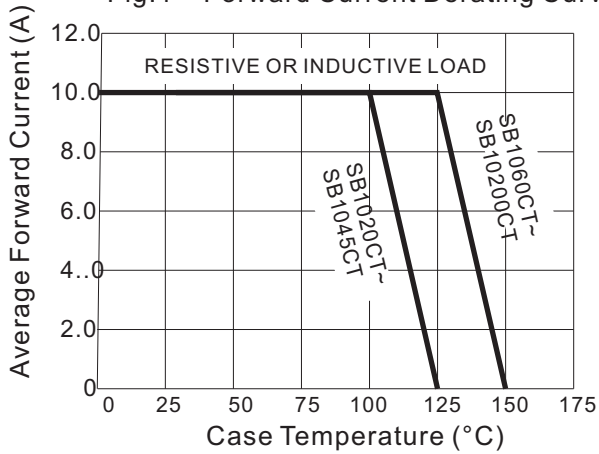


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

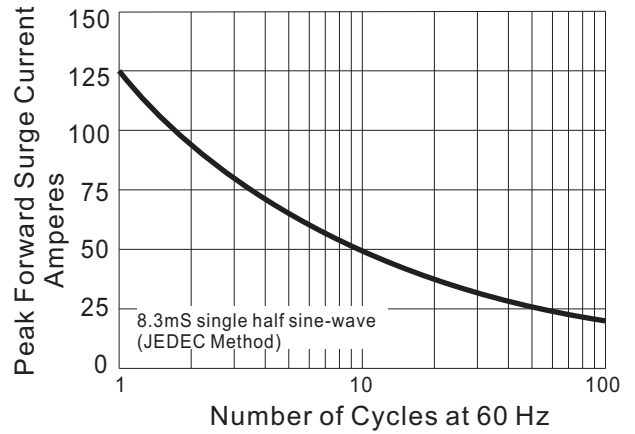


FIG.3-TYPICAL REVER CHARACTERISTICS

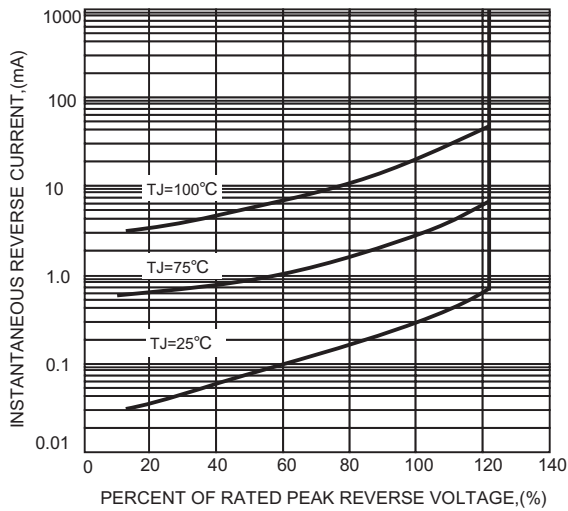


FIG.4-TYPICAL FORWARD CHARACTERISTICS

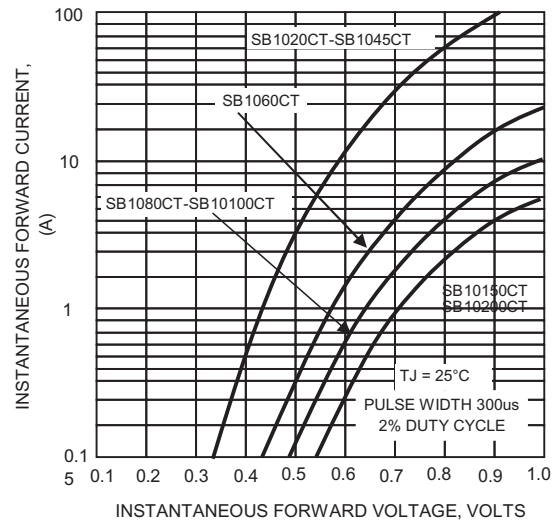
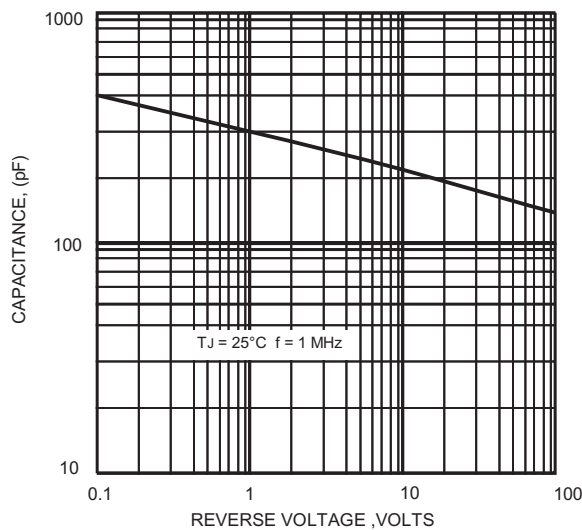
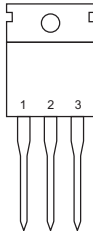
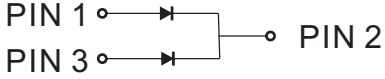


FIG.5-TYPICAL JUNCTION CAPACITANCE



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Pinning information

Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
SB1020CT	SB1020CT
SB1040CT	SB1040CT
SB1045CT	SB1045CT
SB1060CT	SB1060CT
SB1080CT	SB1080CT
SB10100CT	SB10100CT
SB10150CT	SB10150CT
SB10200CT	SB10200CT

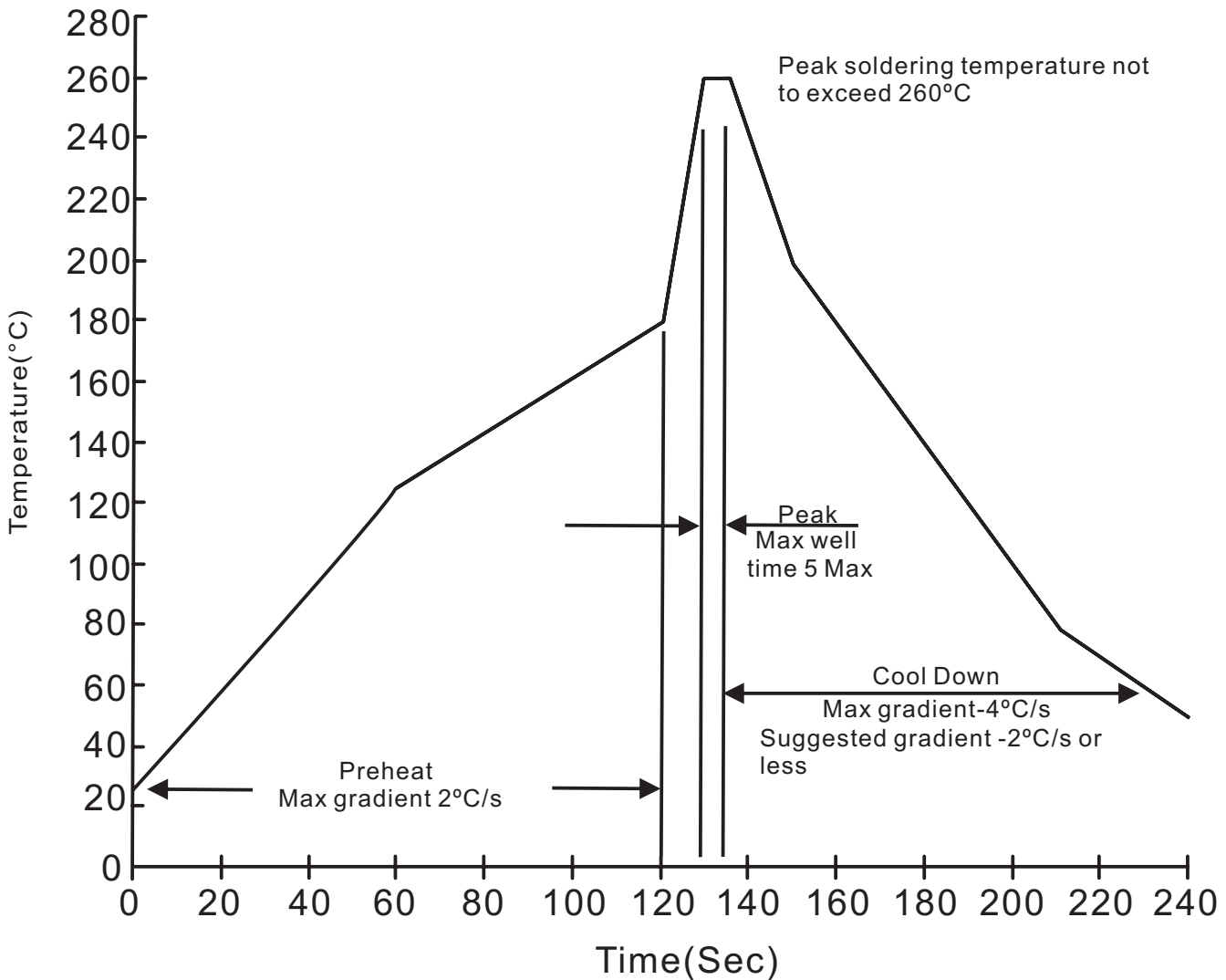
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
TO-220AB	50	525*32*7.5	1000	555*150*40	580*230*175	5,000	15.0

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Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



SB1020CT THRU SB10200CT**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