

CURRENT 20 Ampere  
 VOLTAGE RANG 45 to 150 Volts

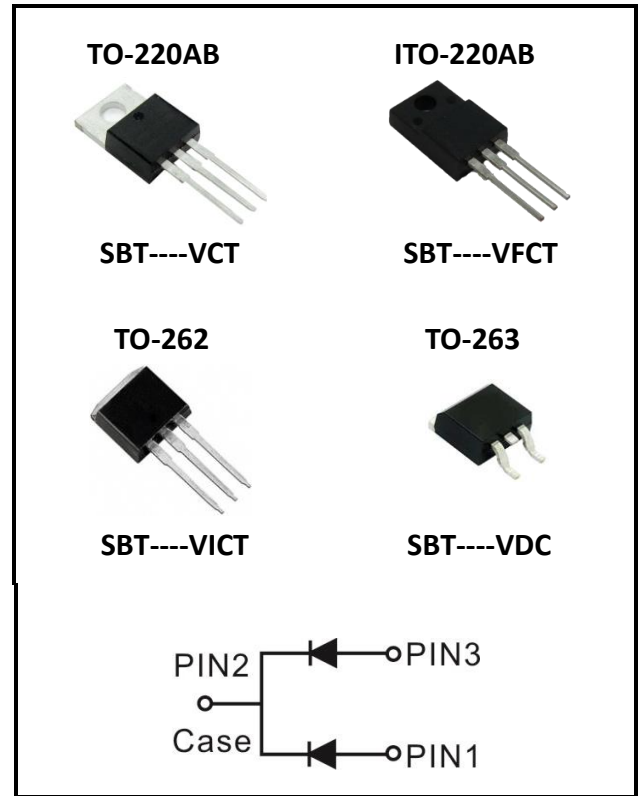
## SBT2045VCT THRU SBT20150VFCT

### Features

- Low Forward Voltage Drop
- Reliable High Temperature Operation
- Softest, Fast Switching Capability
- 150°C Operating Junction Temperature
- Lead Free Finish, RoHS Compliant

### Typical Applications

Device optimized for ultra-low forward voltage drop to maximize efficiency in Power Supply applications



### Characteristics

Maximum Ratings Characteristics (TA = 25°C unless otherwise specified)

Parameter	Symbol	SBT2045 VCT/VFCT	SBT2060 VCT/VFCT	SBT20100 VCT/VFCT	SBT20150 VCT/VFCT	Units
DC Blocking Voltage	V <sub>RM</sub>	45	60	100	150	Volts
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>					
Average Rectified Forward Current Per device 10A*2 (Rated VR-20Khz Square Wave) - 50% duty cycle	I <sub>o</sub>	20				Amps
Peak Forward Surge Current - 1/2 60hz	I <sub>FSM</sub>	180				Amps
Peak Repetitive Reverse Surge Current (2uS-1Khz)	I <sub>RRM</sub>	2				Amps
Typical Thermal Resistance (per leg) Package = TO-220AB Package = TO-262 TO-263 Package = ITO-220AB	R <sub>θjc</sub>	2 3 4				°C/W
Human Body Model ESD Protection (TO-220)	ESD HBM	8				KV
Maximum Rate of Voltage Change ( at Rated VR )	dv/dt	10000				V/uS
Operating Junction Temperature	T <sub>J</sub>	- 65 to +150				°C
Storage Junction Temperature	T <sub>STG</sub>	- 65 to +150				°C

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Electrical Characteristics - (per leg) (  $T_A = 25^\circ\text{C}$  unless otherwise specified )

	Parameter	Test Conditions	Symbol	Typ.	Max.	Units	
SBT20145VCT/VFCT	Instantaneous Forward Voltage	$I_F = 4\text{ A}$	$T_j = 25^\circ\text{C}$	$V_F^*$	0.32	-----	Volts
		$I_F = 10\text{ A}$			0.42	0.47	
		$I_F = 4\text{ A}$	$T_j = 125^\circ\text{C}$		0.24	-----	
		$I_F = 10\text{ A}$			0.37	0.41	
	Instantaneous Reverse Current	$V_R = 36\text{ V}$	$T_j = 25^\circ\text{C}$	$I_R^*$	4	-----	$\mu\text{A}$
		$V_R = 45\text{ V}$			14	80	$\mu\text{A}$
		$V_R = 36\text{ V}$	$T_j = 125^\circ\text{C}$		-----	-----	$\text{mA}$
		$V_R = 45\text{ V}$			-----	5	$\text{mA}$
SBT2060VCT/VFCT	Instantaneous Forward Voltage	$I_F = 4\text{ A}$	$T_j = 25^\circ\text{C}$	$V_F^*$	0.37	-----	Volts
		$I_F = 10\text{ A}$			0.48	0.52	
		$I_F = 4\text{ A}$	$T_j = 125^\circ\text{C}$		0.29	-----	
		$I_F = 10\text{ A}$			0.42	0.46	
	Instantaneous Reverse Current	$V_R = 42\text{ V}$	$T_j = 25^\circ\text{C}$	$I_R^*$	6	-----	$\mu\text{A}$
		$V_R = 60\text{ V}$			14	80	$\mu\text{A}$
		$V_R = 42\text{ V}$	$T_j = 125^\circ\text{C}$		-----	-----	$\text{mA}$
		$V_R = 60\text{ V}$			-----	5	$\text{mA}$
SBT20100VCT/VFCT	Instantaneous Forward Voltage	$I_F = 4\text{ A}$	$T_j = 25^\circ\text{C}$	$V_F^*$	0.45	-----	Volts
		$I_F = 10\text{ A}$			0.60	0.66	
		$I_F = 4\text{ A}$	$T_j = 125^\circ\text{C}$		0.38	-----	
		$I_F = 10\text{ A}$			0.54	0.57	
	Instantaneous Reverse Current	$V_R = 70\text{ V}$	$T_j = 25^\circ\text{C}$	$I_R^*$	6	-----	$\mu\text{A}$
		$V_R = 100\text{ V}$			16	80	$\mu\text{A}$
		$V_R = 70\text{ V}$	$T_j = 125^\circ\text{C}$		-----	-----	$\text{mA}$
		$V_R = 100\text{ V}$			-----	5	$\text{mA}$
SBT20150VCT/VFCT	Instantaneous Forward Voltage	$I_F = 4\text{ A}$	$T_j = 25^\circ\text{C}$	$V_F^*$	0.55	-----	Volts
		$I_F = 10\text{ A}$			0.70	0.75	
		$I_F = 4\text{ A}$	$T_j = 125^\circ\text{C}$		0.42	-----	
		$I_F = 10\text{ A}$			0.67	0.70	
	Instantaneous Reverse Current	$V_R = 105\text{ V}$	$T_j = 25^\circ\text{C}$	$I_R^*$	6	-----	$\mu\text{A}$
		$V_R = 150\text{ V}$			18	80	$\mu\text{A}$
		$V_R = 105\text{ V}$	$T_j = 125^\circ\text{C}$		-----	-----	$\text{mA}$
		$V_R = 150\text{ V}$			-----	5	$\text{mA}$

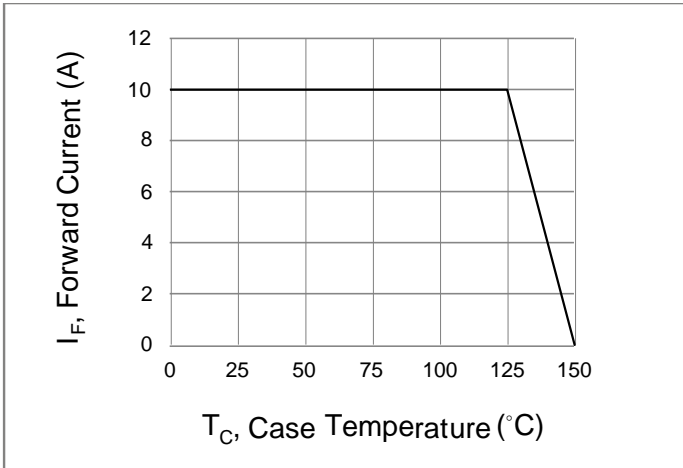
\* Pulse width < 300  $\mu\text{s}$ , Duty cycle < 2%

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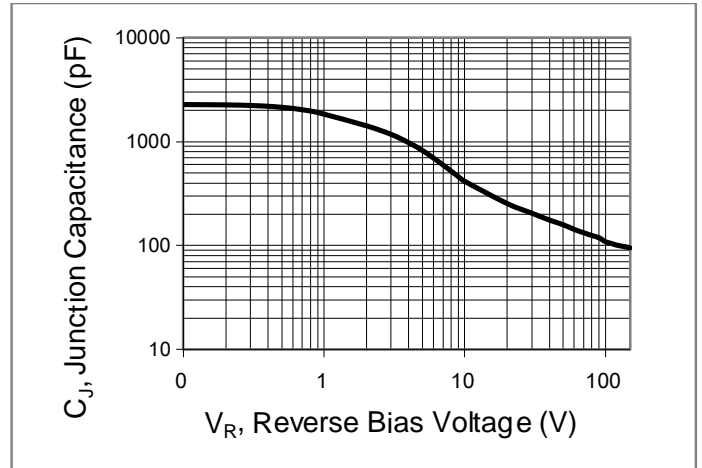
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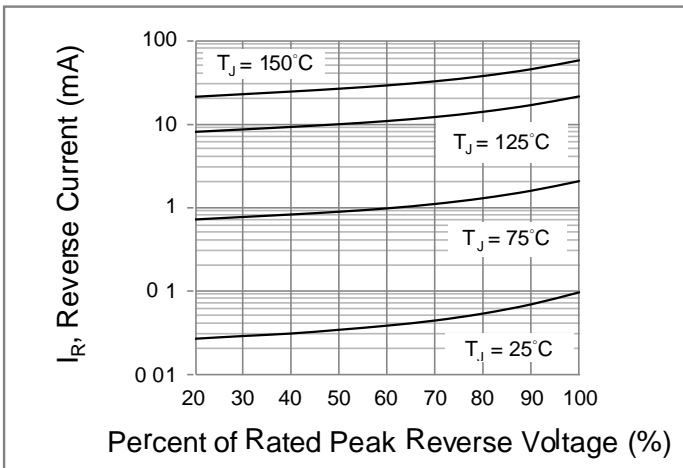
### RATING AND CHARACTERISTIC CURVES



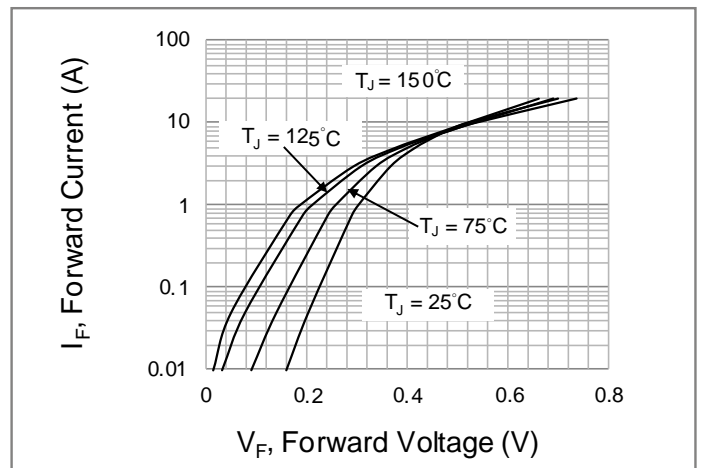
**Fig.1 Forward Current Derating Curve**



**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



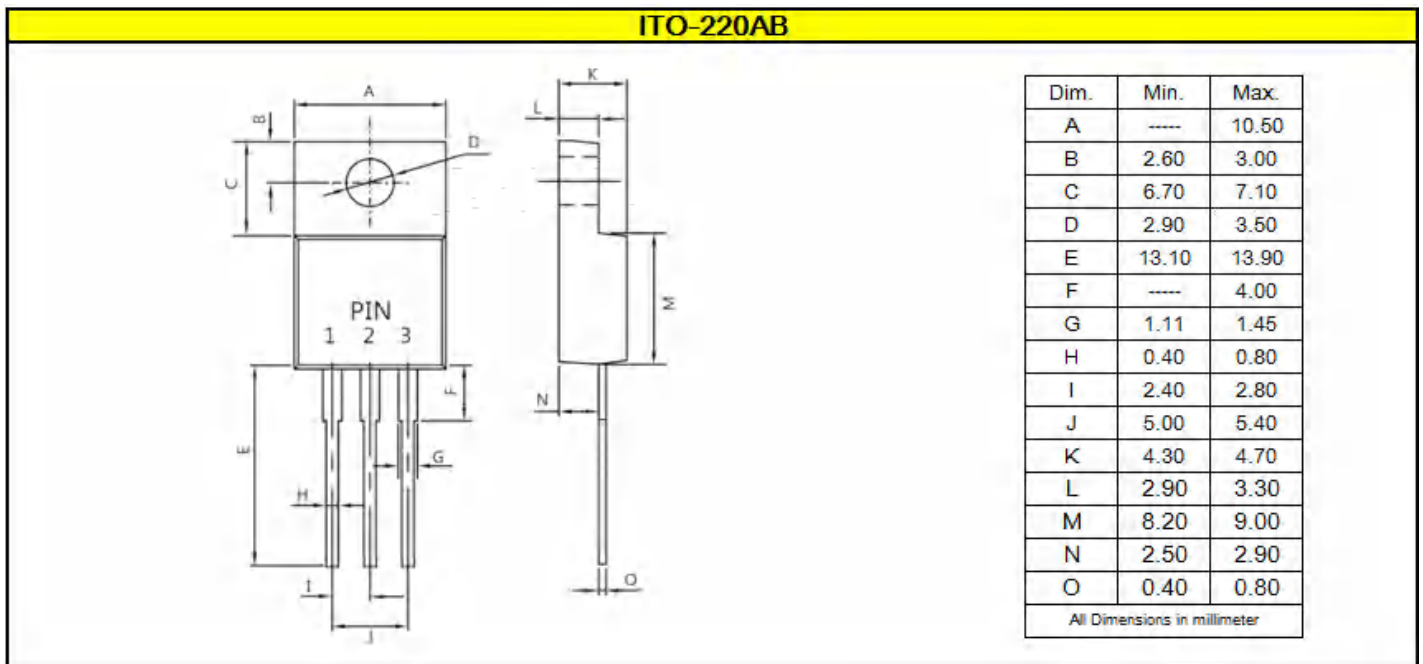
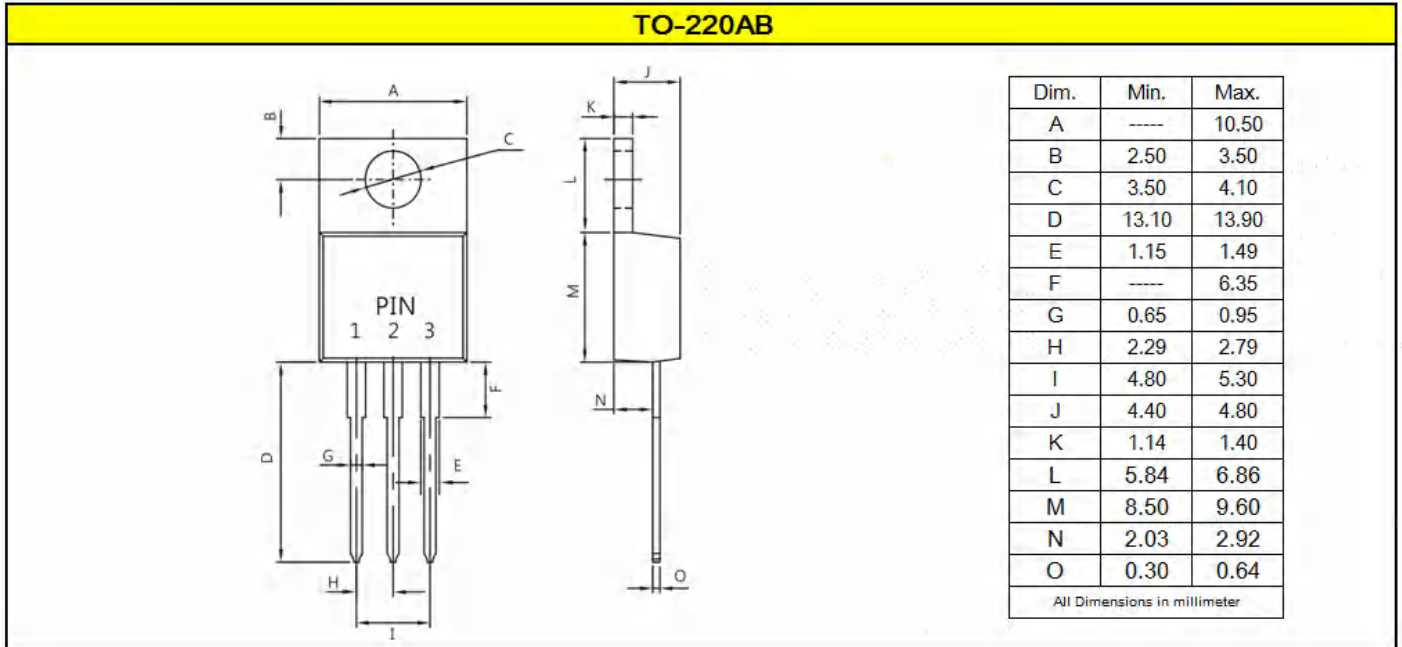
**Fig.4 Typical Forward Characteristics**

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Package information

Package outline Dimensions millimeters



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