

## FEATURES

- Trench MOS Schottky technology
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,low forward voltage drop
- High forward surge capability
- Solder bath temperature 275°C maximum, 10s, per JESD22-B102
- Component in accordance to RoHS 2015/863/EU



TO-220AC



Pin3  Pin1

## MECHANICAL DATA

- Case: JEDEC TO-220AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

## TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

## MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum DC forward bypassing current, with heatsink (see fig.1)	$I_{F(DC)}$	40.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	250	A
Operating junction temperature range (AC mode)	$T_{OP}$	-40 to +150	°C
Junction temperature in DC forward current without reverse bias, $t \leq 1$ h	$T_J$	$\leq 200$	°C

PRIMARY CHARACTERISTICS	
$I_F(AV)$	40A
$V_{RRM}$	45V
$I_{FSM}$	250A
$V_f$ at $I_F=40.0A, 125^\circ C$	0.47V
$I_R$	100 $\mu A$
$T_{OP}$ max. (AC mode)	150°C
$T_J$ max. (DC forward current)	200°C
Diode variations	Single die

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)

Parameter	Test Conditions		Symbol	Typ.	Max.	Unit
Instantaneous forward voltage	T <sub>A</sub> =25°C	I <sub>F</sub> =5A	V <sub>F</sub> <sup>1)</sup>	0.40	–	V
		I <sub>F</sub> =20A		0.47	–	
		I <sub>F</sub> =40A		0.54	0.60	
	T <sub>A</sub> =125°C	I <sub>F</sub> =5A		0.27	–	
		I <sub>F</sub> =20A		0.37	–	
		I <sub>F</sub> =40A		0.47	–	
Reverse current	V <sub>R</sub> =45V	T <sub>A</sub> =25°C	I <sub>R</sub> <sup>2)</sup>	–	100	μA
		T <sub>A</sub> =125°C		–	30	mA

Notes: 1.Pulse test: 300 μs pulse width,1% duty cycle

2.Pulse test: pulse width ≤40ms

## THERMAL CHARACTERISTICS

Parameter	Symbol	SBT4045	Unit
Typical thermal resistance <sup>3)</sup>	R <sub>θc</sub>	0.8	°C/W

3.Thermal resistance from junction to case,Total device

## AVAILABLE PACK INFORMATION

Product code	Pack	Carton Size L×W×H(mm)	Inner Box Size L×W×H(mm)	Tube Length (mm)	Inner Box Number	Tube Number Per A Inner Box	Part Number Per A Tube	Quantity(carton) (K)
SBT4045- TO-220AC	Tube	565×225×170	548×151×37	540	5	20	50	5

FIG.1-FORWARD CURRENT DERATING CURVE

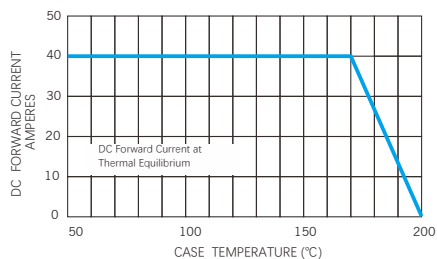


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

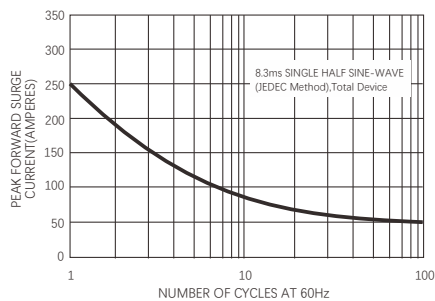


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

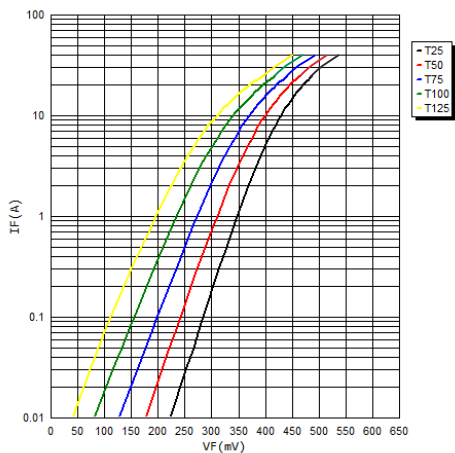


FIG.4-TYPICAL REVERSE CHARACTERISTICS

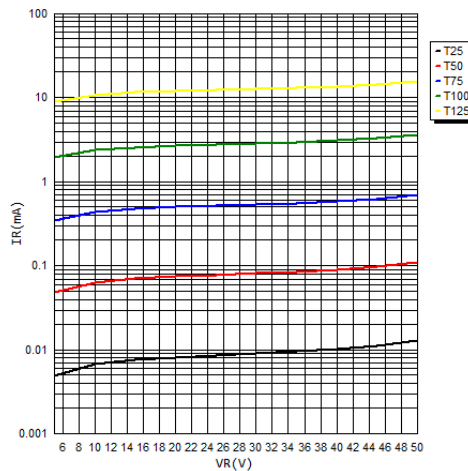
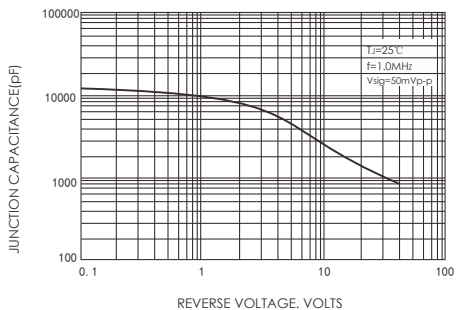
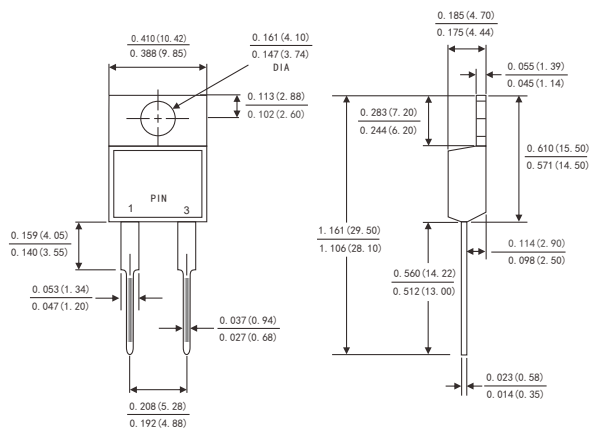


FIG.5-TYPICAL JUNCTION CAPACITANCE



Dimensions in inches and (millimeters)

## TO-220AC



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