

KBP3005 THRU KBP310**List**

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KBP3005 THRU KBP310

3.0A Glass Passivated Single Phase Bridge Rectifiers - 50 - 1000V

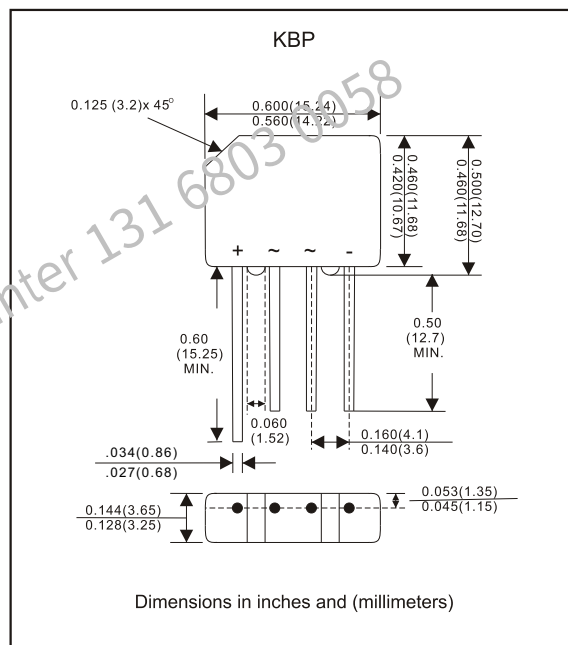
Features

- Ideal for printed circuit board.
- High forward surge current capability.
- Low reverse leakage, typical IR less than 0.5μA.
- General purpose use in AC-TO-AC bridge full wave rectification for switching power supply, home, office equipment and telecommunication applications.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- UL recognized file #E321971

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, KBP
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : marked on body
- Mounting Position : Any
- Weight : Approximated 1.70gram

Package outline



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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward rectified current	See Fig.1	I_O			3.0	A
Forward surge current	8.3ms single halfsine-wave superimposed on rate load (JEDEC methode)	I_{FSM}			60.0	A
Reverse current	$V_R = V_{RRM}$ $T_A = 25^{\circ}\text{C}$	I_R			5.0	uA
	$V_R = V_{RRM}$ $T_A = 125^{\circ}\text{C}$				500	
Rating for fusing	$t < 8.3 \text{ ms}$	I^2t		15		A^2s
Typical Junction capacitance	Note1	C_J		25		pF
Typical thermal resistance per leg	Note2	$R_{\theta JC}$		11.0		$^{\circ}\text{C/W}$
		$R_{\theta JA}$		30.0		$^{\circ}\text{C/W}$
Storage temperature		T_{STG}	-65		+175	$^{\circ}\text{C}$

Note 1. Measured at 1.0MHz and applied reverse voltage of 4.0 voltage.

2. Thermal resistance from junction to ambient and from junction to lead mounted on P.B.C. with 0.47" X 0.47" (12x12mm) copper pads.

SYMBOLS	V_{RRM}^{*1} (V)	V_{RMS}^{*2} (V)	V_R^{*3} (V)	V_F^{*4} (V)	Operating temperature T_J , ($^{\circ}\text{C}$)
KBP3005	50	35	50	1.10	-55 to +150
KBP301	100	70	100		
KBP302	200	140	200		
KBP304	400	280	400		
KBP306	600	420	600		
KBP308	800	560	800		
KBP310	1000	700	1000		

*1 Repetitive peak reverse voltage

*2 RMS voltage

*3 Continuous reverse voltage

*4 Maximum forward voltage @3.0A

Rating and characteristic curves (KBP3005 THRU KBP310)

FIG. 1-OUTPUT RECTIFIED CURRENT DERATING CURVE

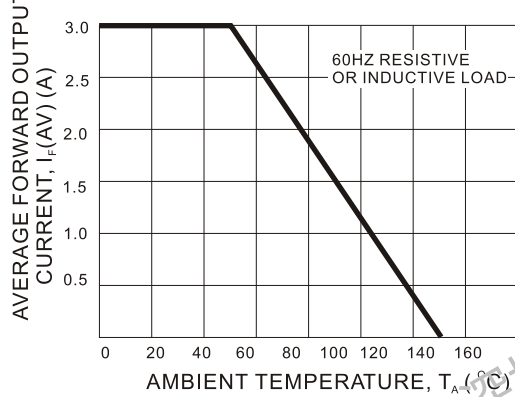


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

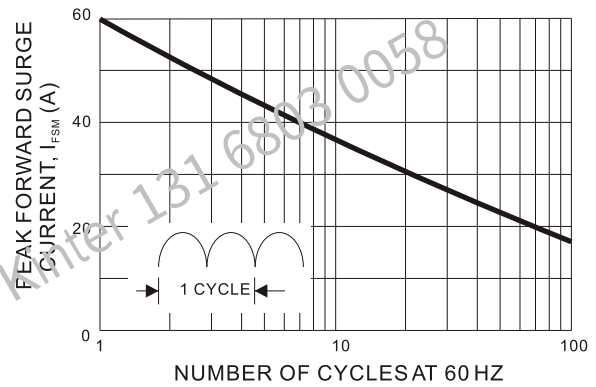


FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS (PER LEG)

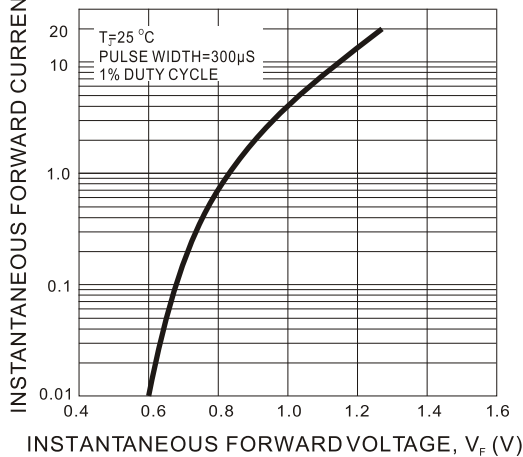
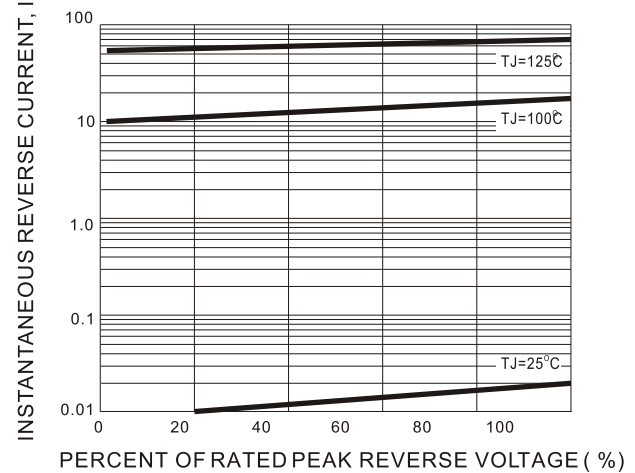
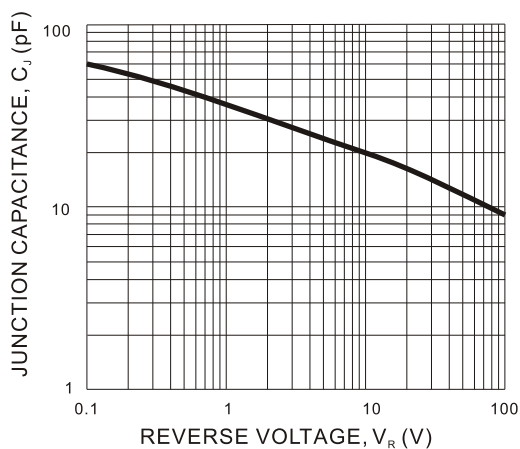
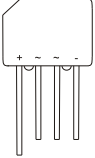
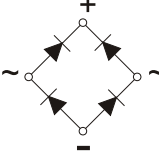


FIG. 4-TYPICAL REVERSE CHARACTERISTICS PER LEG



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Pinning information

Simplified outline	Symbol
	

Marking

Type number	Marking code
KBP3005	KBP3005
KBP301	KBP301
KBP302	KBP302
KBP304	KBP304
KBP306	KBP306
KBP308	KBP308
KBP310	KBP310

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)
KBP	30	470*37.4*7.4	1200	490*145*100	505*325*235	4,800	17.0

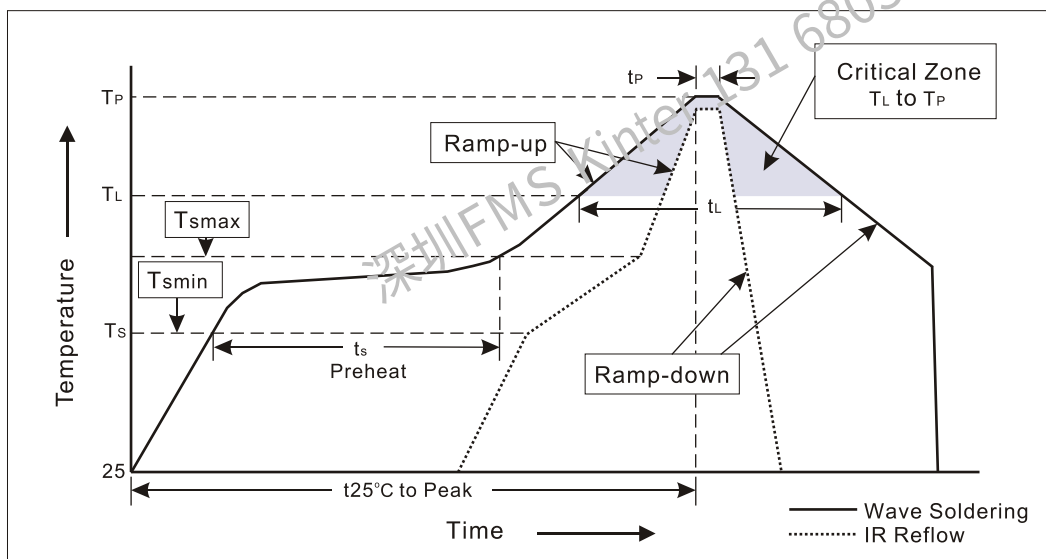
Bulk packing

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. GROSS WEIGHT(kg)
KBP	500	200 * 200 * 35	445 * 215 * 260	6,000	15.0

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Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=10°C~35°C Humidity=65%±15%
- 2.Reflow soldering of surface-mount devices



3.Flow (wave)soldering (solder dipping)

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{Smin}) -Temperature Max(T_{Smax}) -Time(min to max)(t_s)	100°C 150°C 60~120sec
T_{Smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	183°C 60~150sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for 10 ± 2 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 $T_A = 150^\circ\text{C}$ for 168 hrs	MIL-STD-750D METHOD-1026
4. Forward Operation Life	Rated average rectifier current at $T = 25^\circ\text{C}$ for 500 hrs.	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.	
7. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	8.3ms single halfsine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A = 65^\circ\text{C}$, RH=98% for 1000 hrs.	MIL-STD-750D METHOD-1038
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031
12. Solvent Resistance	Dip into Freon at 25°C for 1 min.	MIL-STD-202F METHOD-215