

GBPC1000 THRU GBPC5010

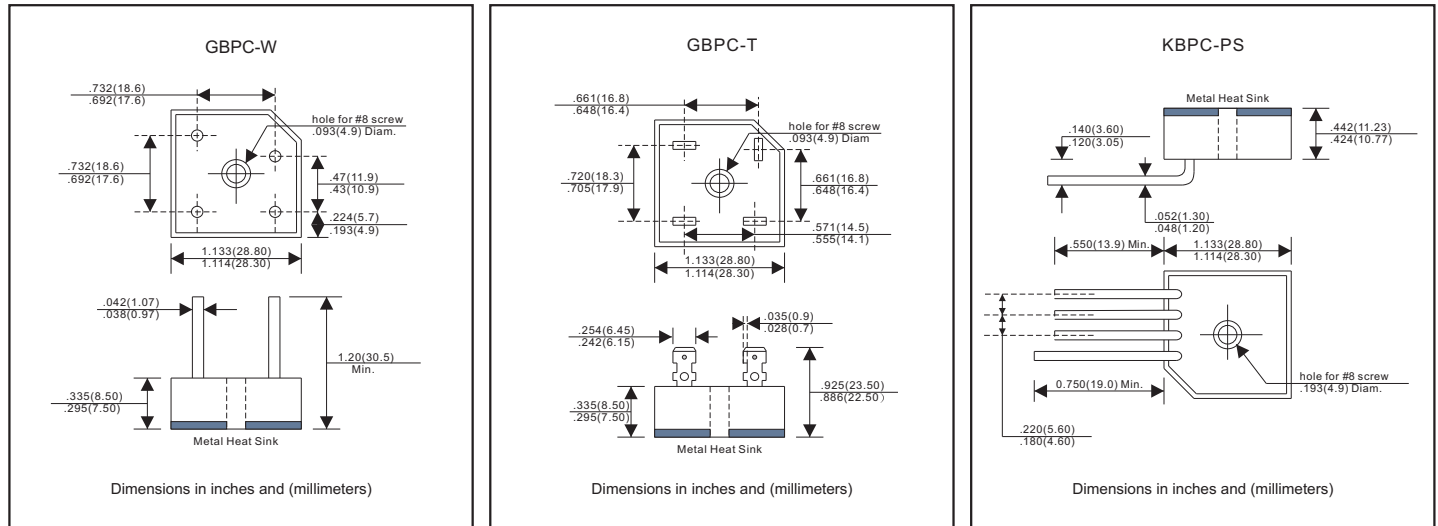
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GBPC1000 THRU GBPC5010

10.0A ~ 50.0A Glass Passivated Single-Phase Bridge Rectifiers - 50V-1000V

Package outline



Features

- Surge overload ratings to 450 amperes peak.
- Low Forward drop voltage & reverse leakage current.
- Integrally molded heatsink provides very low thermal Resistance for maximum heat dissipation
- Universal 3-way terminals for selection, faston terminals wire leads and wire-lead single in line.
- Glass passivated chip junctions.
- Lead-free parts meet RoHS requirements.
- UL recognized file # E321971

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, GBPC case with heatsink
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : marked on side body
- Mounting Position : Hole thru for #10 screw (Note A)
- Mounting Torque : 20 in-lb (23cm-kg) max.
- Weight : GBPC-W , 0.53 ounce, 15 grams
GBPC-T , 0.63 ounce, 18 grams
KBPC-PS , 0.63 ounce, 18 grams

Part Numbering

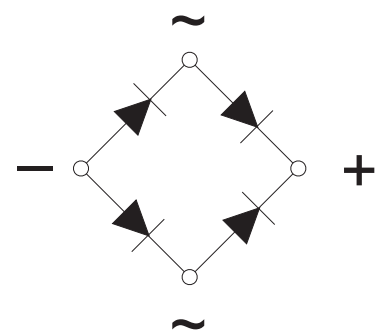
GBPC10 01 - T

Lead Types,
T : faston terminals
W : wire leads
S : wire-lead single in line

Reverse Voltage,
00: 50V 01: 100V 02: 200V
04: 400V 06: 600V 08: 800V
10: 1000V 12: 1200V

Forward Rectified Output Current,
10: 10.0A 15: 15.0A 25: 25.0A
35: 35.0A 40: 40.0A 50: 50.0A

Circuit Diagram



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

GBPCXX, XX=10, 15, 25, 35, 40 or 50		Symbols	GBPC xx00	GBPC xx01	GBPC xx02	GBPC xx04	GBPC xx06	GBPC xx08	GBPC xx10	Unit
Maximum Recurrent Peak Reverse Voltage		V _{RRM}	50	100	200	400	600	800	1000	Volts
Maximum RMS Voltage		V _{RMS}	35	70	140	280	420	560	700	Volts
Maximum DC Blocking Voltage		V _{DC}	50	100	200	400	600	800	1000	Volts
Maximum Average Forward Rectified Output Current (See Fig. 1)	GBPC10 GBPC15 GBPC25 GBPC35 GBPC40 GBPC50	I _(AV)	10.0 15.0 25.0 35.0 40.0 50.0							Amps
Peak Forward Surge Current 8.3mS single half sine-wave superimposed on rated load (JEDEC Method)	GBPC10 GBPC15 GBPC25 GBPC35 GBPC40 GBPC50	I _{FSM}	200 300 300 400 400 450							Amps
Rating (Non-Repetitive, for t greater than 1ms and less than 8.3ms) for fusing	GBPC10 GBPC15 GBPC25 GBPC35 GBPC40 GBPC50	I^2t	160 375 375 660 660 800							A ² sec
Maximum Instantaneous Forwarded Voltage Drop Per Leg at	GBPC10 I _F = 5.0A GBPC15 I _F = 7.5A GBPC25 I _F =12.5A GBPC35 I _F =17.5A GBPC40 I _F =20.0A GBPC50 I _F =25.0A	V _F	1.1							Volts
Maximum DC Reverse Current at Rated DC Blocking Voltage	T _A = 25 $^{\circ}$ C T _A =125 $^{\circ}$ C	I _R	5.0 500.0							μ A
RMS Isolation Voltage from Case to Leads		V _{ISO}	2500							Volts
Typical Junction Capacitance (Note 1)	GBPC10 GBPC15-25 GBPC35-50	C _J	200.0 300.0 400.0							pF
Typical Thermal Resistance Per Leg (Note 2)	GBPC10 GBPC15-25 GBPC35-40 GBPC50	R θ _{JC}	1.9 1.9 1.4 1.0							$^{\circ}\text{C/W}$
Operating Junction Temperature Range		T _J	-55 ~ +150							$^{\circ}\text{C}$
Storage Temperature Range		T _{STG}	-65 ~ +150							$^{\circ}\text{C}$

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

2. Thermal resistance from junction to case per leg with unit mounted on 220x220x50mm Al plate heatsink.

3. Special design for reverse voltage over 1000V per customer's requirement.

Rating and characteristic curves (GBPC1000 THRU GBPC5010)

Fig. 1 - Derating Curve Output Rectified Current

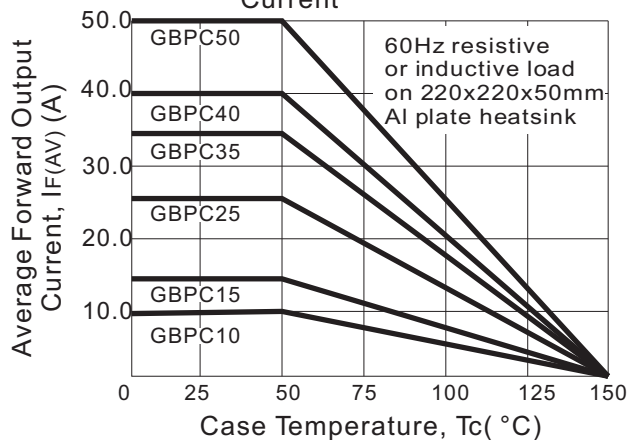


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

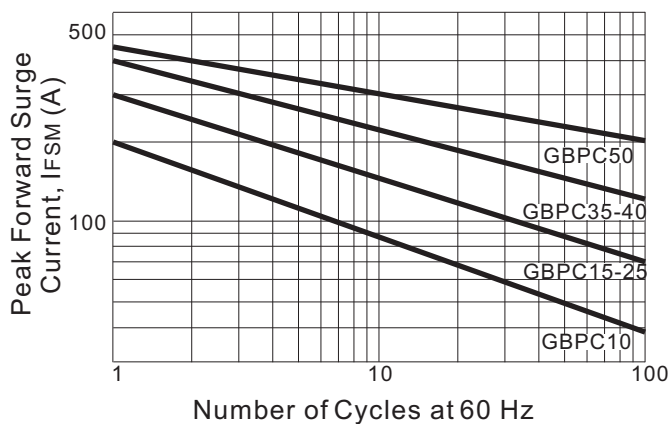


Fig. 3 - Typical Instantaneous Forward Characteristics (Per Leg)

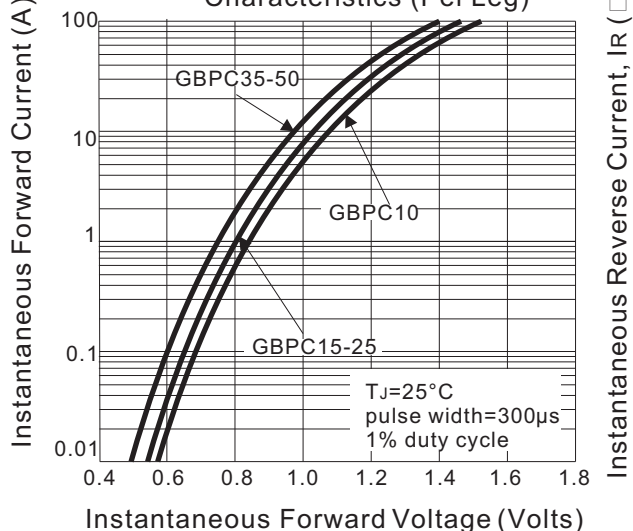


Fig. 4 - Typical Reverse Characteristics Per Leg

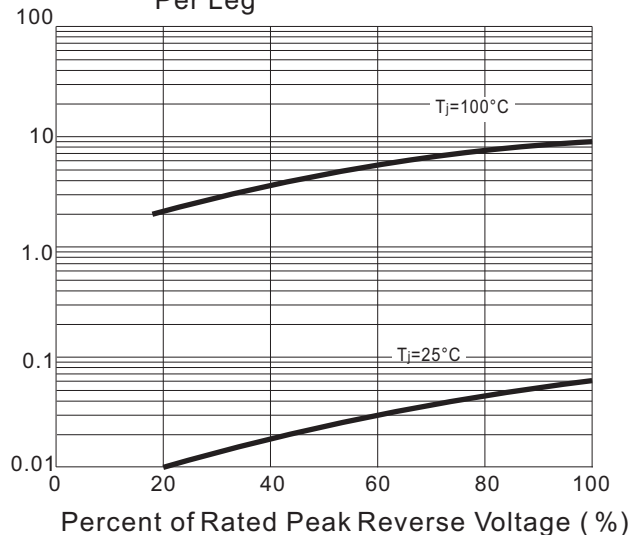
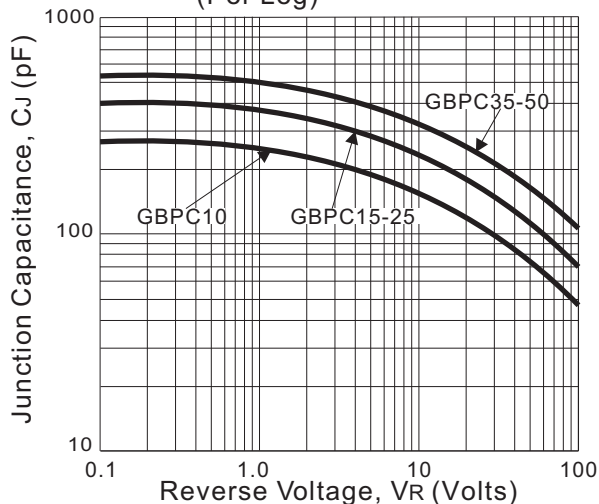


Fig. 5 - Typical Junction Capacitance (Per Leg)



Marking

Type number	Marking code
GBPCXX00	GBPCXX00
GBPCXX01	GBPCXX01
GBPCXX02	GBPCXX02
GBPCXX04	GBPCXX04
GBPCXX06	GBPCXX06
GBPCXX08	GBPCXX08
GBPCXX10	GBPCXX10

XX=10, 15, 25, 35, 40, or 50

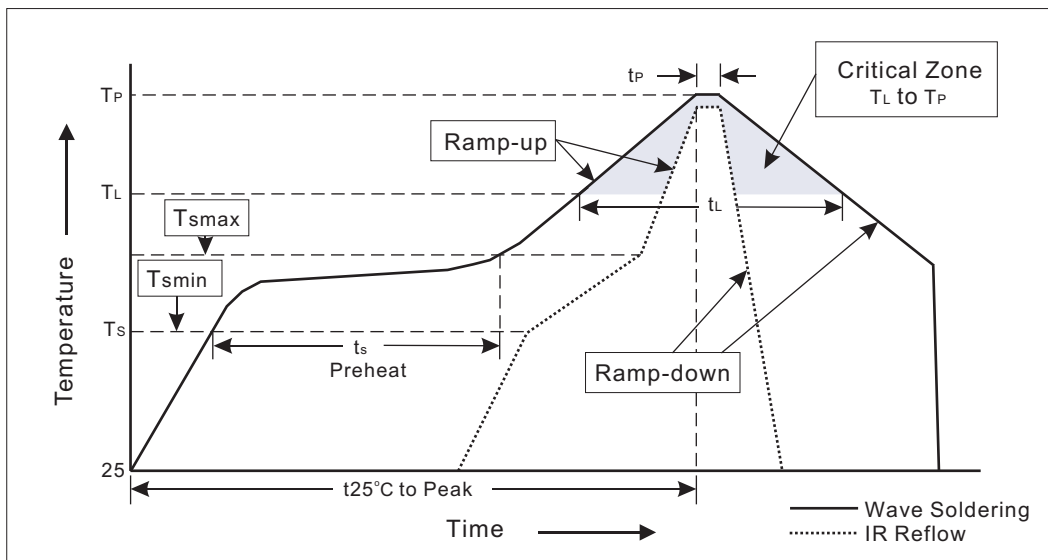
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BULK PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
GBPC-T	50	203 * 203 * 44	445 * 215 * 260	500	8.0
GBPC-W	50	203 * 203 * 44	445 * 215 * 260	500	9.0
KBPC-S	120	203 * 203 * 44	445 * 215 * 260	1,200	22.0

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 $10 \pm 2\text{sec.}$ 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 $T_A = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1026
4. Forward Operation Life	Rated average rectifier current at $T = 25^{\circ}\text{C}$ for 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.	
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 half sine-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 1000hrs.	MIL-STD-750D METHOD-1038
11. High Temperature Storage Life	at 175°C for 1000hrs.	MIL-STD-750D METHOD-1031
12. Solvent Resistance	Dip into Freon at 25°C for 1 min.	MIL-STD-202F METHOD-215