



SURFACE MOUNT FAST SWITCHING RECTIFIER

HBFR80A THRU HBFR80M

VOLTAGE RANGE

50 to 1000 Volts

CURRENT

8.0 Ampere

Features



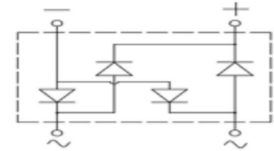
- Fast recovery glass passivated chip
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High temperature soldering: 260°C/10S at terminals
- Component in accordance to ROHS 2002/95/1 and WEEE 2002/96/EC

HBFR



Mechanical Data

- Case: Molded plastic body
- Molding compound meets UL 94 V-0 flammability rating, Halogen-free, RoHS-compliant, and commercial grade
- Polarity: Molded on body
- Weight: 0.0083 ounce, 0.234 grams



Maximum Ratings and Electrical Characteristics

- Ratings at 25°C ambient temperature unless otherwise specified
- Single Phase, half wave, 60Hz, resistive or inductive load
- For capacitive load derate current by 20%

TYPE NUMBER	SYMBOL	HBFR 80A	HBFR 80B	HBFR 80C	HBFR 80D	HBFR 80K	HBFR 80J	HBFR 80M	UNITS
Maximum Repetitive 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 Current $T_L=125^\circ\text{C}$	$I_{(AV)}$	8.0							Amp
Peak Forward Surge Current 8.3mS single half sine wave superimposed on rated load (JEDEC method)	I_{FSM}	200							Amps
Rating for Fusing (1ms < t < 8.3ms)	I^2t	200							A ² s
Maximum Instantaneous Forward Voltage @ 8.0A	V_F	1.3							Volts
Maximum DC Reverse Current at Rated DC Blocking Voltage	$T_A = 25^\circ\text{C}$	5.0							μA
	$T_A = 125^\circ\text{C}$	100							
I^2t Rating for fusing (1ms < t < 8.3ms)	I^2t	210							I^2t
Maximum Reverse Recovery Time $T_J=25^\circ\text{C}$ (Note 3)	T_{RR}	150				250	500		nS
Typical Junction Capacitance (Note 1)	C_J	53							pF
Typical Thermal Resistance (Note 2)	$R_{\theta JC}$	85							$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$	93							
	$R_{\theta JA}$	105							
Operating Junction Temperature Range	T_J, T_{STG}	-55 to +175							$^\circ\text{C}$

1. Measured at 1.0MHz and applied reverse voltage of 4.0 Volts.
2. Mounted on glass epoxy PC board with 4×1.5"×1.5" (3.81×3.81 cm) copper pad
3. The typical data above is for reference only



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Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

FIG.1—TYPICAL FORWARD CURRENT DERATING CURVE

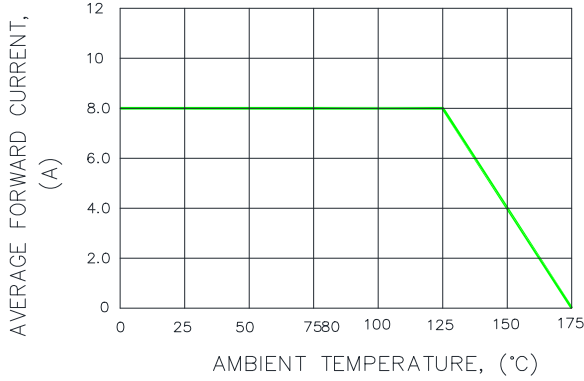


FIG.2—MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

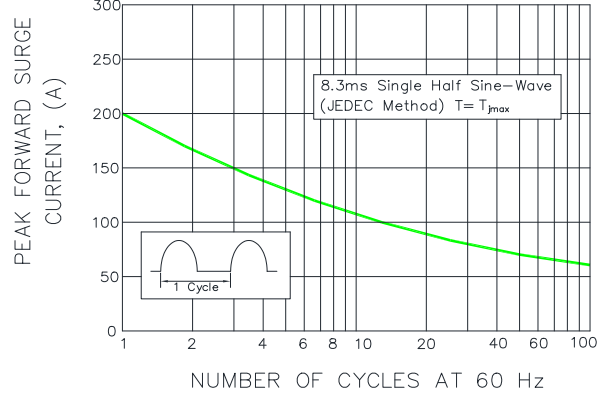


FIG.3—TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

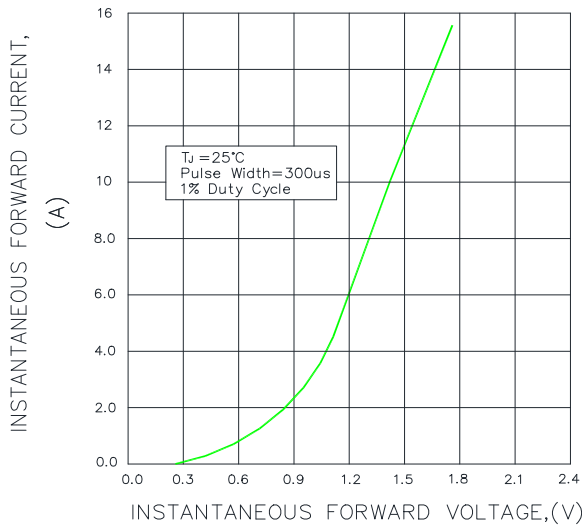


FIG.4—TYPICAL REVERSE CHARACTERISTICS

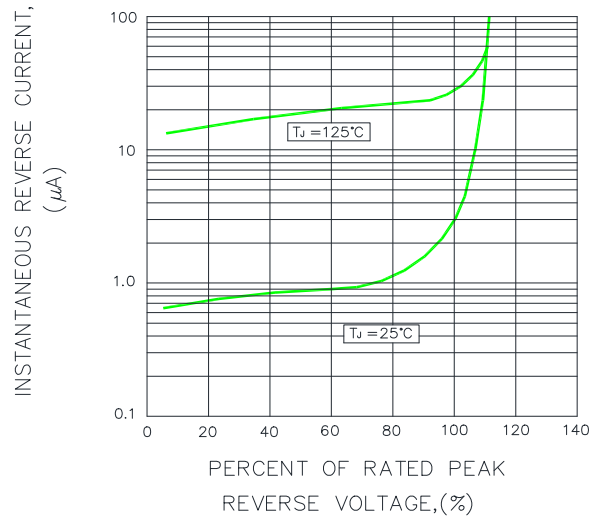


FIG.5—TYPICAL JUNCTION CAPACITANCE

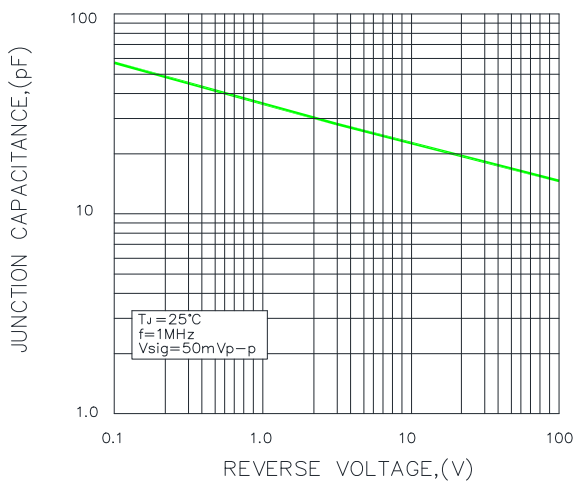
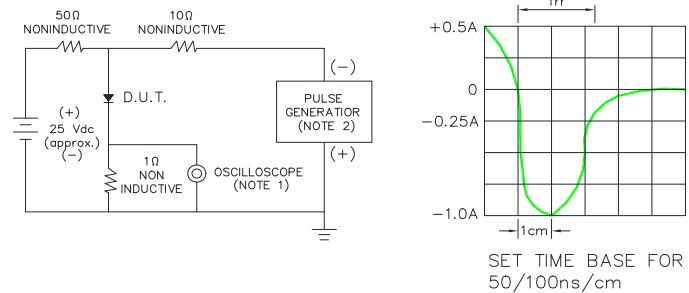


FIG.6—TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC



- NOTES : 1.Rise Time=7ns max. Input Impedance=1 megohm. 22pF
2.Rise time=10ns max. Source Impedance=50 ohms



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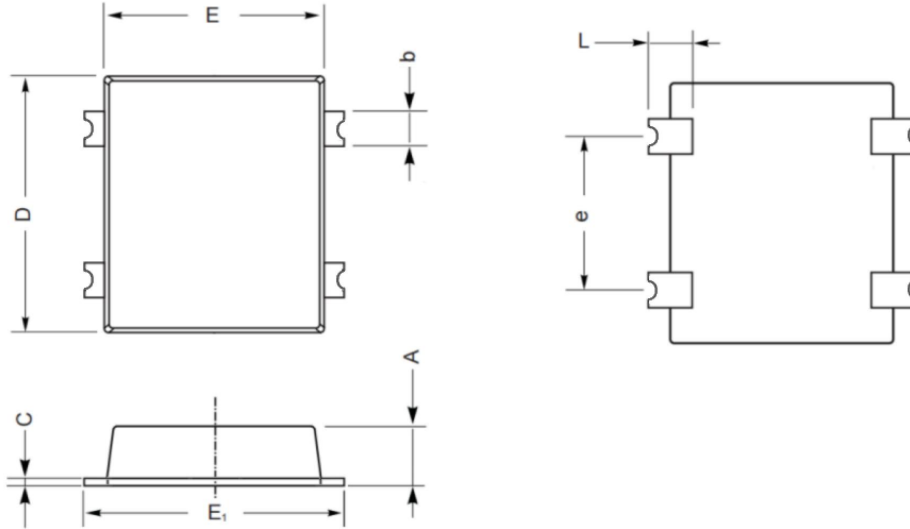
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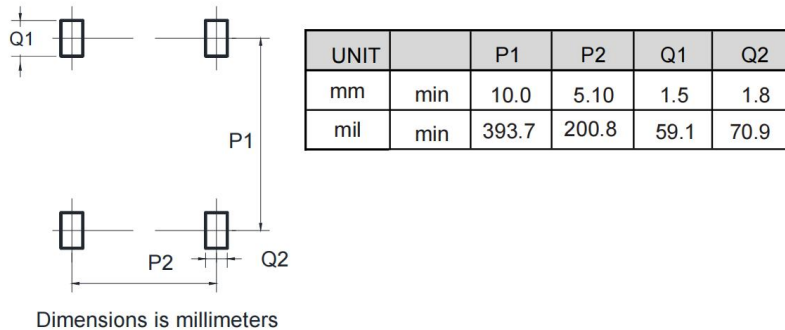
8.0 Ampere

Package Outline Dimensions in inches (millimeters)



UNIT		A	C	D	E	E ₁	L	e	b
mm	max	1.75	0.55	9.8	8.8	10.2	1.25	5.3	1.55
	min	1.35	0.25	9.4	8.4	9.8	0.65	4.9	1.25
mil	max	68	21.6	385	346	401	49	209	61
	min	53	9.8	370	330	385	26	193	49

The recommended mounting pad size





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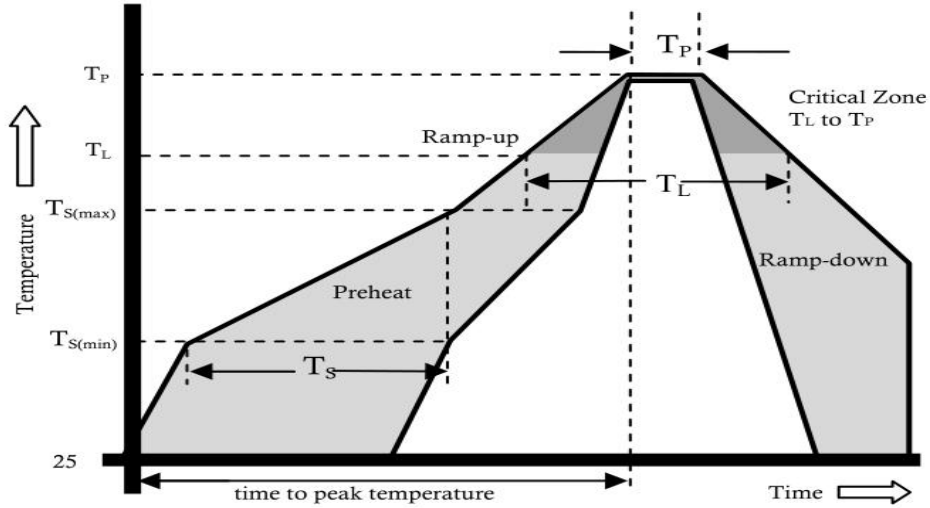
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Reflow Profile



Reflow Condition		Pb-Free Assembly
Pre Heat	Temperature Min.	+150°C
	Temperature Max.	+200°C
	Time(Min to Max)	60-180 secs.
Average ramp up rate(Liquidus Temp(T_L) to peak)		3°C/sec. Max.
$T_S(max)$ to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	Temperature (T_L)(Liquidus)	+217°C
	Temperature (T_P)	60-150 secs.
Peak Temp (T_P)		+(260+0/-5)°C
Time within 5°C of actual Peak Temp (T_P)		25 secs.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to peak Temp (T_P)		8 min. Max.
Do not exceed		+260°C



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