

1. General description

Thin-SIP Package GBJ bridge rectifier.



2. Features and benefits

- Thin-SIP
- Low forward voltage drop
- High voltage capability
- High inrush current capability
- High operating temperature capability ($T_{j(max)} = 150^{\circ}\text{C}$)
- UL Recognition file # E346397

3. Applications

- Power supplies
- Rectifiers for DC motor field supplies
- Battery charger rectifiers
- Inverter

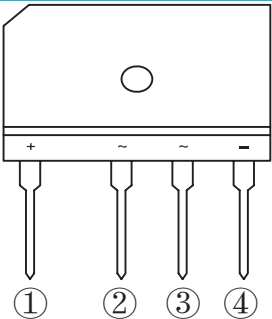
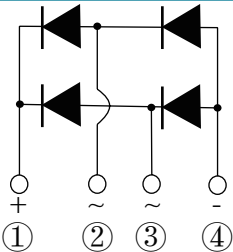
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage		600				V
I _{F(AV)}	average forward current	δ = 0.5; square-wave pulse; T _c ≤ 127 °C; Fig. 1 ; Fig. 2 ; Fig. 3	25				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 4	300				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse	330				A
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 12.5 A; T _J = 25 °C; per diode; Fig. 6		-	0.87	0.92	V

5. Pinning information

Table 2. Pinning information

Simplified outline	Graphic symbol
	

6. Ordering information

Table 3. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WNB2560M	GBJ	WNB2560MQ	Tube	15	GBJS	08-Nov-2021

7. Marking

Table 4. Marking codes

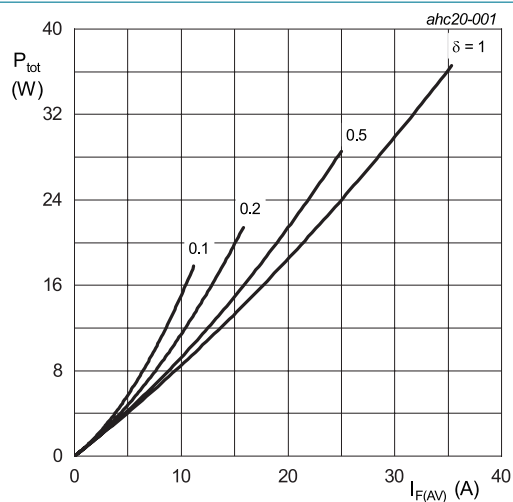
Type number	Marking codes
WNB2560M	WNB2560M

8. Limiting values

Table 5. Limiting values

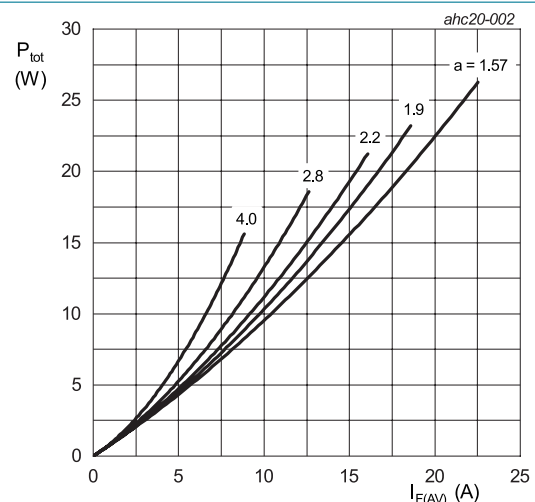
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		600	V
V_{RWM}	crest working reverse voltage		600	V
V_R	reverse voltage	DC	600	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_c \leq 127^\circ\text{C}$; Fig. 1; Fig. 2; Fig. 3	25	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse; Fig. 4	300	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse	330	A
		$t_p = 1\text{ ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse	945	A
I^2t	I^2t for fusing	$t_p = 10\text{ ms}$; sine-wave pulse	450	A^2s
V_{dis}	dielectric strength	terminals to case; AC 1 minute	2.5	kV
T_{stg}	storage temperature		-55 to 150	$^\circ\text{C}$
T_j	junction temperature		150	$^\circ\text{C}$



$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$
 $V_o = 0.778\text{ V}$; $R_s = 0.0073\ \Omega$

Fig. 1. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values; per diode



$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$
 $V_o = 0.778\text{ V}$; $R_s = 0.0073\ \Omega$

Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values; per diode

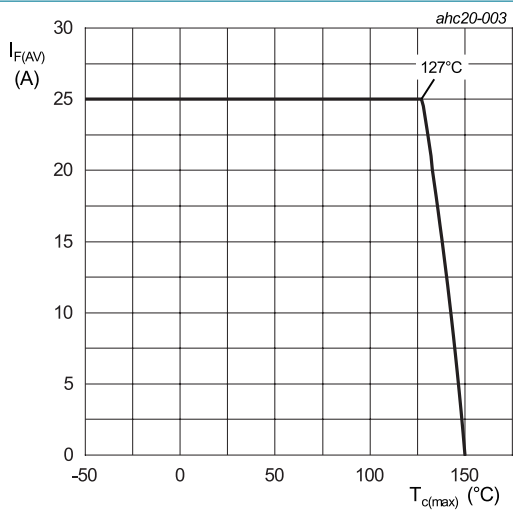


Fig. 3. Forward current as a function of case temperature with heatsink; maximum values

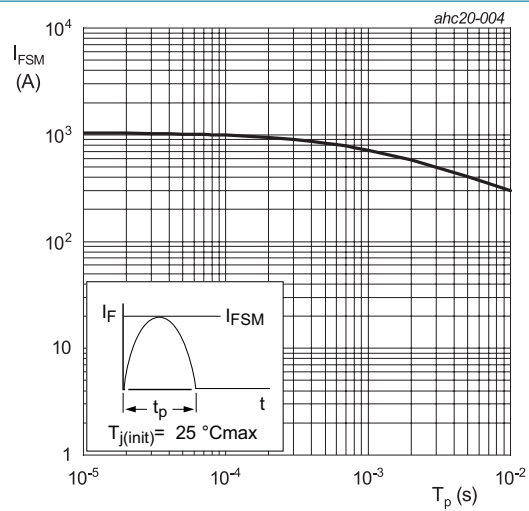


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	with heatsink; Fig. 5	-	-	0.8	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	25	-	K/W

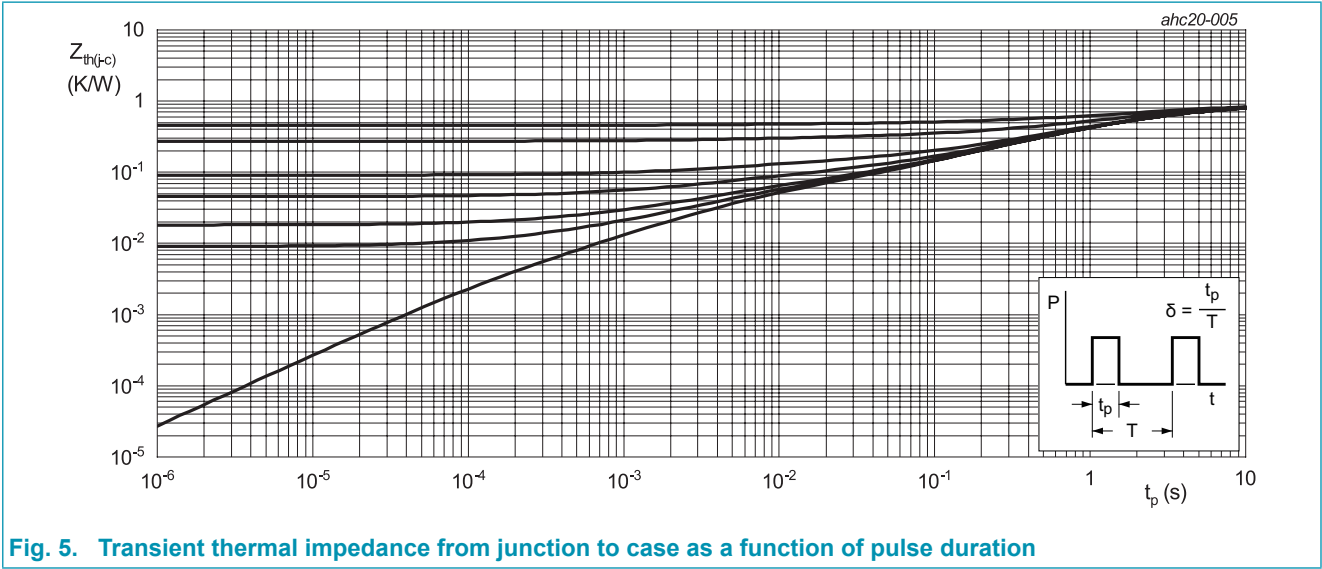
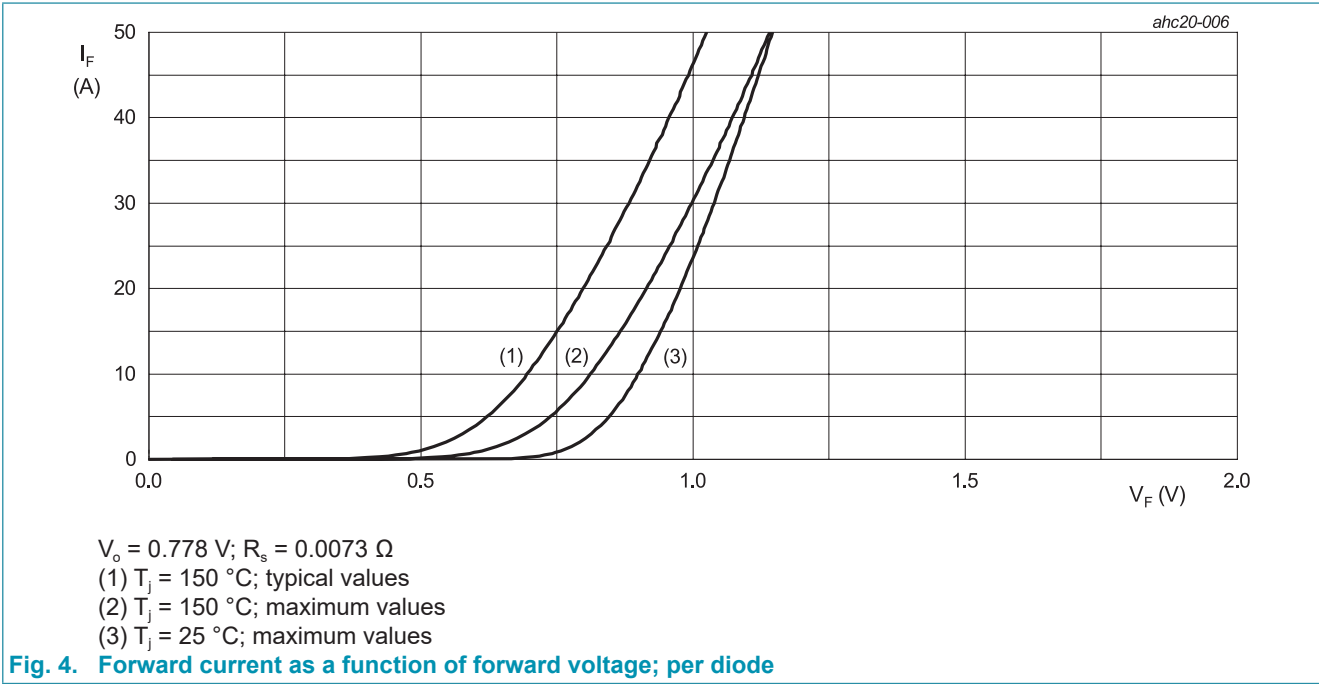


Fig. 5. Transient thermal impedance from junction to case as a function of pulse duration

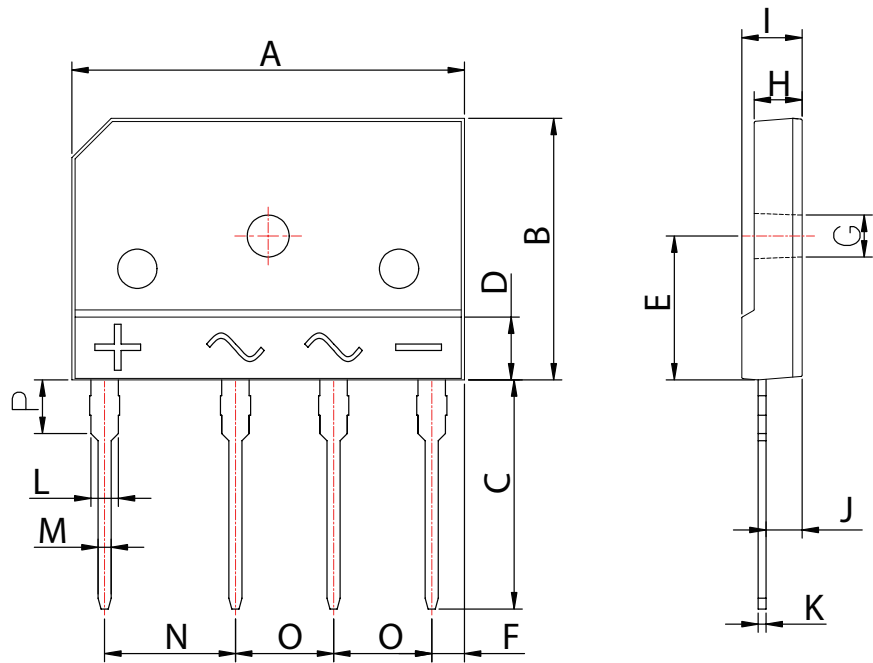
10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 5 A; T _J = 25 °C; per diode; Fig. 6		-	0.8	0.86	V
		I _F = 12.5 A; T _J = 25 °C; per diode; Fig. 6		-	0.87	0.92	V
		I _F = 5 A; T _J = 75 °C; per diode		-	0.73	0.8	V
		I _F = 12.5 A; T _J = 75 °C; per diode		-	0.82	0.88	V
		I _F = 5 A; T _J = 150 °C; per diode; Fig. 6		-	0.62	0.75	V
		I _F = 12.5 A; T _J = 150 °C; per diode; Fig. 6		-	0.72	0.84	V
I _R	reverse current	V _R = 600 V; T _J = 25 °C		-	0.1	10	μA
		V _R = 600 V; T _J = 150 °C		-	0.1	1	mA
Dynamic characteristics							
t _{rr}	reverse recovery time	I _F = 0.5 A; I _R = 1 A; I _{rr} = 0.25 A; per diode		-	0.4	-	μs



11. Package outline



Unit		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MM	MIN	29.70	19.70	17.00	4.70	10.80	2.30	φ3.10	3.40	4.40	2.50	0.60	2.00	0.90	9.80	7.30	3.80
	MAX	30.30	20.30	18.00	4.90	11.20	2.70	φ3.40	3.80	4.80	2.90	0.80	2.40	1.10	10.20	7.70	4.20

Note:
1. All dimensions do not include mold flash and gate remain.

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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