WDMF75M16

Three Phase Rectifier Bridge

Rev.01 - 23 September 2019 Product data sheet

1. General description

Three phase Rectifier Bridge in a WMM01 package.

2. Features and benefits

- Three phase rectifiers
- Heat transfer through aluminum oxide DBC, ceramic isolated metal baseplate
- High voltage capability
- High inrush current capability
- Planar process
- High operating temperature capability ($T_{j\,(max)}$ = 150°C)

3. Applications

- Three phase rectifiers for power supplies
- Rectifiers for DC motor field supplies
- Battery charger rectifiers
- Input rectifiers for variable frequency drives

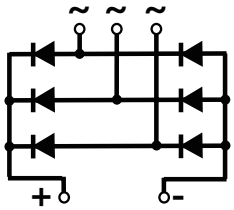
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V_{RRM}	repetitive peak reverse voltage		1600				V
$I_{D(AV)}$	average output current	δ = 0.5 ; square-wave pulse	75				A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	750				A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	822				A
Symbol	**Parameter**	**Conditions**		**Min**	**Typ**	**Max**	**Unit**
Static characteristics							
V_F	forward voltage	I_F = 75 A; T_j = 25 °C		-	1.25	-	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
WDMF75M16	WMM01	WDMF75M16T	Tray	8	WMM01	17-Dec-2018

7. Marking

Table 4. Marking codes

Type number	Marking codes
WDMF75M16	WDMF75M16

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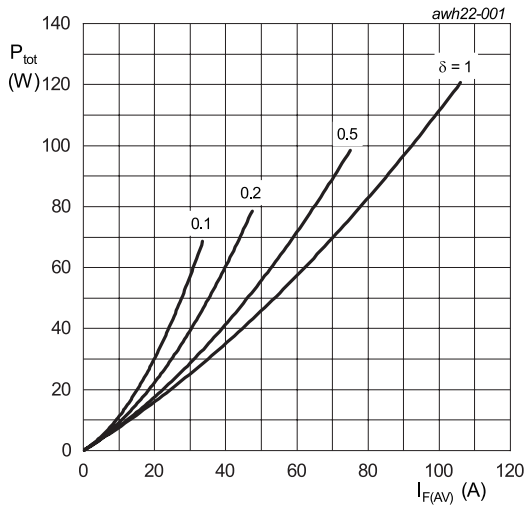
8. Limiting values

Table 5. Limiting values

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

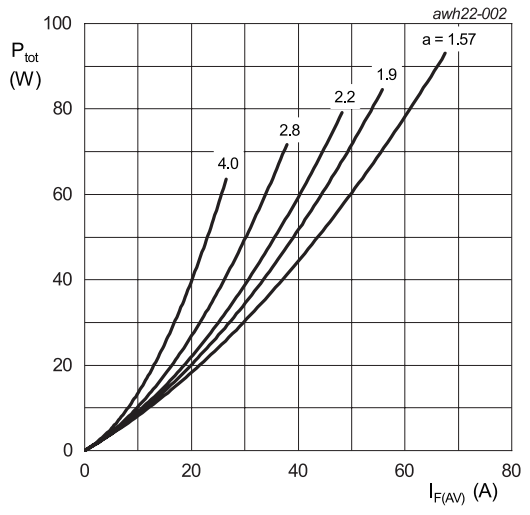
Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		1600	V
V_{RWM}	crest working reverse voltage		1600	V
V_R	reverse voltage	DC	1600	V
$I_{D(AV)}$	average output current	δ = 0.5 ; square-wave pulse	75	A
I_{FRM}	average output current	δ = 0.5 ; square-wave pulse; t_p = 25 us	150	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	750	A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	822	A
I^2t	I^2t for fusing	t_p = 10 ms; sine-wave pulse	2813	A^2s
		t_p = 8.3 ms; sine-wave pulse	2814	A^2s
V_{isol}	isolation breakdown voltage	AC 50Hz; 1 s / 1 min	3600/3000	V
T_{stg}	storage temperature		-40 to 150	°C
T_j	junction temperature		150	°C
Mounting Torque	to terminal (M5)		3 +/- 15%	Nm
	to heatsink (M5)		5 +/- 15%	Nm
Weight	approximate weight	Module	155	g



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$

V_o = 0.719 V; R_s = 0.0040 Ω

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



a = form factor = $I_{F(RMS)} / I_{F(AV)}$

V_o = 0.719 V; R_s = 0.0040 Ω

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

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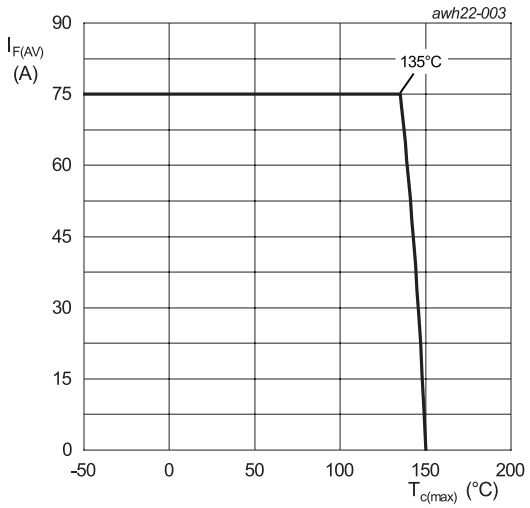

Fig. 3. Forward current as a function of case temperature; maximum values

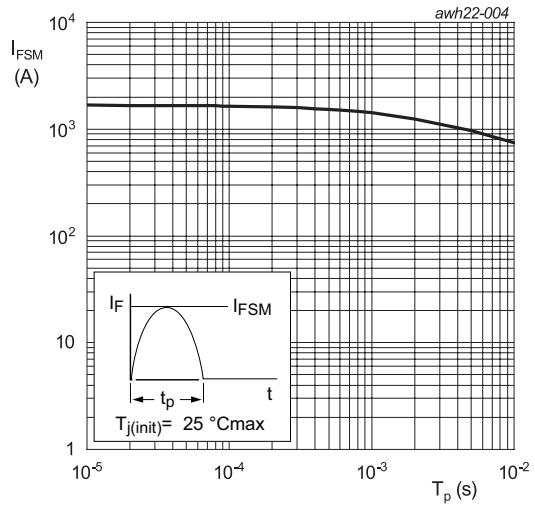

Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	per module		-	-	0.15	K/W

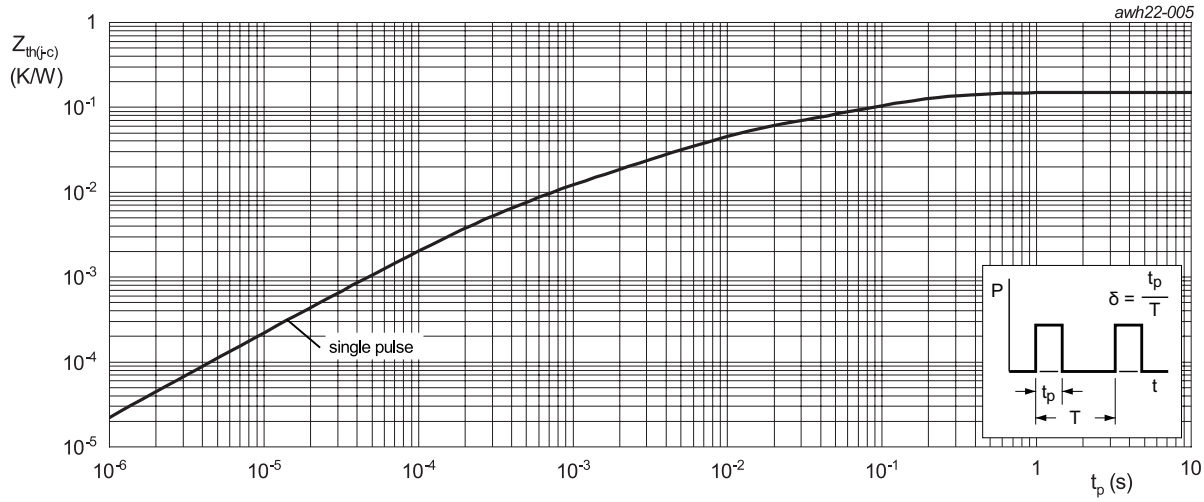

Fig. 5. Transient thermal impedance from junction to case as a function of pulse duration

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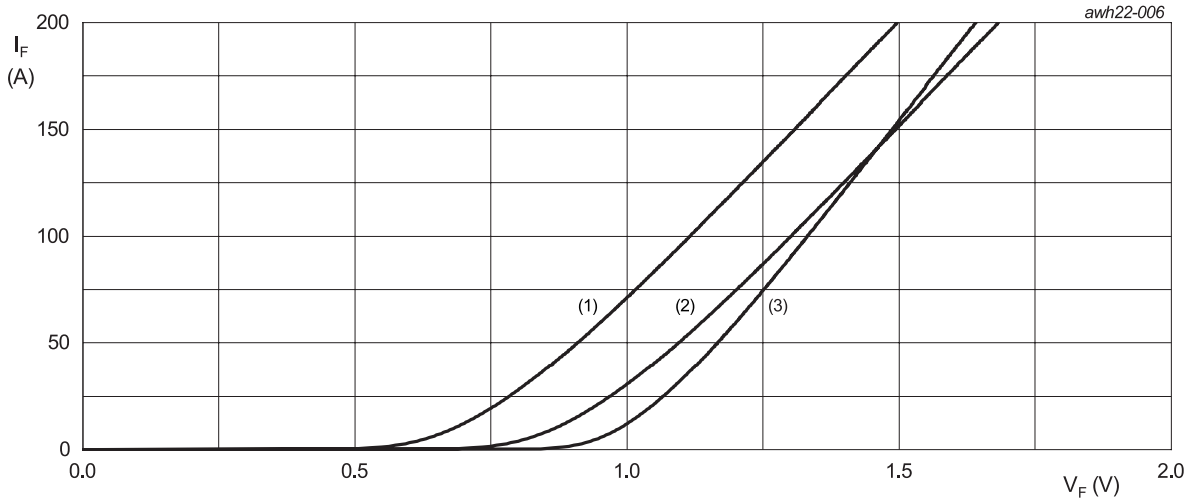
10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward current	I_F = 75 A; T_j = 25 °C		-	1.25	-	V
		I_F = 75 A; T_j = 125 °C		-	1.2	-	V
I_R	reverse current	V_R = 1600 V; T_j = 25 °C		-	-	50	µA
		V_R = 1600 V; T_j = 150 °C		-	-	5	mA



V_o = 0.719 V; R_s = 0.0040 Ω
(1) T_j = 125 °C; typical values
(2) T_j = 125 °C; maximum values
(3) T_j = 25 °C; maximum values

Fig. 6. Forward current as a function of forward voltage

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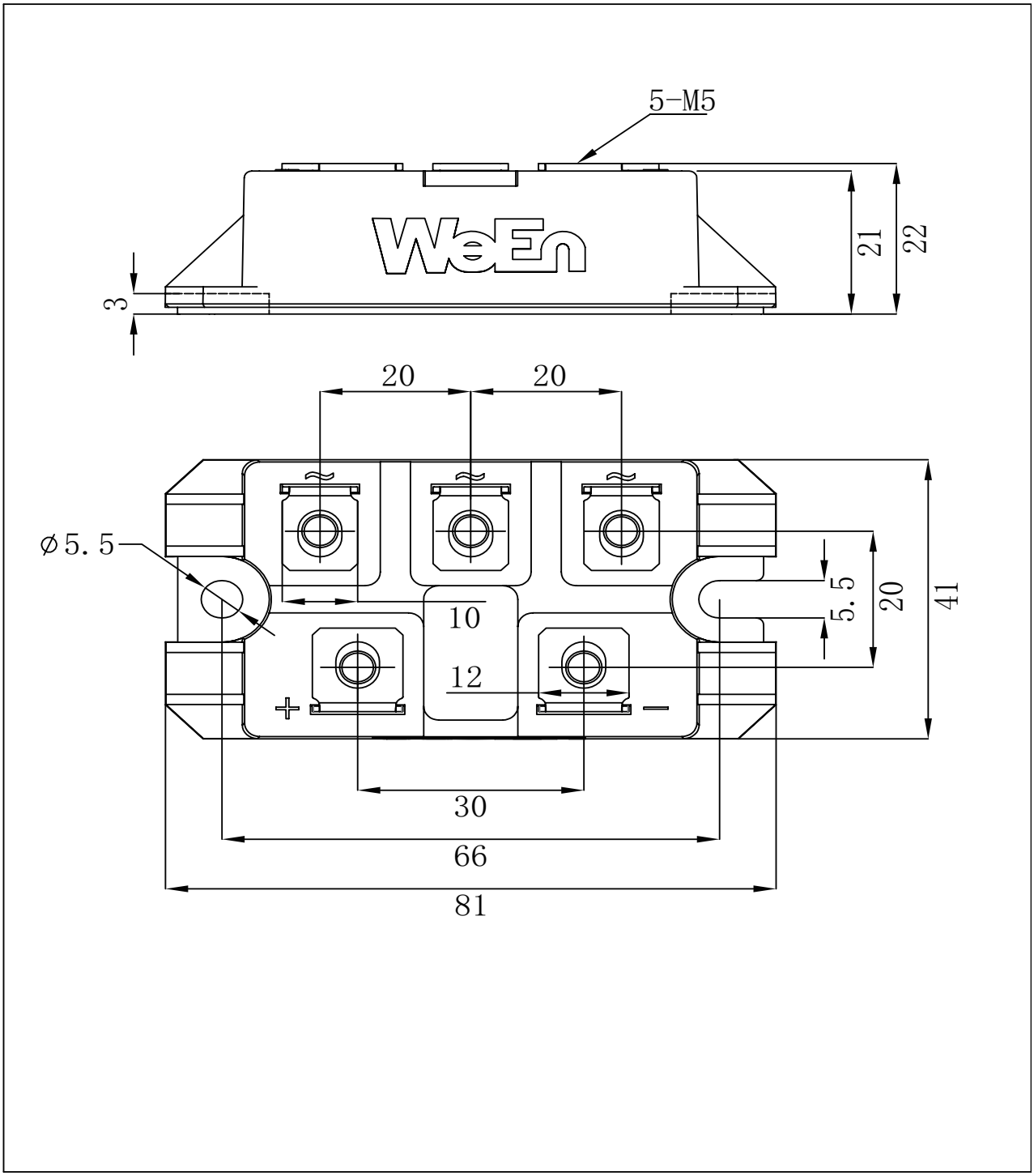
11. Package outline

CASE:WMM01



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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.
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