

## 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 ( $T_{j(max)} = 150^{\circ}\text{C}$ )

## 3. Applications

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

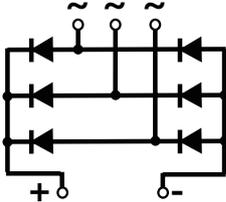
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
<b>Absolute maximum rating</b>						
$V_{RRM}$	repetitive peak reverse voltage		1600			V
$I_{D(AV)}$	average output current	$\delta = 0.5$ ; 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
<b>Static characteristics</b>						
$V_F$	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

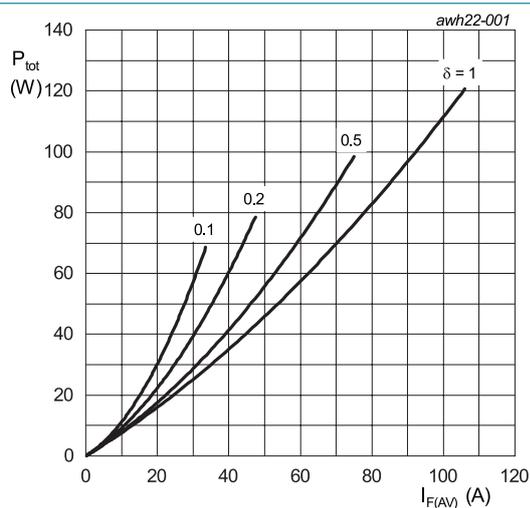
Type number	Marking codes
WDMF75M16	WDMF75M16

### 8. Limiting values

**Table 5. Limiting values**

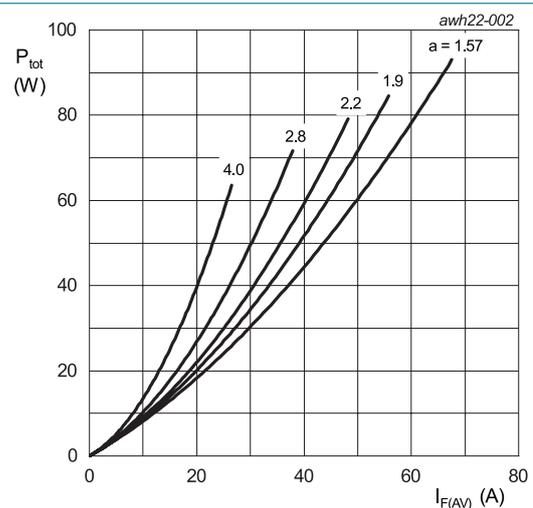
In accordance with the Absolute Maximum Rating System (IEC 60134).

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	$\delta = 0.5$ ; square-wave pulse	75	A
$I_{FRM}$	average output current	$\delta = 0.5$ ; square-wave pulse; $t_p = 25 \mu s$	150	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	750	A
		$t_p = 8.3 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	822	A
$I^2t$	$I^2t$ for fusing	$t_p = 10 \text{ ms}$ ; sine-wave pulse	2813	A <sup>2</sup> s
		$t_p = 8.3 \text{ ms}$ ; sine-wave pulse	2814	A <sup>2</sup> s
$V_{isol}$	isolation breakdown voltage	AC 50Hz; 1 s / 1 min	3600/3000	V
$T_{stg}$	storage temperature		-40 to 150	$^\circ\text{C}$
$T_j$	junction temperature		150	$^\circ\text{C}$
Mounting Torque	to terminal (M5)		3 +/- 15%	Nm
	to heatsink (M5)		5 +/- 15%	Nm
Weight	approximate weight	Module	155	g



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$   
 $V_o = 0.719 \text{ V}$ ;  $R_s = 0.0040 \text{ } \Omega$

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



$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$   
 $V_o = 0.719 \text{ V}$ ;  $R_s = 0.0040 \text{ } \Omega$

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

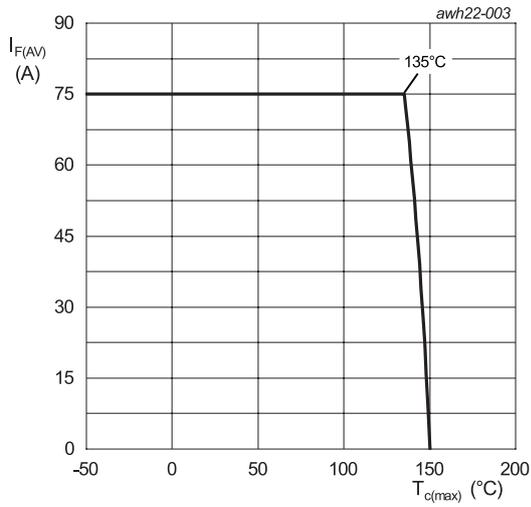


Fig. 3. Forward current as a function of case temperature; maximum values

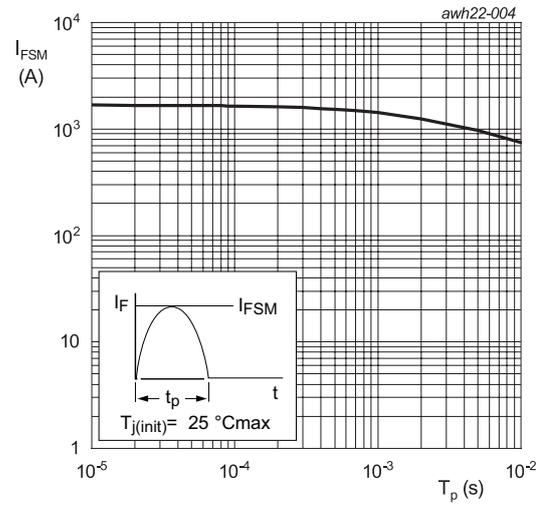


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

### 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

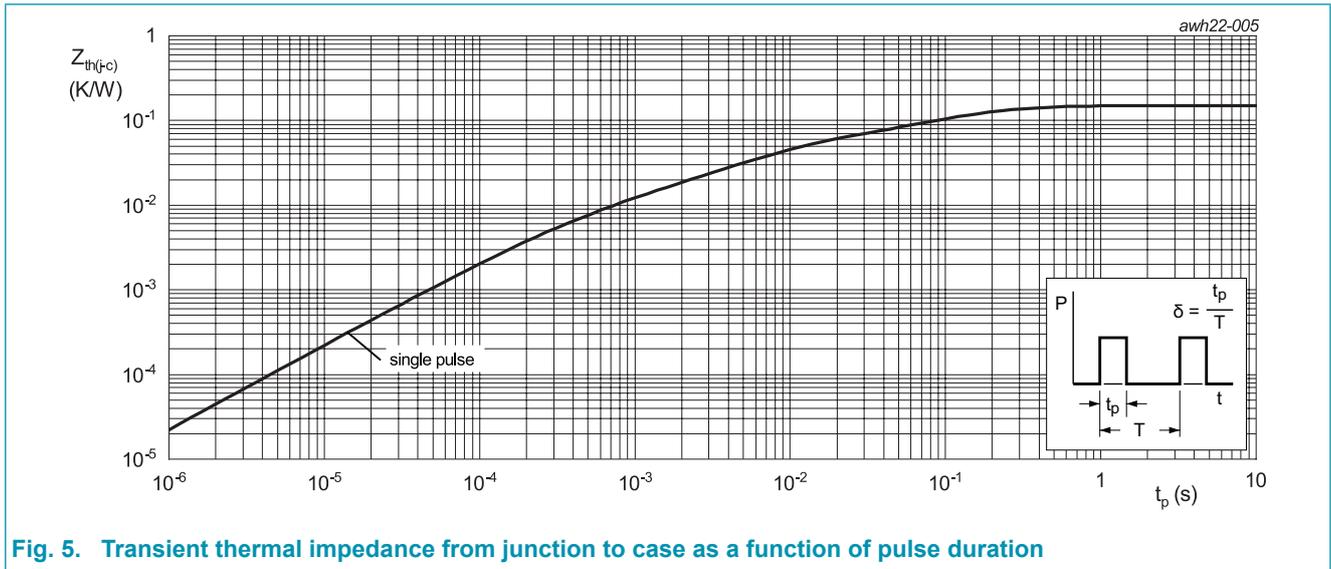


Fig. 5. Transient thermal impedance from junction to case as a function of pulse duration

### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward current	$I_F = 75 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$	-	-	1.25	V
		$I_F = 75 \text{ A}; T_j = 125 \text{ }^\circ\text{C}$	-	-	1.2	V
$I_R$	reverse current	$V_R = 1600 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	-	-	50	$\mu\text{A}$
		$V_R = 1600 \text{ V}; T_j = 150 \text{ }^\circ\text{C}$	-	-	5	mA

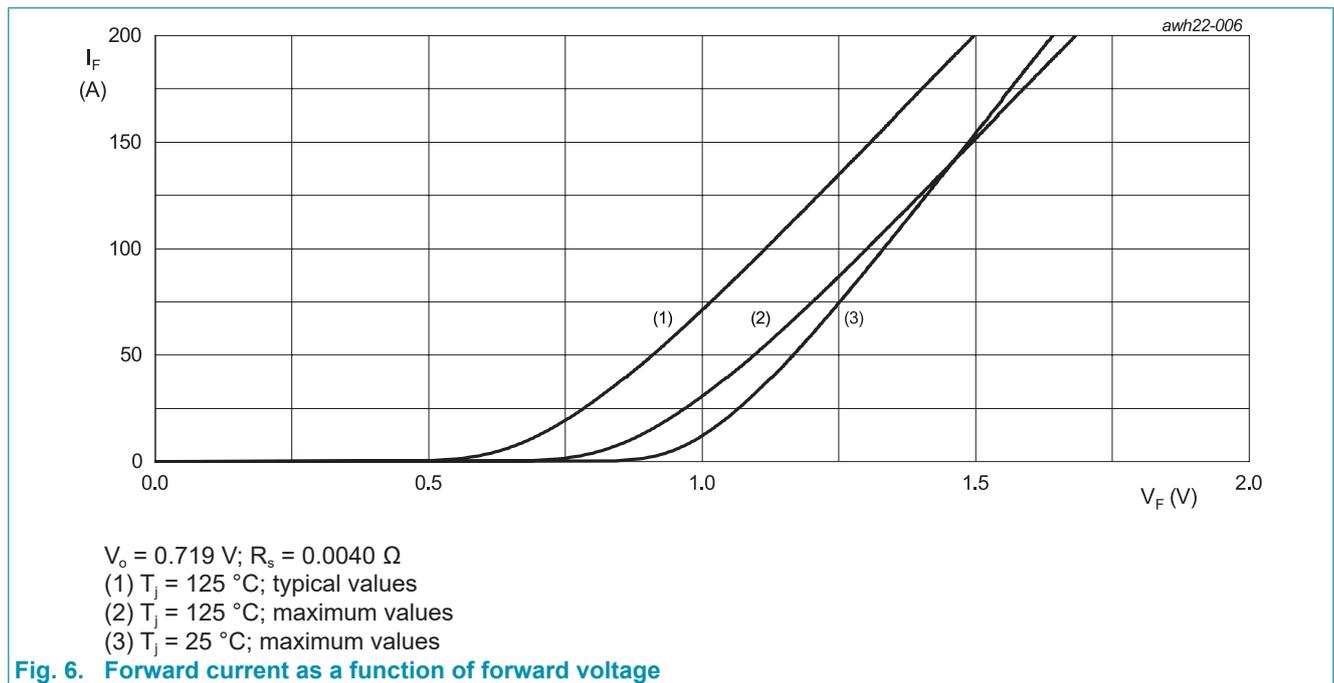
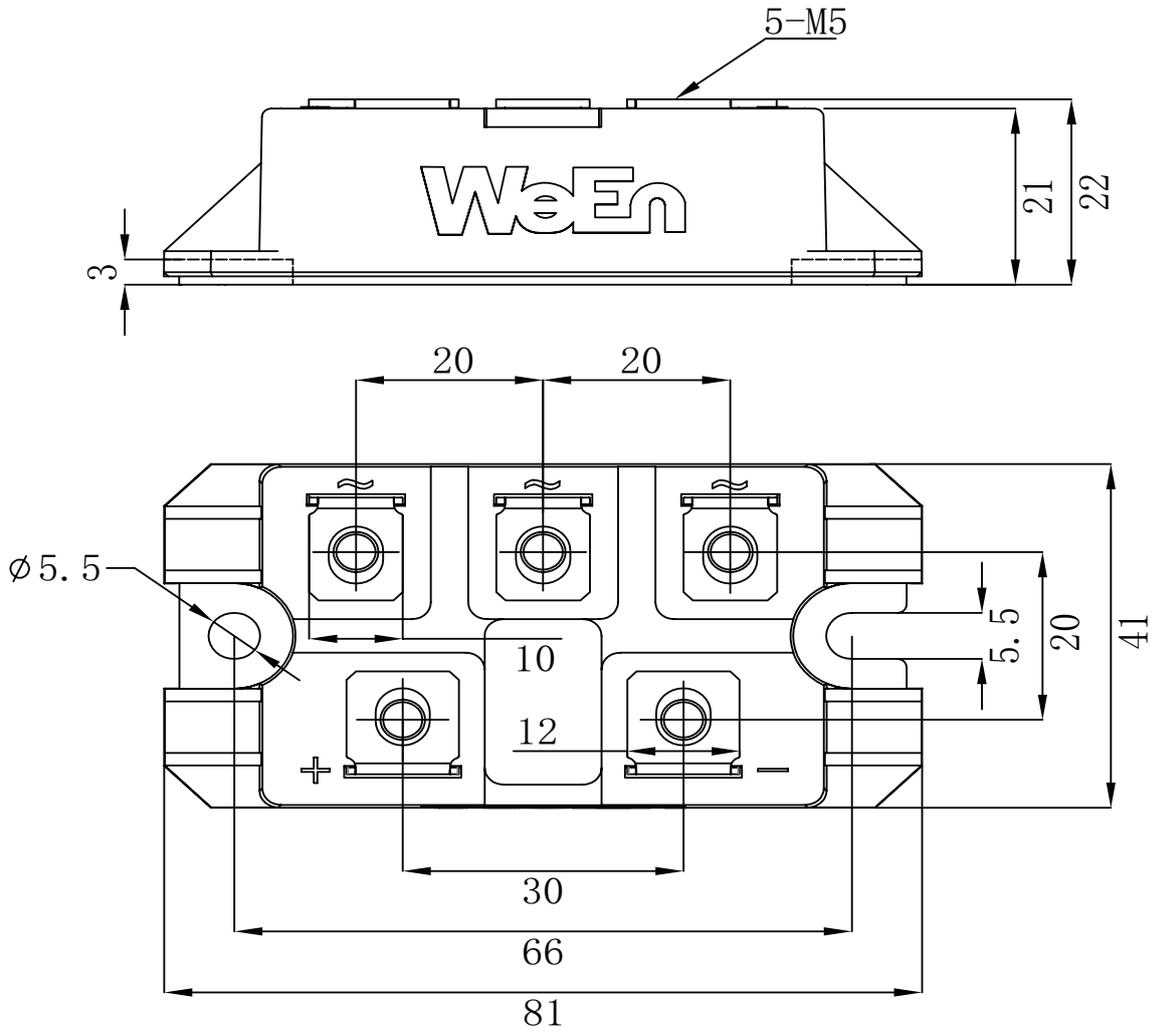


Fig. 6. Forward current as a function of forward voltage

### 11. Package outline

CASE: WMM01



## 12. Legal information

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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.
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