



THE DATASHEET OF BYC75W-1200PQ

1. General description

EEPP™ - Efficiency Enhanced Pt Planar rectifier in a 2-lead TO247 plastic package.

2. Features and benefits

- Fast switching
- Reduces switching losses with improved lower reverse recovery charge
- Soft recovery characteristics
- Low thermal resistance
- Low leakage current
- Planar termination structure
- High operating temperature capability ($T_{j(max)} = 175^{\circ}\text{C}$)
- Higher I_{FSM} capability

3. Applications

- Switched-Mode Power Supplies
- Power factor correction diode
- Uninterrupted Power Supply

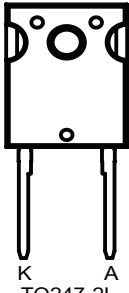
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage		1200				V
I _{F(AV)}	average forward current	δ = 0.5 ; square-wave pulse; T _{mb} ≤ 75 °C; Fig. 1 ; Fig. 2 ; Fig. 3	75				A
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{mb} ≤ 75 °C; square-wave pulse	150				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 4	600				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse;	660				A
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 75 A; T _j = 25 °C; Fig. 6		-	2.8	3.3	V
		I _F = 75 A; T _j = 150 °C; Fig. 6		-	2.2	-	V
Dynamic characteristics							
t _{rr}	reverse recovery time	I _F = 1 A; V _R = 30 V; dI _F /dt = 100 A/μs; T _j = 25 °C; Fig. 7		-	-	85	ns
Avalanche energy							
E _{AS}	non-repetitive avalanche energy	I _R = 1.6 A; T _{j(init)} = 25 °C; L = 40 mH		50	-	-	mJ

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 K A TO247-2L	 001aaa020
2	A	anode		
mb	mb	mounting base; connected to cathod		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BYC75W-1200P	TO247-2L	Plastic single-ended through-hole package; heatsink mounted;1 mounting hole; 2 leads TO-247	TO247-2L

7. Marking

Table 4. Marking codes

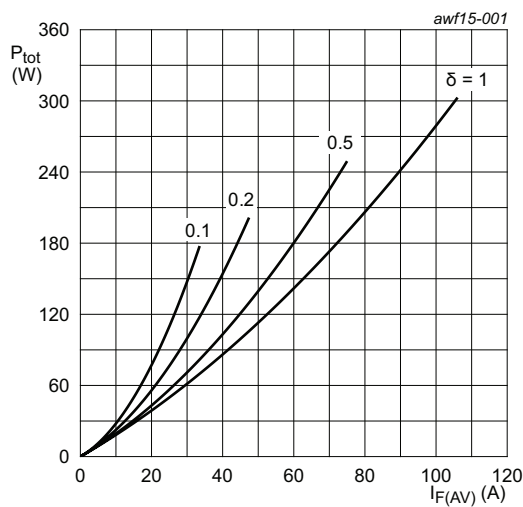
Type number	Marking codes
BYC75W-1200P	BYC75W-1200P

8. Limiting values

Table 5. Limiting values

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

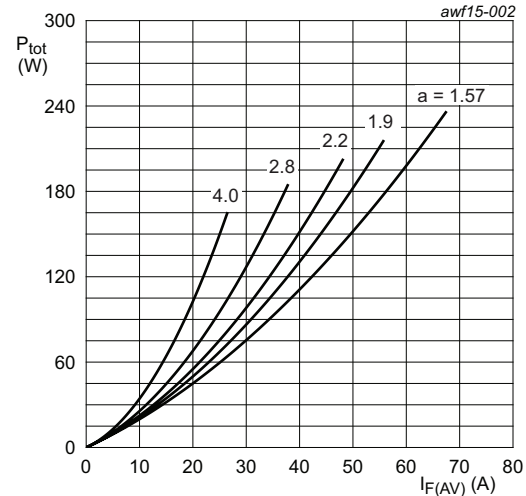
Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		1200	V
V_{RWM}	crest working reverse voltage		1200	V
V_R	reverse voltage	DC	1200	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 75^\circ\text{C}$; Fig. 1; Fig. 2; Fig. 3	75	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25\ \mu\text{s}$; $T_{mb} \leq 75^\circ\text{C}$; square-wave pulse	150	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	600	A
		$t_p = 8.3\ \text{ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse;	660	A
T_{stg}	storage temperature		-65 to 175	$^\circ\text{C}$
T_j	junction temperature		175	$^\circ\text{C}$



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

$$V_o = 1.727\ \text{V}; R_s = 0.0106\ \Omega$$

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



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

$$V_o = 1.727\ \text{V}; R_s = 0.0106\ \Omega$$

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

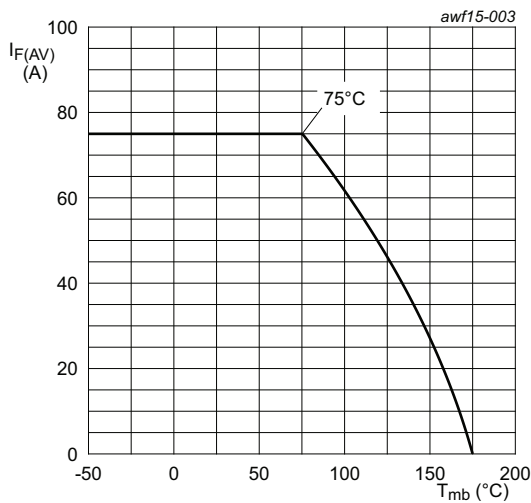


Fig. 3. Forward current as a function of mounting base temperature; maximum values

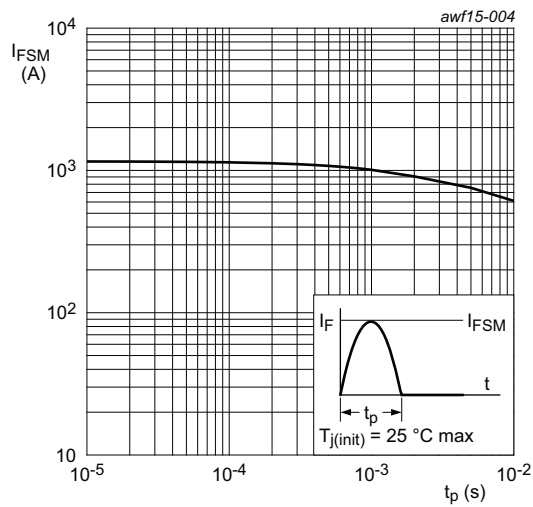


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 5		-	-	0.4	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	45	-	K/W

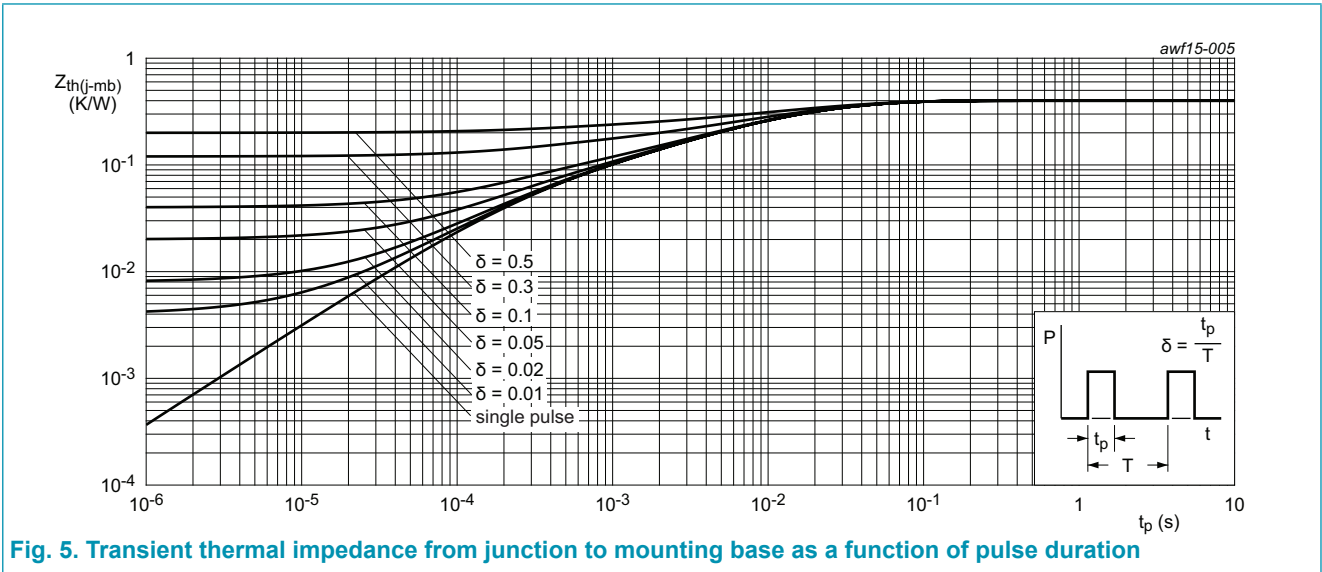
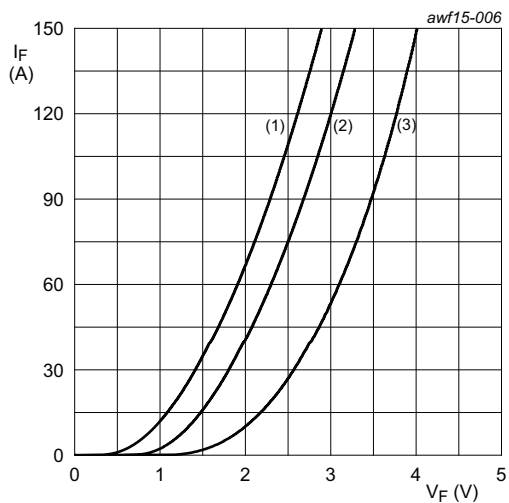


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

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; Fig. 6		-	2.8	3.3	V
		I _F = 75 A; T _j = 150 °C; Fig. 6		-	2.2	-	V
I _R	reverse current	V _R = 1200 V; T _j = 25 °C		-	-	250	μA
		V _R = 1200 V; T _j = 150 °C		-	-	2	mA
Dynamic characteristics							
Q _r	reverse charge	I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 25 °C; Fig. 7		-	1282	-	nC
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	3729	-	nC
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	4608	-	nC
t _{rr}	reverse recovery time	I _F = 1 A; V _R = 30 V; dI _F /dt = 100 A/μs; T _j = 25 °C; Fig. 7		-	-	85	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 25 °C; Fig. 7		-	113	-	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	232	-	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	265	-	ns
I _{RM}	peak reverse recovery current	I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 25 °C; Fig. 7		-	22.4	-	A
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	32.0	-	A
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	34.6	-	A
Avalanche energy							
E _{AS}	non-repetitive avalanche energy	I _R = 1.6 A; T _{j(init)} = 25 °C; L = 40 mH		50	-	-	mJ



$V_o = 1.727\text{ V}; R_s = 0.0106\ \Omega$
(1) $T_j = 150\text{ }^\circ\text{C}$; typical values
(2) $T_j = 150\text{ }^\circ\text{C}$; maximum values
(3) $T_j = 25\text{ }^\circ\text{C}$; maximum values

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

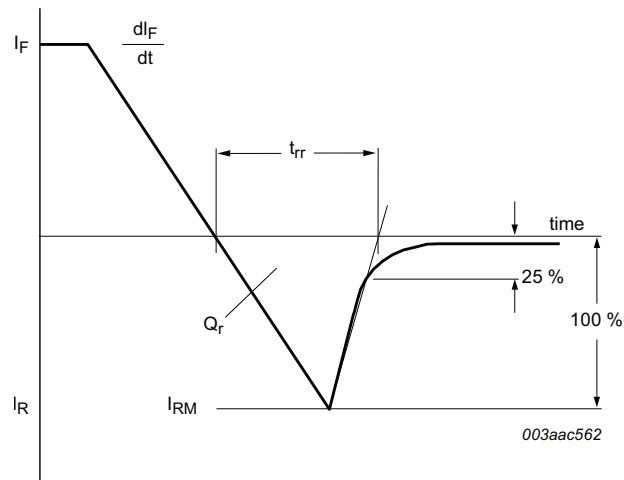
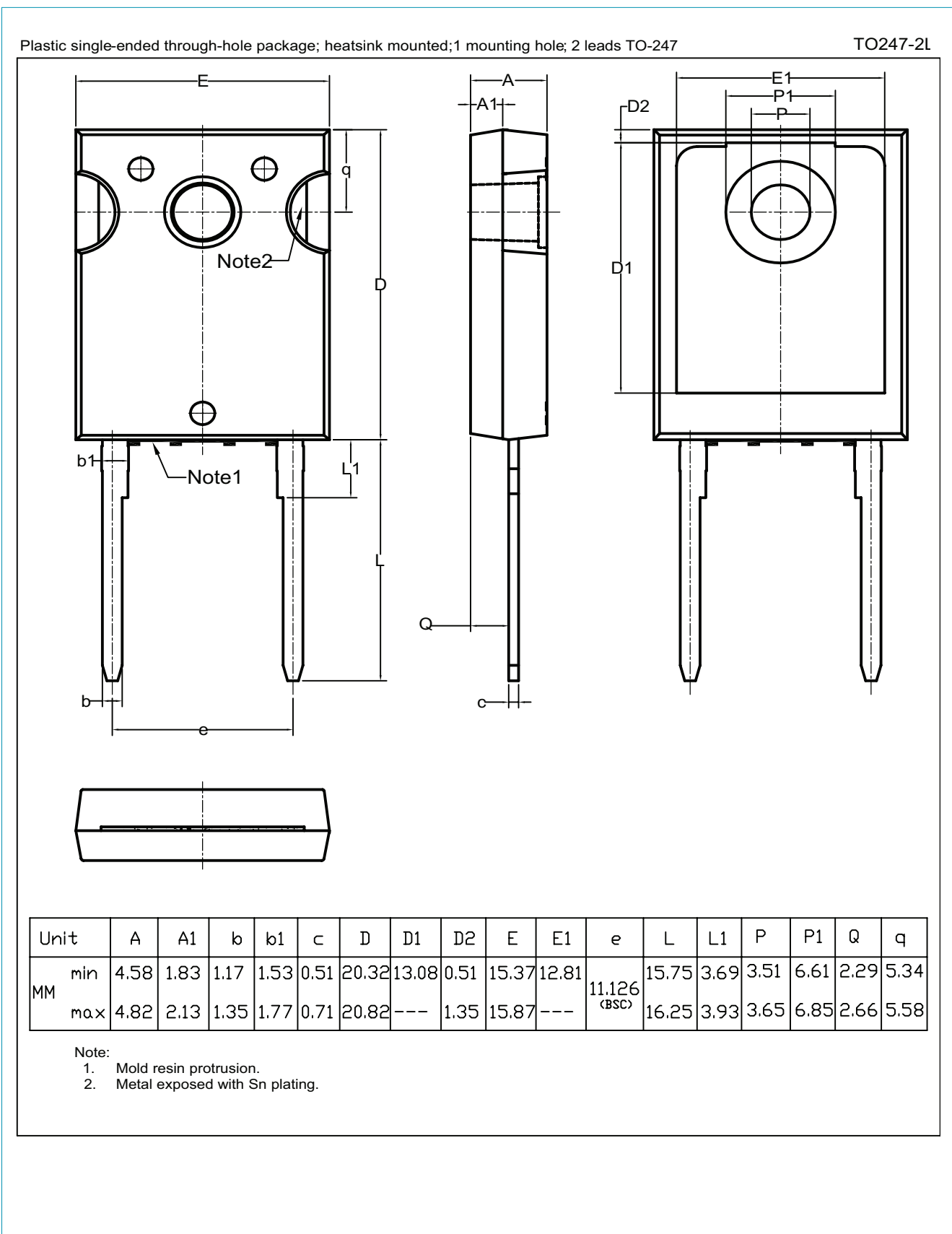


Fig. 7. Reverse recovery definitions; ramp recovery

11. Package outline



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.
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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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13. Contents

1. General description..... 1

2. Features and benefits 1

3. Applications 1

4. Quick reference data 1

5. Pinning information..... 2

6. Ordering information..... 2

7. Marking..... 2

8. Limiting values 3

9. Thermal characteristics 5

10. Characteristics..... 6

11. Package outline 8

12. Legal information 9

13. Contents 11

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