

1. General description

EEPP™ - Efficiency Enhanced Pt Planar rectifier in a TO247-2L 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

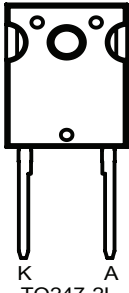
4. Quick reference data

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} ≤ 80 °C; Fig. 1 ; Fig. 2 ; Fig. 3	60				A
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{mb} ≤ 80 °C; square-wave pulse	120				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 4	500				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse;	550				A
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 60 A; T _j = 25 °C; Fig. 6		-	2.8	3.3	V
		I _F = 60 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		-	55	-	ns
Avalanche energy							
E _{AS}	non-repetitive avalanche energy	T _{j(init)} = 25 °C		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
BYC60W-1200P	TO247-2L	Plastic single-ended through-hole package; heatsink mounted;1 mounting hole; 2 leads TO-247	TO247A-2L

7. Marking

Table 4. Marking codes

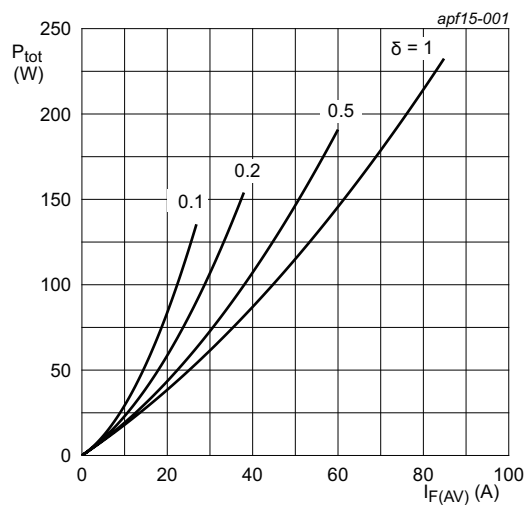
Type number	Marking codes
BYC60W-1200P	BYC60W-1200P

8. Limiting values

Table 5. Limiting values

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

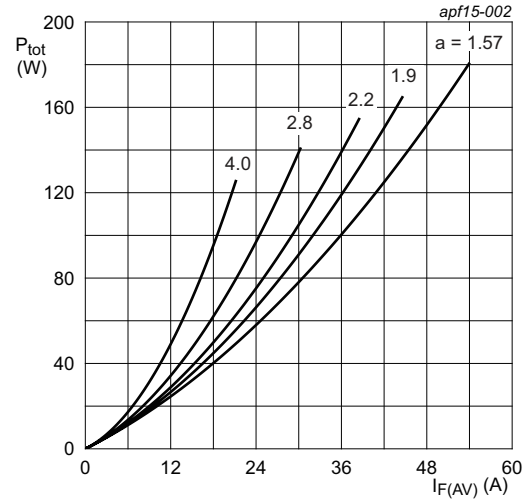
Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		1200	V
V_{RWM}	crest working reverse voltage		1200	V
V_R	reverse voltage	DC	1200	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 80^\circ\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	60	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25\ \mu\text{s}$; $T_{mb} \leq 80^\circ\text{C}$; square-wave pulse	120	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	500	A
		$t_p = 8.3\ \text{ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse;	550	A
T_{stg}	storage temperature		-65 to 175	$^\circ\text{C}$
T_j	junction temperature		175	$^\circ\text{C}$



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

$$V_o = 1.673\ \text{V}; R_s = 0.0126\ \Omega$$

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



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

$$V_o = 1.673\ \text{V}; R_s = 0.0126\ \Omega$$

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

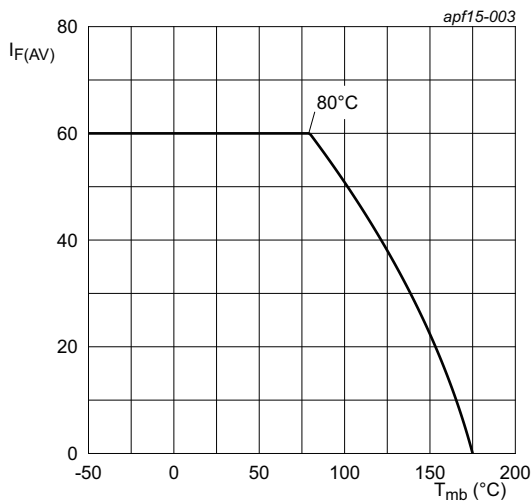


Fig. 3. Forward current as a function of mounting base temperature; maximum values

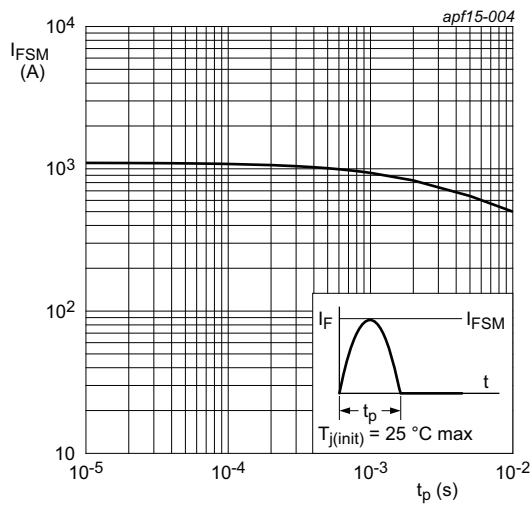


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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		-	-	0.5	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	45	-	K/W

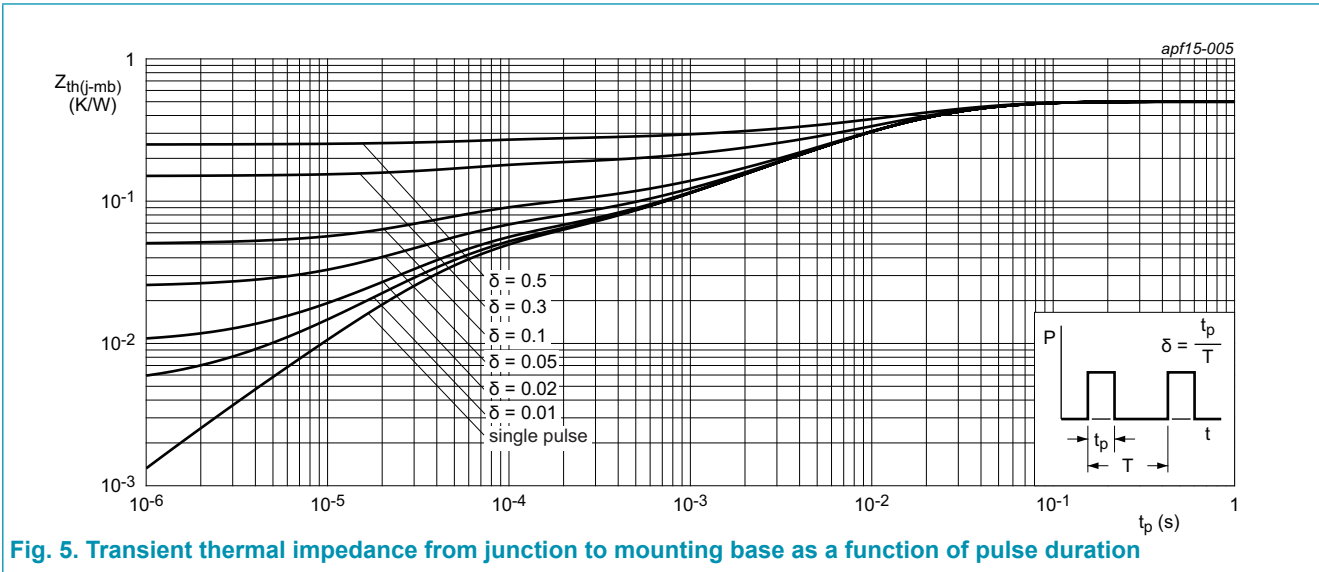
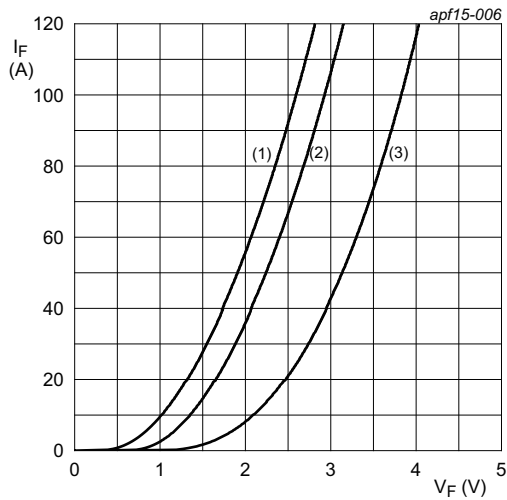


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward current	I _F = 60 A; T _j = 25 °C; Fig. 6		-	2.8	3.3	V
		I _F = 60 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		-	952	-	nC
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	2920	-	nC
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	3425	-	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		-	55	-	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 25 °C; Fig. 7		-	96	-	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	194	-	ns
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	212	-	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		-	20	-	A
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 125 °C; Fig. 7		-	30.2	-	A
		I _F = 50 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 150 °C; Fig. 7		-	32.3	-	A
Avalanche energy							
E _{AS}	non-repetitive avalanche energy	T _{j(init)} = 25 °C		50	-	-	mJ



$V_o = 1.673 \text{ V}$; $R_s = 0.0126 \Omega$

(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

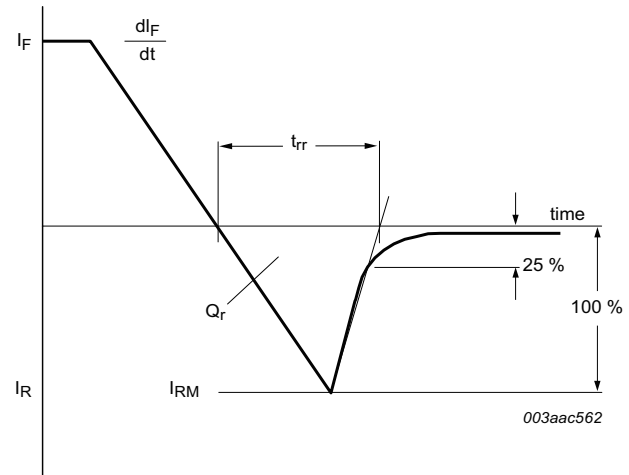
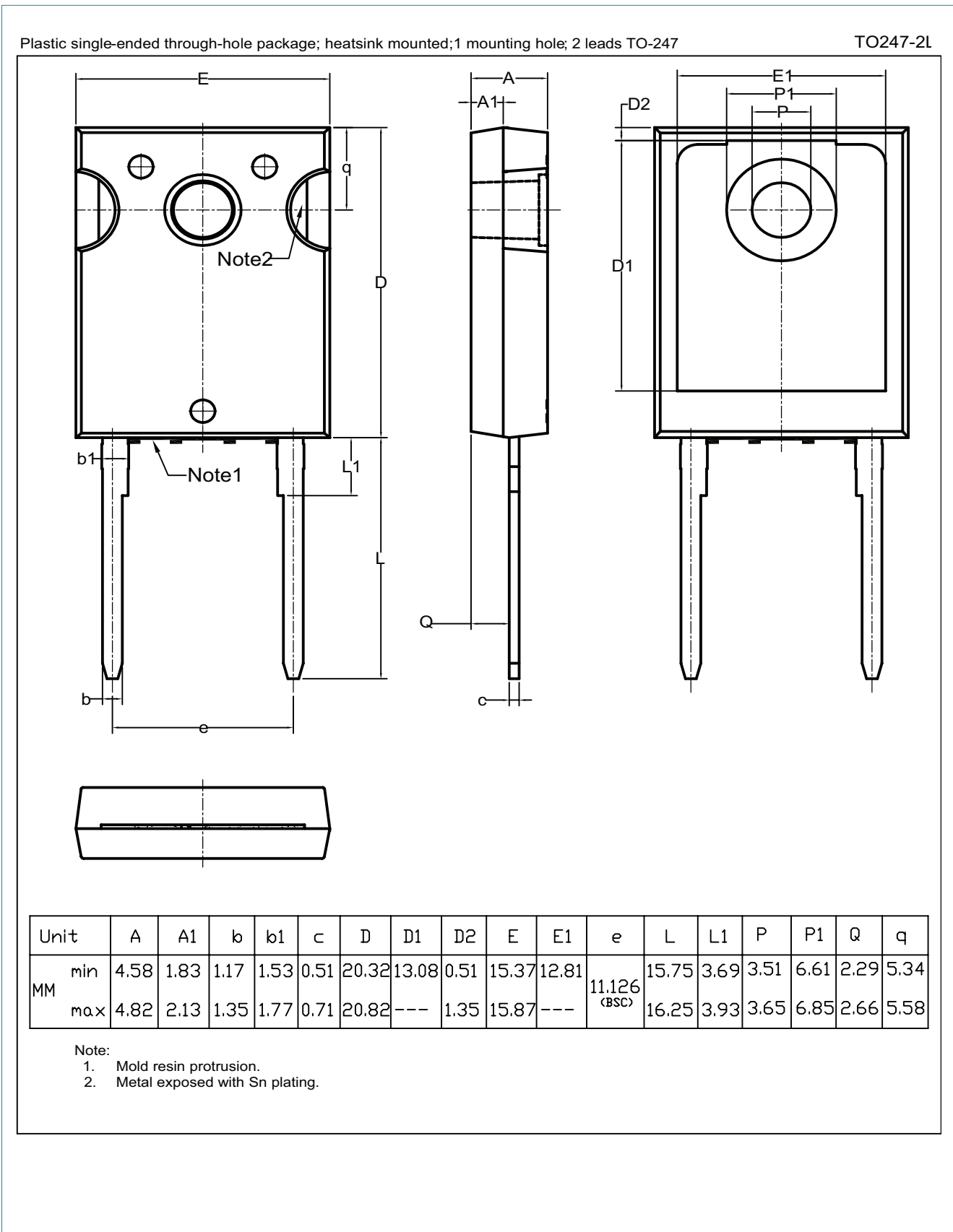


Fig. 7. Reverse recovery definitions; ramp recovery

11. Package outline



12. Legal information

Data sheet status

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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Date of release: 14 November 2018

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

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