



**Product data sheet** 

# 1. Product profile

### 1.1 General description

Hyperfast, epitaxial rectifier diode in a SOD59 (2-lead TO-220AC) plastic package.

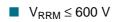
#### 1.2 Features

- Extremely fast switching
  Reduces switching loss in associated MOSFET
- Low thermal resistanceLow reverse recovery current

#### **1.3 Applications**

Half-bridge or full-bridge switched-mode
 Continuous Current Mode (CCM) Power power supplies
 Half-bridge lighting ballasts

#### 1.4 Quick reference data



■ V<sub>F</sub> = 1.32 V (typ)

■  $I_{F(AV)} \le 15 \text{ A}$ ■  $t_{rr} = 19 \text{ ns (typ)}$ 

# 2. Pinning information

#### Table 1. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode (k)		
2	anode (a)	mb	k <mark>───</mark> ── a <i>001aaa020</i>
mb	mounting base; cathode		

SOD59 (2-lead TO-220AC)



# 3. Ordering information

Table 2. Orderin	g information	l de la constante de	
Type number	Package		
	Name	Description	Version
BYC15-600	TO-220AC	plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC	SOD59

# 4. Limiting values

#### Table 3.Limiting values

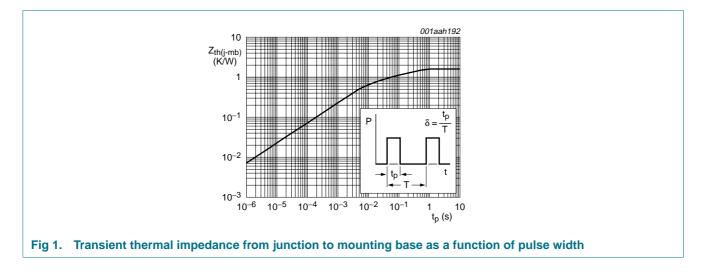
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>RRM</sub>	repetitive peak reverse voltage		-	600	V
V <sub>RWM</sub>	crest working reverse voltage		-	600	V
V <sub>R</sub>	reverse voltage	square waveform; $\delta$ = 1.0; $T_{mb}$ $\leq$ 100 $^{\circ}C$	-	500	V
I <sub>F(AV)</sub>	average forward current	square waveform; $\delta$ = 0.5; $T_{mb} \leq 98~^\circ C$	-	15	А
I <sub>FRM</sub>	repetitive peak forward current	square waveform; $\delta$ = 0.5; $T_{mb}$ $\leq$ 98 °C; $t_p$ = 25 $\mu s$	-	30	А
I <sub>FSM</sub>	non-repetitive peak forward	t = 10 ms; sinusoidal waveform	-	200	А
	current	t = 8.3 ms; sinusoidal waveform	-	220	А
T <sub>stg</sub>	storage temperature		-40	+150	°C
Tj	junction temperature		-	150	°C

**Rectifier diode, hyperfast** 

#### **Thermal characteristics** 5.

Table 4.	Thermal characteristics					
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R <sub>th(j-mb)</sub>	thermal resistance from junction to mounting base	with heatsink compound; see <u>Figure 1</u>	-	-	1.5	K/W
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	-	60	-	K/W



Rectifier diode, hyperfast

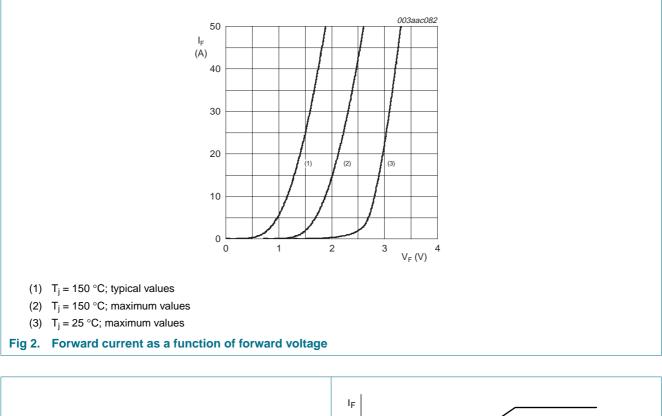
# 6. Characteristics

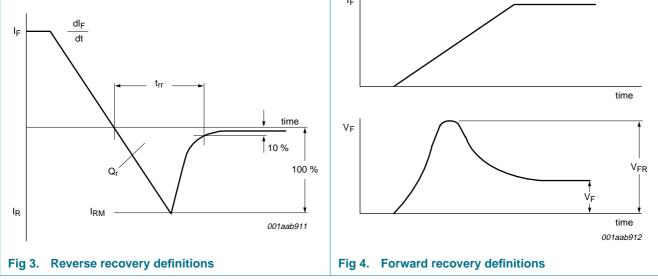
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Static cha	racteristics					
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 15 A; T <sub>j</sub> = 150 °C; see <u>Figure 2</u>	-	1.32	2.03	V
		$I_F = 30 \text{ A}; T_j = 150 \text{ °C}; \text{ see } \frac{\text{Figure 2}}{1000 \text{ C}}$	-	1.64	2.34	V
		I <sub>F</sub> = 15 A; see <u>Figure 2</u>	-	1.89	2.9	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 600 V	-	12	200	μA
		$V_R = 500 \text{ V}; \text{ T}_j = 100 ^{\circ}\text{C}$	-	1.1	3.0	mA
Dynamic o	characteristics					
t <sub>rr</sub>	reverse recovery time	$I_F = 1 \text{ A to } V_R = 30 \text{ V}; \text{ dI}_F/\text{dt} = 50 \text{ A}/\mu\text{s};$ see Figure 3	-	35	55	ns
		$I_F = 15 \text{ A to } V_R = 400 \text{ V}; \text{ d}I_F/\text{d}t = 500 \text{ A}/\mu\text{s};$ see Figure 3				
		T <sub>j</sub> = 25 °C	-	19	-	ns
		T <sub>j</sub> = 100 °C	-	32	40	ns
I <sub>RM</sub>	peak reverse recovery current	I <sub>F</sub> = 15 A to V <sub>R</sub> = 400 V; T <sub>j</sub> = 125 °C; see <u>Figure 3</u>				
		$dI_F/dt = 50 A/\mu s$	-	3.0	7.5	А
		dI <sub>F</sub> /dt = 500 A/μs	-	9.5	12	А
V <sub>FR</sub>	forward recovery voltage	$I_F$ = 15 A; $dI_F/dt$ = 100 A/µs; see Figure 4	-	8	11	V

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# **BYC15-600**

#### Rectifier diode, hyperfast

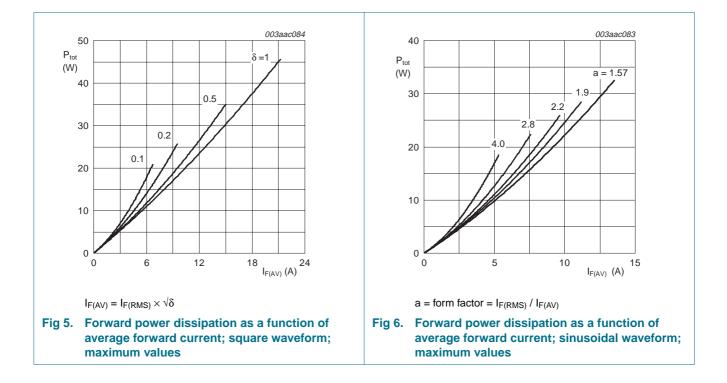




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# **BYC15-600**

Rectifier diode, hyperfast



**BYC15-600** 

Rectifier diode, hyperfast

# 7. Package outline

<b>⊸</b> e - <b>→</b>   0 5 10 mm						
scale						
DIMENSIONS (mm are the original dimensions)		(1)				
UNIT A A1 b b1 c D D1 E e L	L <sub>1</sub>	L2 <sup>(1)</sup>	P	q	Q	
mm      4.5      1.39      0.9      1.3      0.7      15.8      6.4      10.3      5.08      15.0        4.1      1.27      0.7      1.0      0.4      15.2      5.9      9.7      5.08      13.5	3.30 2.79	3.0	3.8 3.6	3.0 2.7	2.6 2.2	

#### Fig 7. Package outline SOD59 (2-lead TO-220AC)

Rectifier diode, hyperfast

# 8. Revision history

Table 6.	Revision h	nistory			
Document	ID	Release date	Data sheet status	Change notice	Supersedes
BYC15-600	0_1	20071129	Product data sheet	-	-

# 9. Legal information

#### 9.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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.

[1] Please consult the most recently issued document before initiating or completing a design.

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# **BYC15-600**

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