



Product data sheet

1. Product profile

1.1 General description

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

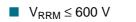
1.2 Features

- 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_F = 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

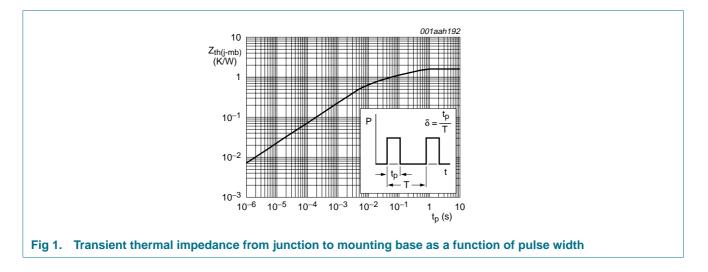
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V _{RRM}	repetitive peak reverse voltage		-	600	V
V _{RWM}	crest working reverse voltage		-	600	V
V _R	reverse voltage	square waveform; δ = 1.0; T_{mb} \leq 100 $^{\circ}C$	-	500	V
I _{F(AV)}	average forward current	square waveform; δ = 0.5; $T_{mb} \leq 98~^\circ C$	-	15	А
I _{FRM}	repetitive peak forward current	square waveform; δ = 0.5; T_{mb} \leq 98 °C; t_p = 25 μs	-	30	А
I _{FSM}	non-repetitive peak forward	t = 10 ms; sinusoidal waveform	-	200	А
	current	t = 8.3 ms; sinusoidal waveform	-	220	А
T _{stg}	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 _{th(j-mb)}	thermal resistance from junction to mounting base	with heatsink compound; see <u>Figure 1</u>	-	-	1.5	K/W
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	-	60	-	K/W



Rectifier diode, hyperfast

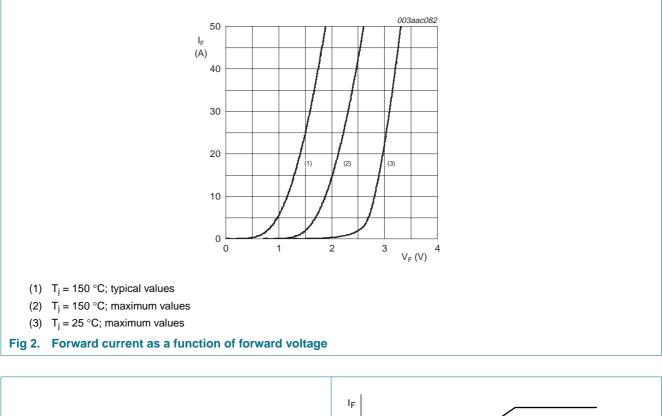
6. Characteristics

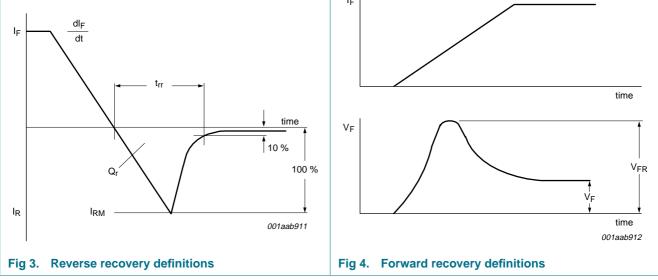
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Static cha	racteristics					
V _F	forward voltage	I _F = 15 A; T _j = 150 °C; see <u>Figure 2</u>	-	1.32	2.03	V
		$I_F = 30 \text{ A}; T_j = 150 \text{ °C}; \text{ see } \frac{\text{Figure 2}}{1000 \text{ C}}$	-	1.64	2.34	V
		I _F = 15 A; see <u>Figure 2</u>	-	1.89	2.9	V
I _R	reverse current	V _R = 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 _{rr}	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 _j = 25 °C	-	19	-	ns
		T _j = 100 °C	-	32	40	ns
I _{RM}	peak reverse recovery current	I _F = 15 A to V _R = 400 V; T _j = 125 °C; see <u>Figure 3</u>				
		$dI_F/dt = 50 A/\mu s$	-	3.0	7.5	А
		dI _F /dt = 500 A/μs	-	9.5	12	А
V _{FR}	forward recovery voltage	I_F = 15 A; dI_F/dt = 100 A/µs; see Figure 4	-	8	11	V

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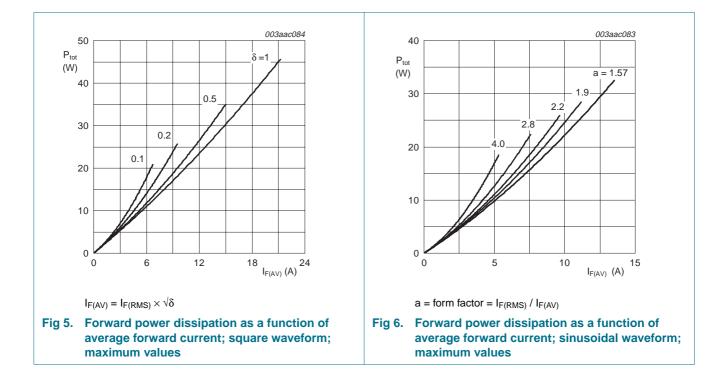




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7. Package outline

⊸ e - → 0 5 10 mm						
scale						
DIMENSIONS (mm are the original dimensions)		(1)				
UNIT A A1 b b1 c D D1 E e L	L ₁	L2 ⁽¹⁾	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 ^{[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.

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

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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11. Contents

1	Product profile 1
1.1	General description
1.2	Features
1.3	Applications 1
1.4	Quick reference data 1
2	Pinning information 1
3	Ordering information 2
4	Limiting values 2
5	Thermal characteristics 3
6	Characteristics 4
7	Package outline 7
8	Revision history 8
9	Legal information 9
9.1	Data sheet status 9
9.2	Definitions
9.3	Disclaimers
9.4	Trademarks
10	Contact information 9
11	Contents 10

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Date of release: 29 November 2007 Document identifier: BYC15-600_1

