

# DATA SHEET

**BYV29F, BYV29X series**  
Rectifier diodes  
ultrafast

Product specification

October 2018

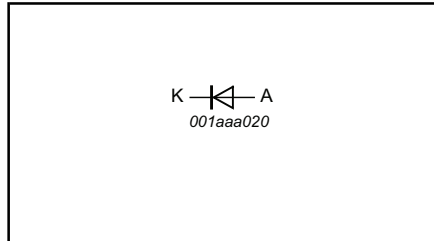
**Rectifier diodes  
ultrafast**

**BYV29F, BYV29X series**

**FEATURES**

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Isolated mounting tab

**SYMBOL**



**QUICK REFERENCE DATA**

$V_R = 300\text{ V} / 400\text{ V} / 500\text{ V}$
$V_F \leq 1.03\text{ V}$
$I_{F(AV)} = 9\text{ A}$
$t_{rr} \leq 60\text{ ns}$

**GENERAL DESCRIPTION**

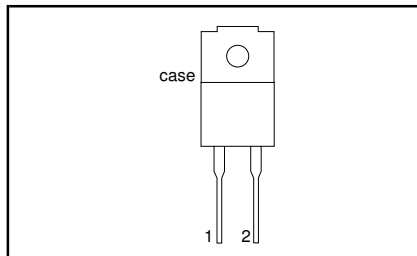
Ultra-fast epitaxial rectifier diodes intended for use in switched mode power supply output rectification, electronic lighting ballasts and high frequency switching circuits in general.

The BYV29F series is supplied in the SOD100 package.  
The BYV29X series is supplied in the SOD113 package.

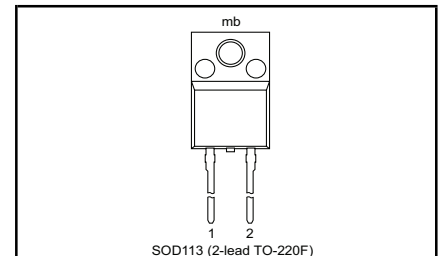
**PINNING**

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	isolated

**SOD100**



**SOD113**



**LIMITING VALUES**

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-300	-400	-500	
$V_{RRM}$	Peak repetitive reverse voltage	<b>BYV29F/BYV29X</b> $T_{hs} \leq 138^\circ\text{C}^1$	-	300	400	500	V
$V_R$	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current <sup>2</sup>	square wave; $\delta = 0.5$ ; $T_{hs} \leq 90^\circ\text{C}$	-	9			A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	110			A
$T_{stg}$	Storage temperature		-40	150			$^\circ\text{C}$
$T_j$	Operating junction temperature		-	150			$^\circ\text{C}$

1  $T_{hs}$  de-rating for thermal stability.

2 Neglecting switching and reverse current losses

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## BYV29F, BYV29X series

**ISOLATION LIMITING VALUE & CHARACTERISTIC** $T_{hs} = 25\text{ °C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{isol}$	Peak isolation voltage from all terminals to external heatsink	SOD100 package; R.H. $\leq$ 65%; clean and dustfree	-	-	1500	V
$V_{isol}$	R.M.S. isolation voltage from all terminals to external heatsink	SOD113 package; $f = 50\text{-}60\text{ Hz}$ ; sinusoidal waveform; R.H. $\leq$ 65%; clean and dustfree	-	-	2500	V
$C_{isol}$	Capacitance from pin 2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

**THERMAL RESISTANCES**

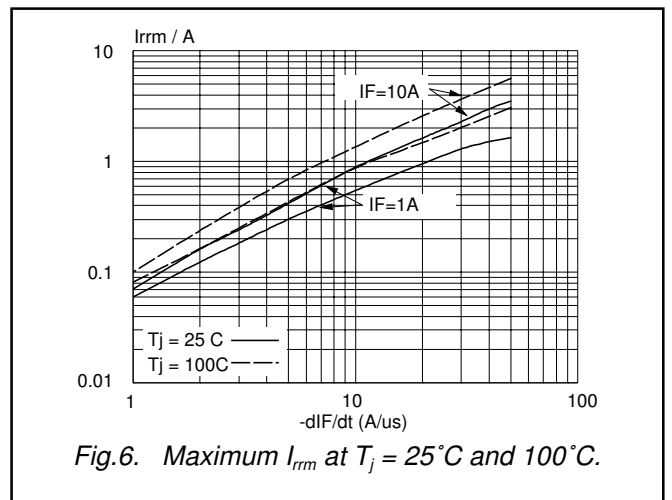
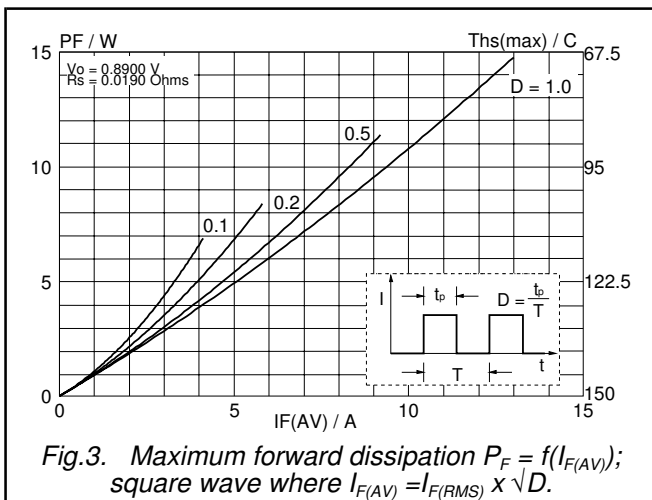
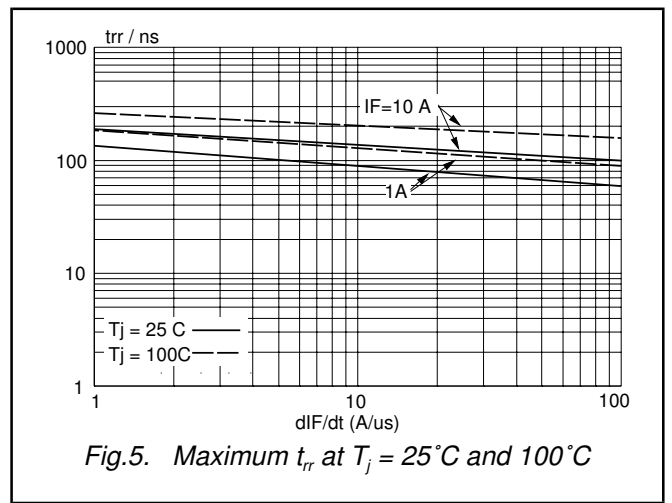
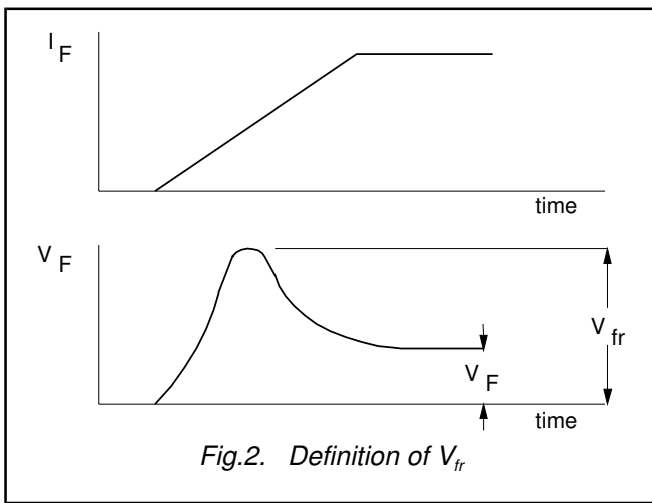
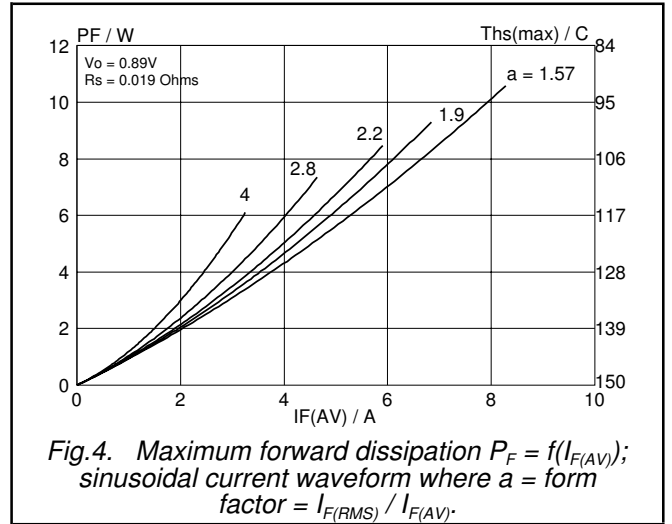
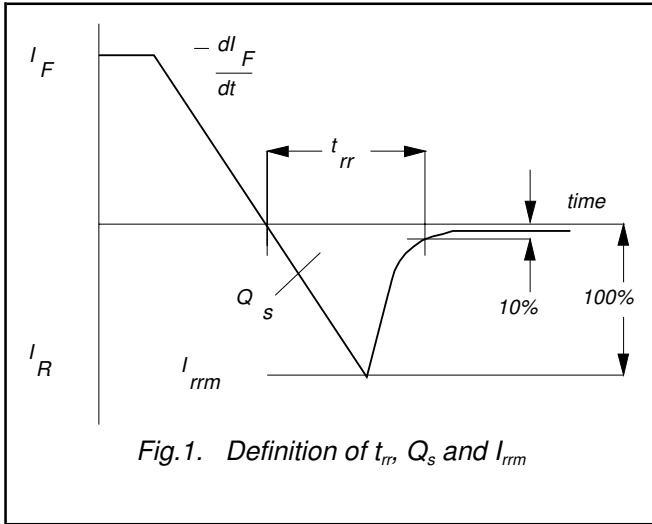
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

**ELECTRICAL CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 8\text{ A}$ ; $T_j = 150\text{ °C}$	-	0.90	1.03	V
		$I_F = 8\text{ A}$	-	1.05	1.25	V
		$I_F = 20\text{ A}$	-	1.20	1.40	V
$I_R$	Reverse current	$V_R = V_{RRM}$	-	2.0	50	$\mu\text{A}$
		$V_R = V_{RRM}$ ; $T_j = 100\text{ °C}$	-	0.1	0.35	mA
$Q_s$	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$ ; $dl_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
$t_{rr}$	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$ ; $dl_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
$I_{rrm}$	Peak reverse recovery current	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$ ; $dl_F/dt = 50\text{ A}/\mu\text{s}$ ; $T_j = 100\text{ °C}$	-	4.0	5.5	A
$V_{fr}$	Forward recovery voltage	$I_F = 10\text{ A}$ ; $dl_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

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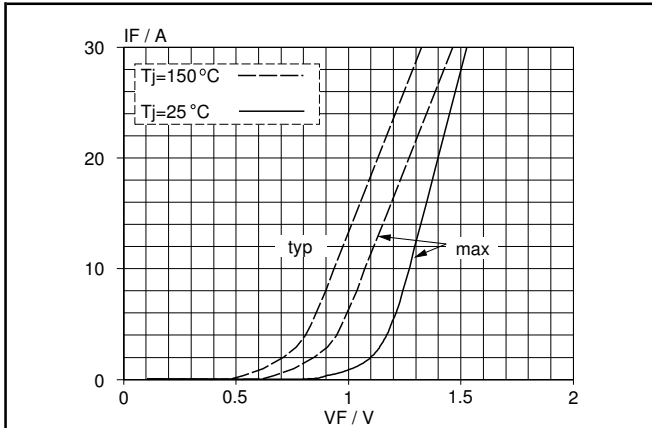


Fig.7. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$

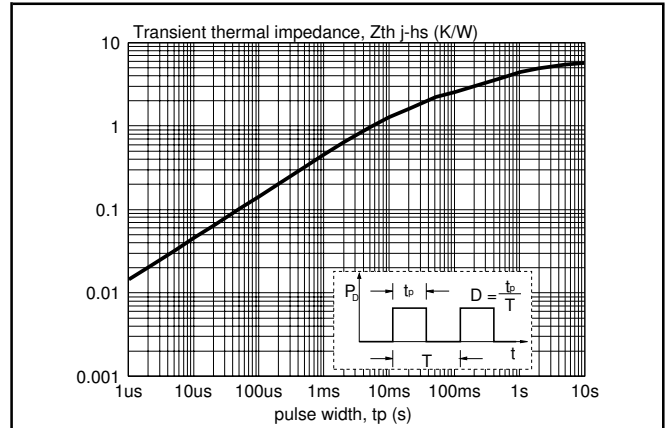


Fig.9. Transient thermal impedance  $Z_{th\ j-hs} = f(t_p)$

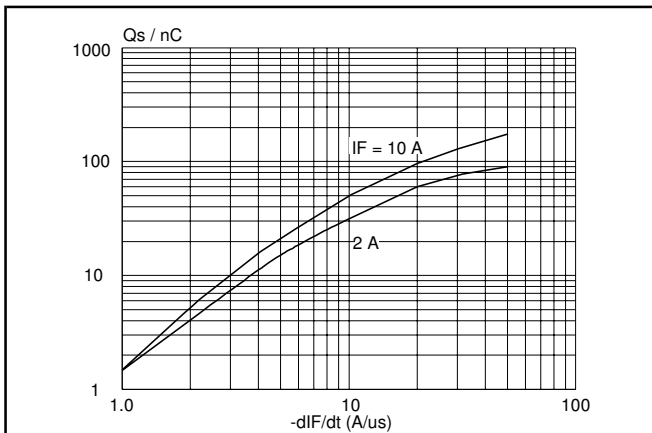
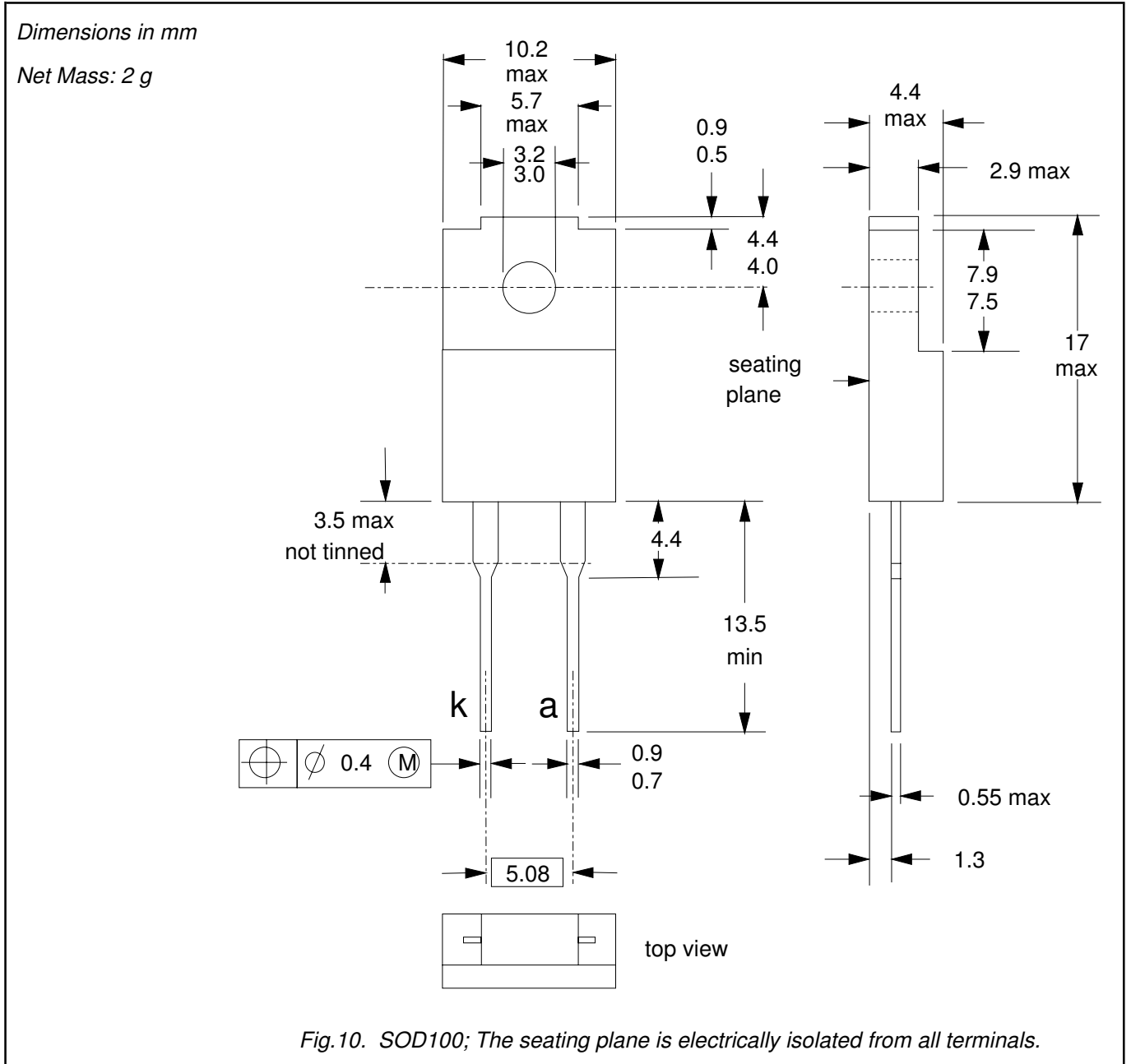


Fig.8. Maximum  $Q_s$  at  $T_j = 25^\circ\text{C}$

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**MECHANICAL DATA**



**Notes**

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

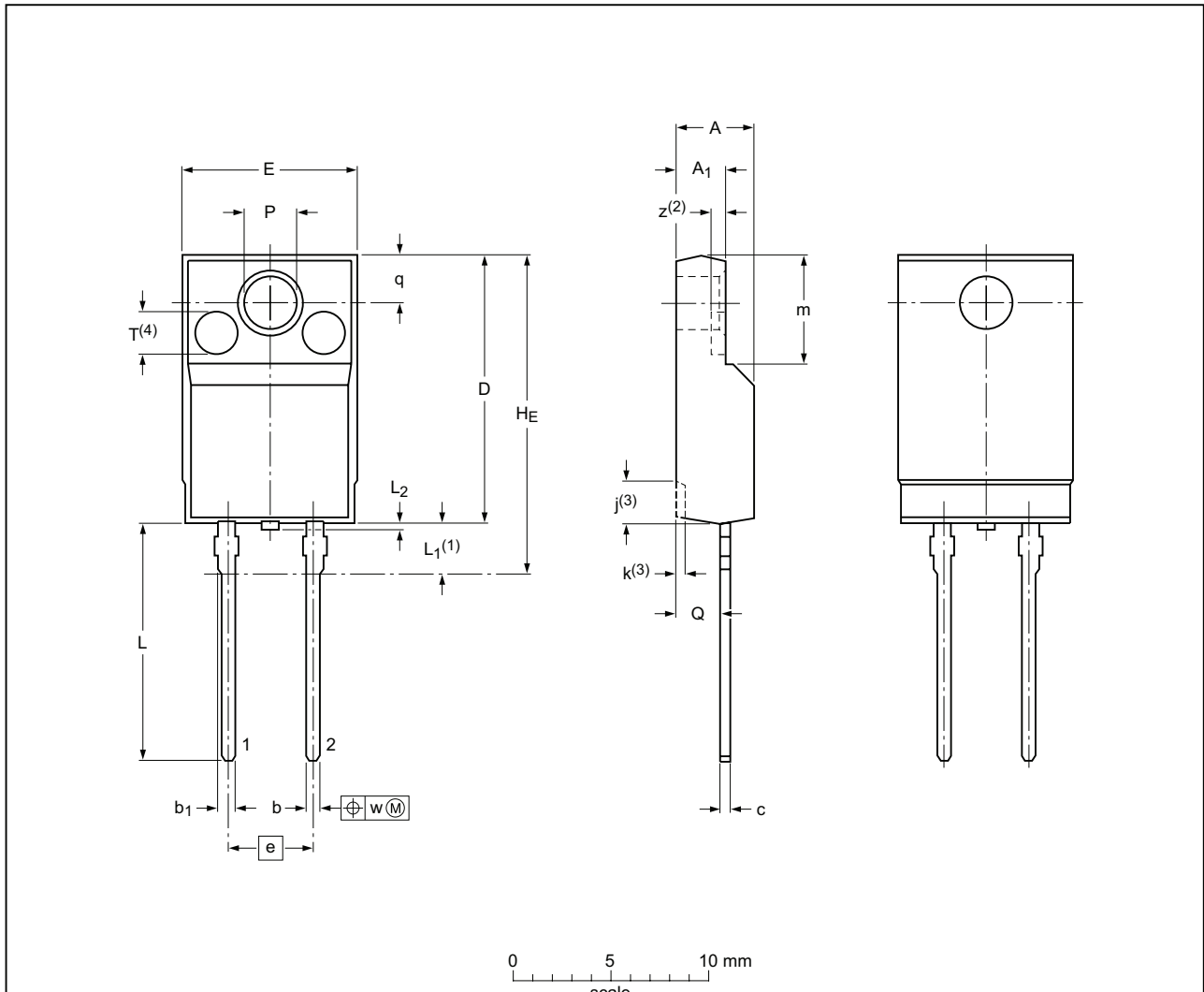
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**MECHANICAL DATA**

Plastic single-ended package; isolated heatsink mounted;  
1 mounting hole; 2-lead TO-220 'full pack'

SOD113



Dimensions (mm are the original dimensions)

Unit	A	A <sub>1</sub>	b	b <sub>1</sub>	c	D	E	e	H <sub>E</sub> max	j <sup>(3)</sup>	k <sup>(3)</sup>	L	L <sub>1</sub> <sup>(1)</sup>	L <sub>2</sub> max	m	P	Q	q	T <sup>(4)</sup>	w	z <sup>(2)</sup>	
max	4.6	2.9	0.9	1.1	0.7	15.8	10.3			2.7	0.6	14.4	3.3		6.5	3.2	2.6					
nom								5.08	19.0					0.5				2.6	2.55	0.4	0.8	
min	4.0	2.5	0.7	0.9	0.4	15.2	9.7			1.7	0.4	13.5	2.8		6.3	3.0	2.3					

Notes

1. Terminals are uncontrolled within zone L1.
2. z is depth of T.
3. Dot lines area designs may vary.
4. Eject pin mark is for reference only.

sod113\_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOD113	2-lead TO-220F				07-06-08 15-08-28

## 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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