

DATA SHEET

BYV29F, BYV29X series
Rectifier diodes
ultrafast

Product specification

February 1999



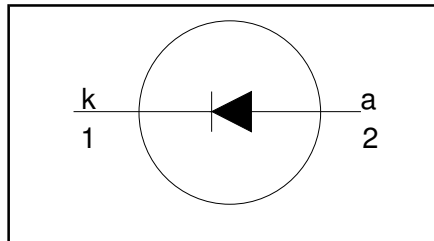
**Rectifier diodes
ultrafast**

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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

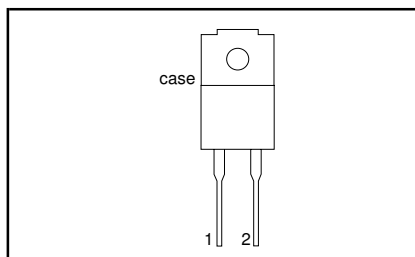
Ultra-fast epitaxial rectifier diodes intended for use in switched mode power supply output rectification, electronic lighting ballasts and high frequency switching circuits in general.

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

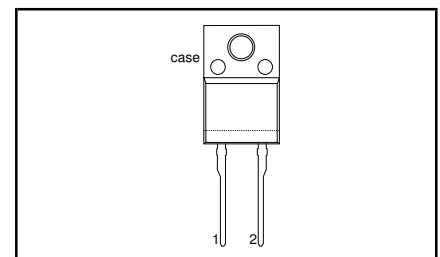
PINNING

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	BYV29F/BYV29X $T_{hs} \leq 138^\circ\text{C}^1$ square wave; $\delta = 0.5$; $T_{hs} \leq 90^\circ\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ²		-	9			A
I_{FSM}	Non-repetitive peak forward current		-	100			A
			-	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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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

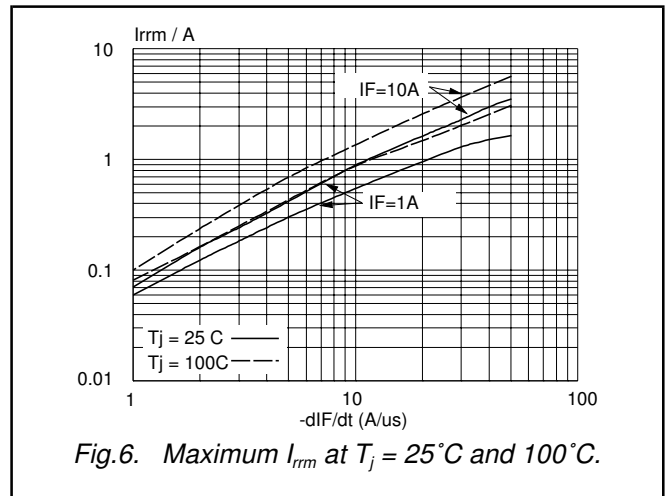
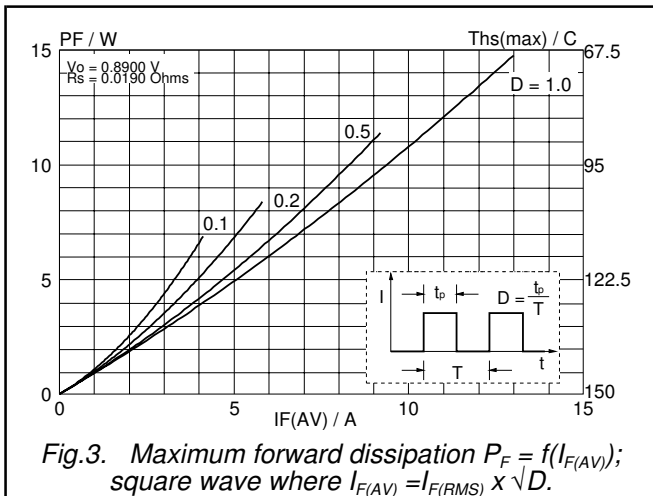
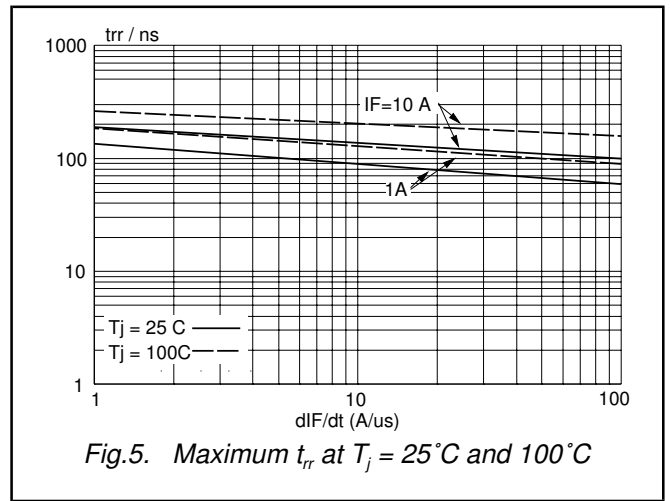
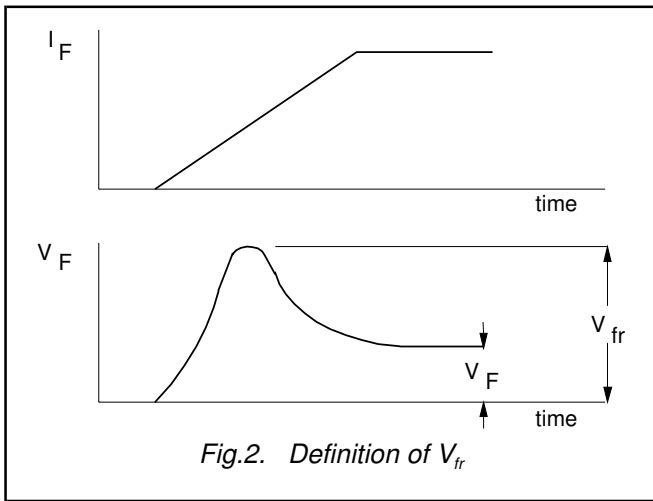
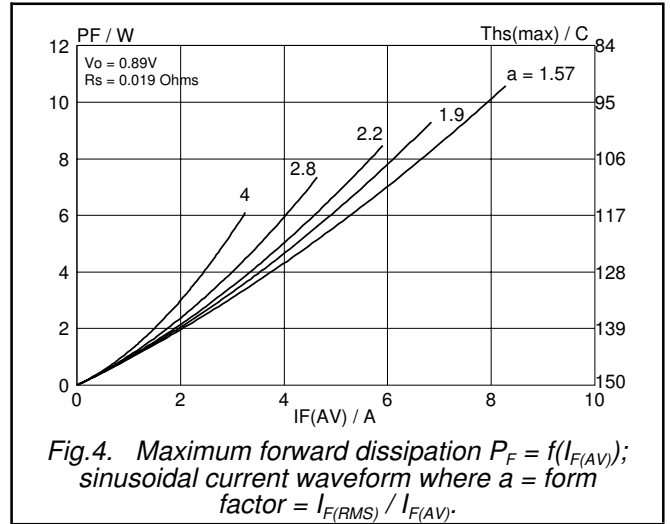
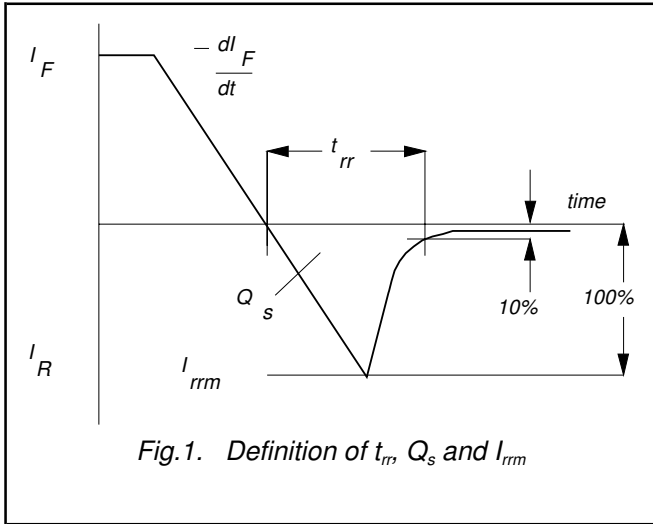
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

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	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ °C}$	-	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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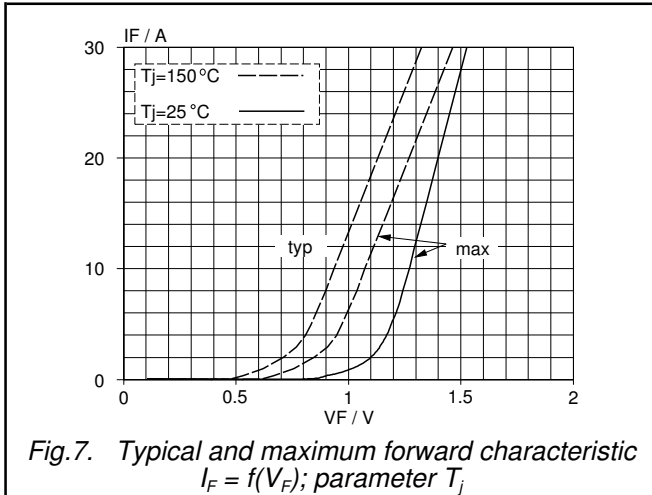


Fig.7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

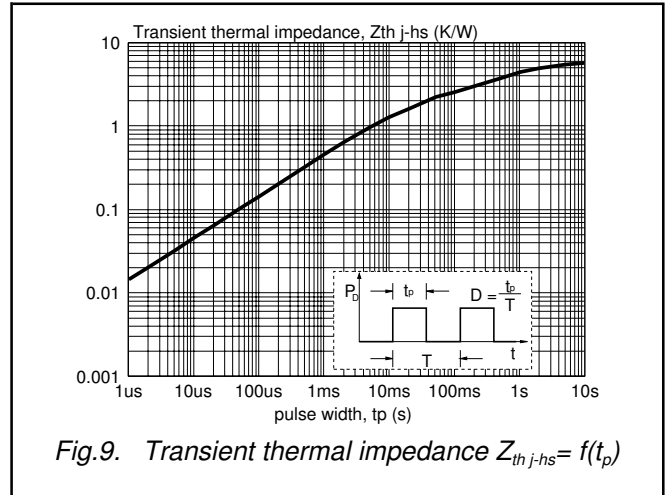


Fig.9. Transient thermal impedance $Z_{th\ j-hs} = f(t_p)$

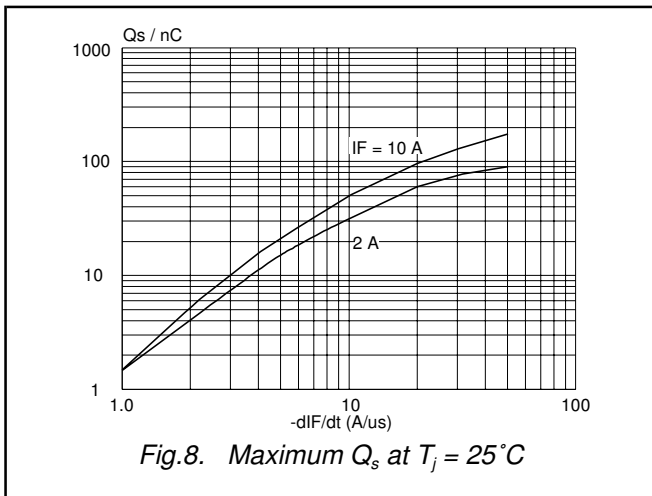
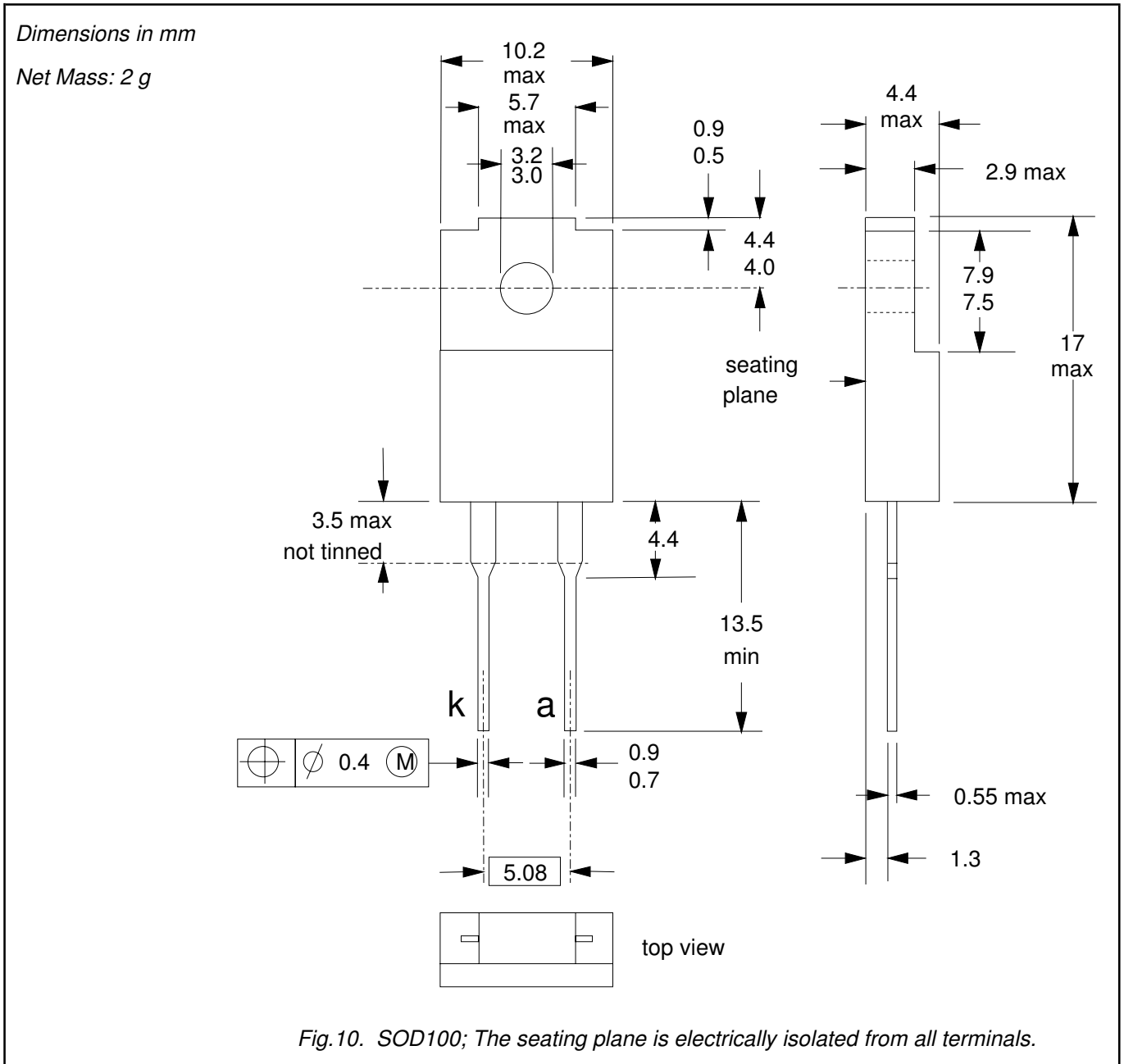


Fig.8. Maximum Q_s at $T_j = 25^\circ\text{C}$

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MECHANICAL DATA



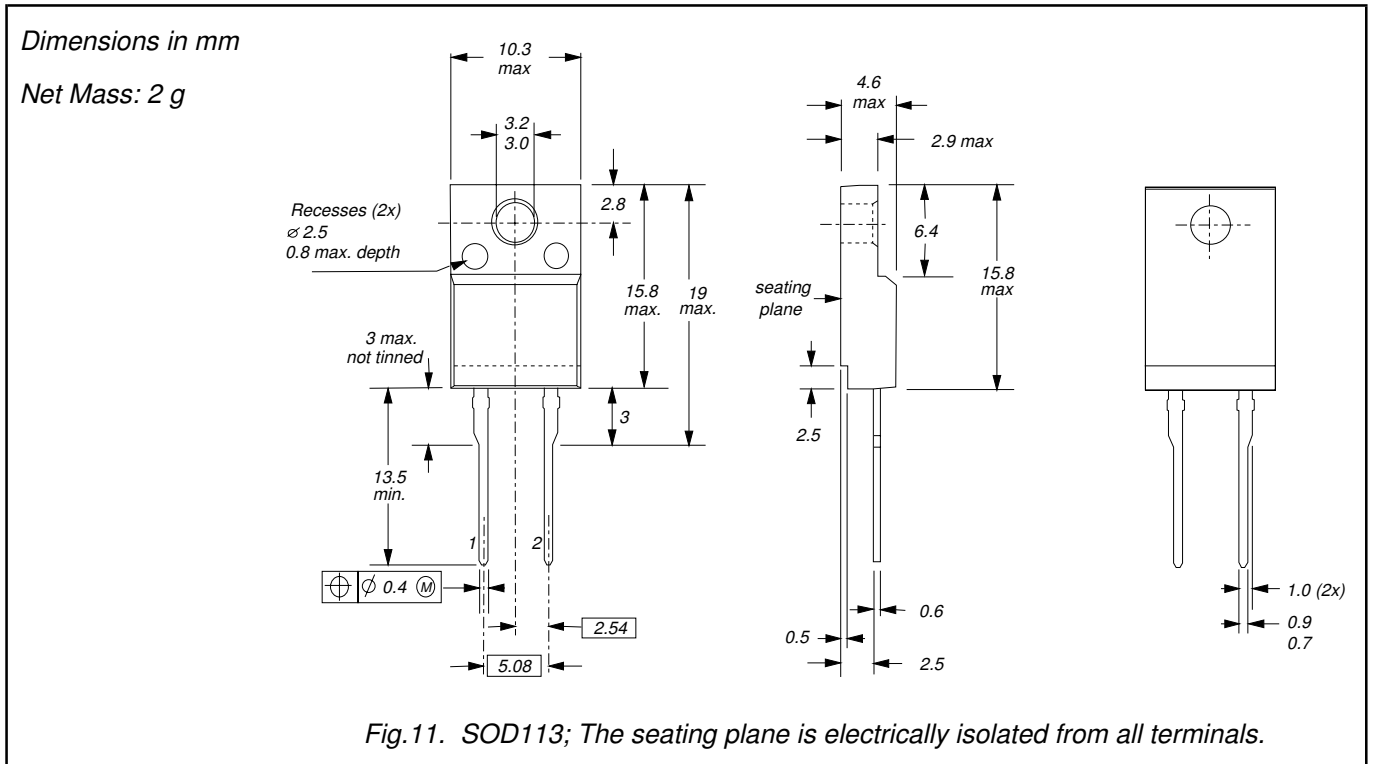
Notes

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

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Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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