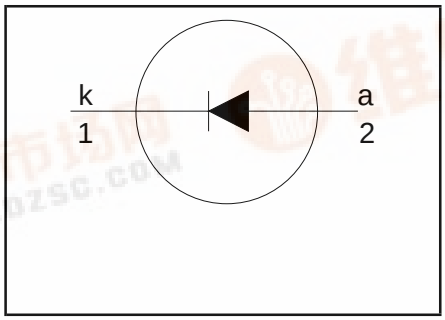
Damper diode fast, high-voltage

BY479X-1700

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

V_R = 1700 V

$V_F \leq 1.2$ V

$V_{fr} \leq 19$ V

I_{FWM} = 10 A

$I_{FRM} \leq 100$ A

$t_{fr} \leq 300$ ns

GENERAL DESCRIPTION

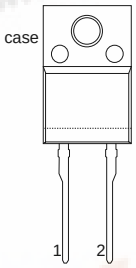
Glass-passivated double diffused rectifier diode featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor deflection circuits up to 64kHz. The device is designed to withstand transient reverse voltages up to 1700V.

The BY479X series is supplied in the conventional leaded SOD113 package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode
tab	isolated

SOD113



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Peak non-repetitive reverse voltage during flash-over of picture tube		-	1700	V
V_{RRM}	Peak repetitive reverse voltage	t = 3.5 µs; f = 64kHz	-	1700	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Peak working forward current[1]	f = 64kHz; $T_{hs} \leq 126$ ˚C	-	10	A
I_{FRM}	Peak repetitive forward current	t = 100 µs	-	100	A
I_{FSM}	Peak non-repetitive forward current	t = 10 ms	-	100	A
		t = 8.3 ms sinusoidal; T_j = 150 ˚C prior to surge; with reapplied $V_{RWM(max)}$	-	110	A
T_{stg}	Storage temperature		-40	150	˚C
T_j	Operating junction temperature		-	150	˚C

1 Including worst case forward recovery losses, see fig:5.

ISOLATION LIMITING VALUE & CHARACTERISTIC

T_{hs} = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	f = 50-60 Hz; sinusoidal waveform; R.H. ≤ 65% ; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	f = 1 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	-	-	4.8	K/W
		without heatsink compound	-	-	5.9	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	in free air	-	55	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	I_F = 6.5 A	-	0.95	1.3	V
		I_F = 6.5 A; T_j = 125 ˚C	-	0.85	1.2	V
I_R	Reverse current	$V_R = V_{RWMmax}$	-	-	0.25	mA
		$V_R = V_{RWMmax}$; T_j = 125 ˚C	-	-	1.0	mA

DYNAMIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{fr}	Forward recovery voltage	I_F = 6.5 A; dI_F/dt = 50 A/µs	-	12	19	V
t_{fr}	Forward recovery time	I_F = 6.5 A; dI_F/dt = 50 A/µs; V_F = 5 V	-	200	300	ns
		I_F = 6.5 A; dI_F/dt = 50 A/µs; V_F = 2 V	-	400	-	ns
t_{rr}	Reverse recovery time	I_F = 1 A; $-dI_F/dt$ = 50 A/µs; $V_R \geq$ 30 V	-	250	350	ns
Q_s	Reverse recovery charge	I_F = 2 A; $-dI_F/dt$ = 20 A/µs; $V_R \geq$ 30 V	-	2.0	3.0	µC

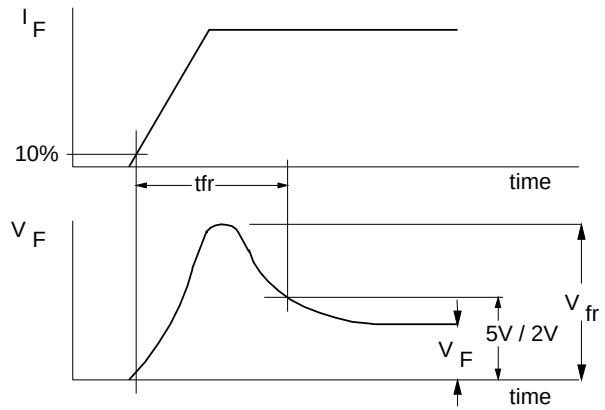


Fig.1. Definition of Vfr and tfr

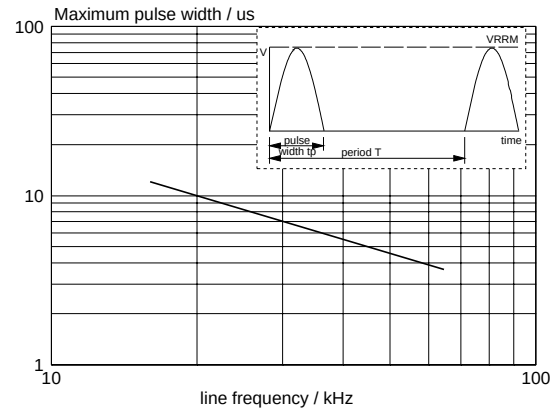


Fig.4. Maximum allowable pulse width t_p versus line frequency; Basic horizontal deflection circuit.

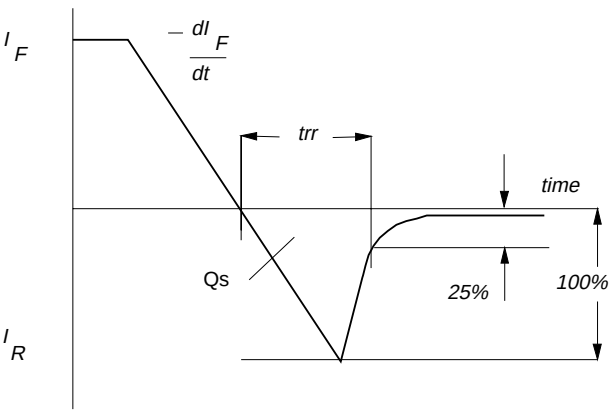


Fig.2. Definition of t_{rr} and Q_s

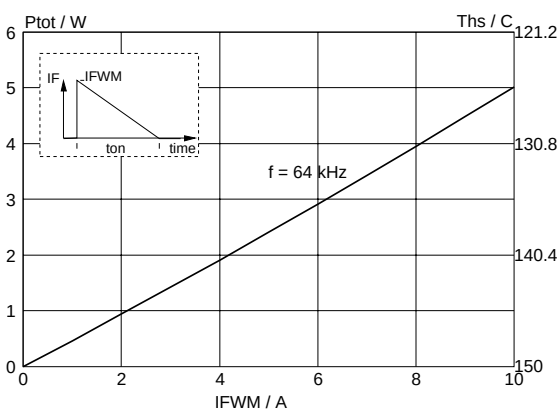


Fig.5. Total dissipation $P_{tot} = f(I_{FWM})$; including forward recovery losses; Basic horizontal deflection circuit.

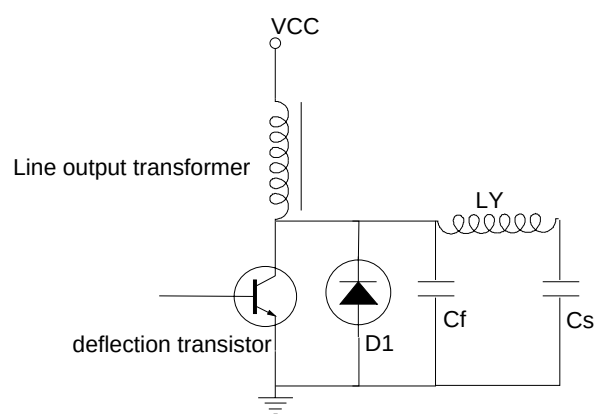


Fig.3. Basic horizontal deflection circuit.

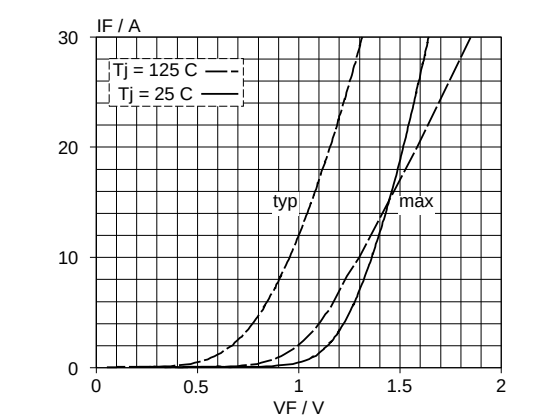


Fig.6. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

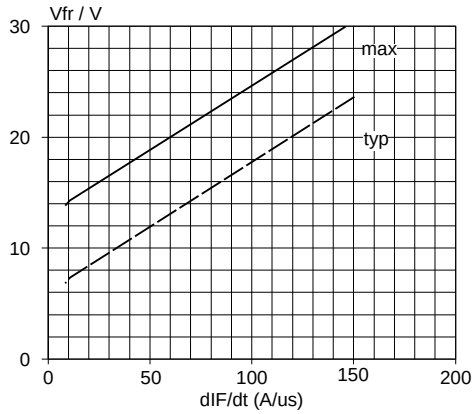


Fig.7. Typical and maximum $V_{fr} = f(dI_F/dt)$; $I_F = 6.5A$; $T_j = 25^{\circ}C$

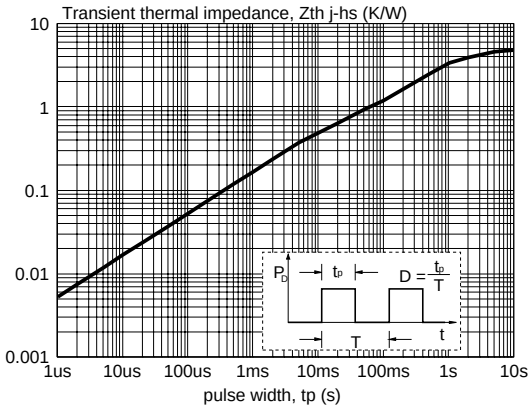


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

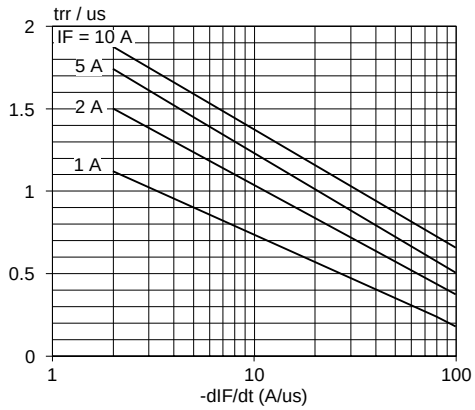


Fig.8. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$; parameter T_j; $V_R \geq 30V$

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

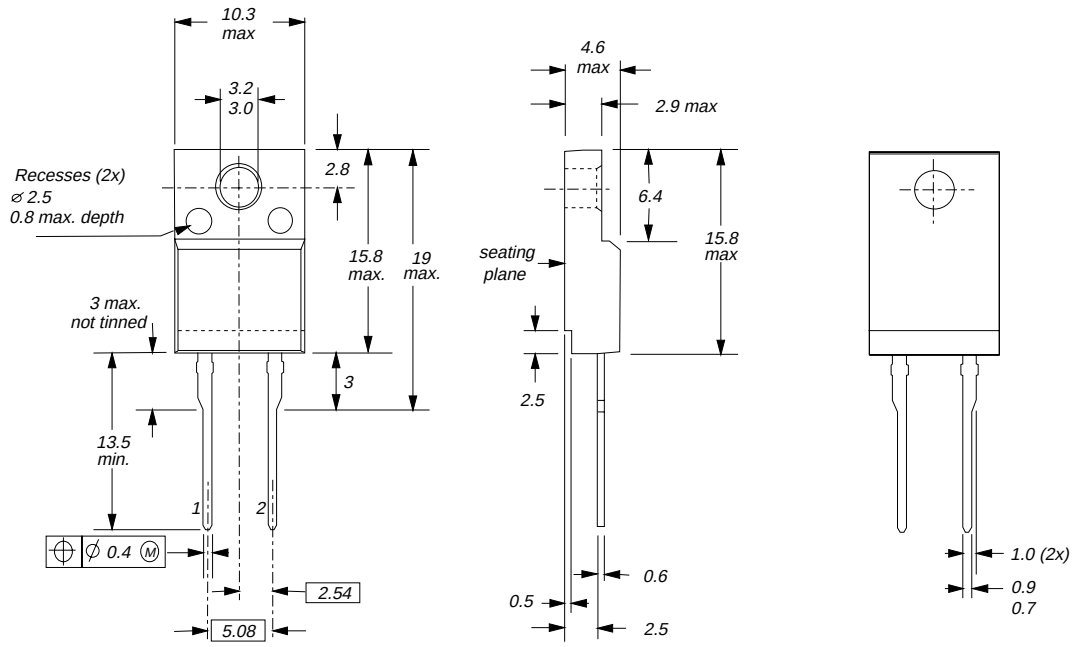


Fig.10. SOD113; The seating plane is electrically isolated from all terminals.

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

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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