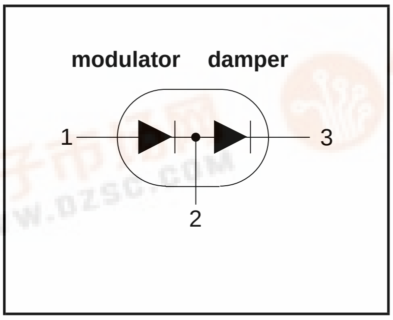
Dual diode fast, high-voltage

BYM359DX

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

DAMPER	MODULATOR
V_R=1500 V	V_R=800 V
$V_F \leq 1.3$ V	$V_F \leq 1.45$ V
$I_{F(RMS)}$ =15.7 A	$I_{F(RMS)}$ = 11 A
$I_{FSM} \leq 60$ A	$I_{FSM} \leq 60$ A
$t_{rr} \leq 300$ ns	$t_{rr} \leq 145$ ns

GENERAL DESCRIPTION

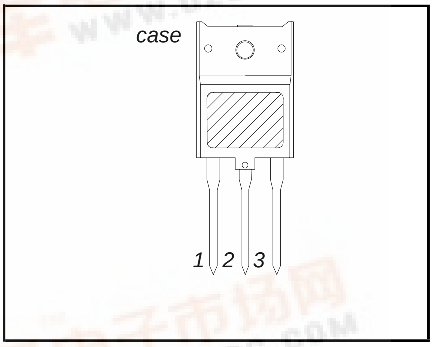
Combined damper and modulator diodes in an isolated plastic envelope for horizontal deflection in colour TV and PC monitors.
The BYM359DX contains diodes with performance characteristics designed specifically for applications from 16kHz to 56kHz

The BYM359DX series is supplied in the conventional leaded SOT399 package.

PINNING

PIN	DESCRIPTION
1	modulator anode.
2	common anode/cathode
3	damper cathode

SOT399



LIMITING VALUES

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	DAMPER MIN	DAMPER MAX	MODULATOR MIN	MODULATOR MAX	UNIT
V_{RSM}	Peak non-repetitive reverse voltage.		-	1500	-	800	V
V_{RRM}	Peak repetitive reverse voltage		-	1500	-	600	V
V_{RWM}	Crest working reverse voltage		-	1300	-	600	V
$I_{F(AV)}$	Average forward current	sinusoidal;a=1.57	-	10	-	8	A
$I_{F(RMS)}$	RMS forward current		-	15.7	-	11.0	A
I_{FRM}	Peak repetitive forward current	t=25 µs δ= 0.5 $T_{hs} \leq 83$ ˚C	-	20	-	16.0	A
I_{FSM}	Peak non-repetitive forward current	t = 10ms	-	60	-	60	A
		t = 8.3 ms sinusoidal; with reapplied $V_{RWM(MAX)}$	-	66	-	66	A
T_{stg}	Storage temperature		-40	150	-40	150	˚C
T_J	Operating junction temperature		-	150	-	150	˚C

ISOLATION LIMITING VALUE & CHARACTERISTIC

T_{hs} = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. ≤ 65 % ; clean and dustfree	-	-	2500	V
C_{isol}	Capacitance from T2 to external heatsink	f = 1 MHz	-	22	-	pF

THERMAL RESISTANCES

			DAMPER		MODULATOR		
SYMBOL	**PARAMETER**	**CONDITIONS**	**TYP.**	**MAX.**	**TYP.**	**MAX.**	**UNIT**
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	3.5	-	3.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	in free air.	35	-	-	35	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

			DAMPER		MODULATOR		
SYMBOL	**PARAMETER**	**CONDITIONS**	**TYP.**	**MAX.**	**TYP.**	**MAX.**	**UNIT**
V_F	Forward voltage	I_F = 6.5 A	1.1	1.45	1.15	1.55	V
		I_F = 6.5 A; T_j = 125˚C	1.05	1.3	1.1	1.45	V
I_R	Reverse current	$V_R = V_{RWM}$	10	250	10	100	µA
		$V_R = V_{RWM}$ T_j = 100 ˚C	50	500	100	600	µA

DYNAMIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

			DAMPER		MODULATOR		
SYMBOL	**PARAMETER**	**CONDITIONS**	**TYP.**	**MAX.**	**TYP.**	**MAX.**	**UNIT**
t_{rr}	Reverse recovery time	I_F = 1 A; V_R ≥ 30 V; -dI_F/dt = 50 A/µs	200	300	125	145	ns
Q_s	Reverse recovery charge	2 A,30 V,20 A/µs	1.2	2.0	0.5	0.7	µC
V_{fr}	Peak forward recovery voltage	I_F = 6.5 A; dI_F/dt = 50 A/µs	27	-	18.0	-	V

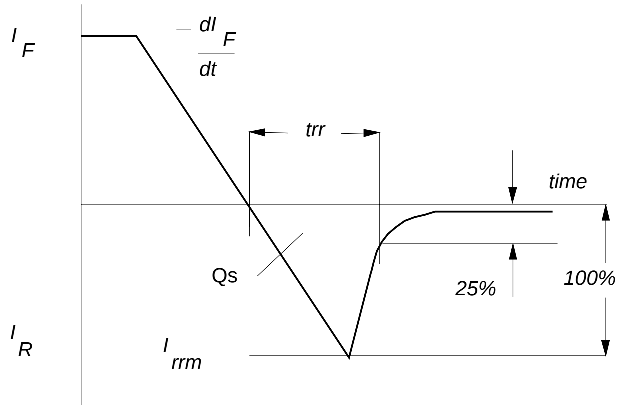


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

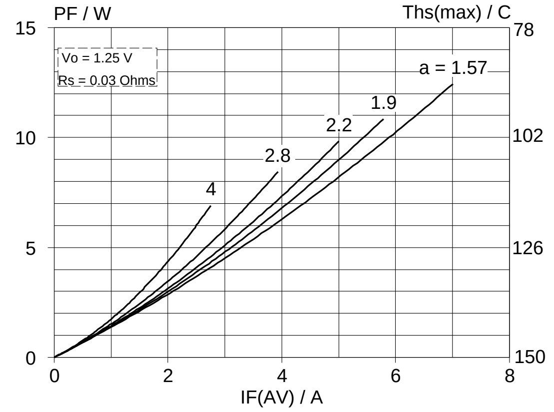


Fig.4. Modulator maximum forward dissipation, $P_F = f(I_{F(AV)})$; sinusoidal current waveform; parameter a = form factor = $I_{F(RMS)}/I_{F(AV)}$.

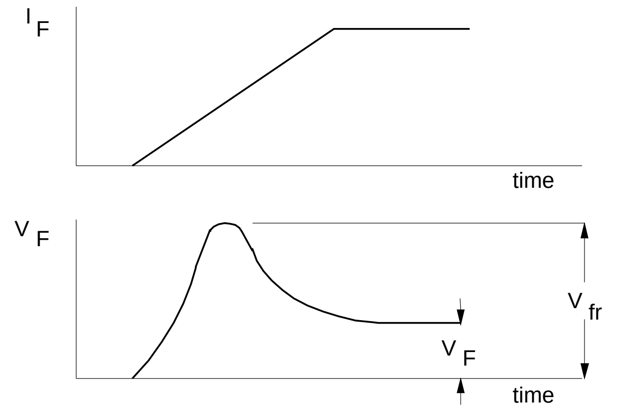


Fig.2. Definition of V_{fr}

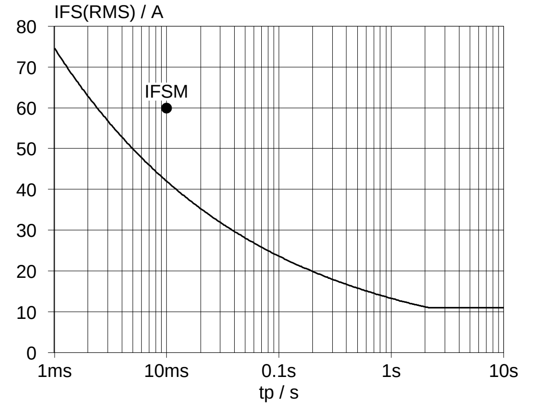


Fig.5. Modulator maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; T_j = 150°C prior to surge with reapplied V_{RWM}.

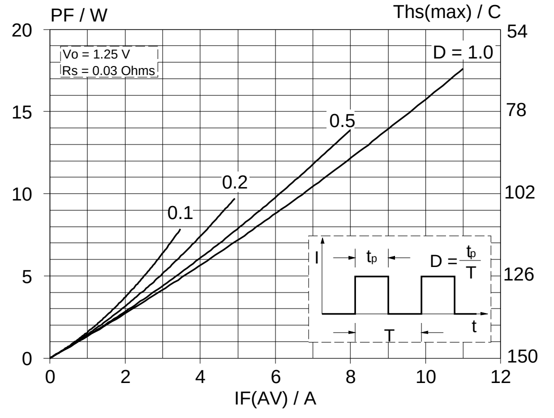


Fig.3. Modulator maximum forward dissipation, $P_F = f(I_{F(AV)})$; square wave current waveform; parameter D = duty cycle = t_p/T.

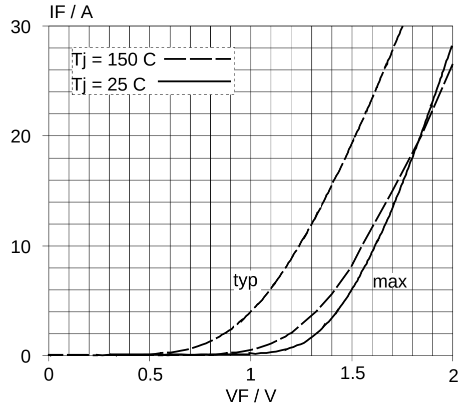


Fig.6. Modulator typical and maximum forward characteristic; $I_F = f(V_F)$; parameter T_j

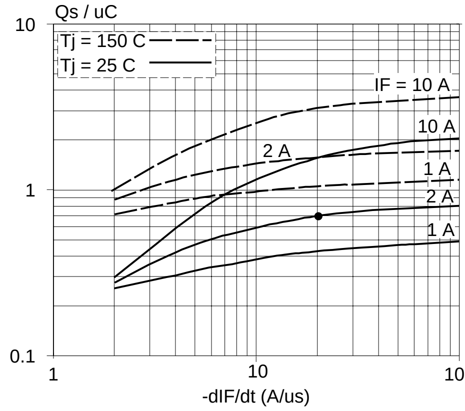


Fig.7. Modulator maximum Q_s at T_j = 25˚C and 150˚C

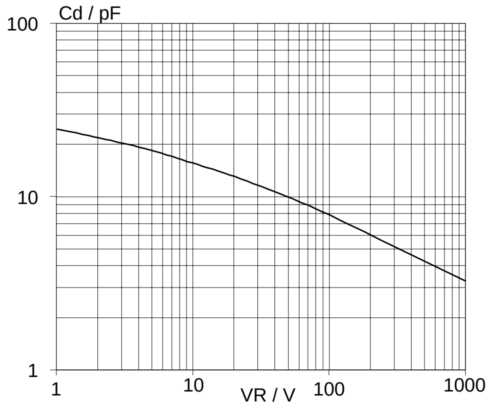


Fig.9. Modulator typical junction capacitance C_d at f = 1 MHz; T_j = 25˚C

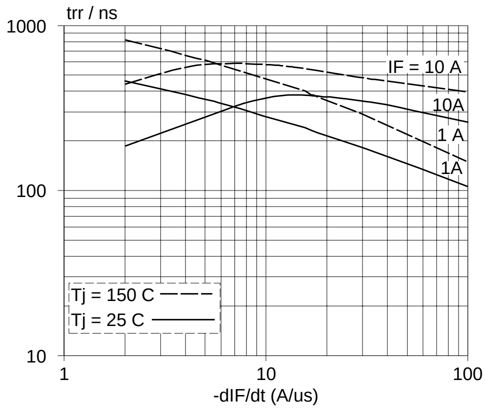


Fig.8. Modulator maximum t_{rr} measured to 25% of I_{rrm}; T_j = 25˚C and 150˚C

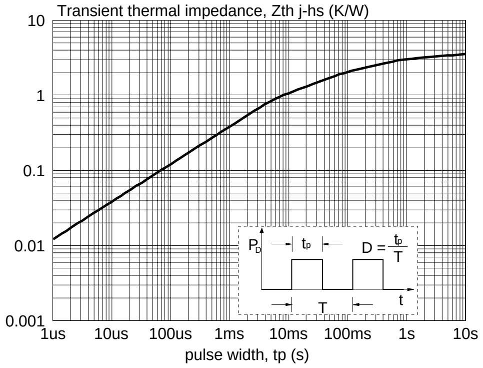


Fig.10. Modulator transient thermal impedance $Z_{th} = f(t_p)$

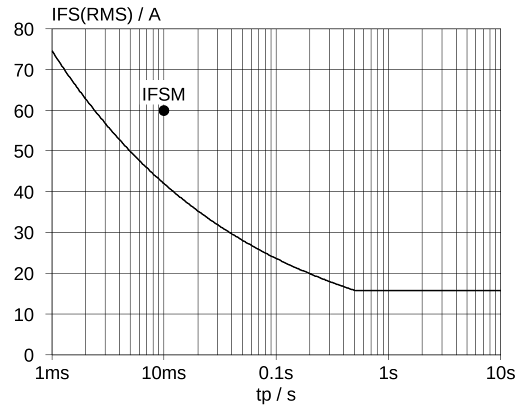


Fig.11. Damper maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; T_j = 150˚C prior to surge with reapplied V_{RWM}.

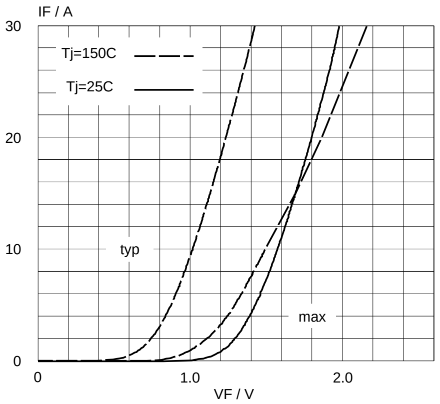


Fig.13. Damper forward characteristic $I_F = f(V_F)$; parameter T_j

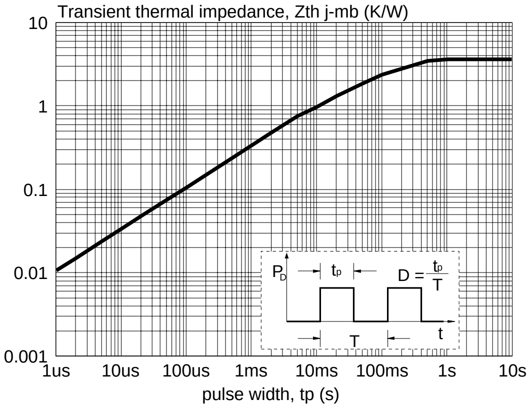


Fig.12. Damper transient thermal impedance $Z_{th} = f(t_p)$

MECHANICAL DATA

Dimensions in mm

Net Mass: 5.88 g

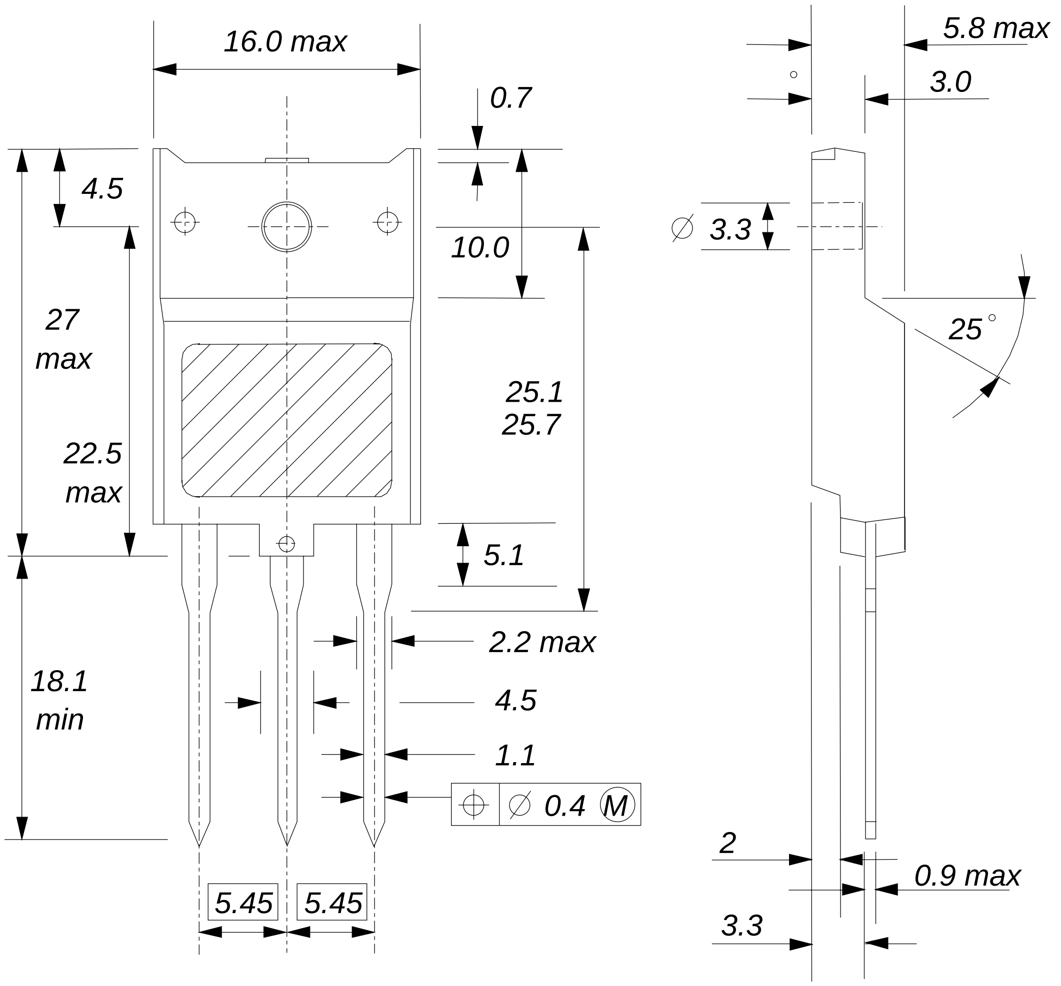


Fig.14. SOT399; The seating plane is electrically isolated from all terminals.

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.	
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