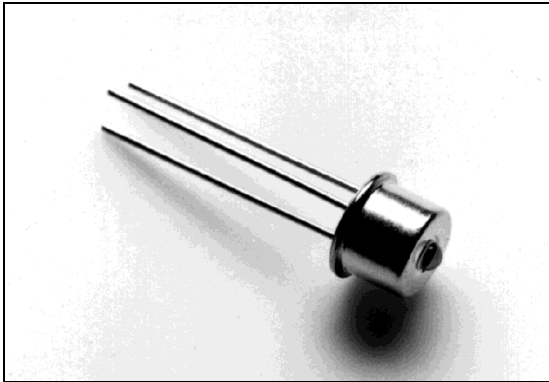


August 2003


Ordering Information

MF359	TO-46 Package
MF359 ST	ST Housing
MF359 SMA	SMA Housing

-40°C to +85°C

Note: Rated Fiber coupled power apply only on the TO-46 package, for housing options fiber coupled power is typically 10% less.

Features

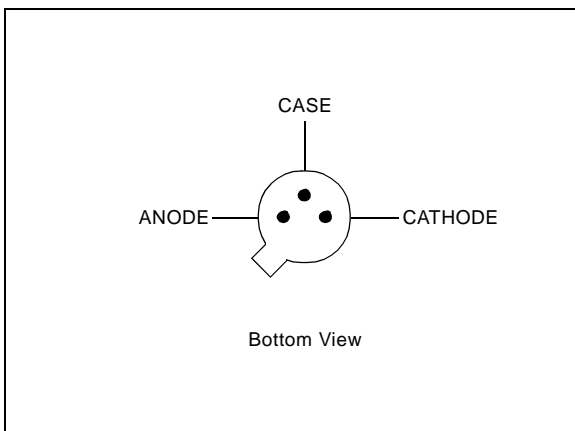
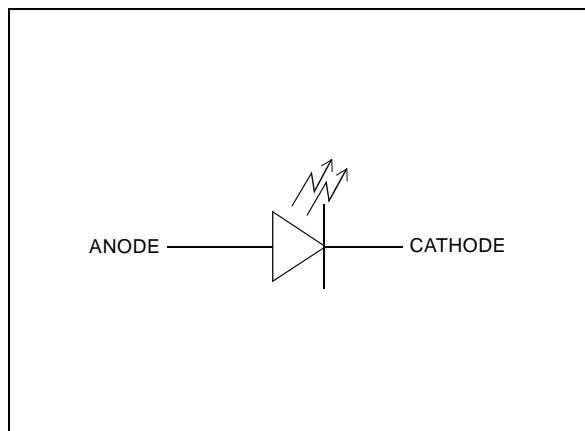
- 780nm Surface-Emitting LED
- 55MHz Bandwidth
- Designed for 62.5/125µm fiber
- Low thermal droop

Applications

- Baseband Video
- Sensors
- General Purpose

Description

The low thermal droop of this device allows baseband video transmission with minimum distortion. The double-lens optical system provides for optimum coupling of power into the fiber. It matches with the MF446 PIN Photodiode.


Figure 1 - Pin Diagram

Figure 2 - Functional Schematic

Optical and Electrical Characteristics - Case Temperature 25°C

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition	
Fiber-Coupled Power	P_{fiber}	80	120		μW	$I_F=80\text{mA}$ (Note 1)	Fiber: 62.5/ 125 μm Graded Index NA=0.275
Rise and Fall Time (10-90%)	t_r, t_f		6	8	ns	$I_F=80\text{mA}$ (no bias)	
Bandwidth (3dB _{el})	f_c		55		MHz	$I_F=80\text{mA}$	
Thermal Droop (non linearity) (Note 2)	ΔPI		2		%	$I_F=80\text{mA}$	
Peak Wavelength	λ_p	760	780	800	nm	$I_F=80\text{mA}$	
Spectral Width (FWHM)	$\Delta\lambda$		50		nm	$I_F=80\text{mA}$	
Forward Voltage (Figure 7)	V_F		2.2	2.6	V	$I_F=80\text{mA}$	
Reverse Current	I_R			20	μA	$V_R=1\text{V}$	
Capacitance	C		250		pF	$V_R=0\text{V}, f=1\text{MHz}$	

Note 1: Measured at the exit of 100 meters of fiber.

Note 2: Transient decline in optical power due to self-heating.

Absolute Maximum Ratings

Parameter	Symbol	Limit
Storage Temperature	T_{stg}	-55 to +125°C
Operating Temperature (derating: Figure 6)	T_{op}	-40 to +85°C
Electrical Power Dissipation (derating: Figure 6)	P_{tot}	300 mW
Continuous Forward Current (f<10kHz)	I_F	110 mA
Peak Forward Current (duty cycle<50%, f>1MHz)	I_{FRM}	180 mA
Reverse Voltage	V_R	1.5 V
Soldering Temperature (2mm from the case for 10 sec.)	T_{slid}	260°C

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance - Infinite Heat Sink	R_{thjc}			100	°C/W
Thermal Resistance - No Heat Sink	R_{thja}			400	°C/W
Temperature Coefficient - Optical Power	dP/dT_j		-0.5		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		nm/°C

Typical Fiber-Coupled Power

Core Diameter/Cladding Diameter Numerical Aperture			
50/125 μm 0.20	62.5/125 μm 0.275	100/140 μm 0.29	200/230 μm 0.37
60 μW	120 μW	250 μW	400 μW

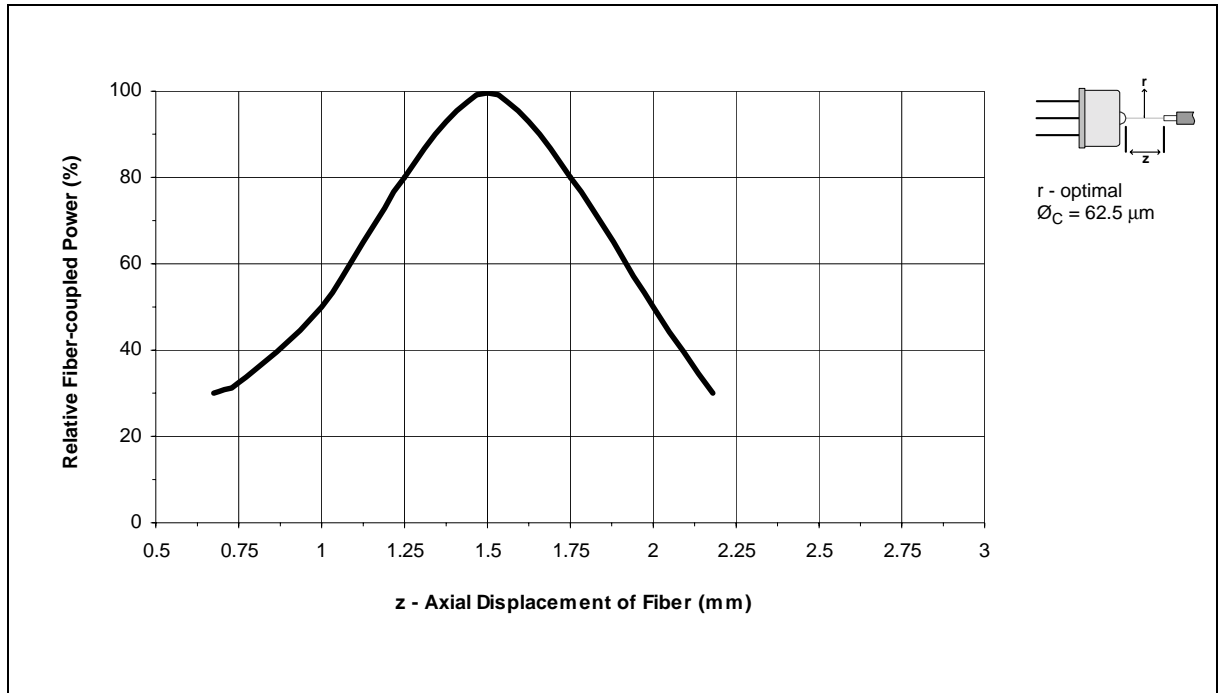


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber

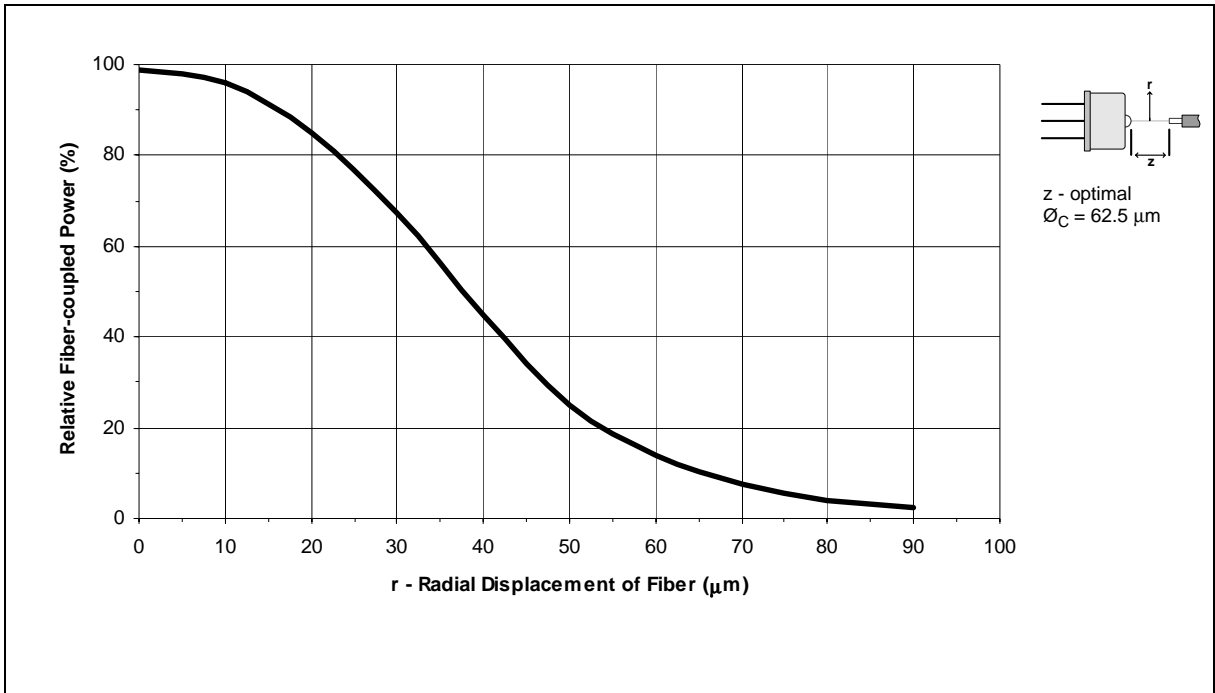


Figure 4 - Relative Fiber-coupled Power vs. r - Radial Displacement of Fiber

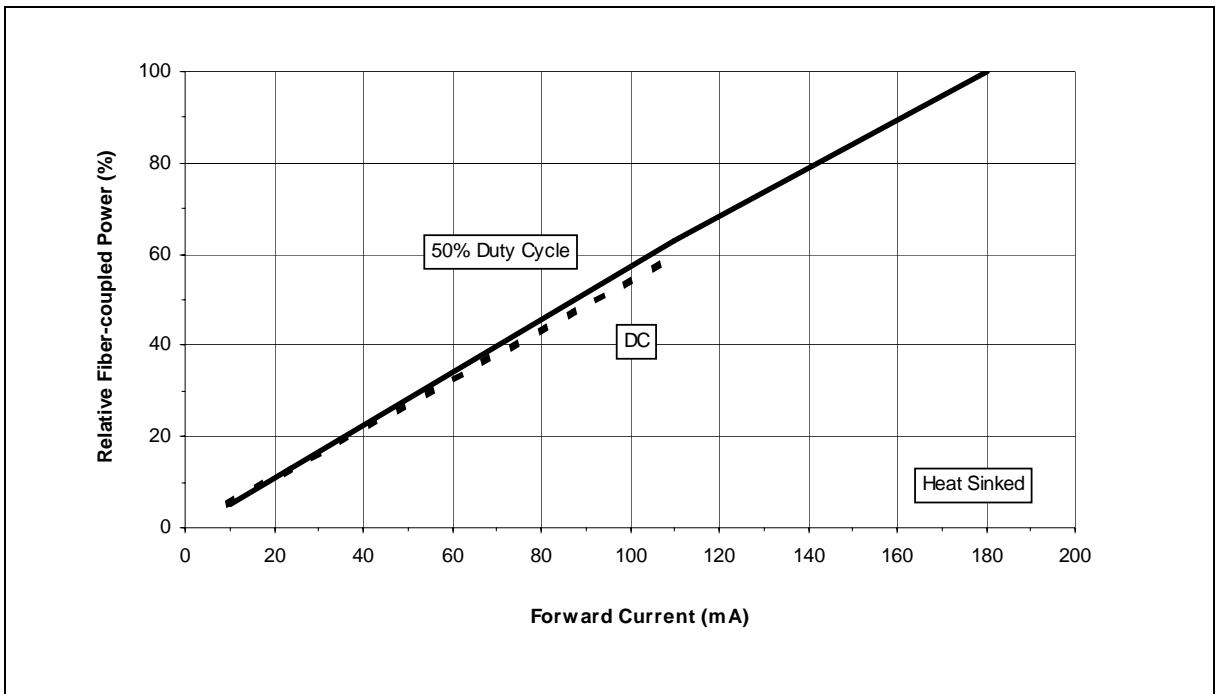


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

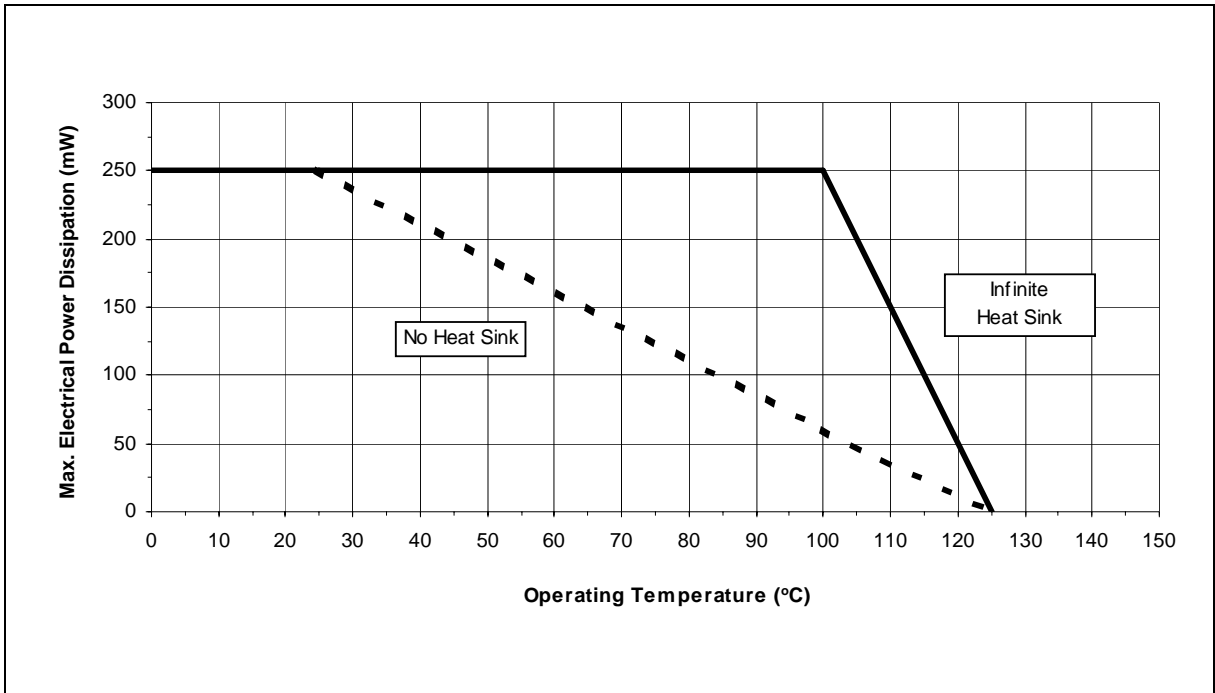


Figure 6 - Max. Electrical Power Dissipation vs. Operating Temperature

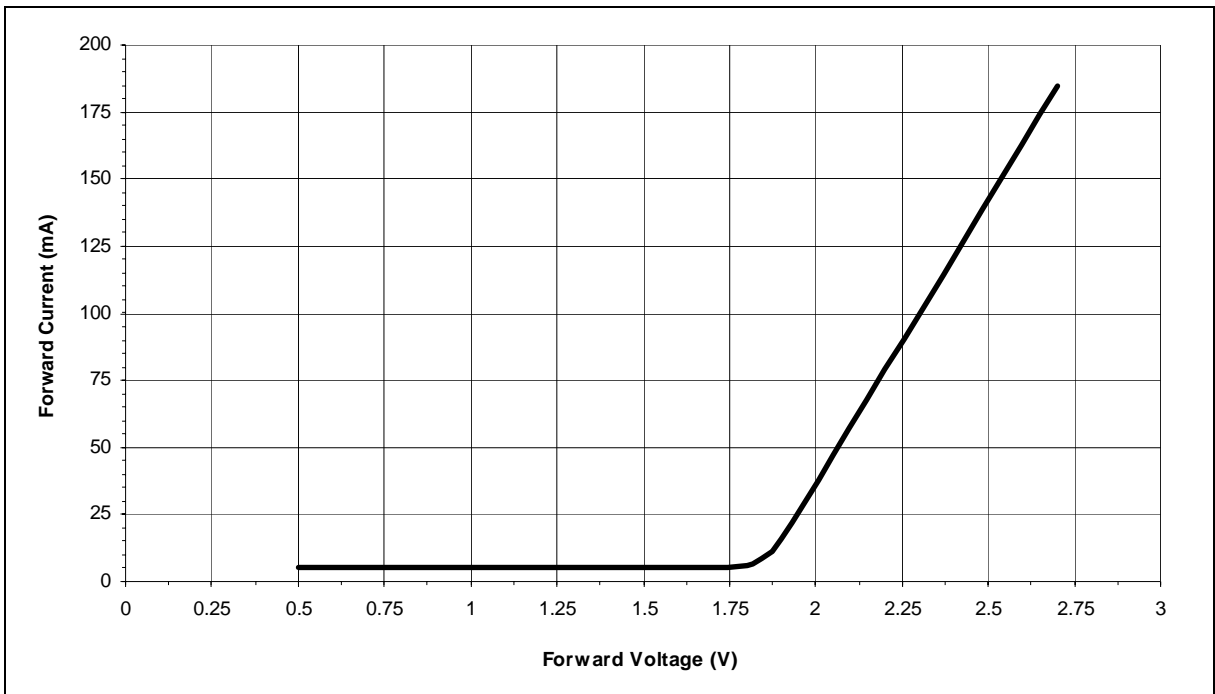
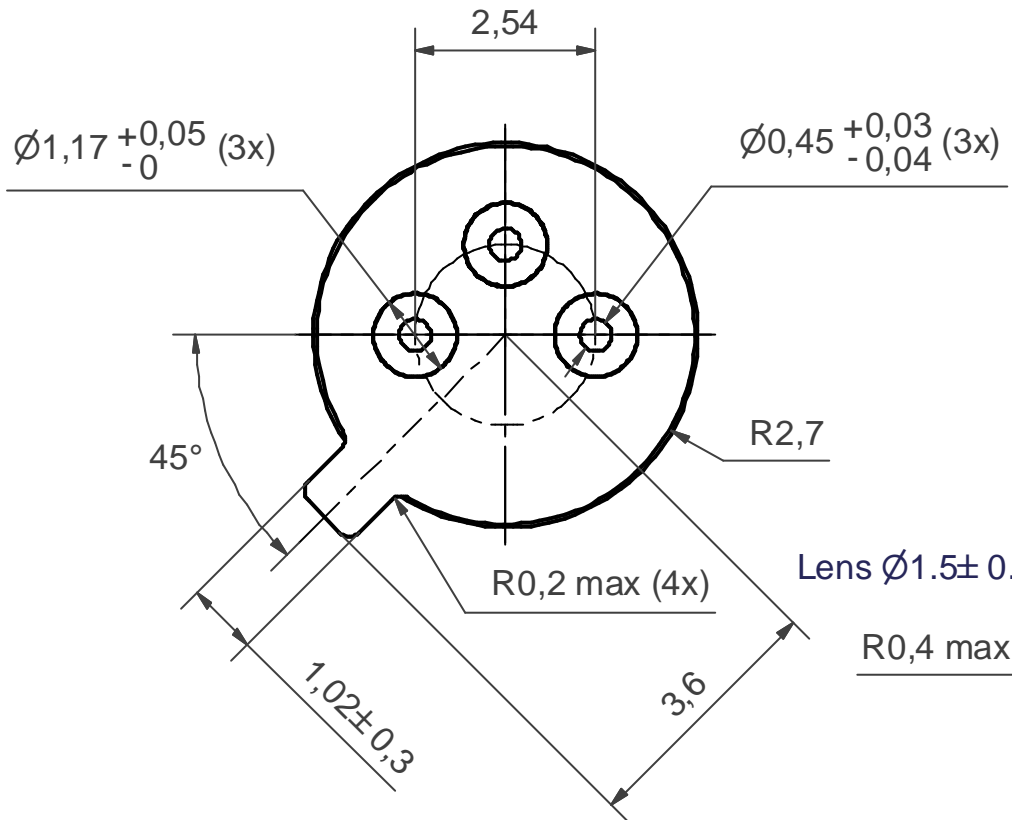
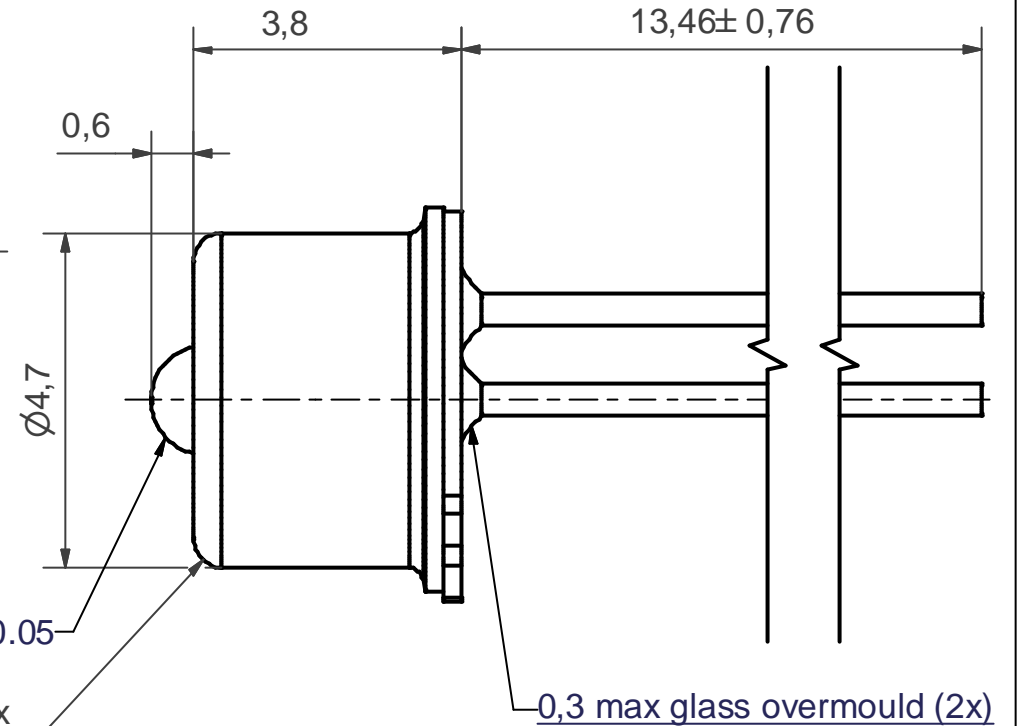


Figure 7 - Forward Current vs. Forward Voltage

BOTTOM VIEW (10 : 1)



SIDE VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.
3. Coating: Case: Ni 1,5-2,5 μm .
Header: Ni 2-3 μm / Au min 1,32 μm .

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Package code **TB**

Previous package codes

Drawing type
Package drawing, TO-46 with lens

Title **JS004076**



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