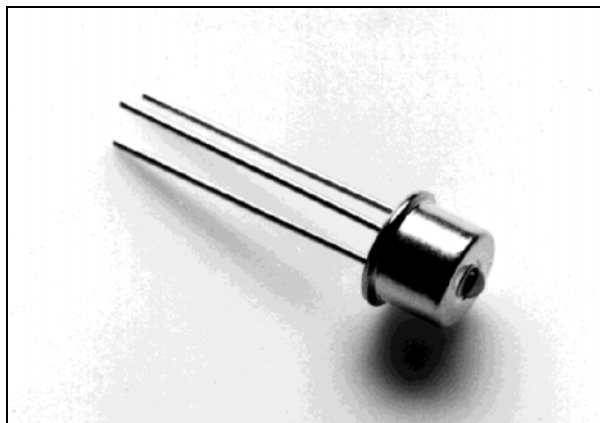


October 2004



### Ordering Information

MF436	TO-46 Package
MF436 ST	ST Housing
MF436 FC	FC 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

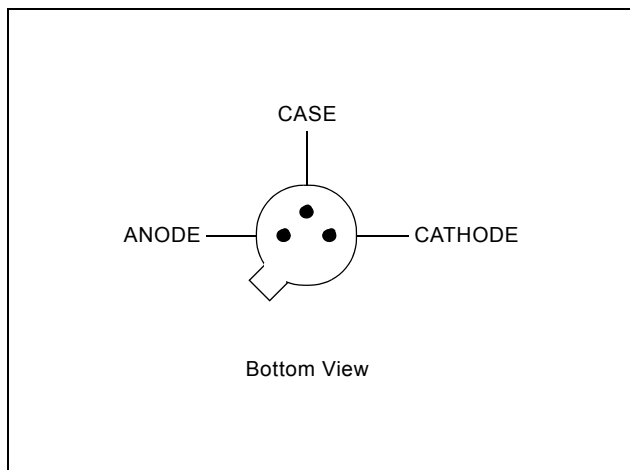
- 1310 nm Surface-Emitting LED
- 50 MHz Bandwidth
- Designed for 62.5/125  $\mu$ m fiber
- High power

### Applications

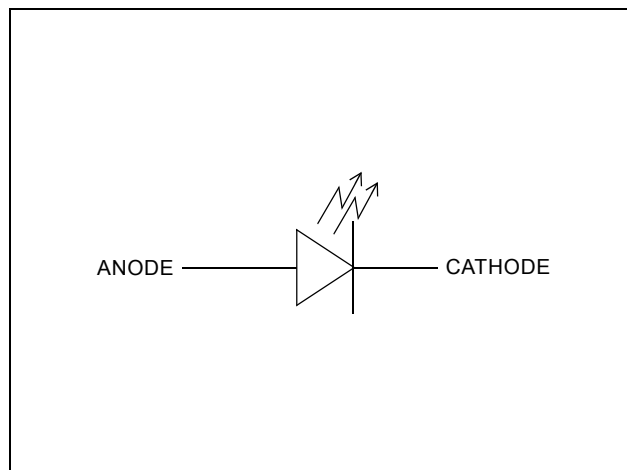
- Sensors
- Test Equipment
- Signal transmission

### Description

This device generates very high power which makes it ideal for many sensors and signal transmission applications. It operates in a wide range of temperatures, and can satisfy virtually any environmental specification. The double-lens optical system results in optimum coupling of power into the fiber.



**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 (Figures 3, 4 and 5) (Table 1)	$P_{\text{fiber}}$	20	27		$\mu\text{W}$	$I_F=80\text{mA}$ , Note 1 Fiber: 50/125 $\mu\text{m}$ NA=0.20
		70	80		$\mu\text{W}$	$I_F=80\text{mA}$ , Note 1 Fiber: 62.5/125 $\mu\text{m}$ NA=0.275
Rise and Fall Time (10-90%)	$t_r, t_f$		7	10	ns	$I_F=80\text{mA}$ (no bias)
Bandwidth (3 dB <sub>el</sub> )	$f_c$		50		MHz	$I_F=80\text{mA}$
Peak Wavelength	$\lambda_p$	1270	1300	1350	nm	$I_F=80\text{mA}$
Spectral Width (FWHM)	$\Delta\lambda$		145	165	nm	$I_F=80\text{mA}$
Forward Voltage (Figure 5)	$V_F$		1.5	2	V	$I_F=80\text{mA}$
Reverse Current	$I_R$			100	$\mu\text{A}$	$V_R=1\text{V}$
Capacitance	C		200		pF	$V_R=0\text{V}$ , $f=1\text{MHz}$

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

**Absolute Maximum Ratings**

Parameter	Symbol	Limit
Storage Temperature	$T_{\text{stg}}$	-55 to +125°C
Operating Temperature	$T_{\text{op}}$	-40 to +85°C
Electrical Power Dissipation (Figure 4)	$P_{\text{tot}}$	160 mW
Continuous Forward Current ( $f < 10$ kHz)	$I_F$	90 mA
Peak Forward Current (duty cycle < 50%, $f > 1$ MHz)	$I_{\text{FRM}}$	130 mA
Reverse Voltage	$V_R$	0.5 V
Soldering Temperature (2mm from the case for 10 sec.)	$T_{\text{sld}}$	260°C

**Thermal Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Infinite Heat Sink	$R_{\text{thjc}}$			150	°C/W
Thermal Resistance - No Heat Sink	$R_{\text{thja}}$			450	°C/W
Temperature Coefficient - Optical Power	$dP/dT_j$		-0.6		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.45		nm/°C
Temperature Coefficient - Spectral Width	$d\Delta\lambda/dT_j$		0.25		nm/°C

Typical Fiber-Coupled Power

Core Diameter/Cladding Diameter Numerical Aperture		
50/125 $\mu\text{m}$ 0.20	62.5/125 $\mu\text{m}$ 0.275	100/140 $\mu\text{m}$ 0.29
27 $\mu\text{W}$	80 $\mu\text{W}$	140 $\mu\text{W}$

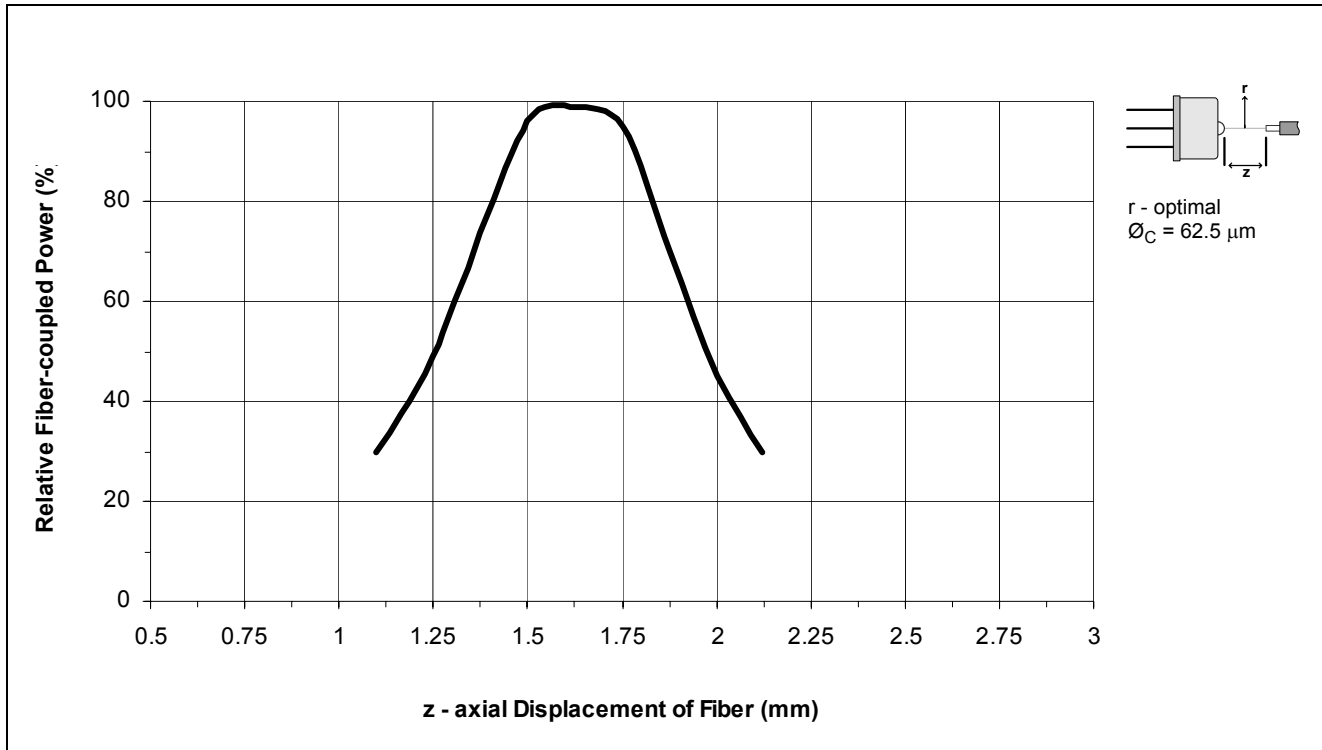


Figure 3 - z - Axial Displacement of Fiber



Figure 4 - r - Radial Displacement of Fiber

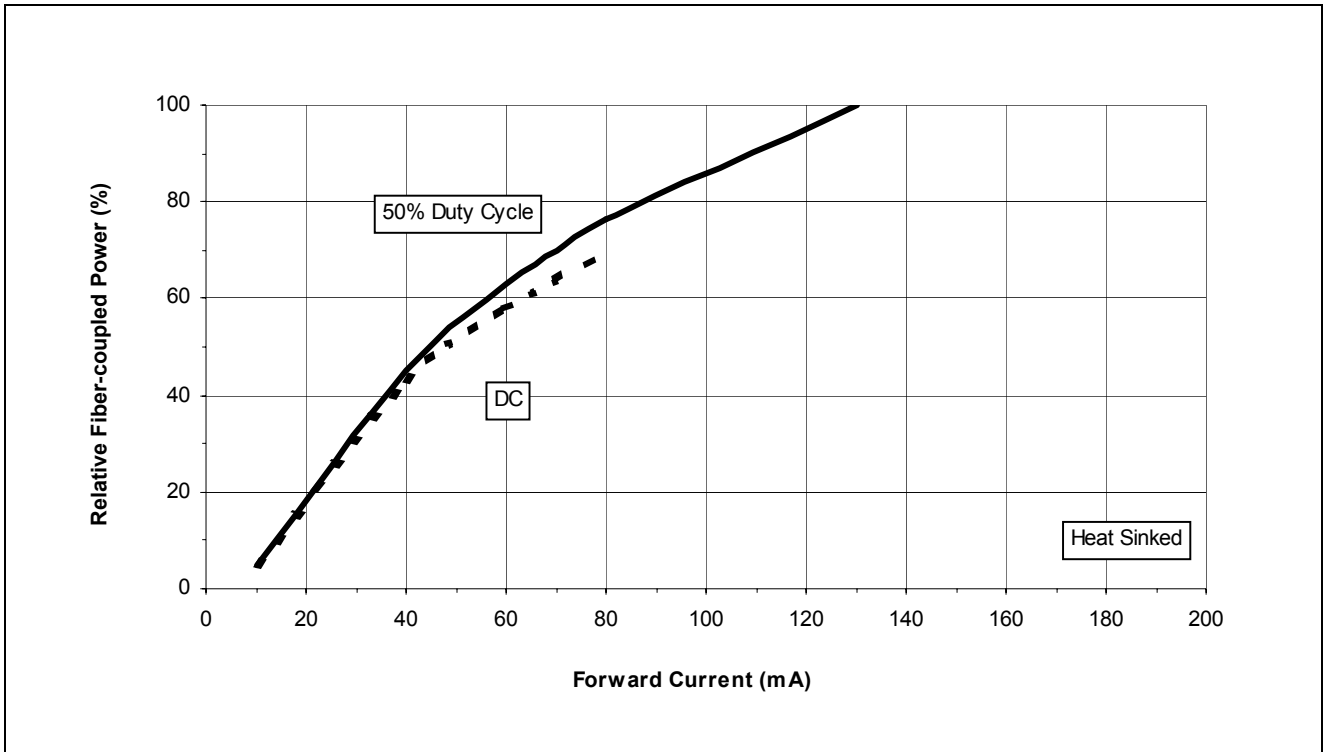


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

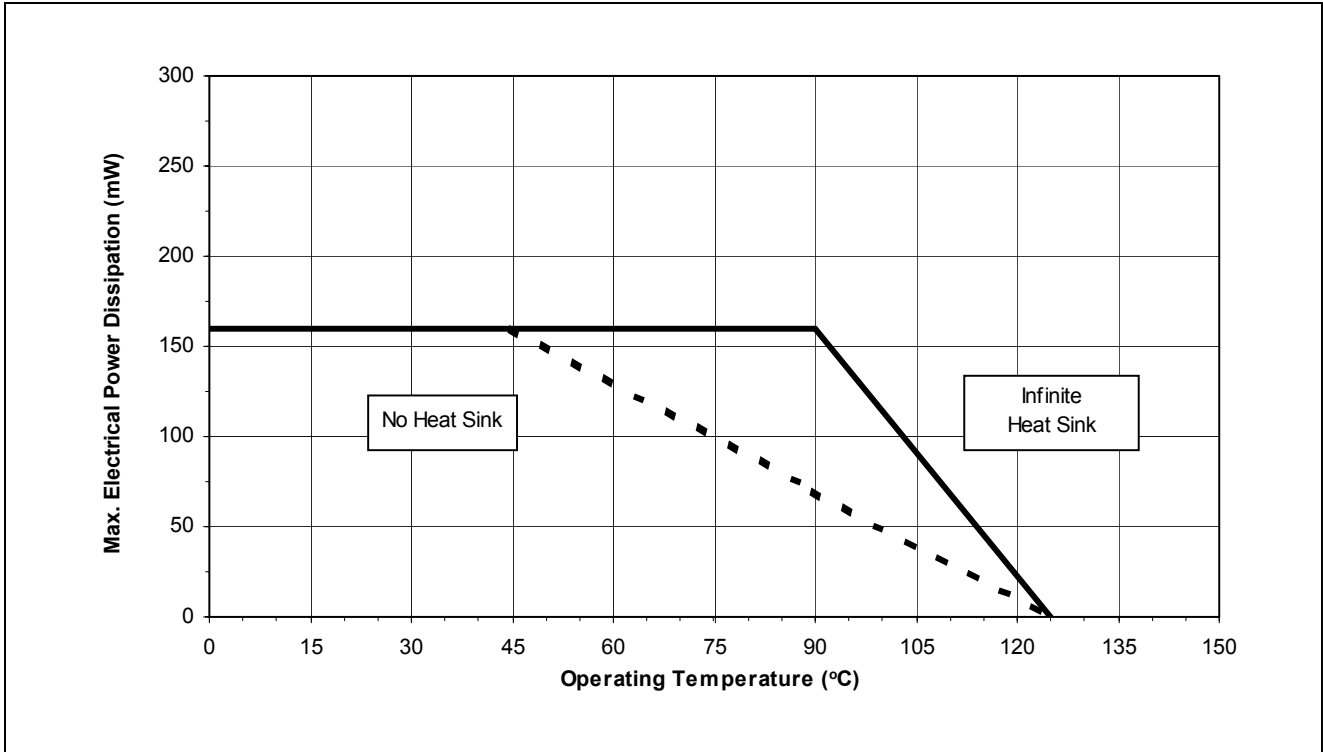


Figure 6 - Max. Electrical Power Dissipation vs. Operating Temperature

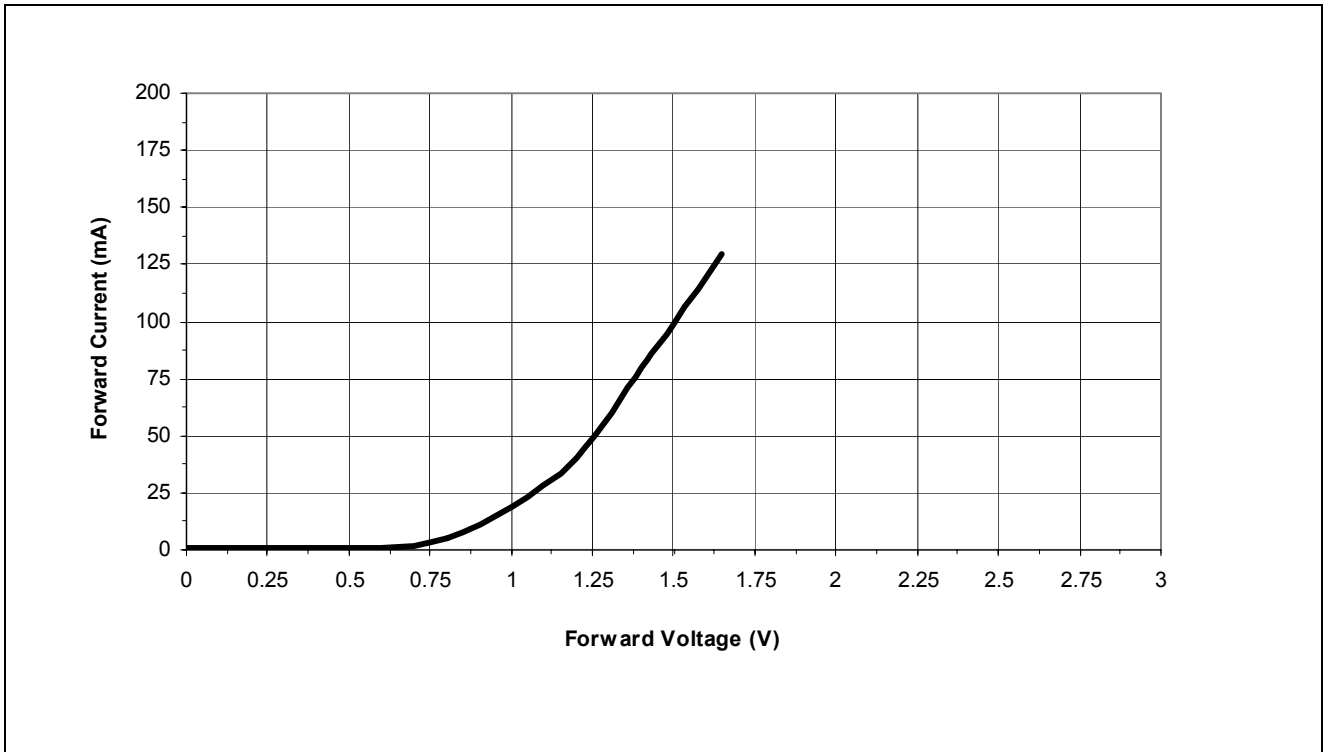
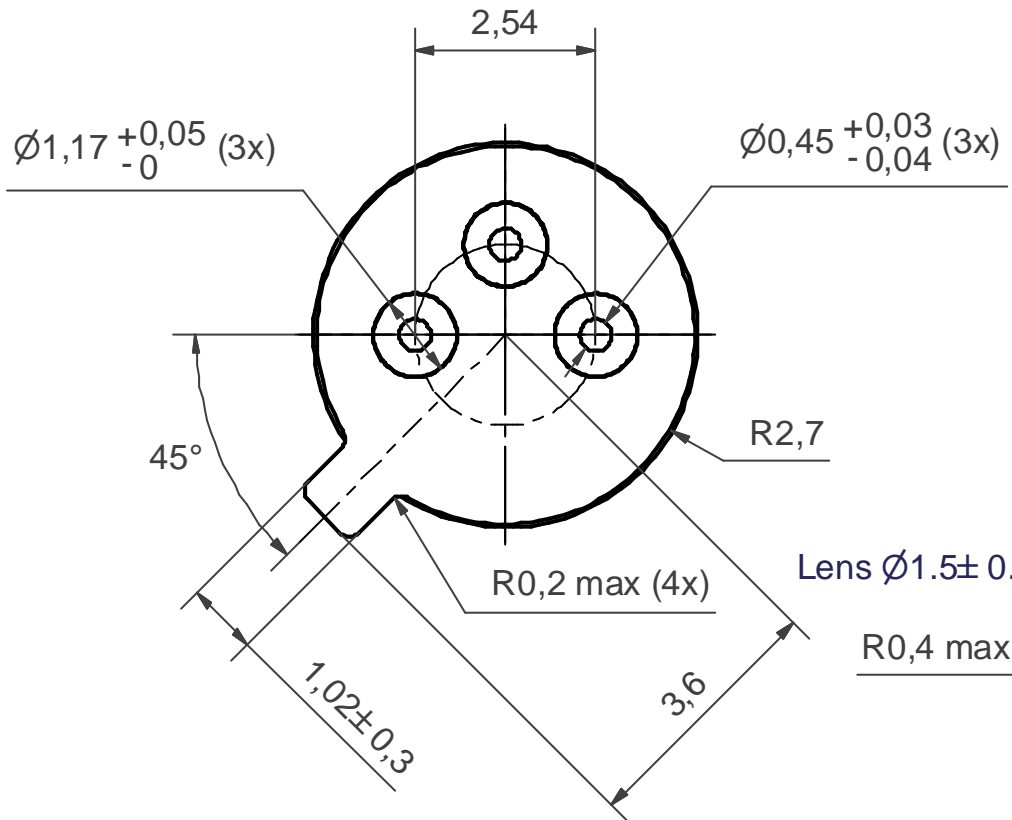
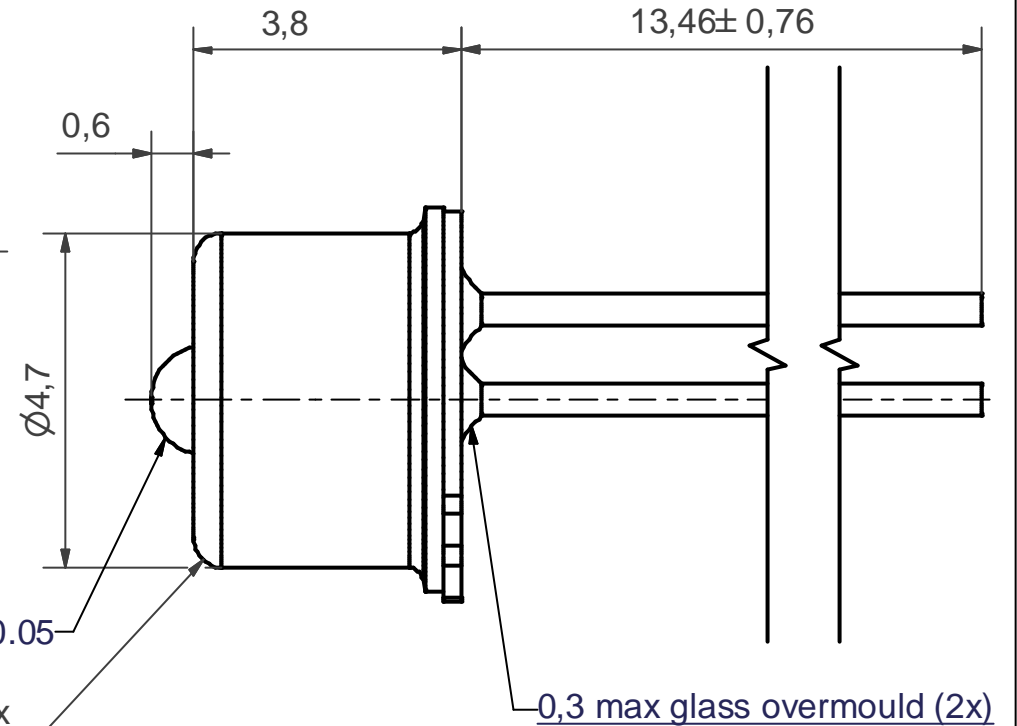


Figure 7 - Forward Current vs. Forward Voltage

# 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  $\mu$ m.  
Header: Ni 2-3  $\mu$ m / Au min 1,32  $\mu$ m.

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ISSUE	1			
ACN	JS004076R1A			
DATE	22-MAR-03			
APPRD.	TD/BE			



	Package code <b>TB</b>
Previous package codes	Drawing type Package drawing, TO-46 with lens
	Title <b>JS004076</b>



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