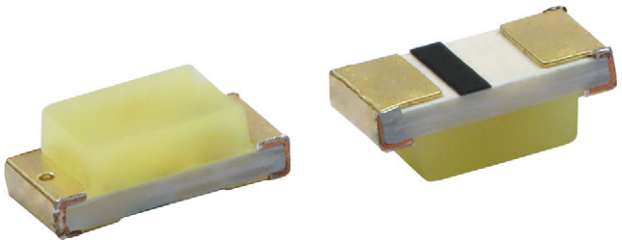
Highbright 0603 ChipLED



FEATURES

- High efficient InGaN technology
- Super thin ChipLED with exceptional brightness 1.6 mm x 0.8 mm x 0.6 mm (L x W x H)
- High reliability PCB based
- Temperature range -40 °C to +100 °C
- Chromaticity coordinate categorized according to CIE 1931 per packing unit
- EIA standard package
- Compatible to IR reflow soldering
- Available on 7" diameter reel
- AEC-Q101 qualified
- Preconditioning according to JEDEC® level 3
- ESD classification: HBM 2 kV
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

Despite its small size, the 0603 ChipLED features an exceptionally high performance for a wide range of applications. The blue LED chip is mounted on a PCB and molded with a mixture of clear resin and yellow converter, converting the blue emission partially to yellow, which mixes the remaining blue to give white. This automotive qualified 0603 LED is an obvious solution for small-scale products that are expected to work reliably in an arduous environment.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD 0603 ChipLED
- Product series: standard
- Angle of half intensity: ± 80°

APPLICATIONS

- Automotive interior lighting
- Telecommunication, audio, video and office equipment, white goods
- Backlighting for LCDs, switches, symbols and keyboards
- Optical indicators
- Ideal for coupling into light guides

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at I_F (mA)	COORDINATE (x, y)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMW1320-GS08	White	224	-	450	20	-	0.255, 0.255	-	20	2.70	-	3.50	20	InGaN/ yellow converter

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

VLMW1320

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
DC forward current	$T_{amb} \leq 25$ °C	I_F	20	mA
Peak forward current	$t_p \leq 100$ µs, $t_p/T = 0.1$	I_{FP}	0.1	A
Power dissipation		P_V	70	mW
Junction temperature		T_J	115	°C
Operating temperature range		T_{amb}	-40 to +100	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Soldering temperature	reflow	T_{sol}	260	°C
ESD classification	AEC-Q101 qualified	ESD_{HBM}	2000	V
		ESD_{MM}	200	V
Thermal resistance junction to ambient		R_{thJA}	800	K/W

Note

- Since this part is using a single direction Zener diode, IR could not be tested.

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLMW1320, WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	I_F = 20 mA	I_V	224	-	450	mcd
Chromatically coordinate x acc. to CIE 1931	I_F = 20 mA	x	-	0.255	-	
Chromatically coordinate y acc. to CIE 1931	I_F = 20 mA	y	-	0.255	-	
Angle of half intensity	I_F = 20 mA	φ	-	± 80	-	°
Forward voltage	I_F = 20 mA	V_F	2.70	-	3.50	V

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LUMINOUS INTENSITY (mcd) at 20 mA	
	MIN.	MAX.
S2	224	280
T1	280	355
T2	355	450

Note

- Luminous intensity is measured with a tolerance of ± 11 %. One reel contains only one luminous intensity group (there will be no mixing of the groups on any reel). In order to ensure delivery availability, single luminous intensity groups will not be orderable.

FORWARD VOLTAGE CLASSIFICATION

GROUP	FORWARD VOLTAGE (V) at 20 mA	
	MIN.	MAX.
29	2.7	2.9
30	2.9	3.1
31	3.1	3.3
32	3.3	3.5

Note

- Forward voltage is measured with a tolerance of ± 0.1 V.
- One reel contains only one forward voltage group (there will be no mixing of the groups on any reel). In order to ensure delivery availability, single forward voltage groups will not be orderable.

CHROMATICITY COORDINATED GROUPS FOR WHITE SMD LED AT 20 mA

	x	y
2C	0.2360	0.2420
	0.2480	0.2590
	0.2620	0.2500
	0.2500	0.2320
3C	0.2480	0.2590
	0.2600	0.2770
	0.2740	0.2680
	0.2620	0.2500

Notes

- Chromaticity coordinate groups are tested with a tolerance of ± 0.01.
- One reel contains only one chromaticity group (there will be no mixing of the groups on any reel). In order to ensure delivery availability, single chromaticity groups will not be orderable.

MARKING EXAMPLE FOR SELECTION CODE ON LABEL

Selection code: S2-2C-30 (sequence: IV, chromaticity coordinate and V_F)

- S2: IV group: 224 mcd to 280 mcd
- 2C: chromaticity coordinate:

x	y
0.2360	0.2420
0.2480	0.2590
0.2620	0.2500
0.2500	0.2320

- 30: V_F group: 2.9 V to 3.1 V

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

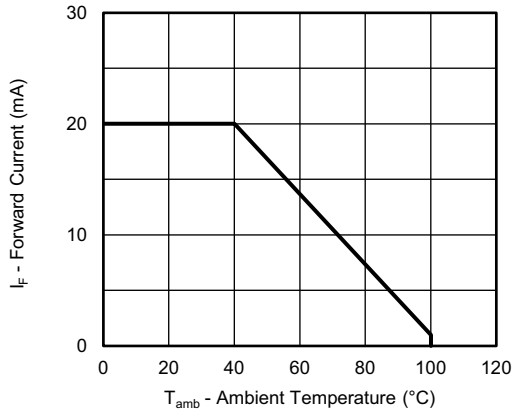


Fig. 1 - Forward Current vs. Ambient Temperature

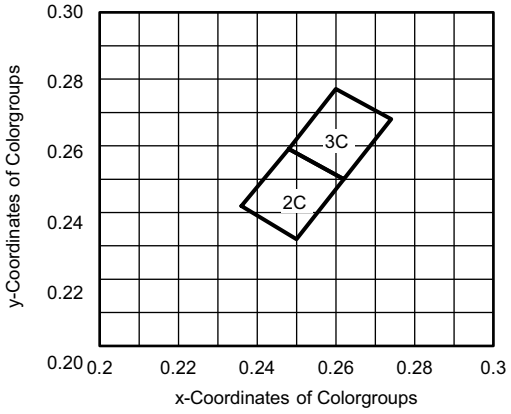


Fig. 4 - Coordinates of Colorgroups

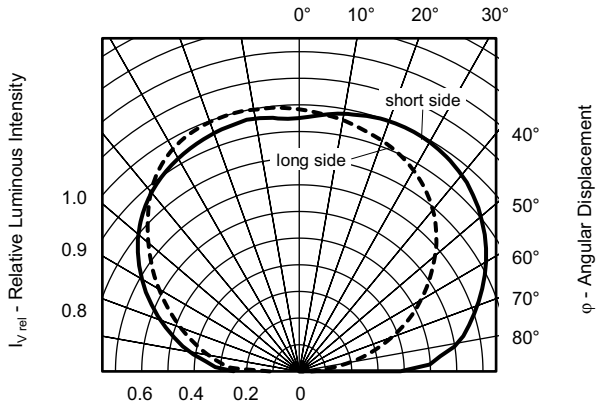


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

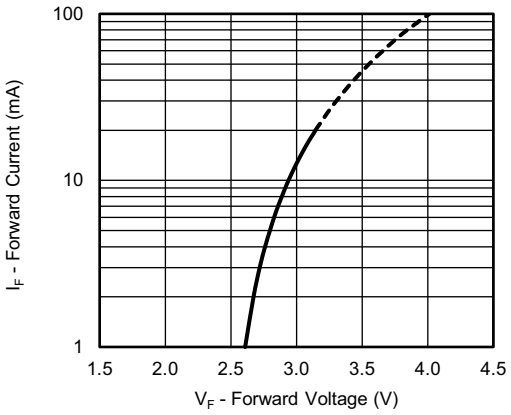


Fig. 5 - Forward Current vs. Forward Voltage

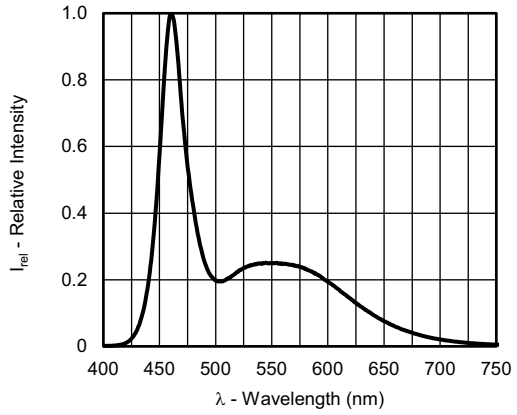


Fig. 3 - Relative Intensity vs. Wavelength

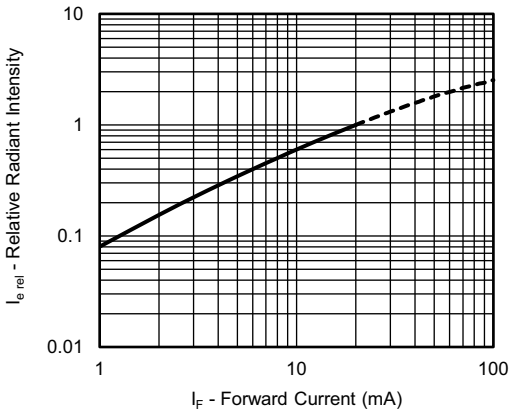


Fig. 6 - Relative Radiant Intensity vs. Forward Current

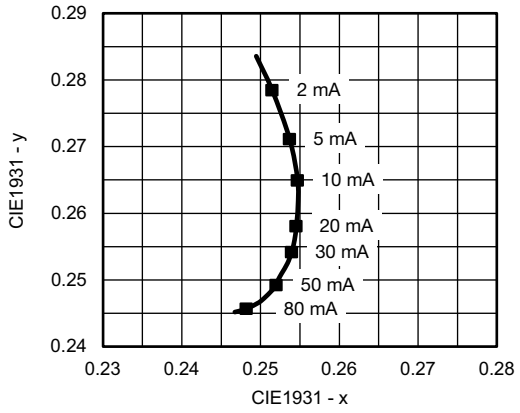


Fig. 7 - Relative Radiant Intensity vs. Forward Current

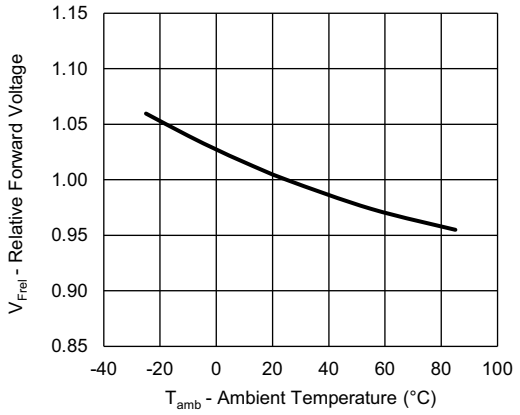


Fig. 8 - Relative Forward Voltage vs. Ambient Temperature

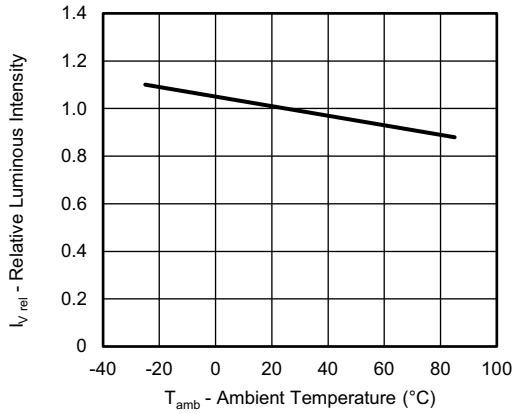
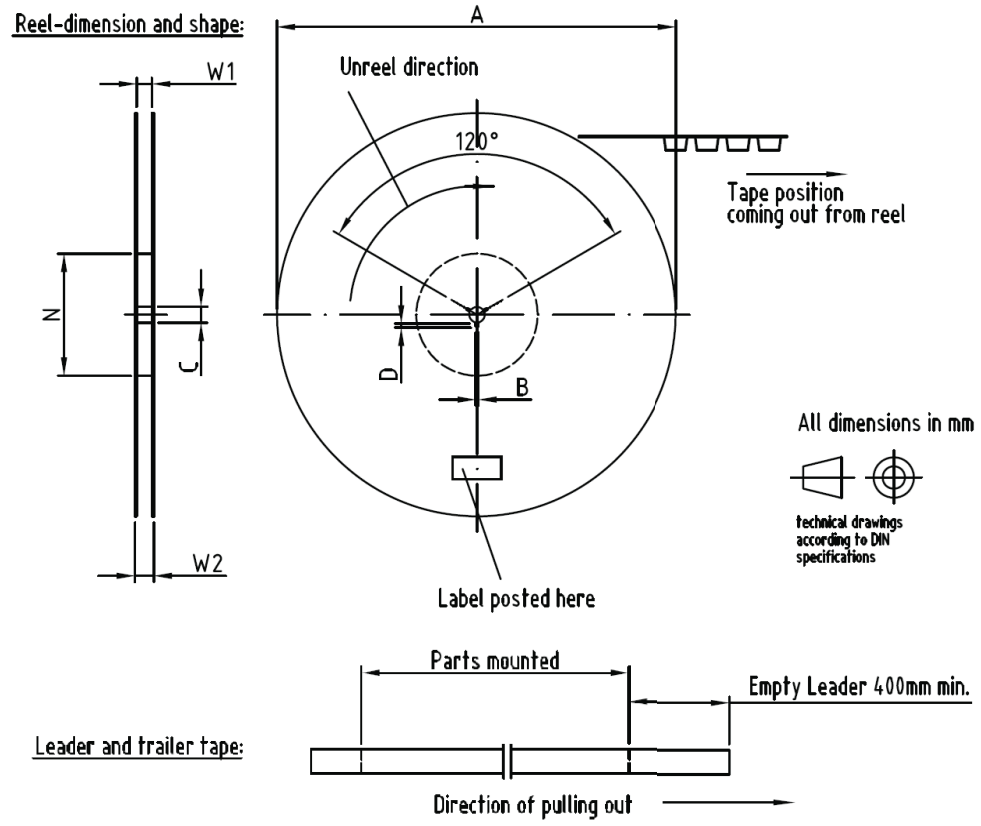


Fig. 9 - Relative Luminous Intensity vs. Ambient Temperature

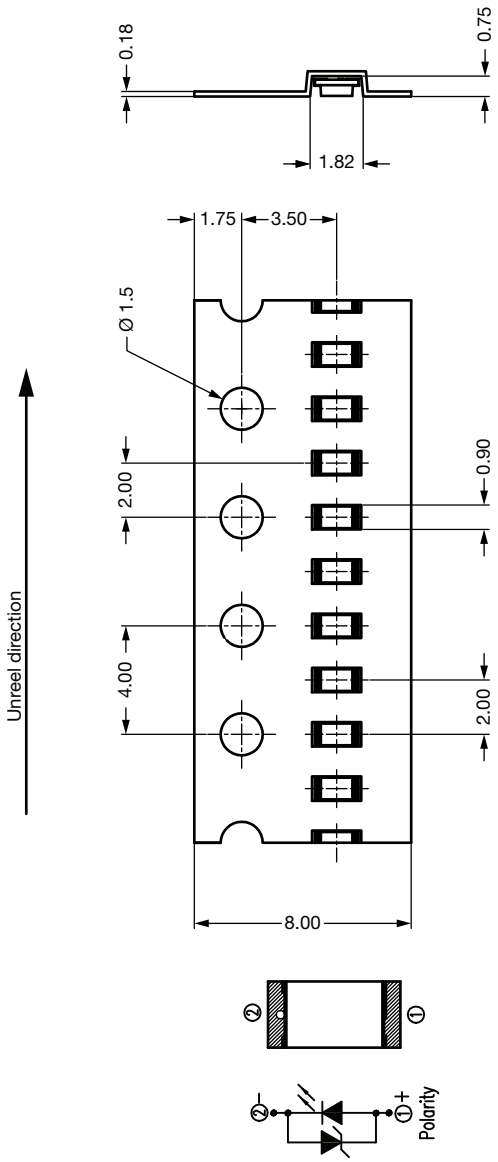
REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5172.01
Issue: VK; 18.04.24

DIMENSIONS OF REEL IN MILLIMETERS (according drawing reference)							
TAPING VERSION	**A**	**B**	**C**	**D**	**N**	**W1**	**W2**
GS08	Ø 180 ± 2	2 ± 0.5	Ø 13 ± 0.2	-	Ø 60 + 0 / - 1	9 + 0.3 / - 0	11.4 ± 1

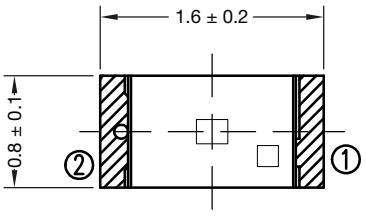
TAPE DIMENSIONS in millimeters



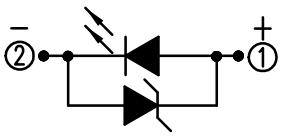
Reels come in quantity of 10 000 units

MOQ: 2 reels (20 000 pcs)

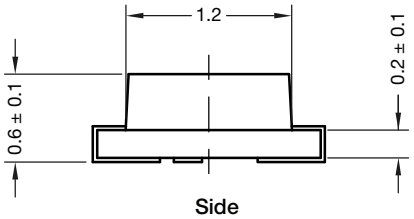
PACKAGE DIMENSIONS in millimeters



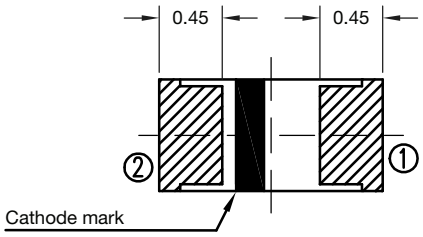
Top



Polarity

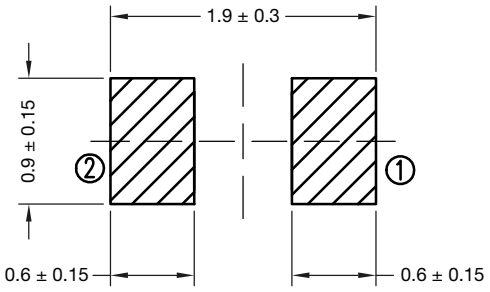


Side



Bottom

Recommended soldering pad



Note

- Suggested pad dimension is for reference only. Please modify the pad dimension based on individual need.

SOLDERING PROFILE

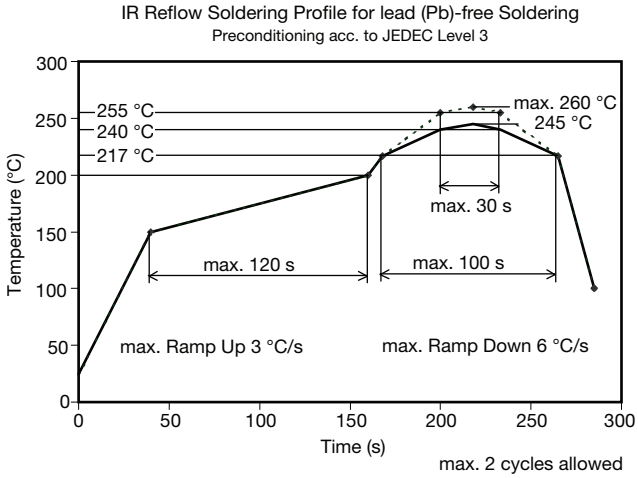
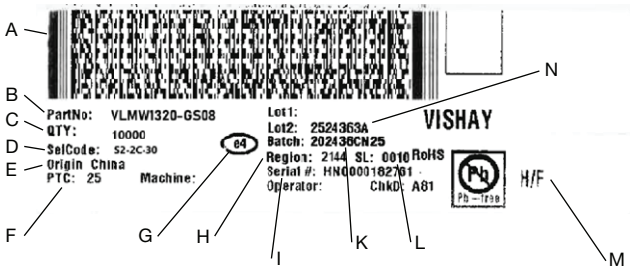


Fig. 10 - Vishay Lead (Pb)-free Reflow Soldering Profile
(according to J-STD-020C)

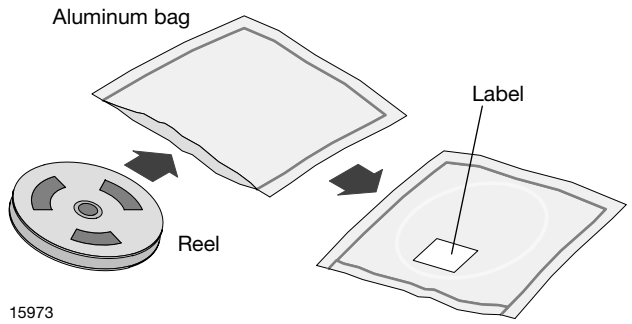
BAR CODE PRODUCT LABEL (Example)



A. 2D bar code
B. Part No: Vishay part number
C. QTY: quantity
D. SelCode: selection bin code
E. Country of origin
F. PTC: production plant code
G. Termination finish
H. Region code
I. Serial#: serial number
K. Batch Number: year, week, country code, plant code
L. SL: storage location
M. Environmental Symbols: RoHS, lead (Pb)-free, halogen-free
N. Lot numbers

DRY PACKING

The reel is packed in an anti-humidity bag to protect the devices from absorbing moisture during transportation and storage.



FINAL PACKING

The sealed reel is packed into a cardboard box. A secondary cardboard box is used for shipping purposes.

RECOMMENDED METHOD OF STORAGE

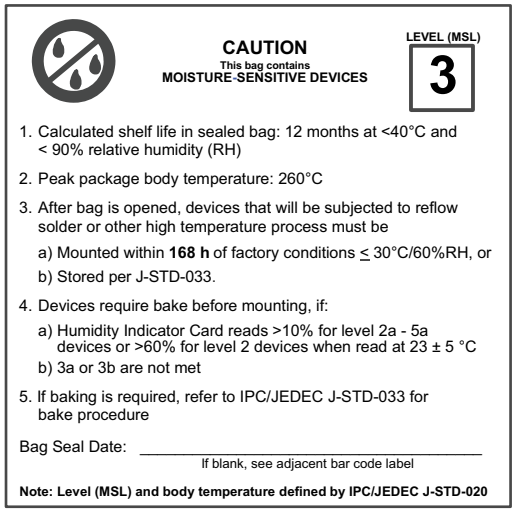
Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

After more than 168 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the condition given in J-STD-033.

A JEDEC J-STD-033 level 3 label is included on all aluminum dry bags.



Example of JEDEC J-STD-033 level 3 label

ESD PRECAUTION

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electrostatic sensitive devices warning labels are on the packaging.

VISHAY SEMICONDUCTORS STANDARD BAR CODE LABEL

The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.

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