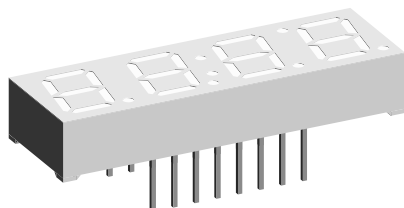


Clock Display



16770

DESCRIPTION

Four digit display, with 10 mm digit character size. Designed as clock display with active colon between digit two and three.

FEATURES

- High efficient AlInGAP technology
- Dark surface, white segments
- Common anode (TDC.1050m)
- Common cathode (TDC.1060m)
- Multiplex mode
- Recommended viewing distance up to 7 m
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

- Clock modules for video/audio equipment, instrumentation, set top boxes

PRODUCT GROUP AND PACKAGE DATA

- Product group: Display
- Package: 10 mm clock
- Product series: Standard
- Angle of half intensity: $\pm 50^\circ$

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (μcd)			at I_F (mA)	WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	CIRCUITRY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TDCG1050m	Green	2800	4000	-	10	562	573	575	20	-	2	2.4	20	Common anode
TDCG1060m	Green	2800	4000	-	10	562	573	575	20	-	2	2.4	20	Common cathode
TDCR1050m	Red	4000	6000	-	10	-	631	-	20	-	2	2.4	20	Common anode
TDCR1060m	Red	4000	6000	-	10	-	631	-	20	-	2	2.4	20	Common cathode
TDCY1050m	Super yellow	4000	8000	-	10	-	589	-	20	-	2	2.4	20	Common anode
TDCY1060m	Super yellow	4000	8000	-	10	-	589	-	20	-	2	2.4	20	Common cathode

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified)

TDCG1050m, TDCG1060m, TDCR1050m, TDCR1060m, TDCY1050m, TDCY1060m

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage per segment		V_R	5	V
DC forward current per segment		I_F	25	mA
Peak forward current per segment	Duty 1/10 at 1 kHz	I_{FM}	160	mA
Power dissipation		P_V	60	mW
Operating temperature range		T_{amb}	- 40 to + 85	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature		T_{sd}	260 ± 5	$^\circ\text{C}$

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TDCG1050m, TDCG1060m, GREEN

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment ⁽¹⁾	$I_F = 2\text{ mA}$	TDCG1050m	I_V	-	1000	-	μcd
		TDCG1060m					
	$I_F = 10\text{ mA}$	TDCG1050m	I_V	2800	4000	-	μcd
		TDCG1060m					
Luminous intensity of colon	$I_F = 2\text{ mA}$	TDCG1050m	I_V	-	200	-	μcd
		TDCG1060m					
	$I_F = 10\text{ mA}$	TDCG1050m	I_V	500	1200	-	μcd
		TDCG1060m					
Dominant wavelength	$I_F = 20\text{ mA}$	TDCG1050m, TDCG1060m	λ_d	562	573	575	nm
Peak wavelength	$I_F = 20\text{ mA}$		λ_p	-	575	-	nm
Spectral bandwidth	$I_F = 20\text{ mA}$		$\Delta\lambda$	-	20	-	nm
Forward voltage per segment or DP	$I_F = 20\text{ mA}$		V_F	-	2	2.4	V
Reverse current per segment or DP	$V_R = 5\text{ V}$		I_R	-	-	10	μA

Note

⁽¹⁾ $I_{Vmin.}$ and I_V groups are mean values of all segments (a to g, D1 to D4), matching factor within segments is ≥ 0.5 , excluding decimal points and colon.

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TDCR1050m, TDCR1060m, RED

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment ⁽¹⁾	$I_F = 2\text{ mA}$	TDCR1050m	I_V	-	1500	-	μcd
		TDCR1060m					
	$I_F = 10\text{ mA}$	TDCR1050m	I_V	4000	6000	-	μcd
		TDCR1060m					
Luminous intensity of colon	$I_F = 2\text{ mA}$	TDCR1050m	I_V	-	400	-	μcd
		TDCR1060m					
	$I_F = 10\text{ mA}$	TDCR1050m	I_V	500	800	-	μcd
		TDCR1060m					
Dominant wavelength	$I_F = 20\text{ mA}$	TDCR1050m, TDCR1060m	λ_d	-	631	-	nm
Peak wavelength	$I_F = 20\text{ mA}$		λ_p	-	639	-	nm
Spectral bandwidth	$I_F = 20\text{ mA}$		$\Delta\lambda$	-	20	-	nm
Forward voltage per segment or DP	$I_F = 20\text{ mA}$		V_F	-	2	2.4	V
Reverse current per segment or DP	$V_R = 5\text{ V}$		I_R	-	-	10	μA

Note

⁽¹⁾ $I_{Vmin.}$ and I_V groups are mean values of all segments (a to g, D1 to D4), matching factor within segments is ≥ 0.5 , excluding decimal points and colon.



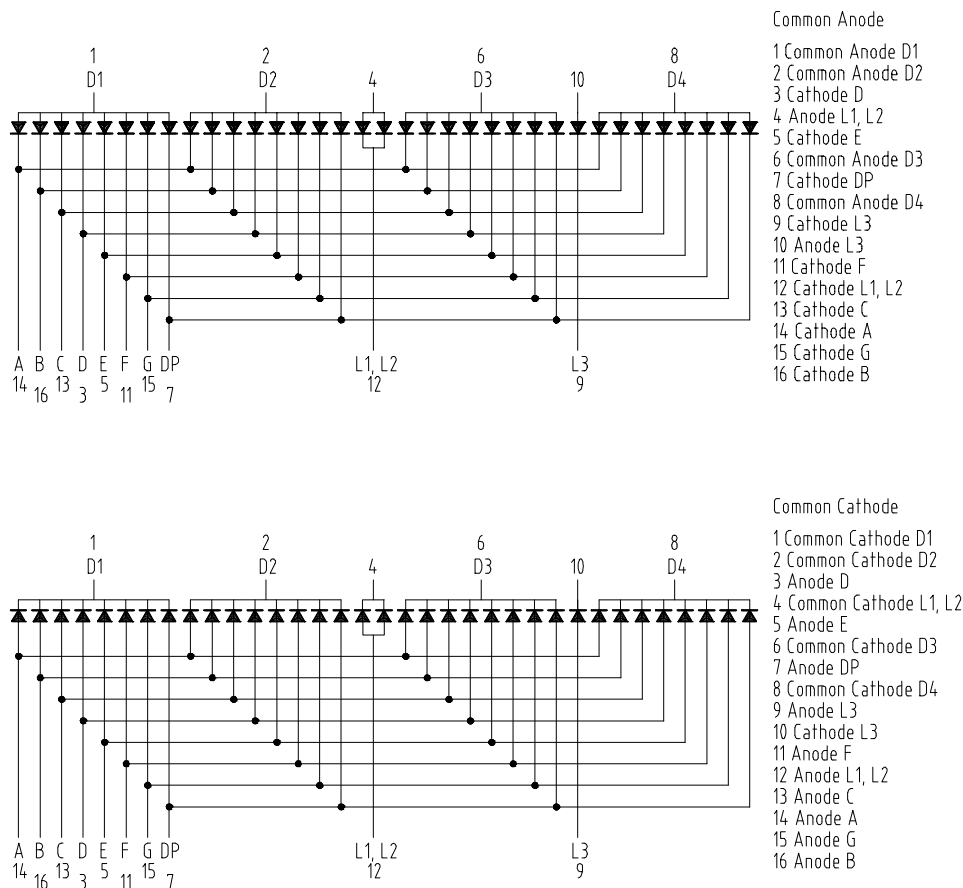
OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified) TDCY1050m, TDCY1060m, SUPER YELLOW

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment ⁽¹⁾	$I_F = 2\text{ mA}$	TDCY1050m	I_V	-	1500	-	μcd
		TDCY1060m					
	$I_F = 10\text{ mA}$	TDCY1050m	I_V	4000	8000	-	μcd
		TDCY1060m					
Luminous intensity of colon	$I_F = 2\text{ mA}$	TDCY1050m	I_V	-	400	-	μcd
		TDCY1060m					
	$I_F = 10\text{ mA}$	TDCY1050m	I_V	500	1000	-	μcd
		TDCY1060m					
Dominant wavelength	$I_F = 20\text{ mA}$	TDCY1050m, TDCY1060m	λ_d	-	589	-	nm
Peak wavelength	$I_F = 20\text{ mA}$		λ_p	-	591	-	nm
Spectral bandwidth	$I_F = 20\text{ mA}$		$\Delta\lambda$	-	15	-	nm
Forward voltage per segment or DP	$I_F = 20\text{ mA}$		V_F	-	2	2.4	V
Reverse current per segment or DP	$V_R = 5\text{ V}$		I_R	-	-	10	μA

Note

⁽¹⁾ $I_{Vmin.}$ and I_V groups are mean values of all segments (a to g, D1 to D4), matching factor within segments is ≥ 0.5 , excluding decimal points and colon.

PINNING



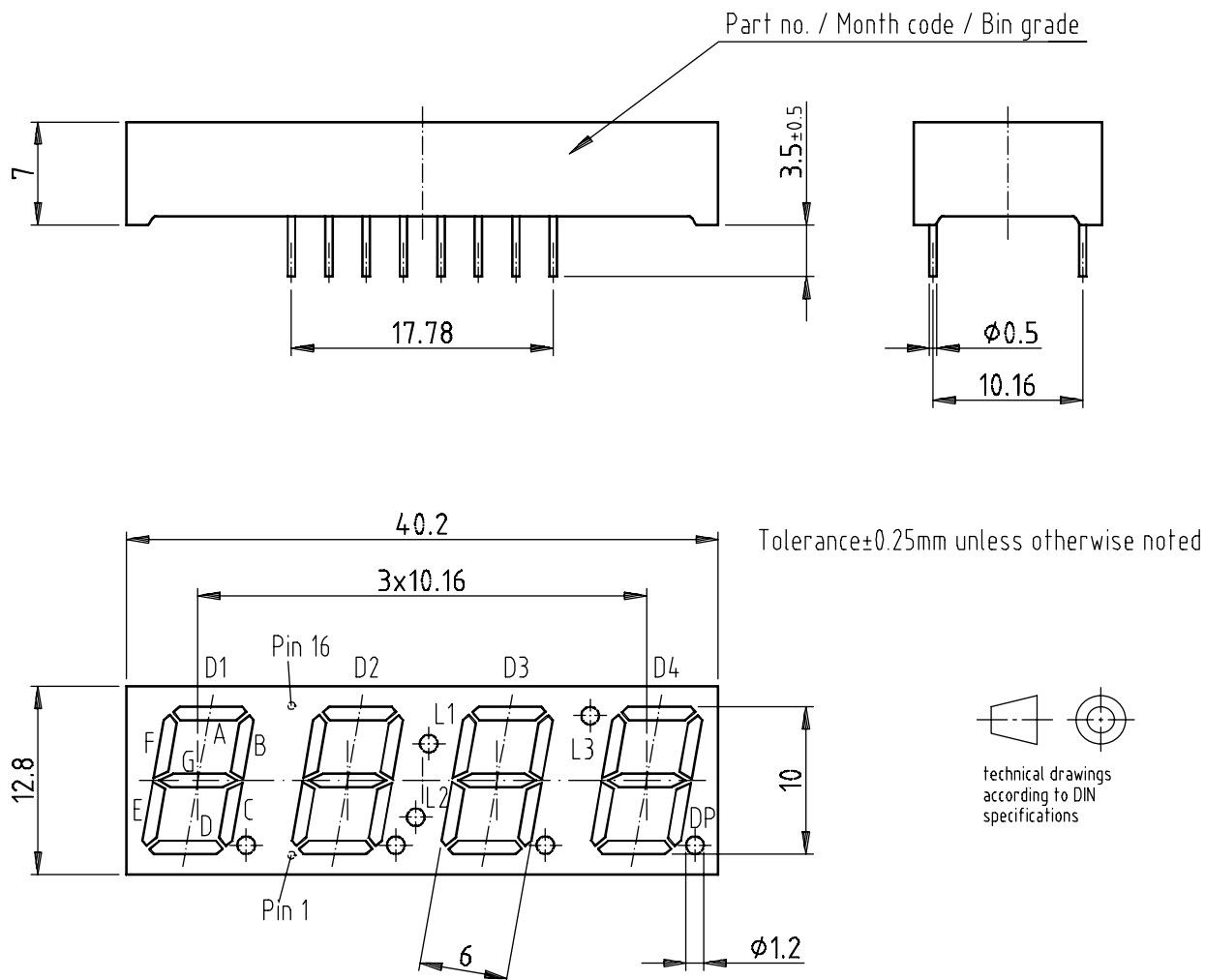
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Issue: 1; 20.02.02

16715



PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5332.01-4 Bl. 1

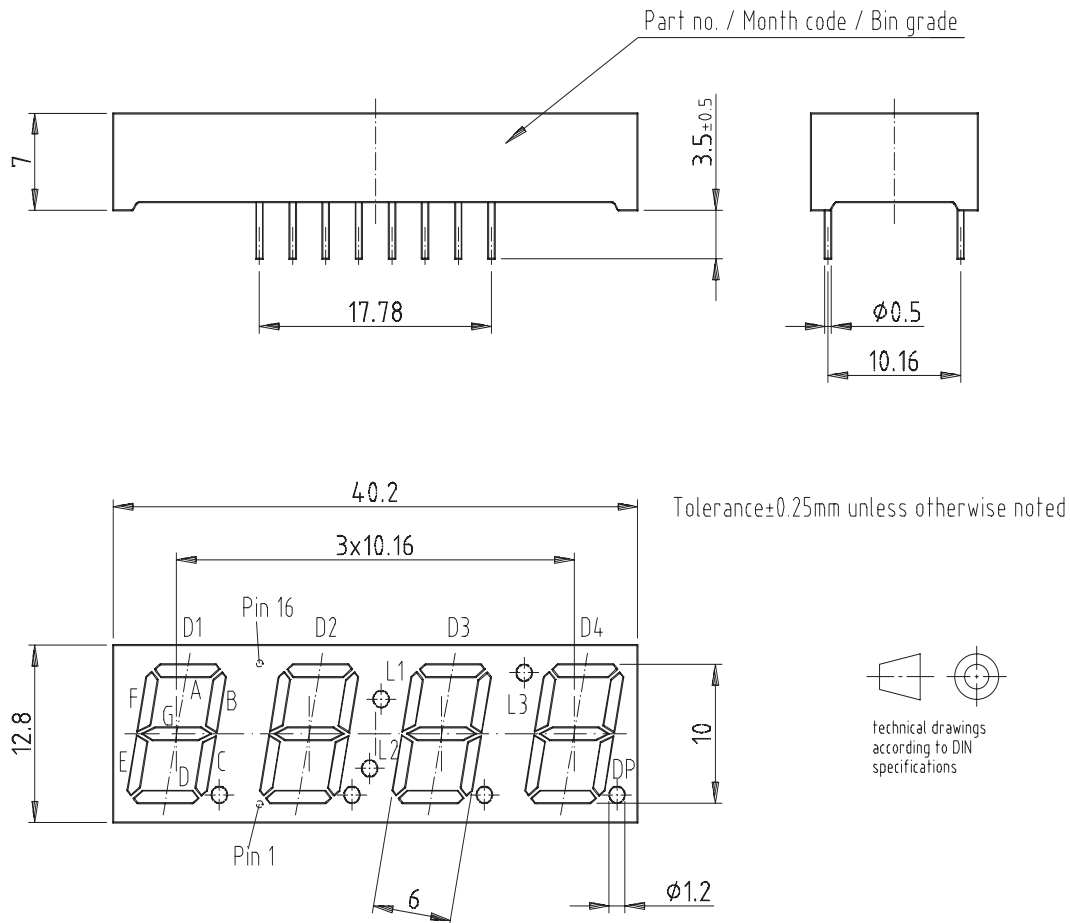
Issue: 3; 27.02.02

16764



Display-10 mm Clock Multiplex

Package Dimensions in mm



Drawing-No.: 6.544-5332.01-4 Bl. 1

Issue: 3; 27.02.02

16764

Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

**We reserve the right to make changes to improve technical design
and may do so without further notice.**

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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