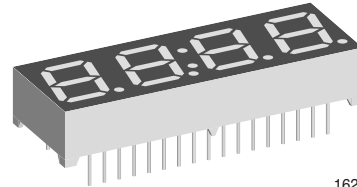


## Clock Display

### Description

Four digit Display, with 10 mm digit charactersize. Designed as clock Display with active colon between digit two and three.



16294

### Features

- High efficient AlInGAP technology
- Dark surface, white segments
- Common anode  
(TDCG1050, TDCR1050, TDCY1050)
- Common cathode  
(TDCG1060, TDCR1060, TDCY1060)
- Recommended viewing distance up to 7 meter
- Lead-free device

### Applications

Clock modules for Video/Audioequipment, Instrumentation, Set Top Boxes

### Parts Table

Part	Color, Luminous Intensity	Circuitry
TDCG1050	Green, $I_V = (2.8 \text{ to } 4.0) \text{ mcd}$	Common anode
TDCG1060	Green, $I_V = (2.8 \text{ to } 4.0) \text{ mcd}$	Common cathode
TDCR1050	Red, $I_V = (4.0 \text{ to } 6.0) \text{ mcd}$	Common anode
TDCR1060	Red, $I_V = (4.0 \text{ to } 6.0) \text{ mcd}$	Common cathode
TDCY1050	Super Yellow, $I_V = (4.0 \text{ to } 6.0) \text{ mcd}$	Common anode
TDCY1060	Super Yellow, $I_V = (4.0 \text{ to } 6.0) \text{ mcd}$	Common cathode

### Absolute Maximum Ratings

$T_{amb} = 25^\circ\text{C}$ , unless otherwise specified

**TDCG1050/ TDCG1060, TDCR1050/ TDCR1060, TDCY1050/ TDCY1060,**

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		$V_R$	5	V
Forward current		$I_F$	25	mA
Operating temperature range		$T_{amb}$	-40 to + 85	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-40 to + 100	$^\circ\text{C}$
Soldering temperature		$T_{sd}$	$260 \pm 5$	$^\circ\text{C}$
Electrostatic discharge		ESD	2000	V
Power dissipation		$P_V$	60	mW
Peak forward current	(Duty 1/10 @ 1kHz)	$I_F(\text{Peak})$	160	mA

### Optical and Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

#### Red

##### TDCR1050/TDCR1060

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity per segment <sup>1)</sup>	$I_F = 2\text{ mA}$	TDCR1050	$I_V$		1.5		mcd
		TDCR1060	$I_V$		1.5		mcd
	$I_F = 10\text{ mA}$	TDCR1050	$I_V$	4.0	6.0		mcd
		TDCR1060	$I_V$	4.0	6.0		mcd
Luminous intensity of colon	$I_F = 2\text{ mA}$	TDCR1050	$I_V$		0.4		mcd
		TDCR1060	$I_V$		0.4		mcd
	$I_F = 10\text{ mA}$	TDCR1050	$I_V$	0.5	0.8		mcd
		TDCR1060	$I_V$	0.5	0.8		mcd
Dominant wavelength	$I_F = 20\text{ mA}$		$\lambda_d$		631		nm
Peak wavelength	$I_F = 20\text{ mA}$		$\lambda_p$		639		nm
Spectral bandwidth	$I_F = 20\text{ mA}$		$\Delta\lambda$		20		nm
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		2.0	2.4	V
Reverse current	$V_R = 5\text{ V}$		$I_R$			10	$\mu\text{A}$

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

#### Yellow

##### TDCY1050/TDCY1060

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity per segment <sup>1)</sup>	$I_F = 2\text{ mA}$	TDCY1050	$I_V$		1.5		mcd
		TDCY1060	$I_V$		1.5		mcd
	$I_F = 10\text{ mA}$	TDCY1050	$I_V$	4.0	6.0		mcd
		TDCY1060	$I_V$	4.0	6.0		mcd
Luminous intensity of colon	$I_F = 2\text{ mA}$	TDCY1050	$I_V$		0.4		mcd
		TDCY1060	$I_V$		0.4		mcd
	$I_F = 10\text{ mA}$	TDCY1050	$I_V$	0.5	0.8		mcd
		TDCY1060	$I_V$	0.5	0.8		mcd
Dominant wavelength	$I_F = 20\text{ mA}$		$\lambda_d$		589		nm
Peak wavelength	$I_F = 20\text{ mA}$		$\lambda_p$		591		nm
Spectral bandwidth	$I_F = 20\text{ mA}$		$\Delta\lambda$		15		nm
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		2.0	2.4	V
Reverse current	$V_R = 5\text{ V}$		$I_R$			10	$\mu\text{A}$

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

## Green

### TDCG1050/TDCG1060

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity per segment <sup>1)</sup>	$I_F = 2 \text{ mA}$	TDCG1050	$I_V$		1.0		mcd
		TDCG1060	$I_V$		1.0		mcd
	$I_F = 10 \text{ mA}$	TDCG1050	$I_V$	2.8	4.0		mcd
		TDCG1060	$I_V$	2.8	4.0		mcd
Luminous intensity of colon	$I_F = 2 \text{ mA}$	TDCG1050	$I_V$		0.2		mcd
		TDCG1060	$I_V$		0.2		mcd
	$I_F = 10 \text{ mA}$	TDCG1050	$I_V$	0.5	1.2		mcd
		TDCG1060	$I_V$	0.5	1.2		mcd
Dominant wavelength	$I_F = 20 \text{ mA}$		$\lambda_d$		573		nm
Peak wavelength	$I_F = 20 \text{ mA}$		$\lambda_p$		575		nm
Spectral bandwidth	$I_F = 20 \text{ mA}$		$\Delta\lambda$		20		nm
Forward voltage	$I_F = 20 \text{ mA}$		$V_F$		2.0	2.4	V
Reverse current	$V_R = 5 \text{ V}$		$I_R$			10	$\mu\text{A}$

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

### Typical Characteristics ( $T_{amb} = 25 \text{ }^\circ\text{C}$ unless otherwise specified)

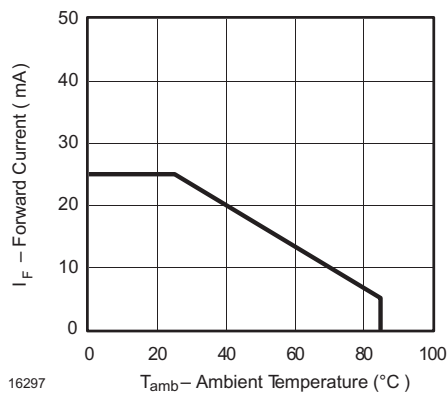


Figure 1. Forward Current vs. Ambient Temperature

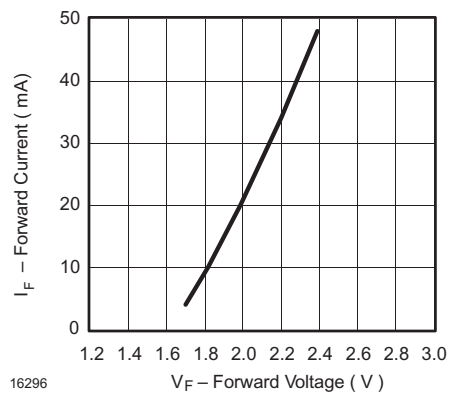


Figure 2. Forward Current vs. Forward Voltage

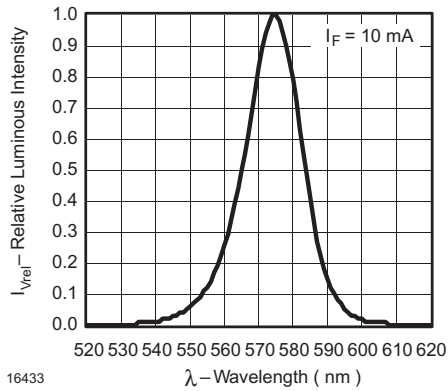


Figure 3. Relative Intensity vs. Wavelength

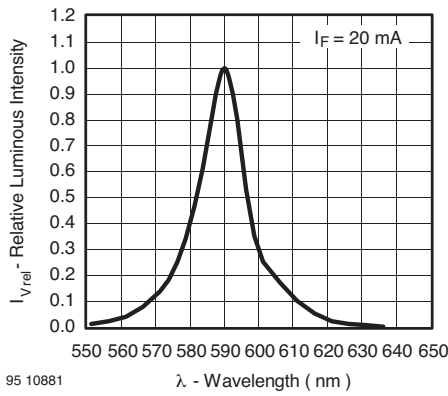


Figure 4. Relative Intensity vs. Wavelength

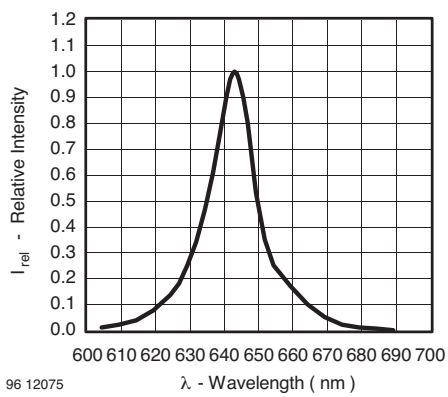
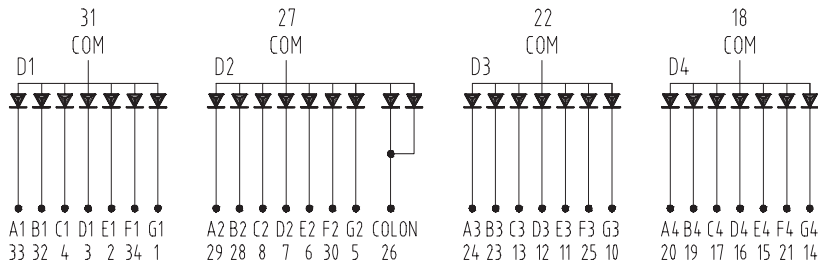
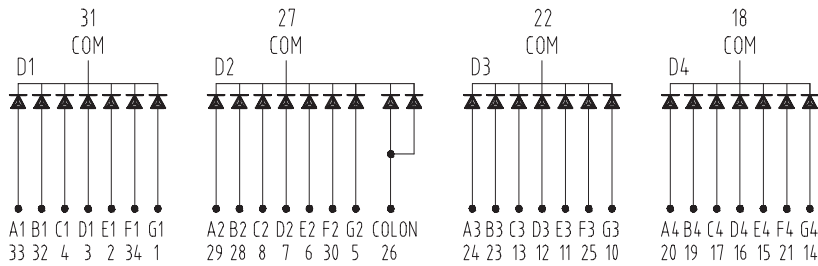


Figure 5. Relative Intensity vs. Wavelength



Common Anode

- |                 |                    |                     |
|-----------------|--------------------|---------------------|
| 1 Cathode D1 G  | 13 Cathode D3 C    | 25 Cathode D3 F     |
| 2 Cathode D1 E  | 14 Cathode D4 G    | 26 Cathode D2 Colon |
| 3 Cathode D1 D  | 15 Cathode D4 E    | 27 Common Anode D2  |
| 4 Cathode D1 C  | 16 Cathode D4 D    | 28 Cathode D2 B     |
| 5 Cathode D2 G  | 17 Cathode D4 C    | 29 Cathode D2 A     |
| 6 Cathode D2 E  | 18 Common Anode D4 | 30 Cathode D2 F     |
| 7 Cathode D2 D  | 19 Cathode D4 B    | 31 Common Anode D1  |
| 8 Cathode D2 C  | 20 Cathode D4 A    | 32 Cathode D1 B     |
| 9 no Pin        | 21 Cathode D4 F    | 33 Cathode D1 A     |
| 10 Cathode D3 G | 22 Common Anode D3 | 34 Cathode D1 F     |
| 11 Cathode D3 E | 23 Cathode D3 B    |                     |
| 12 Cathode D3 D | 24 Cathode D3 A    |                     |



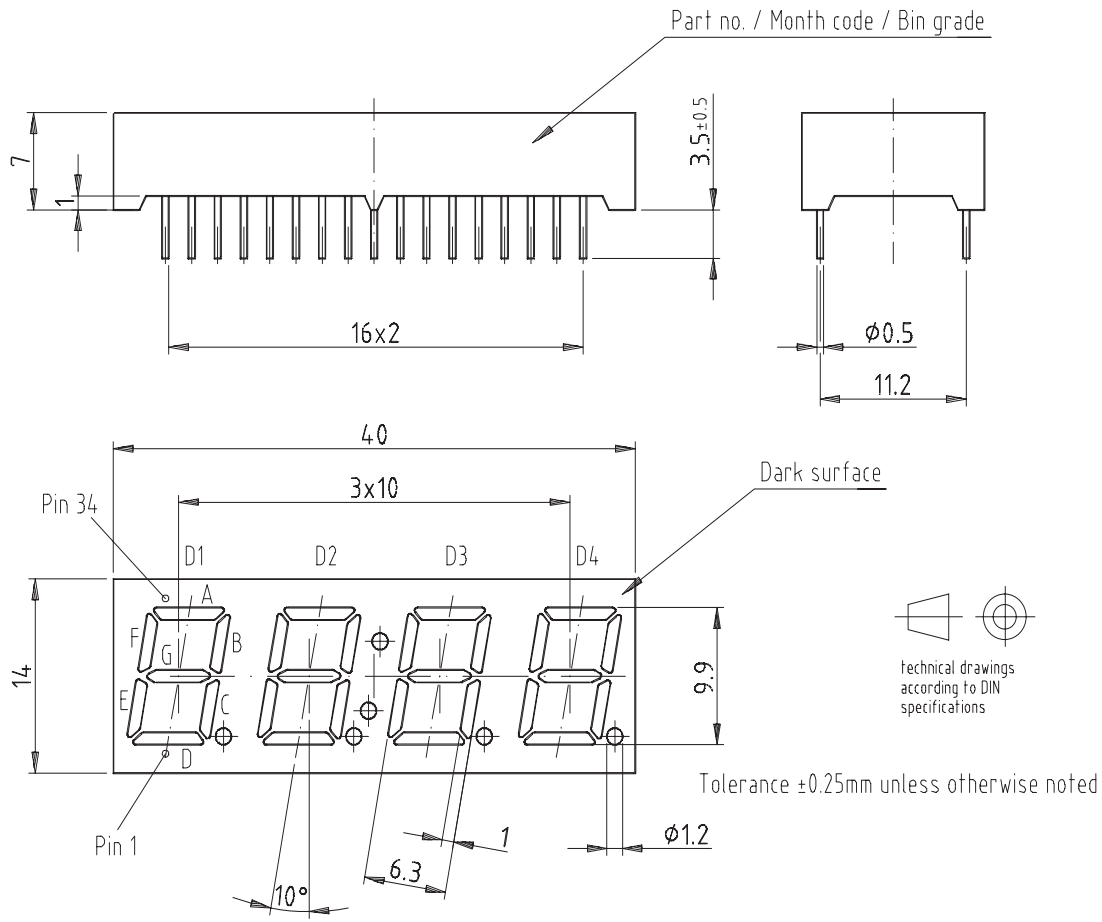
Common Cathode

- |               |                      |                      |
|---------------|----------------------|----------------------|
| 1 Anode D1 G  | 13 Anode D3 C        | 25 Anode D3 F        |
| 2 Anode D1 E  | 14 Anode D4 G        | 26 Anode D2 Colon    |
| 3 Anode D1 D  | 15 Anode D4 E        | 27 Common Cathode D2 |
| 4 Anode D1 C  | 16 Anode D4 D        | 28 Anode D2 B        |
| 5 Anode D2 G  | 17 Anode D4 C        | 29 Anode D2 A        |
| 6 Anode D2 E  | 18 Common Cathode D4 | 30 Anode D2 F        |
| 7 Anode D2 D  | 19 Anode D4 B        | 31 Common Cathode D1 |
| 8 Anode D2 C  | 20 Anode D4 A        | 32 Anode D1 B        |
| 9 no Pin      | 21 Anode D4 F        | 33 Anode D1 A        |
| 10 Anode D3 G | 22 Common Cathode D3 | 34 Anode D1 F        |
| 11 Anode D3 E | 23 Anode D3 B        |                      |
| 12 Anode D3 D | 24 Anode D3 A        |                      |

Drawing-No.: 6.544-5334.01-4 Bl. 2  
Issue: 1; 20.02.02

16714

### Package Dimensions in mm



Drawing-No.: 6.544-5334.01-4 Bl. 1  
 Issue: 4; 27.02.02



## **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.**

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