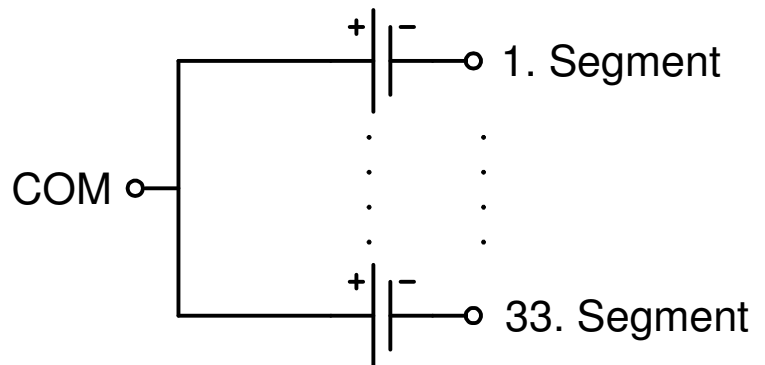


NanoChromics™ display

CHARACTERISTICS

Fully printed display
 Maximum 500 µm thick display
 Lightweight
 Flexible (up to 50mm bending radius)
 Low Power
 5000 switching cycle lifetime
 Low Voltage activation (1.5VDC)

EQUIVALENT CIRCUIT



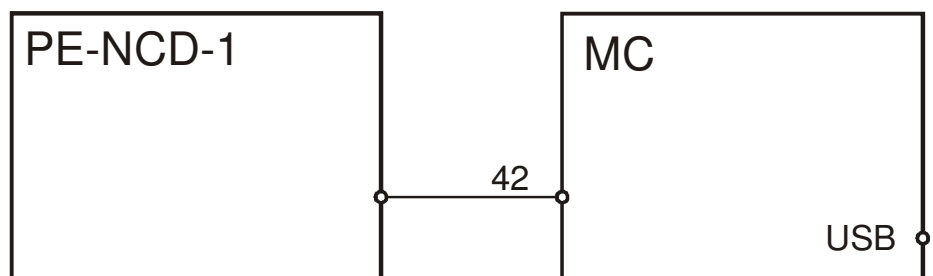
POSSIBLE APPLICATIONS

Disposable products with displays
 Advertising and Point of Sale Displays
 Displays for industrial control systems
 Memory- and smartcards

MARKET

Product development
 Advertising
 Industry

BLOCK DIAGRAM



GENERAL DESCRIPTION

The NCD Evaluation Kit by plastic electronic was designed for development engineers to provide insight into the capabilities of NTERA's NanoChromics™ display technology and for demonstrating this new technology.

Information furnished by plastic electronic is believed to be accurate and reliable. However, no responsibility is assumed by plastic electronic for its use, nor for any infringements of patents or other rights of third parties that may result from its use.

PE-NCD-1 - SPECIFICATON

 Measuring Condition: $T_A = 20^\circ\text{C}$

	min	typ	max	unit
Number of segments		33		
External Dimension				
Length		210		mm
Width		148		mm
Active segment area				
<u>Segment group A</u>				
Length		44		mm
Width		18		mm
<u>Segment group B</u>				
Length		29		mm
Width		27		mm
<u>Segment group C</u>				
Length		25		mm
Width		25		mm
<u>Segment group D</u>				
Length		13		mm
Width		16		mm
<u>Segment group E</u>				
Length		18		mm
Width		8		mm
Thickness	150	250	350	μm
Weight	10	15	20	g
Activation Power	1,5		3	V
Deactivation Power		0		V
Forward Current		tbm		mA
Surge Current		tbm		mA
Power		tbm		mW
Activation Time¹	0,5		10	s
Deactivation Time²	1		20	s

¹Activation Time: Duration until observable coloring of the display (depending on the proportion between active area and the input lead area).

²Deactivation Time: Duration until observable bleaching of the display (depending on the proportion between active area and the input lead area).

tbm... to be measured

ABSOLUTE MAXIMUM RATINGS

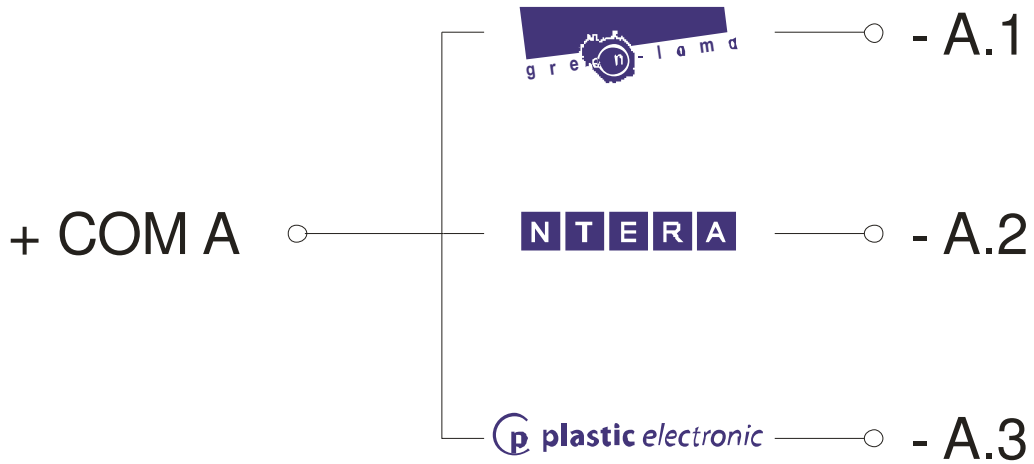
Input voltage	-200mV...3V
Operating temperature	0.....50°C
Storage temperature	-10°C.....70°C
Atmospheric humidity	N/A
Bending radius	50mm

PIN CONFIGURATION

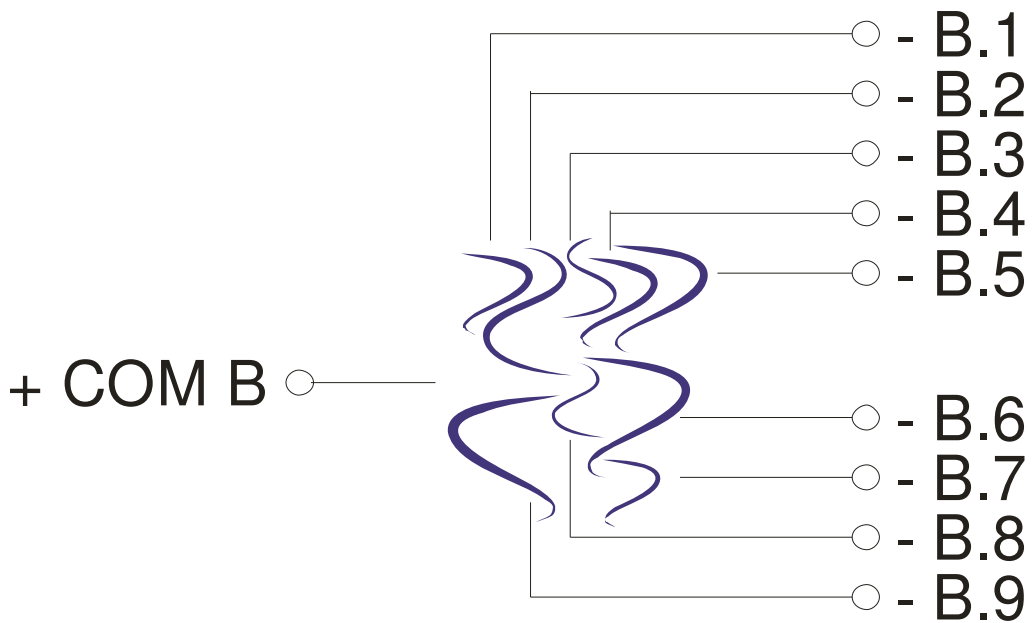
Connector	Configuration
Pin 1	NC
Pin 2	NC
Pin 3	NC
Pin 4	NC
Pin 5	+ COM A
Pin 6	+ COM A
Pin 7	+ COM A
Pin 8	- A.1
Pin 9	- A.2
Pin 10	- A.3
Pin 11	- B.9
Pin 12	- B.8
Pin 13	- B.1
Pin 14	- B.2
Pin 15	- B.3
Pin 16	- B.4
Pin 17	- B.5
Pin 18	- B.6
Pin 19	- B.7
Pin 20	+ COM B
Pin 21	+ COM C
Pin 22	+ COM C
Pin 23	- C.1
Pin 24	- C.1
Pin 25	- D.10

Pin 26	- D.9
Pin 27	- D.11
Pin 28	- D.12
Pin 29	- D.14
Pin 30	+ COM D
Pin 31	- D.8
Pin 32	- D.13
Pin 33	+ COM E
Pin 34	- E.6
Pin 35	- E.5
Pin 36	- E.4
Pin 37	- E.3
Pin 38	- E.2
Pin 39	- E.1
Pin 40	- D.6
Pin 41	- D.7
Pin 42	- D.5
Pin 43	- D.4
Pin 44	- D.2
Pin 45	- D.1
Pin 46	- D.3
Pin 47	NC
Pin 48	NC
Pin 49	NC
Pin 50	NC

LOGO SEGMENT GROUP A



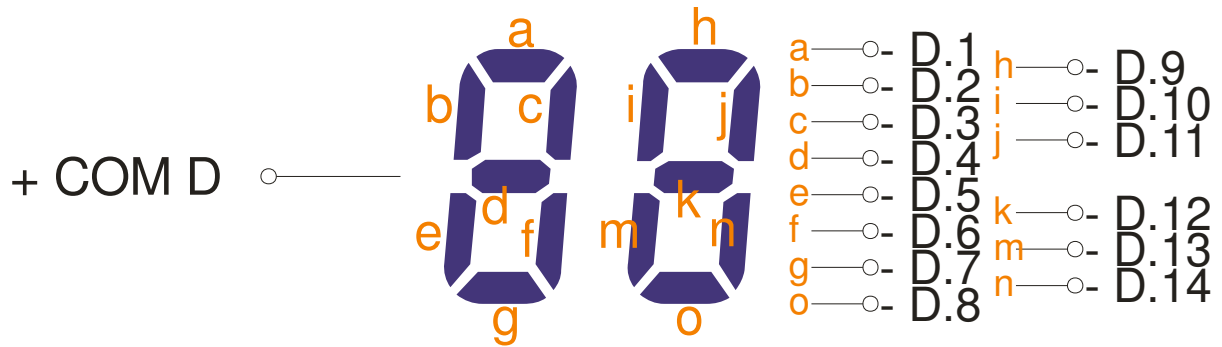
CAFÉ CUP SEGMENT GROUP B



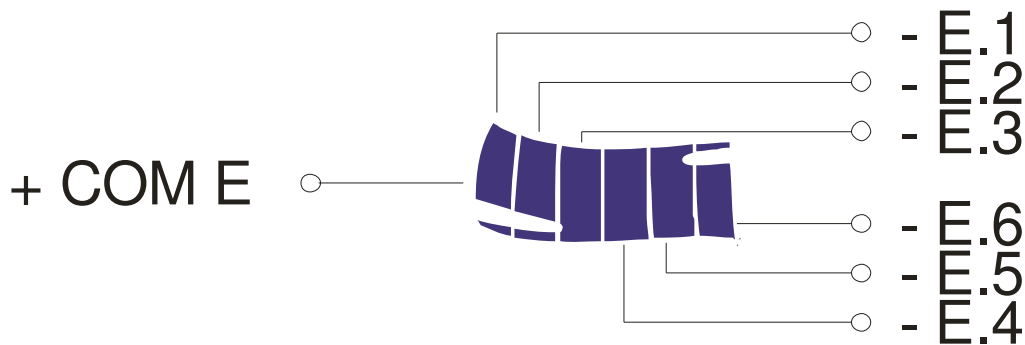
ICE TEA SEGMENT C



7 SEGMENT DISPLAY D



BATTERIE SEGMENT GROUP E



FUNCTION

A display segment may be considered as a capacitive element for the purpose of driving. The COM electrode is a shared electrode; the SEG electrodes are individually addressable. A potential difference applied between the COM and SEG electrodes will cause the SEG electrode to colour.

The COM electrode is held at VCC and the segment to be coloured is driven at 0V (GND) for a short period. Alternatively, the SEG electrode(s) to be coloured can be held at 0V and the COM electrode can be driven at VCC for a short period.

Following the colouring interval, either the COM and/or SEG connection should be disconnected to break the circuit (outputs placed in high impedance), and the contrast will be maintained on the segment for a short period of time. Applying a 0V potential difference between the COM and SEG electrodes will bleach (clear) the coloured segments. The SEG electrodes should not be driven positive with respect to COM as this may damage the display.

The display should be driven from a DC voltage source of no more than 3V. Higher potentials are not recommended as they may damage the display.

The actual potential required for colouring is quite small (1.0 - 1.5 V), however potentials of up to 3V may be used, providing the voltage is not maintained on the display after the segment has reached full contrast.

After the display has reached full contrast, intermittent short power applications (on-pulse) may be utilized to keep the display in the activated state. Between these short power impulses, no VCC is required.

HANDLING PRECAUTION

The device should be kept away from direct sunlight.

The display should not be operated outside the recommended temperature of 0°C to 50°C.

The optimal storage temperature is between -10°C to 70°C and it should be stored in a cool, dry and dark environment.

CONNECTION

For connecting to the NCD display, you can use a FFC/FPC 0,5 50-way SMD-Connector. The height of the connector with bracing is 0,280 mm.

KYOCERA: (Prod.-Nr.: 046288050000846+)

OMRON: (Prod.-Nr.: XF2M50151A)



connector type:

FPC contacts on the bottom
50 way 0,5mm ZIF connector
(bracing on top)

— 0,3mm
(FPC + bracing)

				Surface	Scale 1:1	Position	Amount
					p plastic electronic GmbH Rappetsederweg 28, 4040 Linz, Austria	THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.	© 2008
				Datum	Name	Title	
				created	11.09.2009	NCD-display	
				checked			
				approv.			
				p plastic electronic		Description	
				File name: NCDdimensions.cdt		Dimensions	
Res.	Modification	Datum	Name			sheet	1
						1	1

REVISION OVERVIEW

Revision	Changes	Created by	Date
01		CR	20090914