

BRITISH STANDARDS INSTITUTION

2 PARK STREET, LONDON. W1A 2BS

Specification available from:- AS SHOWN IN PD 9002
AND CECC 00 200 AND

BS CECC 90 104 - 196

ISSUE 1

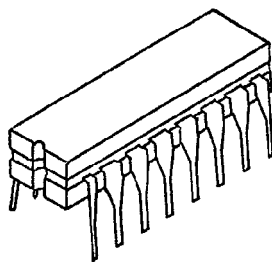
DECEMBER 1981



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ELECTRONIC COMPONENTS OF ASSESSED QUALITY
DETAIL SPECIFICATION IN ACCORDANCE WITH:BS CECC 90 000 : 1976
BS CECC 90 100 : 1977

MANUFACTURERS TYPE NUMBER

4529BSEE PD 9002 AND CECC 00 200
For ordering information
see page 12Outline not to scale: Isometric projection
Marking information see page 11DUAL FOUR-CHANNEL ANALOG
MULTIPLEXER/DEMULTIPLEXER OR
EIGHT CHANNEL ANALOG DATA
SELECTOR WITH THREE STATE
OUTPUTSSILICON COMPLEMENTARY MOS.
WITH (B) BUFFERED OUTPUTS AND
CAVITY PACKAGING.Assessment levels
R, S, T and V
and optional screening
categories A, B, C and D

For detail dimensions see IEC 191-2 (A50C)

CAUTION: THESE ARE STATIC SENSITIVE DEVICES - See clause 1.11Limiting conditions of use (not for inspection purposes)All voltages referenced to V_{SS}

- 1.1 Maximum supply voltage, positive
- 1.2 Maximum supply voltage, negative
- 1.3 Maximum positive input voltage
- 1.4 Maximum negative input voltage

V_{DD}	+18,0V
V_{DD}	-0,5V
V_I	V_{DD} +0,5V
V_I	-0,5V

Refer to Qualified Products List PD 9002 and/or CECC 00 200
for details of manufacturers approved to this specification

1. Limiting conditions of use (contd)

1.5	Maximum power dissipation, per package per output	P_{D1}	200,0mW
		P_{D2}	50,0mW
1.6	Maximum continuous current into any input.	$ I_I $	10,0mA
1.7	Maximum continuous current into any output.	$ I_O $	10,0mA
1.8	Operating temperature range	T_{amb}	
		Full	-55 to +125°C
		Limited	-40 to + 85°C
1.9	Storage temperature range	T_{stg}	-65 to +150°C
1.10	Transient energy rating		400V at 100pF through 1,5kΩ

1.11 Recommended handling precautions

- 1.11.1 Store devices in either conductive foam or conductive rails, or connect all leads together using a similar electrical shorting method.
- 1.11.2 Use grounded tip soldering irons.
- 1.11.3 Ground all test equipment.
- 1.11.4 Connect all unused device inputs to V_{DD} or V_{SS} .
- 1.11.5 PC boards used to mount MOS devices should have all metal leads grounded during device mounting or flow soldering operations.
- 1.11.6 Soldering equipment, solder pots or flow soldering equipment should be grounded whenever in contact with PC boards and/or MOS devices.
- 1.11.7 Do not use ungrounded automatic insertion equipment or other handling equipment that precludes the use of suitable device lead grounding techniques during inspection or handling.
- 1.11.8 When PC boards containing mounted MOS devices are removed from equipment for test, shipping or storage, 'Dummy connectors' should be used to electrically short all PC board terminals together.
- 1.11.9 Switch off power supply before inserting or removing devices from circuits.
- 1.11.10 Disconnect all low impedance equipment and input signals from the device before d.c. power supplies are switched off.

2. Recommended conditions of use and associated characteristics (not for inspection purposes)

These apply over the operating temperature range unless otherwise stated. All voltages referenced to V_{SS} .

Characteristics	Conditions	Symbol	$V_{DD}(V)$	T_{amb} LOW	T_{amb} = 25°C	T_{amb} HIGH	Unit
Quiescent device current	$V_{IL} = 0V$ $V_{IH} = V_{DD}$						
Full temperature range	Outputs open circuit	I_{DDA}	5,0	1,0	1,0	60,0	μA
		I_{DDA}	10,0	2,0	2,0	60,0	μA
		I_{DDA}	15,0	4,0	4,0	120,0	μA
Limited temperature range		I_{DDA}	5,0	5,0	5,0	70,0	μA
		I_{DDA}	10,0	5,0	5,0	70,0	μA
		I_{DDA}	15,0	10,0	10,0	140,0	μA
'ON' state resistance $R_L = 10k\Omega$ $I_I = 10\mu A$ $V_C = V_{DD}$ ON conditions at output as Table 1							
Full temperature range	$\pm V_{IN} = 0,25V$ and $\pm 5,0V$ $V_{SS} = -5,0V$	$r_{DS(ON)A}$	5,0	400,0	480,0	640,0	Ω
	$V_{IN} = 0,25V$ and $\pm 7,5V$ $V_{SS} = -7,5V$	$r_{DS(ON)A}$	7,5	240,0	270,0	400,0	Ω
	$V_{IN} = 0,25V$, $\pm 5,6V$ and $\pm 10,0V$ $V_{SS} = 0V$	$r_{DS(ON)A}$	10,0	400,0	480,0	640,0	Ω
	$V_{IN} = 0,25V$, $\pm 9,3V$ and $\pm 15,0V$ $V_{SS} = 0V$	$r_{DS(ON)A}$	15,0	250,0	270,0	400,0	Ω
Limited temperature range	$\pm V_{IN} = 0,25V$ and $\pm 5,0V$ $V_{SS} = -5,0V$	$r_{DS(ON)A}$	5,0	410,0	480,0	560,0	Ω
	$V_{IN} = 0,25V$ and $\pm 7,5V$ $V_{SS} = -7,5V$	$r_{DS(ON)A}$	7,5	250,0	270,0	350,0	Ω
	$V_{IN} = 0,25V$, $\pm 5,6V$ and $\pm 10,0V$ $V_{SS} = 0V$	$r_{DS(ON)A}$	10,0	410,0	480,0	560,0	Ω

Characteristics	Conditions	Symbol	$V_{DD}(V)$	T_{amb} LOW	T_{amb} = 25°C	T_{amb} HIGH	Unit
Switch 'ON' level resistance (contd)	$V_{IN} = 0,25V$, $\pm 9,3V$ or $\pm 15,0V$ $V_{SS} = 0V$	$r_{DS(ON)A}$	15,0	250,0	270,0	350,0	Ω
Switch 'OFF' state leakage current. Any channel							
Full temperature range	$V_{IN} = V_{SS}$, $V_{OUT} = V_{DD}$ or $V_{IN} = V_{DD}$, $V_{OUT} = V_{SS}$	$I_{S(OFF)}$ A/ $I_{D(OFF)}$ A	15,0	500,0	200,0	500,0	nA
Limited temperature range	$V_{IN} = V_{SS}$, $V_{OUT} = V_{DD}$ or $V_{IN} = V_{DD}$, $V_{OUT} = V_{SS}$	$I_{S(OFF)}$ A/ $I_{D(OFF)}$ A	15,0	1000,0	1000,0	3000,0	nA
Switch terminal 'ON' state leakage current into control circuit							
Full temperature range		$I_{D(ON)A}$	15,0	1,0	1,0	30,0	μA
Limited temperature range		$I_{D(ON)A}$	15,0	4,0	4,0	30,0	μA
Variation of switch 'ON' state resistance with input voltage							
'ON' conditions at output obtained as Table 1							
	$\pm V_{IN} = 5,0V$ $V_{SS} = 5,0V$	$\Delta r_{DS(ON)A}$	5,0	75,0	75,0	125,0	Ω
	$\pm V_{IN} = 7,5V$ $V_{SS} = 7,5V$	$\Delta r_{DS(ON)A}$	7,5	55,0	55,0	100,0	Ω
Input leakage current	$V_{IL} = 0V$ $V_{IH} = V_{DD}$						
Full temperature range		$ I_{IA} $	15,0	0,1	0,1	1,0	A
Limited temperature range		$ I_{IA} $	15,0	0,3	0,3	1,0	A

Characteristics	Conditions	Symbol	$V_{DD}(V)$	T_{amb} LOW	T_{amb} = 25°C	T_{amb} HIGH	Unit
Input capacitance per unit load (Any input)	$V_I = 0V$ $f = 1MHz$	C_{IA}	-	-	7,5	-	pF
Propagation and Transition Times	$C_L = 50pF$ (Test conditions as in Sub-group A5) ($R_L = 1k\Omega$)						
Signal Propagation Delay Time With Input to Switch Output							
Full temperature range		t_{PHLH}	5,0	-	40,0	-	ns
		t_{PHLH}	10,0	-	20,0	-	ns
		t_{PHLH}	15,0	-	15,0	-	ns
Limited temperature range		t_{PHLH}	5,0	-	60,0	-	ns
		t_{PHLH}	10,0	-	30,0	-	ns
		t_{PHLH}	15,0	-	25,0	-	ns
Propagation Delay Time Control Inputs Strobe X, Y, A or B to Signal Output	$V_{IN} = V_{DD}$ or V_{SS} ($R_L = 1k\Omega$)						
Output HIGH or LOW to high impedance or high impedance to HIGH or LOW level							
Full temperature range		$t_{ONA}/$	5,0	-	400,0	-	ns
		t_{OFFA}	10,0	-	160,0	-	ns
			15,0	-	120,0	-	ns
Limited temperature range		$t_{ONA}/$	5,0	-	600,0	-	ns
		t_{OFFA}	10,0	-	240,0	-	ns
			15,0	-	180,0	-	ns
Bandwidth at -3dB (Channel in 'ON' state)	$V_{IN} = 1,77V_{pp}$ $V_{SS} = -5,0V$ ($R_L = 1k\Omega$)	f_I	5,0	-	28,0	-	MHz

Terminal identification

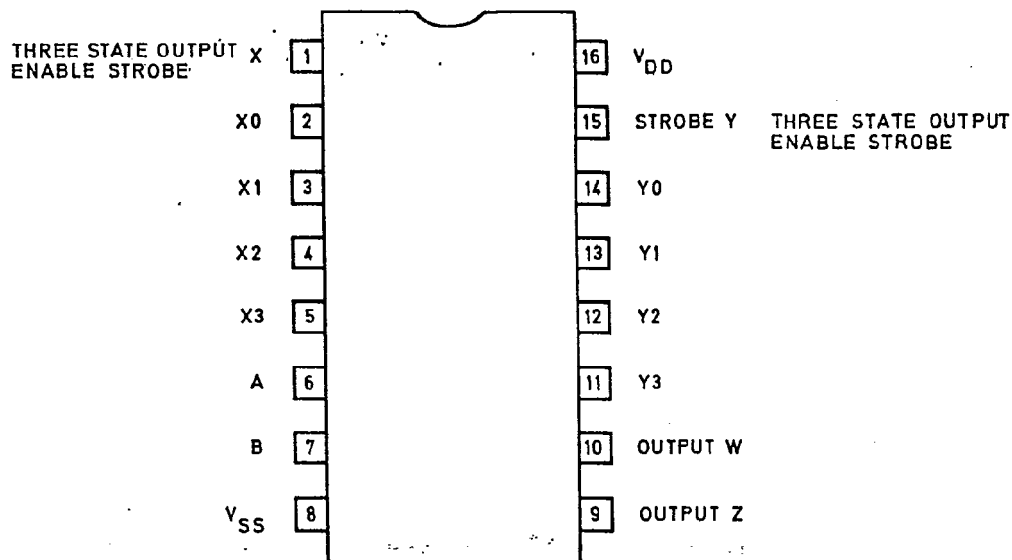


Figure 1

Function table

Table 1

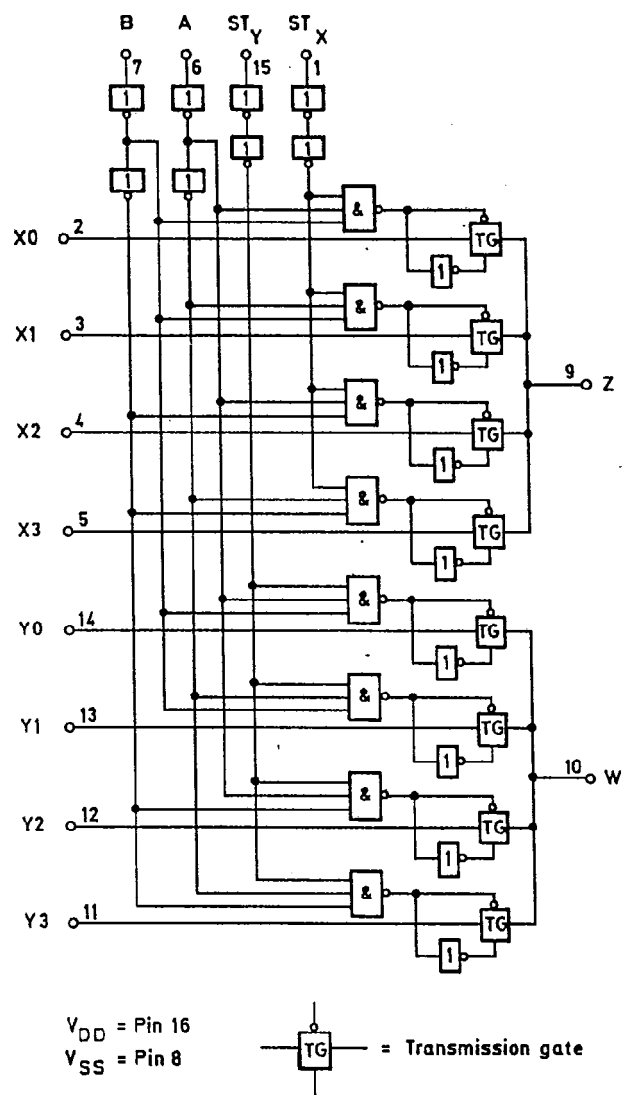
ST _X	ST _Y	B	A	Z	W
H	H	L	L	X0	Y0
H	H	L	H	X1	Y1
H	H	H	L	X2	Y2
H	H	H	H	X3	Y3
H	L	L	L	X0	
H	L	L	H	X1	
H	L	H	L	X2	
H	L	H	H	X3	
L	H	L	L	Y0	
L	H	L	H	Y1	
L	H	H	L	Y2	
L	H	H	H	Y3	
L	L	X	X	High impedance	

Dual 4-Channel Mode
2 Outputs

Single 8-Channel Mode
1 Output
(Z and W tied together)

L = LOW level
H = HIGH level
X = Level irrelevant

Typical logic diagram

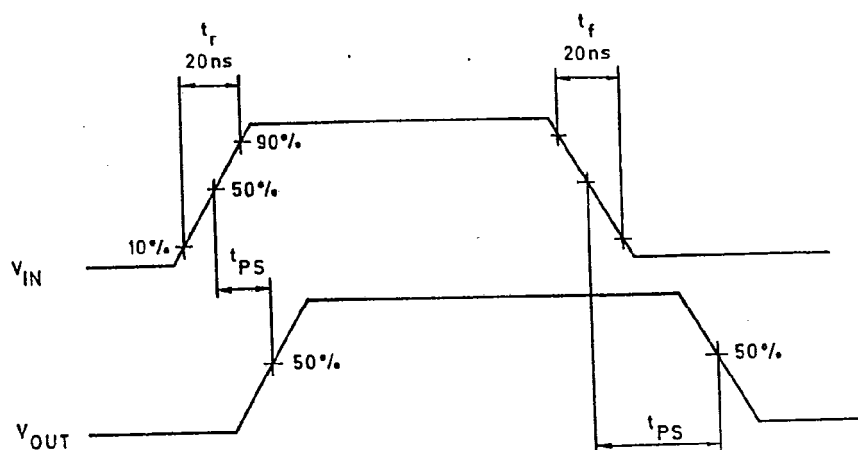


This is a graphic representation, not a circuit diagram

Figure 2

Switching time waveforms

Signal propagation delay time (Switch into switch out)



Channel turn on and turn off time (Control to signal out)

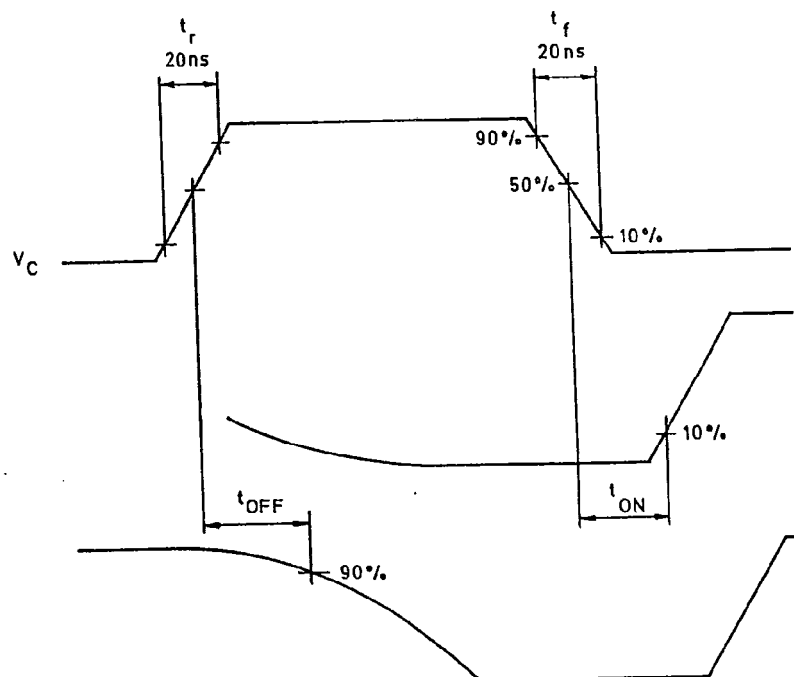


Figure 3

Marking

The following shall be marked on the device, in the following order of precedence, as space permits. All information, except the terminal marking shall appear on the primary package used as initial protection or wrapping for delivery:

- (1) Terminal identification
- (2) Type number
- (3) Operating temperature range (if not included in 2)
- (4) Quality assessment level applied
- (5) Screening class applied
- (6) Date-code (year-week defined by three or four figures)
- (7) Mark of conformity (CECC logo)
- (8) Manufacturers name or trade mark (may include factory code)
- (9) Factory identification code
- (10) Package materials
- (11) Caution label for devices susceptible to damage by electrostatic discharge
- (12) Optional tests

The marking symbols shall be located following the figures below.

The underside of the package is free for manufacturers additional marking

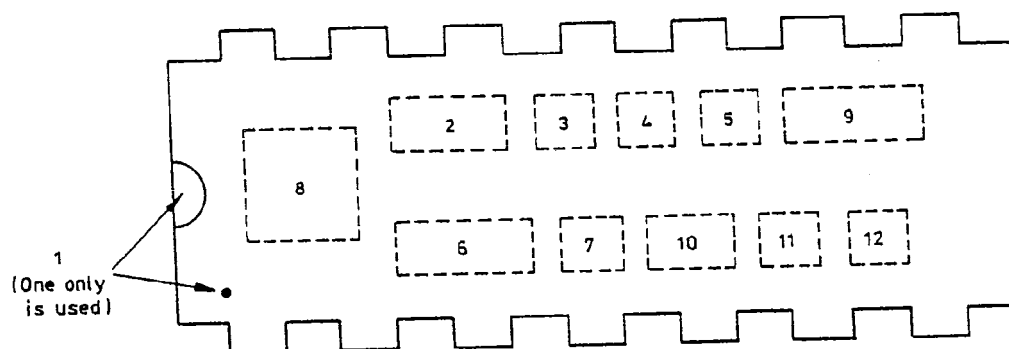


Figure 4