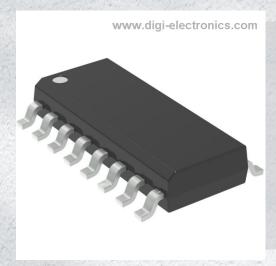


## MC100EL57DG Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number

MC100EL57DG-DG

Manufacturer

onsemi

Manufacturer Product Number

MC100EL57DG

Description

IC MULTIPLEXER 4 X 2:1 16SOIC

**Detailed Description** 

Multiplexer 4 x 2:1 16-SOIC



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.



100EL57

8542.39.0001

## **Purchase and inquiry**

Manufacturer Product Number:	Manufacturer:
MC100EL57DG	onsemi
Series:	Product Status:
100EL	Active
Type:	Circuit:
Multiplexer	4 x 2:1
Independent Circuits:	Current - Output High, Low:
1	
Voltage Supply Source:	Voltage - Supply:
Dual Supply	±4.2V ~ 5.7V
Operating Temperature:	Mounting Type:
-40°C ~ 85°C	Surface Mount
Package / Case:	Supplier Device Package:
16-SOIC (0.154", 3.90mm Width)	16-SOIC
Base Product Number:	

## **Environmental & Export classification**

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	

1



# **5 V ECL 4:1 Differential Multiplexer**

## MC10EL57, MC100EL57

#### **Description**

The MC10/100EL57 is a fully differential 4:1 multiplexer. By leaving the SEL1 line open (pulled LOW via the input pulldown resistors) the device can also be used as a differential 2:1 multiplexer with SEL0 input selecting between D0 and D1.

The SEL1 is the most significant select line. The binary number applied to the select inputs will select the same numbered data input (i.e., 00 selects D0).

Multiple  $V_{BB}$  outputs are provided for single-ended or AC coupled interfaces. The  $V_{BB}$  pin, an internally generated voltage supply, is available to this device only. For single-ended input conditions, the unused differential input is connected to  $V_{BB}$  as a switching reference voltage.  $V_{BB}$  may also rebias AC coupled inputs. When used, decouple  $V_{BB}$  and  $V_{CC}$  via a 0.01  $\mu F$  capacitor and limit current sourcing or sinking to 0.5 mA. When not used,  $V_{BB}$  should be left open.

The 100 Series contains temperature compensation.

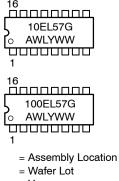
#### **Features**

- Useful as Either 4:1 or 2:1 Multiplexer
- V<sub>BB</sub> Output for Single-Ended Operation
- PECL Mode Operating Range: V<sub>CC</sub> = 4.2 V to 5.7 V with V<sub>EE</sub> = 0 V
- NECL Mode Operating Range: V<sub>CC</sub> = 0 V with V<sub>EE</sub> = -4.2 V to -5.7 V
- Internal Input Pulldown Resistors on All Inputs
- Q Outputs Will Default LOW with Inputs Open or at VEE
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant



SOIC-16 D SUFFIX CASE 751B-05

#### MARKING DIAGRAMS\*



 WL
 = Wafer Lot

 YY
 = Year

 WW
 = Work Week

 G
 = Pb-Free Package

#### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MC100EL57DG	SOIC-16 NB (Pb-Free)	48 Units/Tube
MC10EL57DR2G	SOIC-16 NB (Pb-Free)	2500 Tape & Reel

#### **DISCONTINUED** (Note 1)

MC10EL57DG	SOIC-16 NB (Pb-Free)	48 Units/Tube
MC100EL57DR2G	SOIC-16 NB (Pb-Free)	2500 Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

DISCONTINUED: These devices are not recommifor new design. Please contact your onsemi representative for information.
 The most current information on these devices ma available on <a href="https://www.onsemi.com">www.onsemi.com</a>.

<sup>\*</sup>For additional marking information, refer to Application Note <u>AND8002/D</u>.

**Table 1. ATTRIBUTES** 

Characteristic	Value	
Internal Input Pulldown Resistor	75 KΩ	
Internal Input Pullup Resistor		N/A
ESD Protection Human Body Model Machine Model Charge Device Model		> 1 kV > 100 V > 2 kV
Moisture Sensitivity (Note 1)		Level 1
Flammability Rating	Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in
Transistor Count		109 Devices
Meets or Exceeds JEDEC Spec EIA/JE	SD78 IC Latchup Test	

<sup>1.</sup> For additional Moisture Sensitivity information, refer to Application Note AND8003/D.

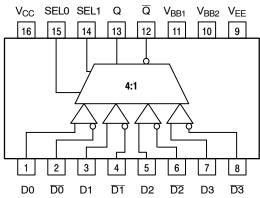


Figure 1. Logic Diagram and Pinout Assignment

#### **Table 3. FUNCTION TABLE**

SEL1*	SEL0*	DATA OUT
L	L	D0
L	Н	D1
H	L	D2
Н	Н	D3

<sup>\*</sup> Pin will default low when left open.

**Table 2. PIN DESCRIPTION** 

PIN	FUNCTION
D0-3, <del>D0-3</del>	ECL Diff Data Inputs
SEL0,1	ECL MUX Select Inputs
$Q, \overline{Q}$	ECL Data Outputs
$V_{BB1},V_{BB2}$	Reference Voltage Output
$V_{CC}$	Positive Supply
$V_{EE}$	Negative Supply

**Table 4. MAXIMUM RATINGS** 

Symbol	Parameter	Condition 1	Condition 2	Rating	Unit
V <sub>CC</sub>	PECL Mode Power Supply	V <sub>EE</sub> = 0 V		8	V
V <sub>EE</sub>	NECL Mode Power Supply	V <sub>CC</sub> = 0 V		-8	V
VI	PECL Mode Input Voltage NECL Mode Input Voltage	V <sub>EE</sub> = 0 V V <sub>CC</sub> = 0 V	$\begin{array}{c} V_I \leq V_{CC} \\ V_I \geq V_{EE} \end{array}$	6 -6	V
l <sub>out</sub>	Output Current	Continuous Surge		50 100	mA
I <sub>BB</sub>	V <sub>BB</sub> Sink/Source			±0.5	mA
T <sub>A</sub>	Operating Temperature Range			-40 to +85	°C
T <sub>stg</sub>	Storage Temperature Range			-65 to +150	°C
θJA	Thermal Resistance (Junction-to-Ambient)	0 lfpm 500 lfpm	SOIC-16 SOIC-16	130 75	°C/W
$\theta_{\sf JC}$	Thermal Resistance (Junction-to-Case)	Standard Board	SOIC-16	33 to 36	°C/W
T <sub>sol</sub>	Wave Solder (Pb-Free)	< 2 to 3 sec @ 260°C		265	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Table 5. 10EL SERIES PECL DC CHARACTERISTICS (V<sub>CC</sub> = 5.0 V; V<sub>EE</sub> = 0 V (Note 1))

		-40°C			25°C						
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I <sub>EE</sub>	Power Supply Current			24			24			24	mA
V <sub>OH</sub>	Output HIGH Voltage (Note 2)	3920	4010	4110	4020	4105	4190	4090	4185	4280	mV
V <sub>OL</sub>	Output LOW Voltage (Note 2)	3050	3200	3350	3050	3210	3370	3050	3227	3405	mV
V <sub>IH</sub>	Input HIGH Voltage (Single-Ended)	3770		4110	3870		4190	3940		4280	mV
V <sub>IL</sub>	Input LOW Voltage (Single-Ended)	3050		3500	3050		3520	3050		3555	mV
$V_{BB}$	Output Voltage Reference	3.57		3.7	3.65		3.75	3.69		3.81	V
V <sub>IHCMR</sub>	Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 3)	2.5		4.6	2.5		4.6	2.5		4.6	V
I <sub>IH</sub>	Input HIGH Current			150			150			150	μΑ
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.3			μΑ

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- Input and output parameters vary 1:1 with V<sub>CC</sub>. V<sub>EE</sub> can vary +0.06 V / -0.5 V.
   Outputs are terminated through a 50 \( \Omega\) resistor to V<sub>CC</sub> 2.0 V.
   V<sub>IHCMR</sub> min varies 1:1 with V<sub>EE</sub>, V<sub>IHCMR</sub> max varies 1:1 with V<sub>CC</sub>. The V<sub>IHCMR</sub> range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V<sub>PP</sub>min and 1 V.

Table 6. 10EL SERIES NECL DC CHARACTERISTICS (V<sub>CC</sub> = 0 V; V<sub>EE</sub> = -5.0 V (Note 1))

		–40°C			25°C						
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I <sub>EE</sub>	Power Supply Current			24			24			24	mA
V <sub>OH</sub>	Output HIGH Voltage (Note 2)	-1080	-990	-890	-980	-895	-810	-910	-815	-720	mV
V <sub>OL</sub>	Output LOW Voltage (Note 2)	-1950	-1800	-1650	-1950	-1790	-1630	-1950	-1773	-1595	mV
V <sub>IH</sub>	Input HIGH Voltage (Single-Ended)	-1230		-890	-1130		-810	-1060		-720	mV
V <sub>IL</sub>	Input LOW Voltage (Single-Ended)	-1950		-1500	-1950		-1480	-1950		-1445	mV
$V_{BB}$	Output Voltage Reference	-1.43		-1.30	-1.35		-1.25	-1.31		-1.19	V
V <sub>IHCMR</sub>	Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 3)	-2.5		-0.4	-2.5		-0.4	-2.5		-0.4	V
I <sub>IH</sub>	Input HIGH Current			150			150			150	μΑ
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.3			μΑ

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 1. Input and output parameters vary 1:1 with V $_{CC}$ . V $_{EE}$  can vary +0.06 V / -0.5 V. 2. Outputs are terminated through a 50  $\Omega$  resistor to V $_{CC}$  2.0 V.
- 3. V<sub>IHCMR</sub> min varies 1:1 with V<sub>EE</sub>, V<sub>IHCMR</sub> max varies 1:1 with V<sub>CC</sub>. The V<sub>IHCMR</sub> range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V<sub>PP</sub>min and 1 V.

Table 7. 100EL SERIES PECL DC CHARACTERISTICS (V<sub>CC</sub> = 5.0 V; V<sub>EE</sub> = 0 V (Note 1))

		-40°C			25°C						
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I <sub>EE</sub>	Power Supply Current			24			24			27	mA
V <sub>OH</sub>	Output HIGH Voltage (Note 2)	3915	3995	4120	3975	4045	4120	3975	4050	4120	mV
V <sub>OL</sub>	Output LOW Voltage (Note 2)	3170	3305	3445	3190	3295	3380	3190	3295	3380	mV
V <sub>IH</sub>	Input HIGH Voltage (Single-Ended)	3835		4120	3835		4120	3835		4120	mV
V <sub>IL</sub>	Input LOW Voltage (Single-Ended)	3190		3525	3190		3525	3190		3525	mV
V <sub>BB</sub>	Output Voltage Reference	3.62		3.74	3.62		3.74	3.62		3.74	V
V <sub>IHCMR</sub>	Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 3)	2.5		4.6	2.5		4.6	2.5		4.6	V
I <sub>IH</sub>	Input HIGH Current			150			150			150	μΑ
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.5			μΑ

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.8 V / -0.5 V.
- 2. Outputs are terminated through a 50  $\Omega$  resistor to  $V_{CC}$  2.0 V. 3.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between Vppmin and 1 V.

Table 8. 100EL SERIES NECL DC CHARACTERISTICS (V<sub>CC</sub> = 0 V; V<sub>EE</sub> = -5.0 V (Note 1))

		-40°C			25°C						
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
I <sub>EE</sub>	Power Supply Current			24			24			27	mA
V <sub>OH</sub>	Output HIGH Voltage (Note 2)	-1085	-1005	-880	-1025	-955	-880	-1025	-955	-880	mV
V <sub>OL</sub>	Output LOW Voltage (Note 2)	-1830	-1695	-1555	-1810	-1705	-1620	-1810	-1705	-1620	mV
V <sub>IH</sub>	Input HIGH Voltage (Single-Ended)	-1165		-880	-1165		-880	-1165		-880	mV
$V_{IL}$	Input LOW Voltage (Single-Ended)	-1810		-1475	-1810		-1475	-1810		-1475	mV
$V_{BB}$	Output Voltage Reference	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	V
V <sub>IHCMR</sub>	Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 3)	-2.5		-0.4	-2.5		-0.4	-2.5		-0.4	<b>&gt;</b>
I <sub>IH</sub>	Input HIGH Current			150			150			150	μΑ
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.5			μΑ

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 1. Input and output parameters vary 1:1 with  $V_{CC}.\ V_{EE}$  can vary +0.8 V / -0.5 V.
- 2. Outputs are terminated through a 50  $\Omega$  resistor to V<sub>CC</sub> 2.0 V.
- V<sub>IHCMR</sub> min varies 1:1 with V<sub>EE</sub>, V<sub>IHCMR</sub> max varies 1:1 with V<sub>CC</sub>. The V<sub>IHCMR</sub> range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V<sub>PP</sub>min and 1 V.

Table 9. AC CHARACTERISTICS (V<sub>CC</sub> = 5.0 V; V<sub>EE</sub> = 0 V or V<sub>CC</sub> = 0 V; V<sub>EE</sub> = -5.0 V (Note 1))

			-40°C 25°C		85°C						
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
f <sub>max</sub>	Maximum Toggle Frequency		TBD			TBD			TBD		GHz
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation DATA→Q/Q Delay SEL→Q/Q	350 440		550 690	360 440		560 690	380 460		580 710	ps
t <sub>SKEW</sub>	Input Skew D <sub>n</sub> , D <sub>m</sub> to Q	440		100	440		100	400		100	ps
t <sub>JITTER</sub>	Cycle-to-Cycle Jitter		TBD			TBD			TBD		ps
$V_{PP}$	Input Swing (Note 2)	150		1000	150		1000	150		1000	mV
t <sub>r</sub> t <sub>f</sub>	Output Rise/Fall Times Q (20%-80%)	125		375	125		375	125		375	ps

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- 1. 10 Series:  $V_{EE}$  can vary +0.06 V / -0.5 V. 100 Series:  $V_{EE}$  can vary +0.8 V / -0.5 V.
- 2.  $V_{PP}$ min is minimum input swing for which AC parameters guaranteed. The device has a DC gain of  $\approx$ 40.

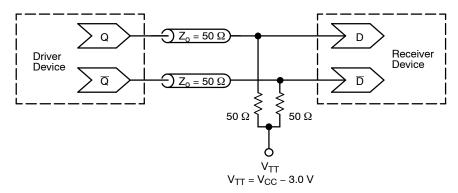


Figure 2. Typical Termination for Output Driver and Device Evaluation (See Application Note <u>AND8020/D</u> – Termination of ECL Logic Devices)

#### **Resource Reference of Application Notes**

AN1405/D - ECL Clock Distribution Techniques

AN1406/D - Designing with PECL (ECL at +5.0 V)

AN1503/D - ECLinPS™ I/O SPiCE Modeling Kit

AN1504/D - Metastability and the ECLinPS Family

AN1568/D - Interfacing Between LVDS and ECL

AND8001/D - The ECL Translator Guide

AND8001/D - Odd Number Counters Design

AND8002/D - Marking and Date Codes

AND8020/D - Termination of ECL Logic Devices

AND8066/D - Interfacing with ECLinPS

AND8090/D - AC Characteristics of ECL Devices



## **MECHANICAL CASE OUTLINE**



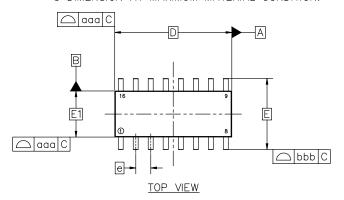


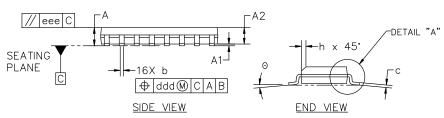
#### SOIC-16 9.90x3.90x1.37 1.27P CASE 751B ISSUE M

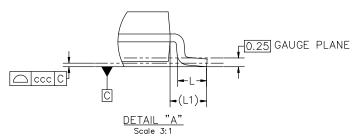
**DATE 18 OCT 2024** 

#### NOTES:

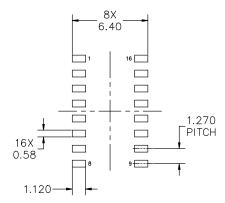
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
- DIMENSION IN MILLIMETERS. ANGLE IN DEGREES.
- DIMENSIONS D AND E1 DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15mm PER SIDE.
- DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127mm TOTAL IN EXCESS OF THE b DIMENSION AT MAXIMUM MATERIAL CONDITION.







MILLIMETERS							
DIM	MIN	NOM	MAX				
А	1.35	1.75					
A1	0.10	0.18	0.25				
A2	1.25	1.37	1.50				
b	0.35	0.42	0.49				
С	0.19	0.22	0.25				
D	9.90 BSC						
E	6.00 BSC						
E1	3.90 BSC						
е	1.27 BSC						
h	0.25		0.50				
L	0.40	0.83	1.25				
L1	1.05 REF						
Θ	0 2.						
TOLERANCE OF FORM AND POSITION							
aaa	0.10						
bbb	0.20						
ccc	0.10						
ddd	0.25						
eee	eee 0.10						



#### RECOMMENDED MOUNTING FOOTPRINT

\*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE onsemi SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D

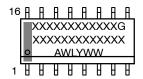
DOCUMENT NUMBER:	98ASB42566B	Electronic versions are uncontrolled except when accessed directly from the Document Reposito Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.				
DESCRIPTION:	SOIC-16 9.90X3.90X1.37 1.27P		PAGE 1 OF 2			

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#### SOIC-16 9.90x3.90x1.37 1.27P CASE 751B ISSUE M

**DATE 18 OCT 2024** 

## GENERIC MARKING DIAGRAM\*



XXXXX = Specific Device Code A = Assembly Location

WL = Wafer Lot
 Y = Year
 WW = Work Week
 G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:		STYLE 2:		STYLE 3:		TYLE 4:	
PIN 1.	COLLECTOR	PIN 1.	CATHODE	PIN 1.	COLLECTOR, DYE #1	PIN 1.	COLLECTOR, DYE #1
2.	BASE	2.	ANODE	2.	BASE. #1	2.	
3.	EMITTER	3.	NO CONNECTION	3.	EMITTER, #1	3.	
4.	NO CONNECTION	4.	CATHODE	4.	COLLECTOR, #1	4.	
5.	EMITTER	5.	CATHODE	5.	COLLECTOR, #1	5.	
6.	BASE	6.	NO CONNECTION	6.	BASE. #2	6.	,
7.	COLLECTOR	7.		7.	EMITTER, #2	7.	
8.	COLLECTOR	8.	CATHODE	8.	COLLECTOR, #2	8.	
	BASE	9.	CATHODE	9.	COLLECTOR, #2	9.	
	EMITTER	10.	ANODE	10.	BASE. #3	10.	- ,
	NO CONNECTION	11.	NO CONNECTION	11.	. ,	11.	,
	EMITTER		CATHODE	12.		12.	
13.	BASE	13.	CATHODE	13.	COLLECTOR, #4	13.	
14.	COLLECTOR	14.	NO CONNECTION	14.	BASE, #4	14.	
15.	EMITTER	15.	ANODE	15.	EMITTER, #4	15.	BASE, #1
16.	COLLECTOR	16.	CATHODE	16.	COLLECTOR, #4	16.	EMITTER, #1
STYLE 5:		STYLE 6:		STYLE 7:			
PIN 1.	DRAIN, DYE #1	PIN 1.	CATHODE	PIN 1.	SOURCE N-CH		
2.	DRAIN. #1	2.	CATHODE	2.	COMMON DRAIN (OUTPUT)		
		۷.	OATTIODE	۷.			
3.	DRAIN, #2	3.	CATHODE	3.	COMMON DRAIN (OUTPUT)		
3. 4.					COMMON DRAIN (OUTPUT) GATE P-CH		
	DRAIN, #2	3.	CATHODE	3.	COMMON DRAIN (OUTPUT)		
4.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3	3. 4.	CATHODE CATHODE CATHODE CATHODE	3. 4.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5.	DRAIN, #2 DRAIN, #2 DRAIN, #3	3. 4. 5.	CATHODE CATHODE CATHODE CATHODE CATHODE	3. 4. 5.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4	3. 4. 5. 6.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE	3. 4. 5. 6.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 GATE, #4	3. 4. 5. 6.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE	3. 4. 5. 6. 7.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH		
4. 5. 6. 7. 8.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 GATE, #4 SOURCE, #4	3. 4. 5. 6. 7. 8. 9.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE ANODE	3. 4. 5. 6. 7.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8. 9. 10.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 GATE, #4 SOURCE, #4 GATE, #3	3. 4. 5. 6. 7. 8. 9. 10.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE ANODE ANODE ANODE	3. 4. 5. 6. 7. 8. 9. 10.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8. 9. 10. 11.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 GATE, #4 SOURCE, #4 SOURCE, #3 SOURCE, #3	3. 4. 5. 6. 7. 8. 9. 10. 11.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE ANODE ANODE ANODE ANODE ANODE	3. 4. 5. 6. 7. 8. 9. 10. 11.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8. 9. 10. 11. 12.	DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 SOURCE, #4 SOURCE, #3 SOURCE, #3 GATE, #2	3. 4. 5. 6. 7. 8. 9. 10. 11. 12.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE ANODE ANODE ANODE ANODE ANODE ANODE ANODE ANODE	3. 4. 5. 6. 7. 8. 9. 10. 11. 12.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) GATE N-CH		
4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 SOURCE, #4 SOURCE, #4 GATE, #3 SOURCE, #3 SOURCE, #3 SOURCE, #3 SOURCE, #2	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) GATE N-CH COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.	DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 GATE, #4 SOURCE, #4 GATE, #3 SOURCE, #3 GATE, #2 SOURCE, #2 GATE, #1	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) GATE N-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT)		
4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	DRAIN, #2 DRAIN, #2 DRAIN, #3 DRAIN, #3 DRAIN, #4 DRAIN, #4 SOURCE, #4 SOURCE, #4 GATE, #3 SOURCE, #3 SOURCE, #3 SOURCE, #3 SOURCE, #2	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE CATHODE ANODE	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	COMMON DRAIN (OUTPUT) GATE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) SOURCE P-CH SOURCE P-CH COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) COMMON DRAIN (OUTPUT) GATE N-CH COMMON DRAIN (OUTPUT)		

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