ON Semiconductor

Is Now

Onsemi

To learn more about onsemi[™], please visit our website at <u>www.onsemi.com</u>

onsemi and ONSEMI. and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product factures, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and asfety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi data sheets and/or by customer's technical experts. onsemi products and actal performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use onsemi products for any such unintended or unauthorized application, Buyer shall indemnify and hold onsemi and its officers, employees, subsidiari

TinyLogic UHS 1-of-2 Non-Inverting De-multiplexer with 3-STATE Deselected Output

NC7SZ18

Description

The NC7SZ18 is a 1–of–2 non–inverting demultiplexer. The device will buffer the data on the A pin and pass to either output Y_0 or Y_1 dependent on whether state of the select pin (S) is LOW or HIGH respectively. The deselected output will be placed into a high impedance state. The device is fabricated with advanced CMOS technology to achieve ultra high speed with high output drive while maintaining low static power dissipation over a broad V_{CC} operating range. The device is specified to operate over the 1.65 V to 5.5 V V_{CC} operating range. The inputs and outputs are high impedance when V_{CC} is 0 V. Inputs tolerate voltages up to 5.5 V independent of V_{CC} operating range.

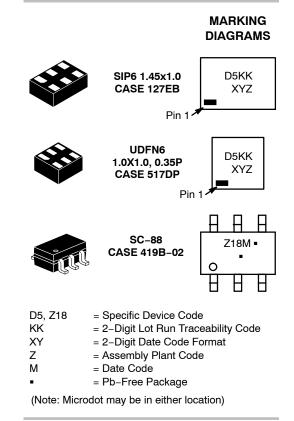
Features

- Ultra High–Speed: t_{PD} = 2.5 ns Typical at 5 V V_{CC}
- High Impedance Output when Deselected
- Broad V_{CC} Operating Range: 1.65 V to 5.50 V
- Power Down High Impednce Inputs / Outputs
- Over-Voltage Tolerance Inputs Facilitate 5 V to 3 V Translation
- Proprietary Noise / EMI Reduction Circuitry
- Ultra-Small MicroPakTM Packages
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant



ON Semiconductor®

www.onsemi.com



ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 6 of this data sheet.

Pin Configurations

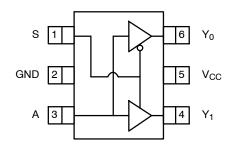
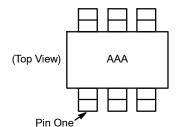


Figure 1. SC-88 (Top View)



NOTES:

1. AAA represents product code top mark (see Ordering Information).

Orientation of top mark determines pin one location.
 Reading the top mark left to right, pin one is the lower left pin.

Figure 3. Pin 1 Orientation

PIN DEFINITIONS

Pin # SC-88	Pin # MicroPak	Name	Description
1	1	S	Data Input
2	2	GND	Ground
3	3	А	Demultiplexer Data
4	4	Y ₁	Output
5	5	V _{CC}	Supply Voltage
6	6	Y ₀	Output

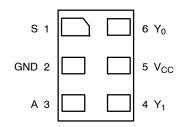


Figure 2. MicroPak (Top Through View)

Inp	uts	Output		
S	Α	Y ₀	Y ₁	
L	L	L	Z	
L	Н	Н	Z	
Н	L	Z	L	
Н	Н	Z	Н	

H = HIGH Logic Level L = LOW Logic Level X = 3-STATE

ABSOLUTE MAXIMUM RATINGS

Symbol	Parame	Min	Max	Unit	
V _{CC}	Supply Voltage	-0.5	6.5	V	
V _{IN}	DC Input Voltage		-0.5	6.5	V
V _{OUT}	DC Output Voltage		-0.5	6.5	V
Ι _{ΙΚ}	DC Input Diode Current	DC Input Diode Current V _{IN} < 0 V		-50	mA
I _{OK}	DC Output Diode Current	V _{OUT} < 0 V	-	-50	mA
I _{OUT}	DC Output Current	-	±50	mA	
$I_{CC} \text{ or } I_{GND}$	DC V _{CC} or Ground Current	-	±100	mA	
T _{STG}	Storage Temperature Range	-65	+150	°C	
TJ	Junction Temperature Under Bias	-	+150	°C	
ΤL	Junction Lead Temperature (Solde	ering, 10 Seconds)	-	+260	°C
PD	Power Dissipation at +85°C	SC-88	-	332	mW
		MicroPak-6	-	812	
		MicroPak2™–6	-	812	
ESD	Human Body Model, JEDEC: JES	D22-A114	-	2000	V
	Charge Device Model, JEDEC: JE	SD22-C101	-	1000	

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.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Conditions	Min	Мах	Unit
V _{CC}	Supply Voltage Operating		1.65	5.5	V
	Supply Voltage Data Retention		1.5	5.5	
V _{IN}	Input Voltage		0	5.5	V
V _{OUT}	Output Voltage		0	V _{CC}	V
t _r , t _f	Input Rise and Fall Times	V_{CC} at 1.8 V ± 0.15 V, 2.5 V ± 0.2 V	0	20	ns/V
		V _{CC} at 3.3 V ±0.3 V	0	10	
		V _{CC} at 5.0 V ±0.5 V	0	5	
T _A	Operating Temperature		-40	+85	°C
θ_{JA}	Thermal Resistance	SC-88	-	377	°C/W
		MicroPak-6	-	154	
		MicroPak2-6	-	154	

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

DC ELECTRICAL CHARACTERISTICS

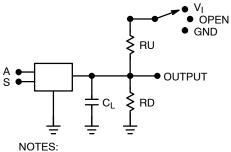
	Parameter		Conditions	T _A = +25°C			T _A = −40 to +85°C		
Symbol		V _{CC} (V)		Min	Тур	Max	Min	Max	Unit
VIH	HIGH Level Input Voltage	1.65 to 1.95		0.65 V _{CC}	-	-	0.75 V _{CC}	-	V
		2.30 to 5.50		0.70 V _{CC}	-	-	0.70 V _{CC}	-	
VIL	IL LOW Level Input Voltage	1.65 to 1.95		-	-	0.25 V _{CC}	-	0.25 V _{CC}	V
		2.30 to 5.50		-	-	0.30 V _{CC}	-	0.30 V _{CC}	
V _{OH}	HIGH Level Output Voltage	1.65	$V_{IN} = V_{IH} \text{ or } V_{IL}$	1.55	1.65	-	1.55	-	V
		2.30	$I_{OH} = -100 \mu A$	2.20	2.30	-	2.20	-	
		3.00		2.90	3.00	-	2.90	-	
		4.50		4.40	4.50	-	4.40	-	1
		1.65	I _{OH} = -4 mA	1.29	1.52	-	1.29	-	
		2.30	I _{OH} = -8 mA	1.90	2.15	-	1.90	-	
		3.00	I _{OH} = -16 mA	2.40	2.80	-	2.40	-	
	3.00	I _{OH} = -24 mA	2.30	3.68	-	2.30	-		
		4.50	I _{OH} = -32 mA	3.80	4.20	-	3.80	-	
V _{OL}	LOW Level Output Voltage	1.65	$V_{IN} = V_{IH} \text{ or } V_{IL},$	-	0.00	0.10	-	0.10	V
		2.30	I _{OL} = 100 μA	-	0.00	0.10	-	0.10	
		3.00		-	0.00	0.10	-	0.10	1
		4.50		-	0.00	0.10	-	0.10	1
		1.65	I _{OL} = 4 mA	-	0.08	0.24	-	0.24	1
		2.30	I _{OL} = 8 mA	-	0.10	0.30	-	0.30	1
		3.00	I _{OL} = 16 mA	-	0.15	0.40	-	0.40	
		3.00	I _{OL} = 24 mA	-	0.22	0.55	-	0.55	
		4.50	I _{OL} = 32 mA	-	0.22	0.55	-	0.55	1
I _{IN}	Input Leakage Current	1.65 to 5.5	V _{IN} = 5.5 V, GND	-	-	±0.1	-	±1.0	μA
I _{OZ}	3-STATE Output Leakage	1.65 to 5.5	$\begin{array}{l} V_{IN} = V_{IH} \text{ or } V_{IL}, \\ 0 < V_{OUT} \leq 5.5 \text{ V} \end{array}$	-	-	±0.5	_	±5.0	μA
I _{OFF}	Power Off Leakage Current	0	V_{IN} or V_{OUT} = 5.5 V	-	-	1	-	10	μA
I _{CC}	Quiescent Supply Current	1.65 to 5.5	V _{IN} = 5.5 V, GND	-	-	1	-	10	μA

AC ELECTRICAL CHARACTERISTICS

				T _A = +25°C			T _A = −40 to +85°C		
Symbol	Parameter	V _{CC} (V)	Conditions	Min	Тур	Max	Min	Max	Unit
t _{PLH} , t _{PHL}	Propagation Delay A to $(Y_0 \text{ or } Y_1)$	1.80 ±0.15	$C_L = 15 \text{ pF},$	-	6.3	10.1	-	10.5	ns
	(Figure 4, 6)	2.50 ± 0.20	$R_D = 1 M\Omega,$ V ₁ = OPEN	-	3.6	5.7	-	6.0	
		$3.30\pm\!\!0.30$		-	2.7	4.0	-	4.3	
		5.00 ±0.50		-	2.0	3.1	-	3.3	
		$3.30\pm\!\!0.30$		-	3.4	4.9	-	5.4	ns
		$5.00\pm\!\!0.50$	· R _D = 500 Ω, V ₁ = OPEN	-	2.5	3.9	-	4.2	
t _{PZL} , t _{PHZ} Output Enable Tim (Figure 4, 6)	Output Enable Time	1.80 ±0.15		-	6.9	12.0	-	12.5	ns
	(Figure 4, 6)	2.50 ±0.20 V ₁ = GND		-	4.2	6.8	-	7.3	
		3.30 ±0.30	$V_1 = V_{IN}$ for t_{PZL} $V_{IN} = 2 \times V_{CC}$	-	3.2	5.0	-	5.5	1
		5.00 ± 0.50		-	2.5	4.0	-	4.3	
	Output Disable Time	1.80 ±0.15		-	6.0	10.0	-	10.5	ns
	(Figure 4, 6)	2.50 ±0.20	$ \begin{array}{l} R_{D}, R_{U} = 500 \ \Omega, \\ V_1 = GND \ \text{for} \ t_{PHZ} \\ V_1 = V_{IN} \ \text{for} \ t_{PLZ} \\ V_{IN} = 2 \ x \ V_{CC} \end{array} $	-	4.0	6.8	-	7.1	
		$3.30\pm\!\!0.30$		-	2.9	4.9	-	5.3	1
		5.00 ± 0.50		-	1.8	3.5	-	3.7	
C _{IN}	Input Capacitance	0		-	2.5	-	-	-	pF
C _{OUT}	Output Capacitance	0		-	4.0	-	-	-	pF
C _{PD}	Power Dissipation Capacitance	3.30		-	16.0	-	-	-	pF
	(Note 4) (Figure 5)	5.00		-	19.5	_	-	-	

4. C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. C_{PD} is related to I_{CCD} dynamic operating current by the expression: I_{CCD} = (C_{PD}) (V_{CC}) (f_{IN}) + (I_{CC}static).

AC Loading and Waveforms



5. C_L includes load and stray capacitance. 6. Input PRR = 1.0 MHz, t_W = 500 ns.



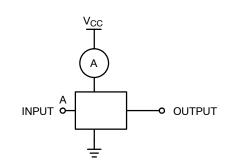
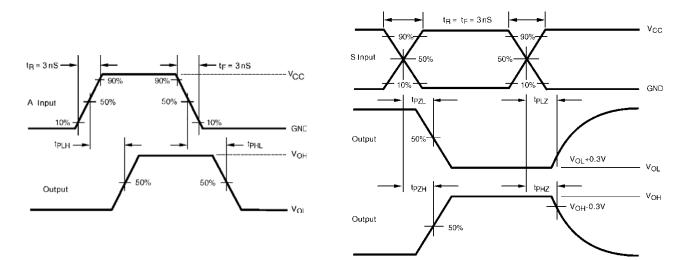


Figure 5. I_{CCD} Test Circuit





ORDERING INFORMATION

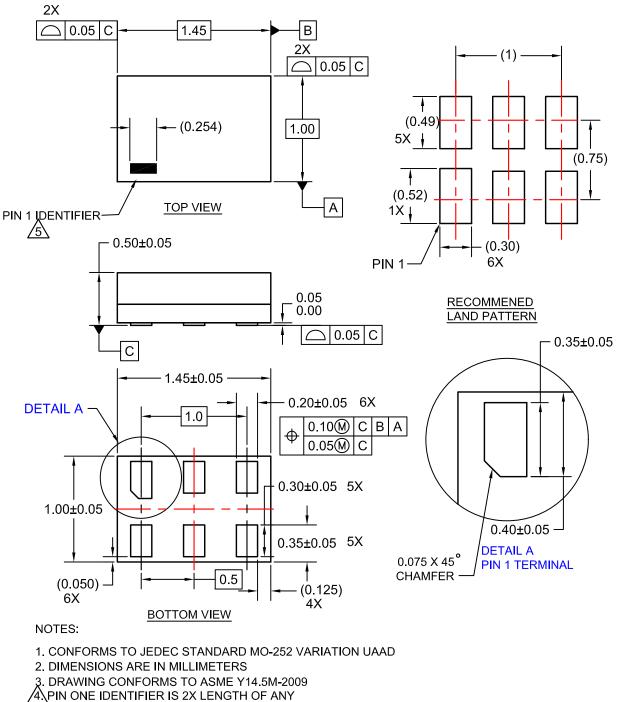
Device	Top Mark	Packages	Shipping [†]
NC7SZ18P6X	Z18	SC-88	3000 / Tape & Reel
NC7SZ18L6X	D5	SIP6, MicroPak	5000 / Tape & Reel
NC7SZ18FHX	D5	UDFN6, MicroPak2	5000 / Tape & Reel

†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.

PACKAGE DIMENSIONS

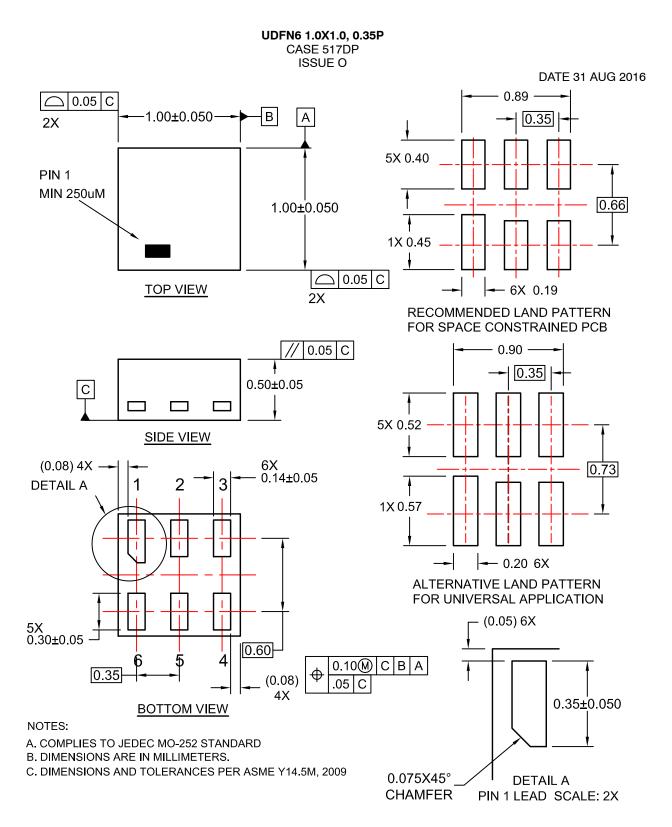
SIP6 1.45X1.0 CASE 127EB ISSUE O

DATE 31 AUG 2016



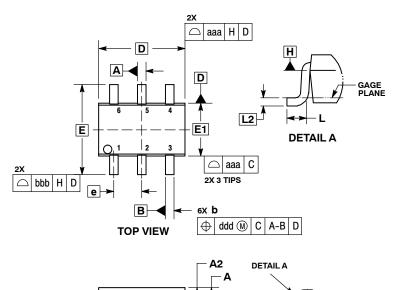
OTHER LINE IN THE MARK CODE LAYOUT.

PACKAGE DIMENSIONS



PACKAGE DIMENSIONS

SC-88/SC70-6/SOT-363 CASE 419B-02 **ISSUE Y**



NOTES:

С

END VIEW

- 1. 2.
- З.
- DITES:
 DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 CONTROLLING DIMENSION: MILLIMETERS.
 DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRU-SIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END.
 DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AND DATUM H.
 DATUMS A AND B ARE DETERMINED AT DATUM H.
 DIMENSIONS D AND C APPLY TO THE ELA SECTION OF THE 4
- 5. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP. 6.
- 7 DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION 5 AT MAXIMUM MATERIAL CONDI-TION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

	MIL	LIMETE	RS		INCHES	3	
DIM	MIN	NOM	MAX	MIN	NOM	MAX	
Α			1.10			0.043	
A1	0.00		0.10	0.000		0.004	
A2	0.70	0.90	1.00	0.027	0.035	0.039	
b	0.15	0.20	0.25	0.006	0.008	0.010	
С	0.08	0.15	0.22	0.003	0.006	0.009	
D	1.80	2.00	2.20	0.070	0.078	0.086	
Е	2.00	2.10	2.20	0.078	0.082	0.086	
E1	1.15	1.25	1.35	0.045	0.049	0.053	
е	(0.65 BS	С	0.026 BSC			
L	0.26	0.36	0.46	0.010	0.014	0.018	
L2	0.15 BSC			0.006 BSC			
aaa	0.15			0.006			
bbb	0.30			0.012			
CCC		0.10			0.004		
ddd		0.10			0.004		

GENERIC **MARKING DIAGRAM***



XXX = Specific Device Code Μ

- = Date Code*
- = Pb-Free Package

(Note: Microdot may be in either location)

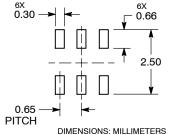
- *Date Code orientation and/or position may vary depending upon manufacturing location.
- *This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

RECOMMENDED **SOLDERING FOOTPRINT***

A1

SIDE VIEW

6X C C C



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

STYLES ON PAGE 2

SC-88/SC70-6/SOT-363 CASE 419B-02 ISSUE Y

STYLE 1: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2	STYLE 2: CANCELLED	STYLE 3: CANCELLED	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. COLLECTOR 4. EMITTER 5. BASE 6. ANODE	STYLE 5: PIN 1. ANODE 2. ANODE 3. COLLECTOR 4. EMITTER 5. BASE 6. CATHODE	STYLE 6: PIN 1. ANODE 2 2. N/C 3. CATHODE 1 4. ANODE 1 5. N/C 6. CATHODE 2
STYLE 7: PIN 1. SOURCE 2 2. DRAIN 2 3. GATE 1 4. SOURCE 1 5. DRAIN 1 6. GATE 2	STYLE 8: CANCELLED	STYLE 9: PIN 1. EMITTER 2 2. EMITTER 1 3. COLLECTOR 1 4. BASE 1 5. BASE 2 6. COLLECTOR 2	STYLE 10: PIN 1. SOURCE 2 2. SOURCE 1 3. GATE 1 4. DRAIN 1 5. DRAIN 2 6. GATE 2	STYLE 11: PIN 1. CATHODE 2 2. CATHODE 2 3. ANODE 1 4. CATHODE 1 5. CATHODE 1 6. ANODE 2	STYLE 12: PIN 1. ANODE 2 2. ANODE 2 3. CATHODE 1 4. ANODE 1 5. ANODE 1 6. CATHODE 2
STYLE 13:	STYLE 14:	STYLE 15:	STYLE 16:	STYLE 17:	STYLE 18:
PIN 1. ANODE	PIN 1. VREF	PIN 1. ANODE 1	PIN 1. BASE 1	PIN 1. BASE 1	PIN 1. VIN1
2. N/C	2. GND	2. ANODE 2	2. EMITTER 2	2. EMITTER 1	2. VCC
3. COLLECTOR	3. GND	3. ANODE 3	3. COLLECTOR 2	3. COLLECTOR 2	3. VOUT2
4. EMITTER	4. IOUT	4. CATHODE 3	4. BASE 2	4. BASE 2	4. VIN2
5. BASE	5. VEN	5. CATHODE 2	5. EMITTER 1	5. EMITTER 2	5. GND
6. CATHODE	6. VCC	6. CATHODE 1	6. COLLECTOR 1	6. COLLECTOR 1	6. VOUT1
STYLE 19:	STYLE 20:	STYLE 21:	STYLE 22:	STYLE 23:	STYLE 24:
PIN 1. I OUT	PIN 1. COLLECTOR	PIN 1. ANODE 1	PIN 1. D1 (i)	PIN 1. Vn	PIN 1. CATHODE
2. GND	2. COLLECTOR	2. N/C	2. GND	2. CH1	2. ANODE
3. GND	3. BASE	3. ANODE 2	3. D2 (i)	3. Vp	3. CATHODE
4. V CC	4. EMITTER	4. CATHODE 2	4. D2 (c)	4. N/C	4. CATHODE
5. V EN	5. COLLECTOR	5. N/C	5. VBUS	5. CH2	5. CATHODE
6. V REF	6. COLLECTOR	6. CATHODE 1	6. D1 (c)	6. N/C	6. CATHODE
STYLE 25:	STYLE 26:	STYLE 27:	STYLE 28:	STYLE 29:	STYLE 30:
PIN 1. BASE 1	PIN 1. SOURCE 1	PIN 1. BASE 2	PIN 1. DRAIN	PIN 1. ANODE	PIN 1. SOURCE 1
2. CATHODE	2. GATE 1	2. BASE 1	2. DRAIN	2. ANODE	2. DRAIN 2
3. COLLECTOR 2	3. DRAIN 2	3. COLLECTOR 1	3. GATE	3. COLLECTOR	3. DRAIN 2
4. BASE 2	4. SOURCE 2	4. EMITTER 1	4. SOURCE	4. EMITTER	4. SOURCE 2
5. EMITTER	5. GATE 2	5. EMITTER 2	5. DRAIN	5. BASE/ANODE	5. GATE 1
6. COLLECTOR 1	6. DRAIN 1	6. COLLECTOR 2	6. DRAIN	6. CATHODE	6. DRAIN 1

Note: Please refer to datasheet for style callout. If style type is not called out in the datasheet refer to the device datasheet pinout or pin assignment.

MicroPak and MicroPak2 are trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries.

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at <u>www.onsemi.com/site/pdf/Patent-Marking.pdf</u>. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor roducts, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for implantation in the human body. Should Buyer purchase or use ON Semiconductor pay such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated wi

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

TECHNICAL SUPPORT

ON Semiconductor Website: www.onsemi.com

Email Requests to: orderlit@onsemi.com

North American Technical Support: Voice Mail: 1 800–282–9855 Toll Free USA/Canada Phone: 011 421 33 790 2910 Europe, Middle East and Africa Technical Support: Phone: 00421 33 790 2910 For additional information, please contact your local Sales Representative

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Encoders, Decoders, Multiplexers & Demultiplexers category:

Click to view products by ON Semiconductor manufacturer:

Other Similar products are found below :

MC74HC163ADTG 74HC253N NLV74VHC1G01DFT1G TC74AC138P(F) NLV14051BDR2G NLV74HC238ADTR2G COMX-CAR-210 5962-8607001EA NTE74LS247 5962-8756601EA SN74LS148N 8CA3052APGGI8 TC74VHC138F(EL,K,F PI3B3251LE PI3B3251QE NTE4028B NTE4514B NTE4515B NTE4543B NTE4547B NTE74LS249 NLV74HC4851AMNTWG MC74LVX257DG M74HCT4851ADWR2G AP4373AW5-7-01 NL7SZ19DBVT1G MC74LVX257DTR2G 74VHC4066AFT(BJ) 74VHCT138AFT(BJ) 74HC158D.652 74HC4052D(BJ) 74VHC138MTC COMX-CAR-P1 JM38510/65852BEA 74VHC138MTCX 74HC138D(BJ) NL7SZ19DFT2G 74AHCT138T16-13 74LCX138FT(AJ) 74LCX157FT(AJ) NL7SZ18MUR2G PCA9540BD,118 QS3VH16233PAG8 SNJ54HC251J SN54LS139AJ SN74CBTLV3257PWG4 SN74ALS156DR SN74AHCT139PWR 74HC251D.652 74HC257D.652