MOTOROLA

SN54ALS641/642
SN74ALS641/642

Advance Information

OCTAL BUS TRANSCEIVERS
OPEN-COLLECTOR OUTPUTS

ADVANCED LOW POWER SCHOTTKY

DESCRIPTION — These octal bus transceivers are ideally suited for asynchronous two-way communication between data buses. Control function implementation minimizes external timing requirements.

These circuits allow data transmission from the A bus to B bus or from the B bus to A bus depending upon the logic level of the direction control (DIR) input. Enable input ($\overline{G}$) can disable the device so that the buses are effectively isolated.

This device is pin and functionally compatible with the 54LS641/642, 74LS641/642. It is manufactured using the MOSAIC (oxide isolated) process which results in the same speed at 50% of the power of the LS device.

- **BI-DIRECTIONAL BUS TRANSCEIVERS IN HIGH-DENSITY 20-PIN PACKAGES**
- **CHOICE OF TRUE OR INVERTING LOGIC**
- **OPEN-COLLECTOR OUTPUTS**
- **PNP INPUTS REDUCE D-C LOADING ON BUS LINES**
- **HYSTERESIS AT BUS INPUTS IMPROVES NOISE MARGINS**

TYPE	LOGIC	OUTPUT
ALS641	Non-Inverting	o.c.
ALS642	Inverting	o.c.

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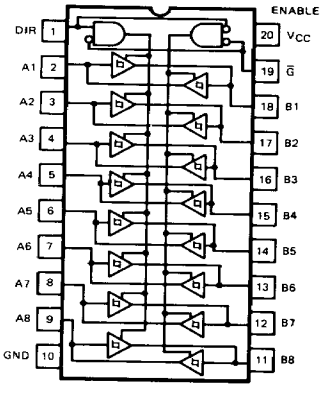
FUNCTION TABLE

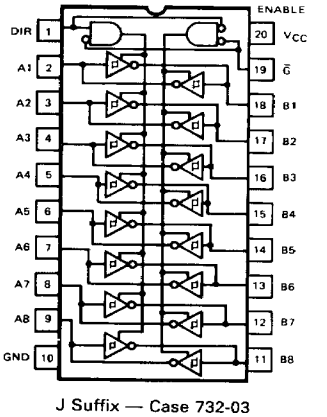
ENABLE $\overline{G}$	DIRECTION CONTROL DIR	OPERATION	
		ALS642	ALS641
L	L	B data to A bus	B data to A bus
L	H	A data to B bus	A data to B bus
H	X	Isolation	Isolation

H = high level, L = low level, X = irrelevant

SN54ALS/74ALS641
(TOP VIEW)



SN54ALS/74ALS642
(TOP VIEW)



J Suffix — Case 732-03
N Suffix — Case 738-01

This document contains information on a new product. Specifications and information herein are subject to change without notice.

GUARANTEED OPERATING RANGES

SYMBOL	PARAMETER		MIN	TYP	MAX	UNIT
V_{CC}	Supply Voltage	54 74	4.5 4.75	5.0 5.0	5.5 5.25	V
T_A	Operating Ambient Temperature Range	54 74	−55 0	25 25	125 70	°C
V_{OH}	Output Voltage — High	54,74			5.5	V
I_{OL}	Output Current — Low	54 74			12 24	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNITS	TEST CONDITIONS
V_{IH}	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage for All Inputs
V_{IL}	Input LOW Voltage	54			0.8	V	Guaranteed Input LOW Voltage for All Inputs
		74			0.8		
$V_{T+}-V_{T-}$	Hysteresis, A or B Inputs	54,74	0.2	0.4		V	V_{CC} = MIN
V_{IK}	Input Clamp Diode Voltage				−1.5	V	V_{CC} = MIN, I_{IN} = −18 mA
I_{OH}	Output HIGH Current	54,74			100	μA	V_{CC} = MIN, V_{OH} = MAX
V_{OL}	Output LOW Voltage	54,74		0.25	0.4	V	I_{OL} = 12 mA; V_{CC} = V_{CC} MIN, V_{IN} = V_{IL} or V_{IH} per Truth Table
		74		0.35	0.5	V	I_{OL} = 24 mA; V_{CC} = V_{CC} MIN, V_{IN} = V_{IL} or V_{IH} per Truth Table
I_{IH}	Input HIGH Current				20	μA	V_{CC} = MAX, V_{IN} = 2.7 V
					0.1	mA	V_{CC} = MAX, V_{IN} = 5.5 V on A or B Inputs, V_{IN} = 7.0 V on DIR or $\overline{G}$
I_{IL}	Input LOW Current				−0.2	mA	V_{CC} = MAX, V_{IN} = 0.4 V
I_{CC}	Power Supply Current Total, Output HIGH				35	mA	V_{CC} = MAX
	Total, Output LOW				45		
	Total at HIGH-Z				47.5		

AC CHARACTERISTICS: T_A = 25°C, V_{CC} = 5.0 V

SYMBOL	PARAMETER			LIMITS MIN	LIMITS TYP	ALS 641/ ALS 642 MAX	UNITS	TEST CONDITIONS S1 SWITCH POSITION	
t_{PLH} t_{PHL}	Propagation Delay, Data to Output					25 25	ns	See Figure 1	t_{PLH} — Closed t_{PHL} — Closed
t_{PLH}	Output Disable Time From Low Level	G	A			40	ns		
		G	B			40	ns		
t_{PHL}	Output Disable Time To Low Level	G	A			50/60	ns		
		G	B			50/60	ns		

Fig. 1