



74AVC8T245

8-Bit Dual-Supply Translating Transceiver with Configurable Voltage Translation and 3-State Outputs

GENERAL DESCRIPTION

The 74AVC8T245 is an 8-bit, dual-supply bus transceiver with configurable voltage translation. The An and Bn are 8-bit data input-output ports, DIR is the direction control input. \overline{OE} is an output enable input and V_{CCA} and V_{CCB} are dual supply pins. The supply voltage of V_{CCA} and V_{CCB} can range from 0.8V to 3.6V, making the device suitable for bidirectional translating among any of the 0.8V, 1.2V, 1.5V, 1.8V, 2.5V and 3.3V voltage nodes. The An, \overline{OE} and DIR pins are referenced to V_{CCA} and Bn pins are referenced to V_{CCB} .

The direction control (DIR) input determines the direction of the data flow. The DIR (active-high) enables data from An ports to Bn ports. The DIR (active-low) enables data from Bn ports to An ports. The output enable (\overline{OE}) input, when high, disables both An and Bn ports, so the buses are effectively isolated.

FEATURES

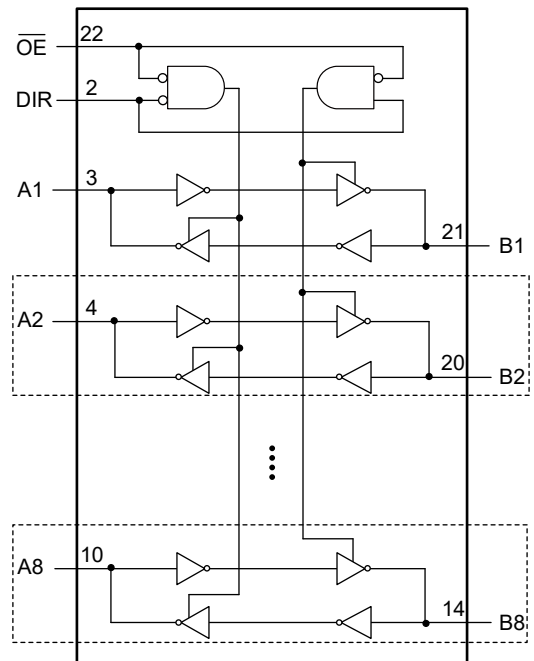
- V_{CCA} Supply Voltage Range: 0.8V to 3.6V
- V_{CCB} Supply Voltage Range: 0.8V to 3.6V
- Inputs Accept Voltages up to 3.6V
- +12mA/-12mA Output Current
- Data Rates:
 - ♦ 380Mbps ($\geq 1.8V$ to 3.3V Translation)
 - ♦ 260Mbps ($\geq 1.1V$ to 3.3V Translation)
 - ♦ 260Mbps ($\geq 1.1V$ to 2.5V Translation)
 - ♦ 210Mbps ($\geq 1.1V$ to 1.8V Translation)
 - ♦ 150Mbps ($\geq 1.1V$ to 1.5V Translation)
 - ♦ 100Mbps ($\geq 1.1V$ to 1.2V Translation)
- Outputs in High-Impedance State when V_{CCA} or $V_{CCB} = 0V$
- -40°C to +125°C Operating Temperature Range
- Available in Green TQFN-5.5×3.5-24L and TSSOP-24 Packages

FUNCTION TABLE

CONTROL INPUT		INPUT/OUTPUT	
\overline{OE}	DIR	An	Bn
L	L	An = Bn	Inputs
L	H	Inputs	Bn = An
H	X	Z	Z
X	X	Z	Z

H = High Voltage Level
 L = Low Voltage Level
 Z = High-Impedance State
 X = Don't Care

LOGIC DIAGRAM



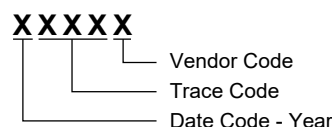
8-Bit Dual-Supply Translating Transceiver with 74AVC8T245 Configurable Voltage Translation and 3-State Outputs

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
74AVC8T245	TQFN-5.5×3.5-24L	-40°C to +125°C	74AVC8T245XTQQ24G/TR	R43 XTQQ XXXXX	Tape and Reel, 3000
	TSSOP-24	-40°C to +125°C	74AVC8T245XTS24G/TR	74AVC8T245 XTS24 XXXXX	Tape and Reel, 4000

MARKING INFORMATION

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Supply Voltage Range, V_{CCA}	-0.5V to 4.6V
Supply Voltage Range, V_{CCB}	-0.5V to 4.6V
Input Voltage Range, V_I ⁽²⁾	-0.5V to 4.6V
Output Voltage Range, V_O ⁽²⁾	
3-State Mode	-0.5V to 4.6V
High-State or Low-State	
A Ports	-0.5V to MIN(4.6V, $V_{CCA} + 0.5V$)
B Ports	-0.5V to MIN(4.6V, $V_{CCB} + 0.5V$)
Output Current, I_O	
High-State or Low-State	± 50 mA
Input Clamp Current, I_{IK} ($V_I < 0V$)	-50mA
Output Clamp Current, I_{OK} ($V_O < 0V$)	-50mA
Supply Current, I_{CCA} or I_{CCB}	100mA
Ground Current, I_{GND}	-100mA
Junction Temperature ⁽³⁾	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s)	+260°C
ESD Susceptibility	
HBM.....	8000V
CDM	1000V

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range, V_{CCA}	0.8V to 3.6V
Supply Voltage Range, V_{CCB}	0.8V to 3.6V
Input Voltage Range, V_I	0V to 3.6V
Output Voltage Range, V_O	
3-State Mode	0V to 3.6V
High-State or Low-State	
A Ports	0V to V_{CCA}
B Ports	0V to V_{CCB}
High-State or Low-State Output Current, I_O	± 12 mA

Input Transition Rise or Fall Rate, $\Delta t/\Delta V$ 10ns/V (MAX)
Operating Temperature Range..... -40°C to +125°C

OVERSTRESS CAUTION

- Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.
- The input and output voltage ratings may be exceeded if the input and output clamp current ratings are observed.
- The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability.

ESD SENSITIVITY CAUTION

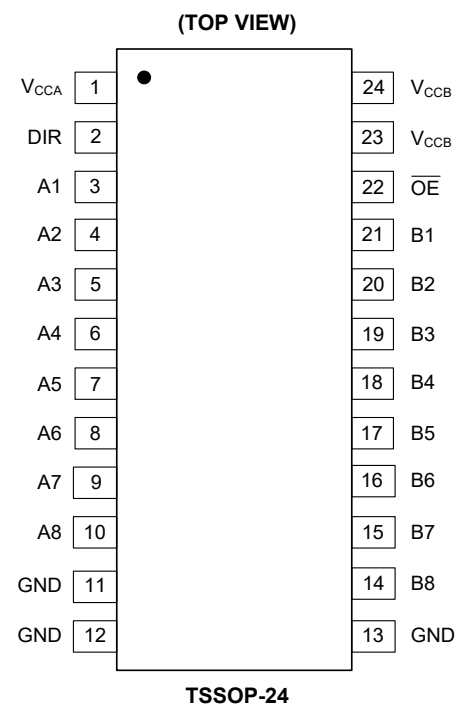
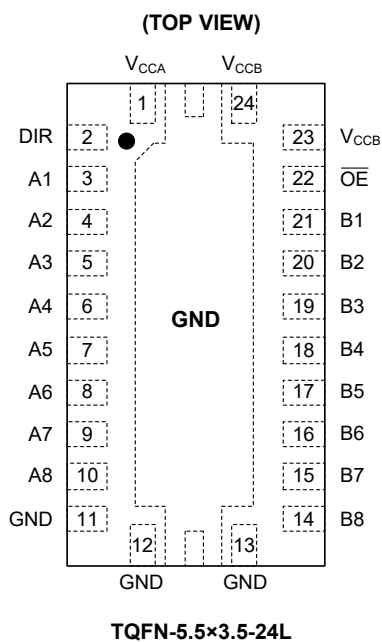
This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

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PIN CONFIGURATIONS

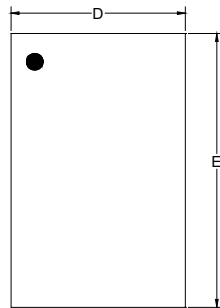


PIN DESCRIPTION

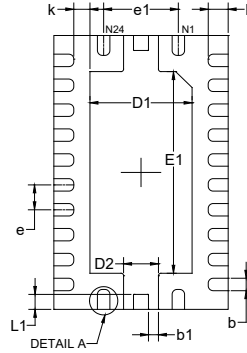
PIN	NAME	FUNCTION
1	V _{CCA}	Supply Voltage V _{CCA} . The A _n , DIR and \overline{OE} signals are referenced to V _{CCA} .
2	DIR	Direction Control Input.
3, 4, 5, 6, 7, 8, 9, 10	A1, A2, A3, A4, A5, A6, A7, A8	Data Inputs/Outputs.
11, 12, 13	GND	Ground.
14, 15, 16, 17, 18, 19, 20, 21	B8, B7, B6, B5, B4, B3, B2, B1	Data Inputs/Outputs.
22	\overline{OE}	Output Enable Input (Active-Low).
23, 24	V _{CCB}	Supply Voltage V _{CCB} . The B _n signals are referenced to V _{CCB} .
Exposed Pad	GND	Connect it to GND internally. This pad is not an electrical connection point. TQFN-5.5x3.5-24L package only.

PACKAGE OUTLINE DIMENSIONS

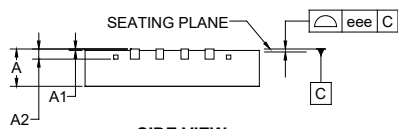
TQFN-5.5×3.5-24L



TOP VIEW



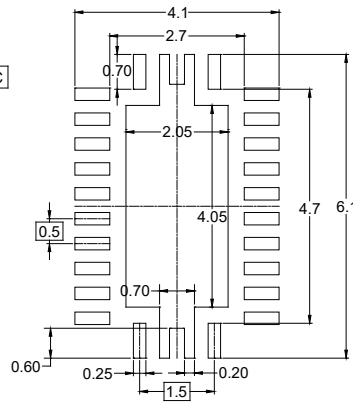
BOTTOM VIEW



SIDE VIEW



DETAIL A
ALTERNATE TERMINAL
CONSTRUCTION



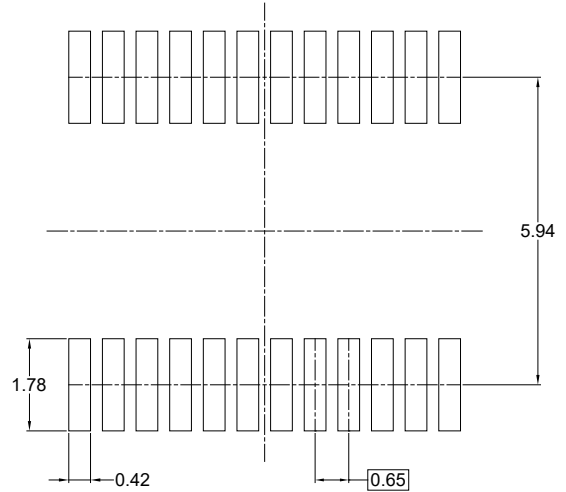
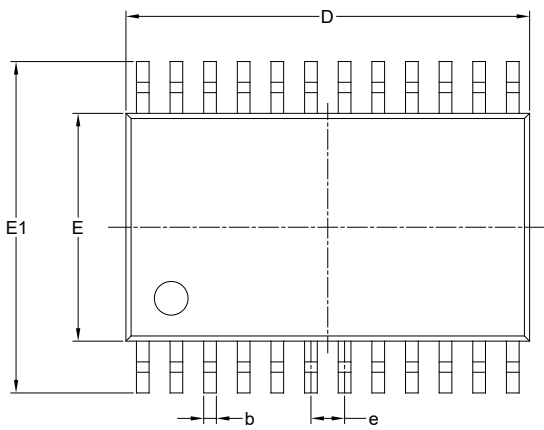
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.700	-	0.800
A1	0.000	-	0.050
A2	0.203 REF		
b	0.200	-	0.300
b1	0.150	-	0.250
D	3.400	-	3.600
D1	1.950	-	2.150
D2	0.600	-	0.800
E	5.400	-	5.600
E1	3.950	-	4.150
e	0.500 BSC		
e1	1.500 BSC		
k	0.325 REF		
L	0.300	-	0.500
L1	0.200	-	0.400
eee	0.080		

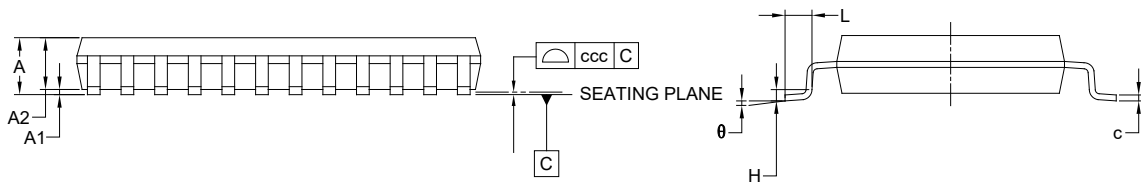
NOTE: This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

TSSOP-24



RECOMMENDED LAND PATTERN (Unit: mm)



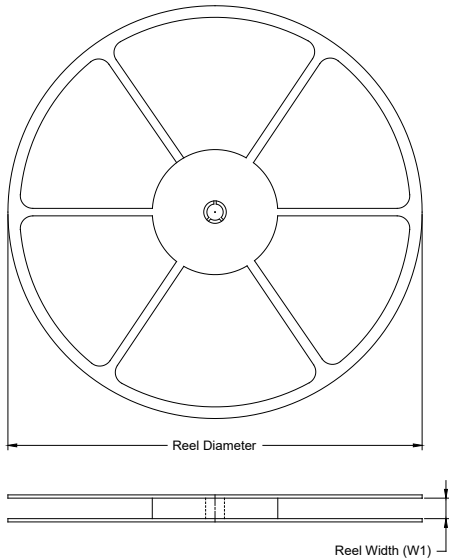
Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	-	-	1.200
A1	0.050	-	0.150
A2	0.800	-	1.050
b	0.190	-	0.300
c	0.090	-	0.200
D	7.700	-	7.900
E	4.300	-	4.500
E1	6.200	-	6.600
e	0.650 BSC		
L	0.450	-	0.750
H	0.250 TYP		
theta	0°	-	8°
ccc	0.100		

NOTES:

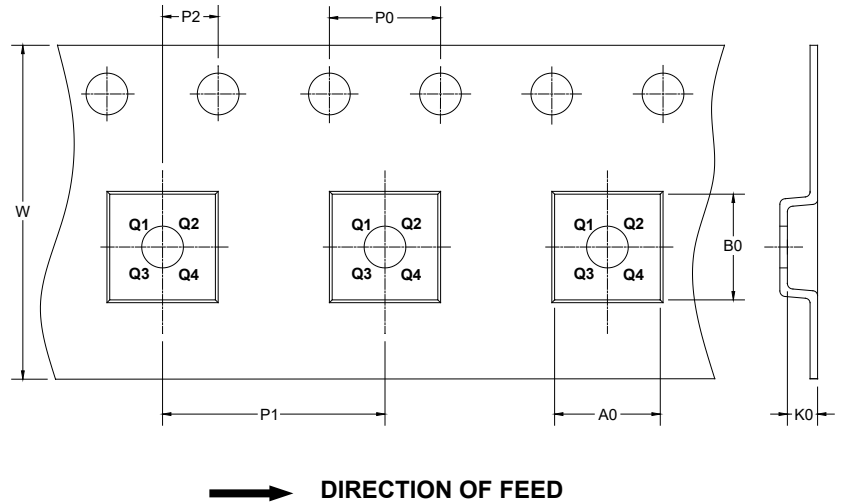
1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MO-153.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TQFN-5.5×3.5-24L	13"	12.4	3.80	5.80	1.00	4.0	8.0	2.0	12.0	Q1
TSSOP-24	13"	16.4	6.80	8.30	1.60	4.0	8.0	2.0	16.0	Q1

D00001

PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5

DD0002