

SN54ALS805A, SN54AS805B, SN74ALS805A, SN74AS805B HEX 2-INPUT NOR DRIVERS

SDAS023C – DECEMBER 1982 – REVISED JANUARY 1995

- **High Capacitive-Drive Capability**
- 'ALS805A Has Typical Delay Time of 4.2 ns ($C_L = 50 \text{ pF}$) and Typical Power Dissipation of 4.2 mW Per Gate
- 'AS805B Has Typical Delay Time of 2.6 ns ($C_L = 50 \text{ pF}$) and Typical Power Dissipation of 12 mW Per Gate
- **Package Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK), and Standard Plastic (N) and Ceramic (J) 300-mil DIPs**

description

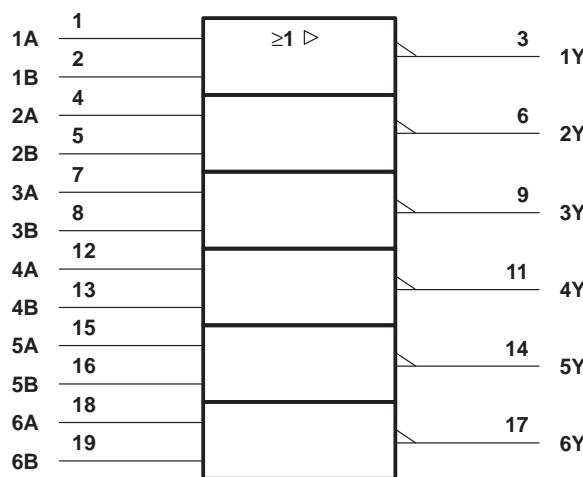
These devices contain six independent 2-input NOR drivers. They perform the Boolean functions $Y = A + B$ or $Y = A \cdot \bar{B}$ in positive logic.

The SN54ALS805A and SN54AS805B are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS805A and SN74AS805B are characterized for operation from 0°C to 70°C .

FUNCTION TABLE
(each driver)

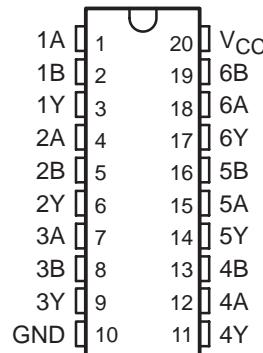
INPUTS		OUTPUT
A	B	Y
H	X	L
X	H	L
L	L	H

logic symbol†

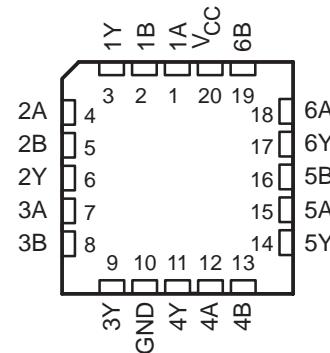


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

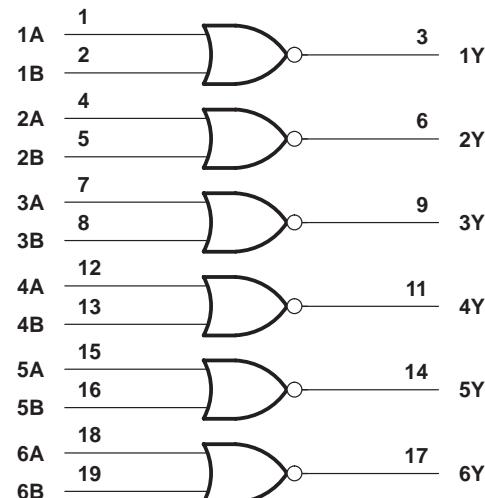
SN54ALS805A, SN54AS805B . . . J PACKAGE
SN74ALS805A, SN74AS805B . . . DW OR N PACKAGE
(TOP VIEW)



SN54ALS805A, SN54AS805B . . . FK PACKAGE
(TOP VIEW)



logic diagram (positive logic)



PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS
INSTRUMENTS**

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SN54ALS805A, SN54AS805B, SN74ALS805A, SN74AS805B HEX 2-INPUT NOR DRIVERS

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absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

recommended operating conditions

		SN54ALS805A			SN74ALS805A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V _{IH}	High-level input voltage		2		2			V
V _{IL}	Low-level input voltage			0.7			0.8	V
I _{OH}	High-level output current			-12			-15	mA
I _{OL}	Low-level output current			12			24	mA
T _A	Operating free-air temperature	-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	SN54ALS805A			SN74ALS805A			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V _{IK}	V _{CC} = 4.5 V, I _I = -18 mA			-1.2			-1.2	V
V _{OH}	V _{CC} = 4.5 V to 5.5 V, I _{OH} = -0.4 mA	V _{CC} - 2		V _{CC} - 2				V
	V _{CC} = 4.5 V	I _{OH} = -3 mA	2.4	3.2	2.4	3.2		
		I _{OH} = -12 mA	2					
		I _{OH} = -15 mA				2		
V _{OL}	V _{CC} = 4.5 V	I _{OL} = 12 mA	0.25	0.4	0.25	0.4		V
		I _{OL} = 24 mA				0.35	0.5	
I _I	V _{CC} = 5.5 V, V _I = 7 V		0.1		0.1		0.1	mA
I _{IH}	V _{CC} = 5.5 V, V _I = 2.7 V		20		20		20	µA
I _{IL}	V _{CC} = 5.5 V, V _I = 0.4 V		-0.1		-0.1		-0.1	mA
I _O §	V _{CC} = 5.5 V, V _O = 2.25 V	-20	-112	-30	-112			mA
I _{CCH}	V _{CC} = 5.5 V, V _I = 0		2	4	2	4		mA
I _{CCL}	V _{CC} = 5.5 V, V _I = 4.5 V		8	14	8	14		mA

[‡]All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

§ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

SN54ALS805A, SN54AS805B, SN74ALS805A, SN74AS805B HEX 2-INPUT NOR DRIVERS

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switching characteristics (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5\text{ V to }5.5\text{ V},$ $C_L = 50\text{ pF},$ $R_L = 500\text{ }\Omega,$ $T_A = \text{MIN to MAX}^\dagger$				UNIT	
			SN54ALS805A		SN74ALS805A			
			MIN	MAX	MIN	MAX		
t_{PLH}	A or B	Y	1	12	2	7	ns	
t_{PHL}			1	9	2	8		

[†] For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

‡ Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

recommended operating conditions§

		SN54AS805B			SN74AS805B			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V _{IH}	High-level input voltage		2		2			V
V _{IL}	Low-level input voltage			0.8			0.8	V
I _{OH}	High-level output current			-40			-48	mA
I _{OL}	Low-level output current			40			48	mA
T _A	Operating free-air temperature	-55		125	0		70	°C

§ These high sink- or source-current devices are not recommended for use above 40 MHz.

SN54ALS805A, SN54AS805B, SN74ALS805A, SN74AS805B HEX 2-INPUT NOR DRIVERS

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electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	SN54AS805B			SN74AS805B			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 \text{ V}$, $I_I = -18 \text{ mA}$			-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $I_{OH} = -2 \text{ mA}$	$V_{CC} - 2$			$V_{CC} - 2$			V
	$V_{CC} = 4.5 \text{ V}$	$I_{OH} = -3 \text{ mA}$	2.4	3.2	2.4	3.2		
		$I_{OH} = -40 \text{ mA}$	2					
		$I_{OH} = -48 \text{ mA}$				2		
V_{OL}	$V_{CC} = 4.5 \text{ V}$	$I_{OL} = 40 \text{ mA}$	0.25	0.5				V
		$I_{OL} = 48 \text{ mA}$			0.35	0.5		
I_I	$V_{CC} = 5.5 \text{ V}$, $V_I = 7 \text{ V}$		0.1		0.1		mA	
I_{IH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 2.7 \text{ V}$			20		20	μA	
I_{IL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0.4 \text{ V}$			-0.5		-0.5	mA	
I_O^{\ddagger}	$V_{CC} = 5.5 \text{ V}$, $V_O = 2.25 \text{ V}$	-50	-200	-50	-200		mA	
I_{CCH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0$		6.5	10	6.5	10	mA	
I_{CCL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 4.5 \text{ V}$	20	32	20	32		mA	

† All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$.

‡ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

switching characteristics (see Figure 1)

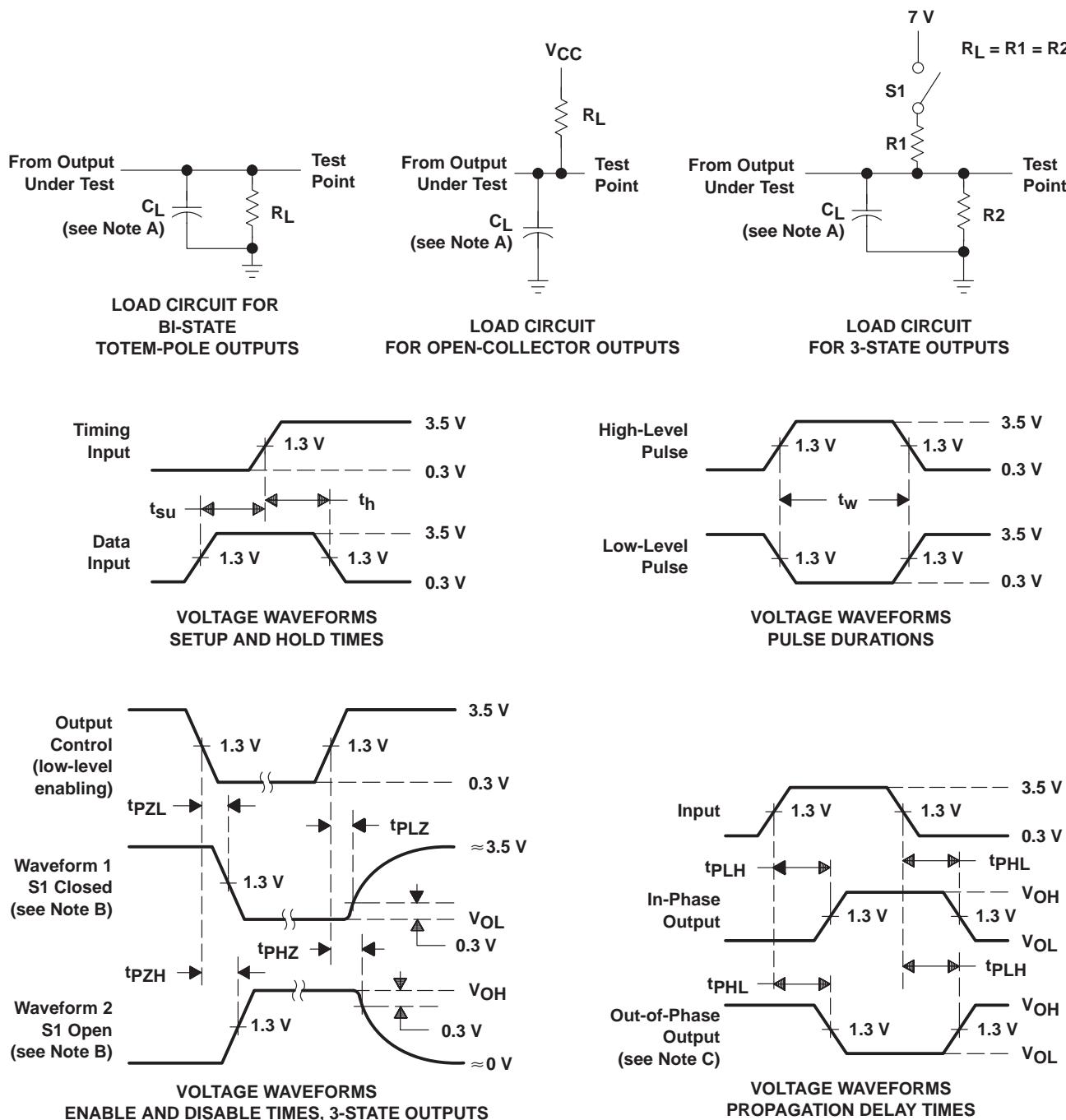
PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $C_L = 50 \text{ pF}$, $R_L = 500 \Omega$, $T_A = \text{MIN to MAX}^{\$}$				UNIT	
			SN54AS805B		SN74AS805B			
			MIN	MAX	MIN	MAX		
t_{PLH}	A or B	Y	1	4.8	1	4.3	ns	
t_{PHL}			1	4.8	1	4.3		

§ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.



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PARAMETER MEASUREMENT INFORMATION
SERIES 54ALS/74ALS AND 54AS/74AS DEVICES



NOTES: A. C_L includes probe and jig capacitance.
 B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 C. When measuring propagation delay items of 3-state outputs, switch S1 is open.
 D. All input pulses have the following characteristics: PRR \leq 1 MHz, $t_r = t_f = 2$ ns, duty cycle = 50%.
 E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuits and Voltage Waveforms

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
5962-87794012A	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962- 87794012A SNJ54AS 805BFK
SNJ54AS805BFK	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962- 87794012A SNJ54AS 805BFK
SNJ54AS805BFK.A	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962- 87794012A SNJ54AS 805BFK

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

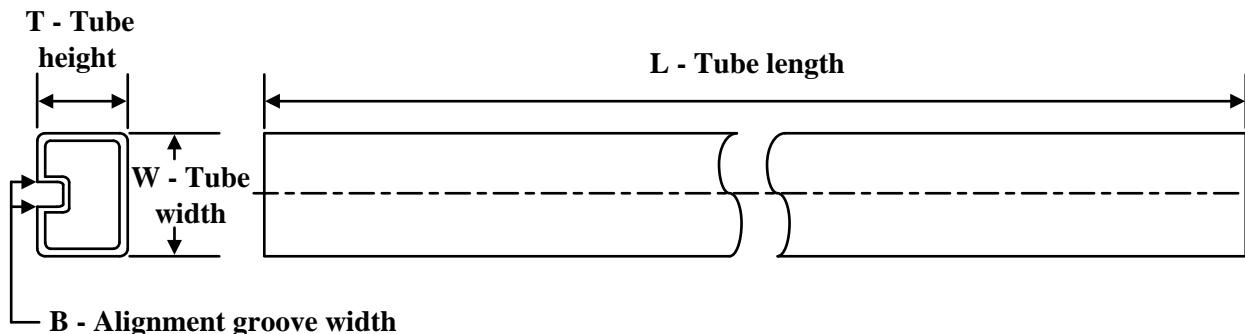
⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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TUBE


*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
5962-87794012A	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AS805BFK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AS805BFK.A	FK	LCCC	20	55	506.98	12.06	2030	NA

GENERIC PACKAGE VIEW

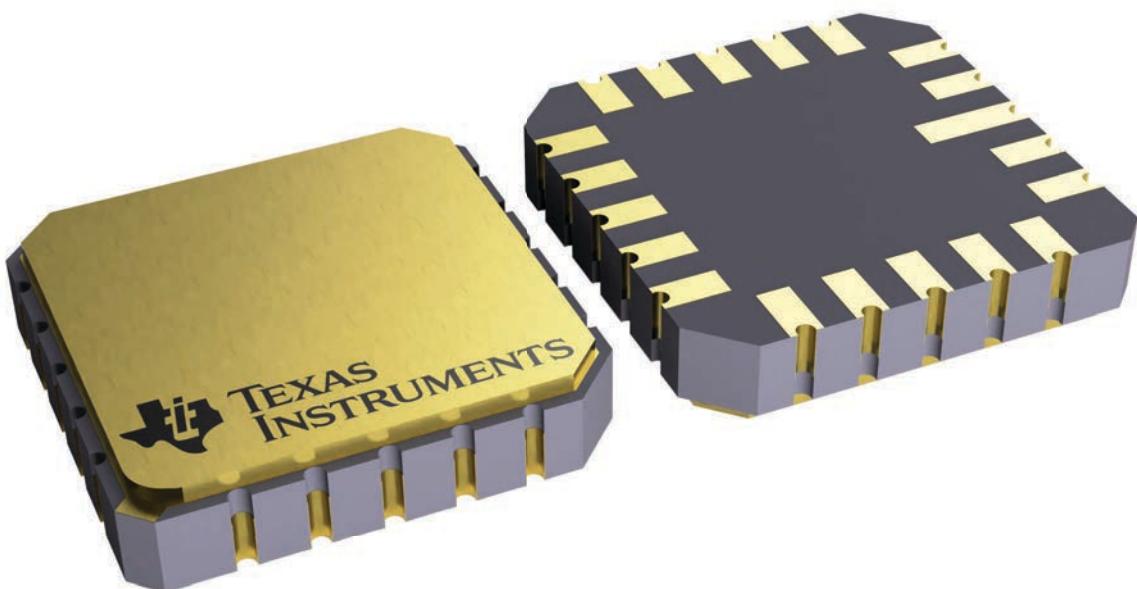
FK 20

LCCC - 2.03 mm max height

8.89 x 8.89, 1.27 mm pitch

LEADLESS CERAMIC CHIP CARRIER

This image is a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.



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