

DATA SHEET

74F805, 74F1805 Hex 2-input NOR drivers

Product specification

1990 Sep 14

IC15 Data Handbook

Hex 2-input NOR drivers

74F805/74F1805

FEATURES

- High capacitive drive capability
- Choice of configuration
Corner V_{CC} and GND – 74F805
Center V_{CC} and GND – 74F1805
- Typical propagation delay of 2.3ns

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F805	2.3ns	10mA
74F1805	2.3ns	10mA

ORDERING INFORMATION

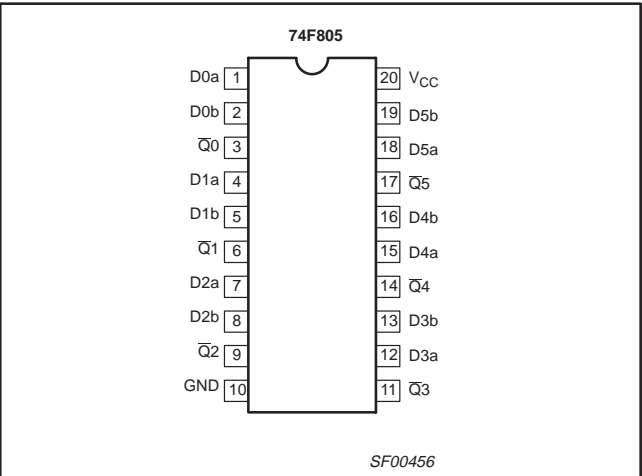
DESCRIPTION	ORDER CODE	PKG DWG #
	COMMERCIAL RANGE V _{CC} = 5V ±10%, T _{amb} = 0°C to +70°C	
20-pin plastic DIP	N74F805N, N74F1805N	SOT146-1
20-pin plastic SOL	N74F805D, N74F1805D	SOT163-1

INPUT AND OUTPUT LOADING
AND FAN OUT TABLE

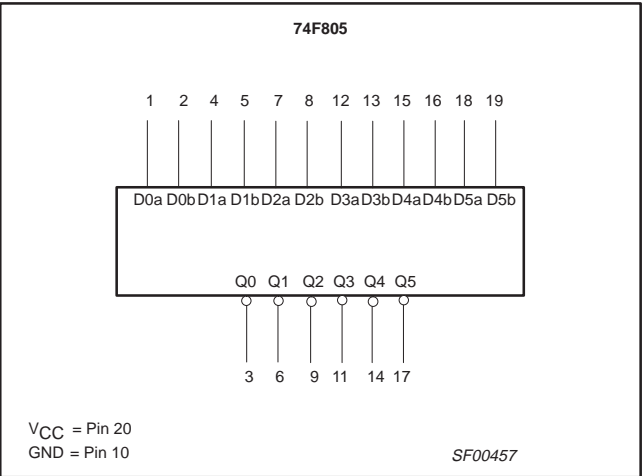
PINS	DESCRIPTION	74F (U.L.) HIGH/ LOW	LOAD VALUE HIGH/LOW
Dna – Dnb	Data inputs	1.0/0.033	20µA/20µA
Q0 – Q5	Data outputs	2400/80	48mA/48mA

NOTE: One (1.0) FAST unit load is defined as: 20µA in the high state and 0.6mA in the low state.

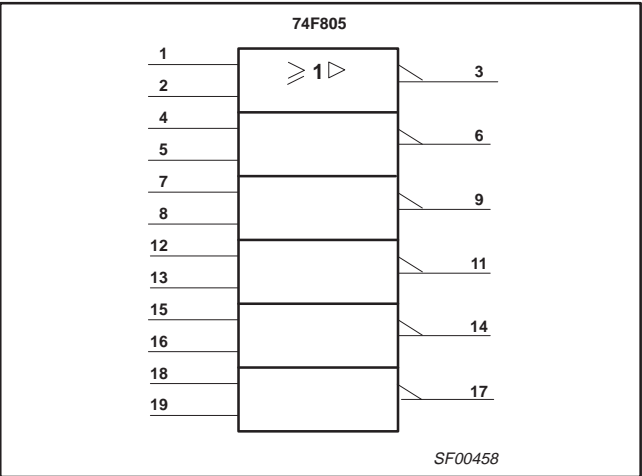
PIN CONFIGURATION



LOGIC SYMBOL



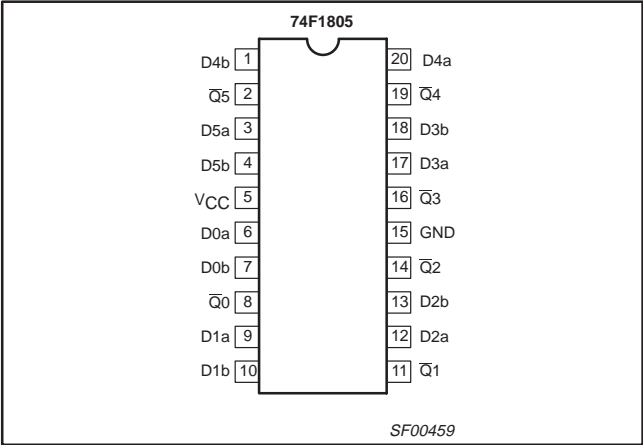
IEC/IEEE SYMBOL



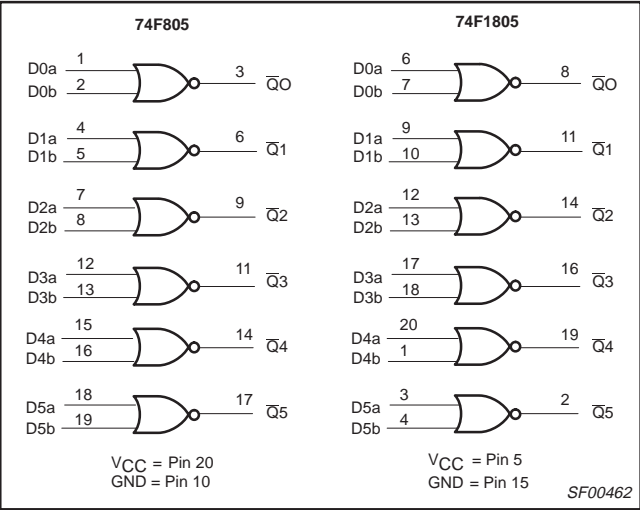
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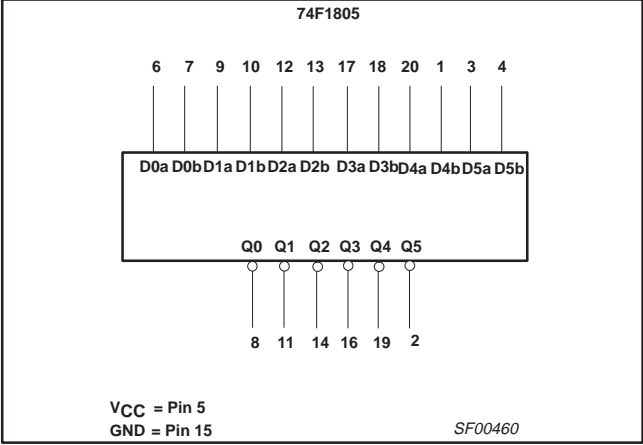
PIN CONFIGURATION



LOGIC DIAGRAM



LOGIC SYMBOL



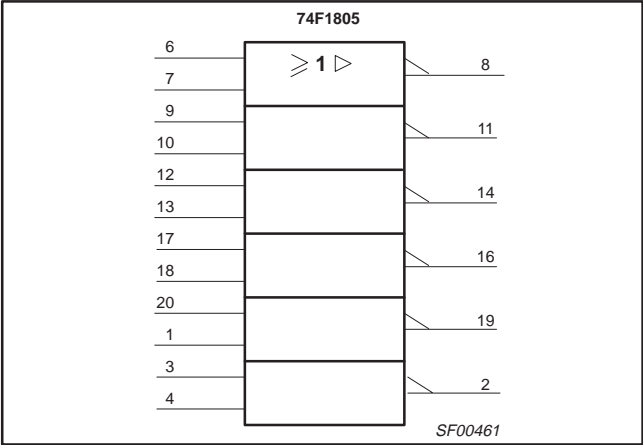
FUNCTION TABLE

INPUTS		OUTPUT
Dna	Dnb	Qn
H	X	L
X	H	L
L	L	H

Notes to function table

- H = High voltage level
- L = Low voltage level
- X = Don't care

IEC/IEEE SYMBOL



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ABSOLUTE MAXIMUM RATINGS

(Operation beyond the limit set forth in this table may impair the useful life of the device. Unless otherwise noted these limits are over the operating free air temperature range.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	-0.5 to +7.0	V
V_{IN}	Input voltage	-0.5 to +7.0	V
I_{IN}	Input current	-30 to +5	mA
V_{OUT}	Voltage applied to output in high output state	-0.5 to V_{CC}	V
I_{OUT}	Current applied to output in low output state	96	mA
T_{amb}	Operating free air temperature range	0 to +70	°C
T_{stg}	Storage temperature range	-65 to +150	°C

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_{IH}	High-level input voltage	2.0			V
V_{IL}	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			-18	mA
I_{OH}	High-level output current			-48	mA
I_{OL}	Low-level output current			48	mA
T_{amb}	Operating free air temperature range	0		+70	°C

DC ELECTRICAL CHARACTERISTICS

(Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER		TEST CONDITIONS ¹		LIMITS			UNIT
					MIN	TYP ²	MAX	
V _{OH}	High-level output voltage		V _{CC} = MIN, V _{IL} = MAX	±10%V _{CC}	2.0			V
			V _{IH} = MIN, I _{OH} = MAX	±5%V _{CC}	2.0			V
V _{OL}	Low-level output voltage		V _{CC} = MIN, V _{IL} = MAX	±10%V _{CC}		0.38	0.55	V
			V _{IH} = MIN, I _{OI} = MAX	±5%V _{CC}		0.38	0.55	V
V _{IK}	Input clamp voltage		V _{CC} = MIN, I _I = I _{IK}			-0.73	-1.2	V
I _I	Input current at maximum input voltage		V _{CC} = MAX, V _I = 7.0V				100	μA
I _{IH}	High-level input current		V _{CC} = MAX, V _I = 2.7V				20	μA
I _{IL}	Low-level input current		V _{CC} = MAX, V _I = 0.5V				-20	μA
I _O	Output current ³		V _{CC} = MAX		-60		-150	mA
I _{CC}	Supply current (total)	I _{CCH}	V _{CC} = MAX	V _{IN} = GND		3.0	5.0	mA
		I _{CCL}		V _{IN} = 4.5V		17	25	mA

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at $V_{CC} = 5\text{V}$, $T_{amb} = 25^\circ\text{C}$.
- The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

Hex 2-input NOR drivers

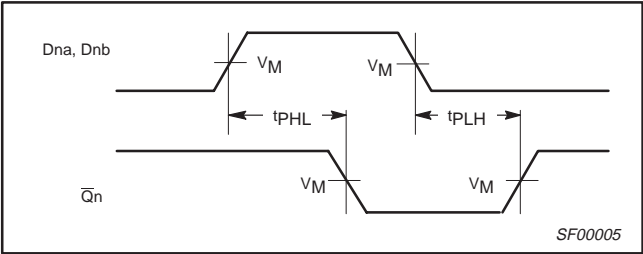
74F805/74F1805

AC ELECTRICAL CHARACTERISTICS

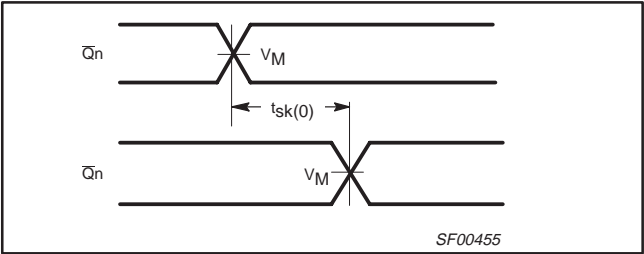
SYMBOL	PARAMETER	TEST CONDITION	LIMITS					UNIT
			T _{amb} = +25°C V _{CC} = +5.0V C _L = 50pF, R _L = 500Ω			T _{amb} = 0°C to +70°C V _{CC} = +5.0V ± 10% C _L = 50pF, R _L = 500Ω		
			MIN	TYP	MAX	MIN	MAX	
t _{PLH} t _{PHL}	Propagation delay D _{na} , D _{nb} to Q _n	Waveform 1	1.0 1.0	2.0 2.5	4.0 4.5	1.0 1.0	4.0 4.5	ns
t _{sk(o)}	Output skew ^{1,2}	Waveform 2			1.5		1.5	ns

- NOTES:
- [t_{PN} actual – t_{PM} actual] for any output compared to any other output where N and M are either LH or HL.
 - Skew times are valid only under same test conditions (temperature, V_{CC} , loading, etc.,).

AC WAVEFORMS



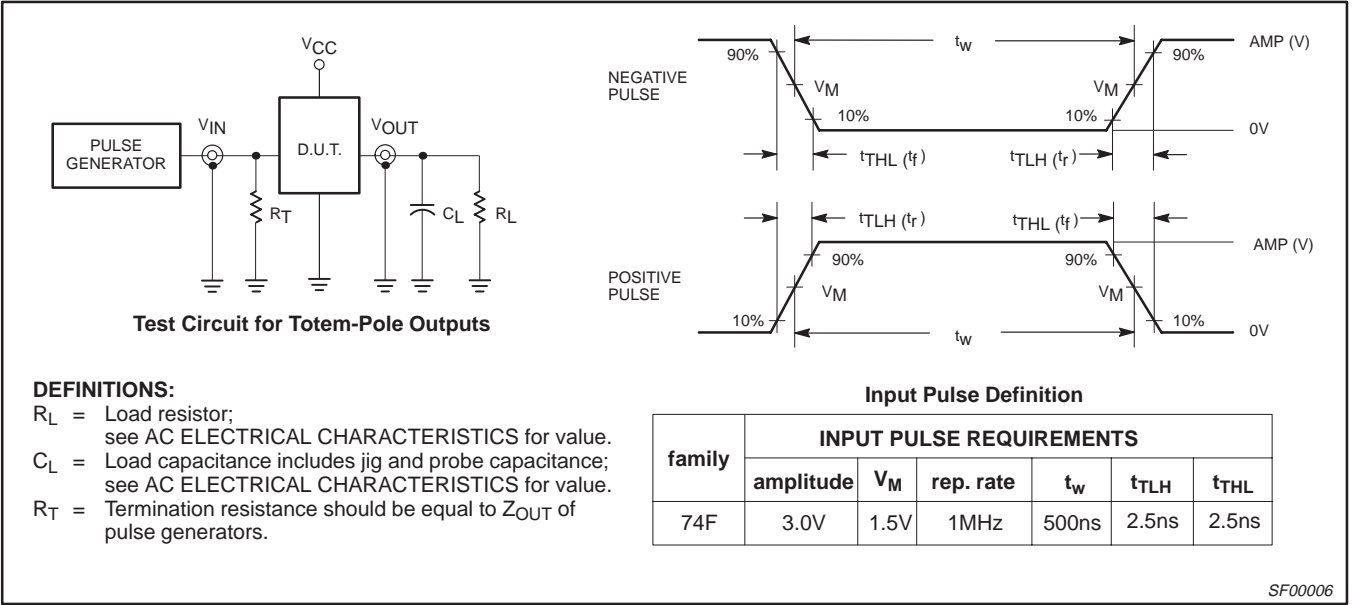
Waveform 1. Propagation delay for inverting output



Waveform 2. Output skew

NOTE: For all waveforms, $V_M = 1.5V$.

TEST CIRCUIT AND WAVEFORMS

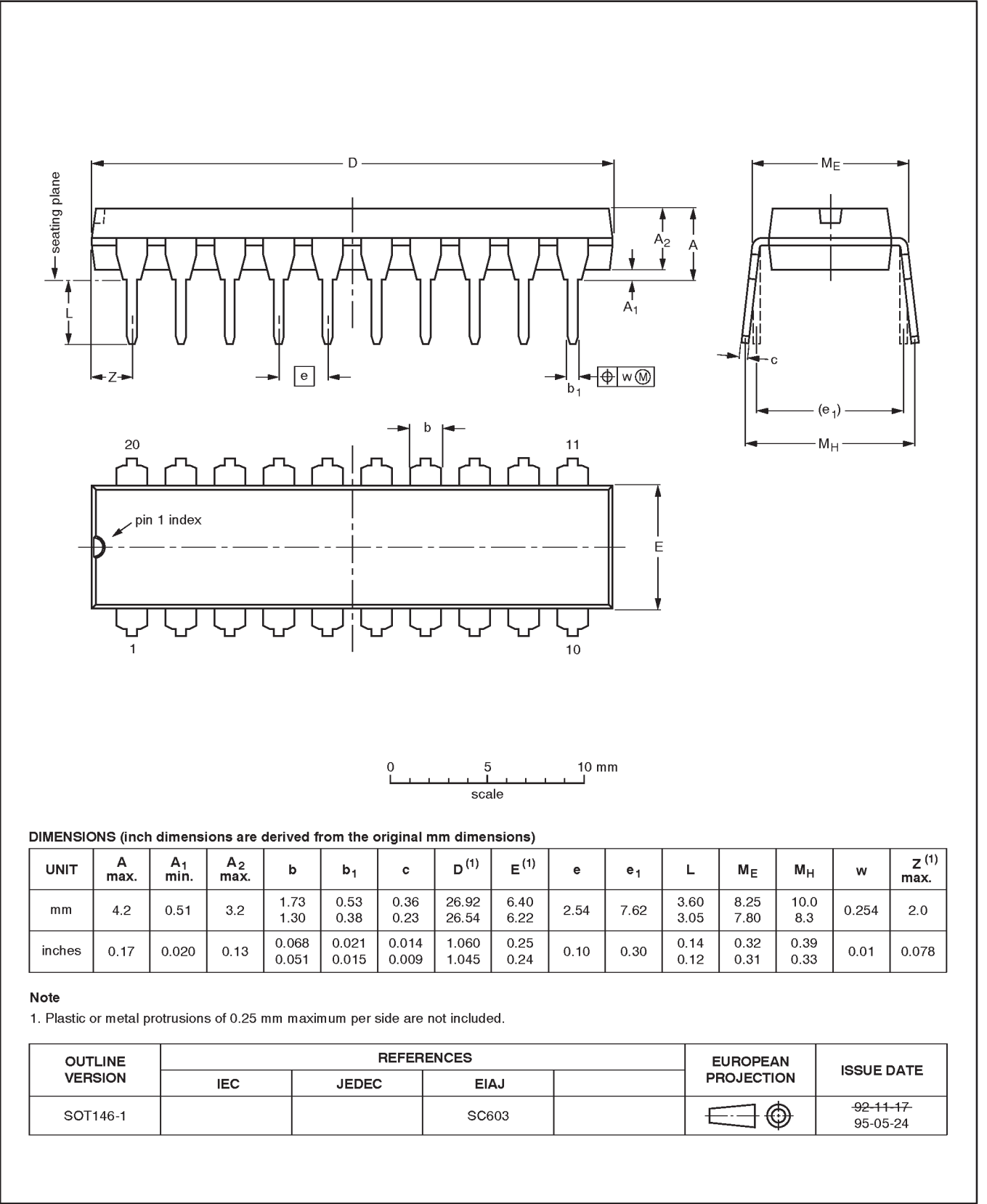


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DIP20: plastic dual in-line package; 20 leads (300 mil)

SOT146-1

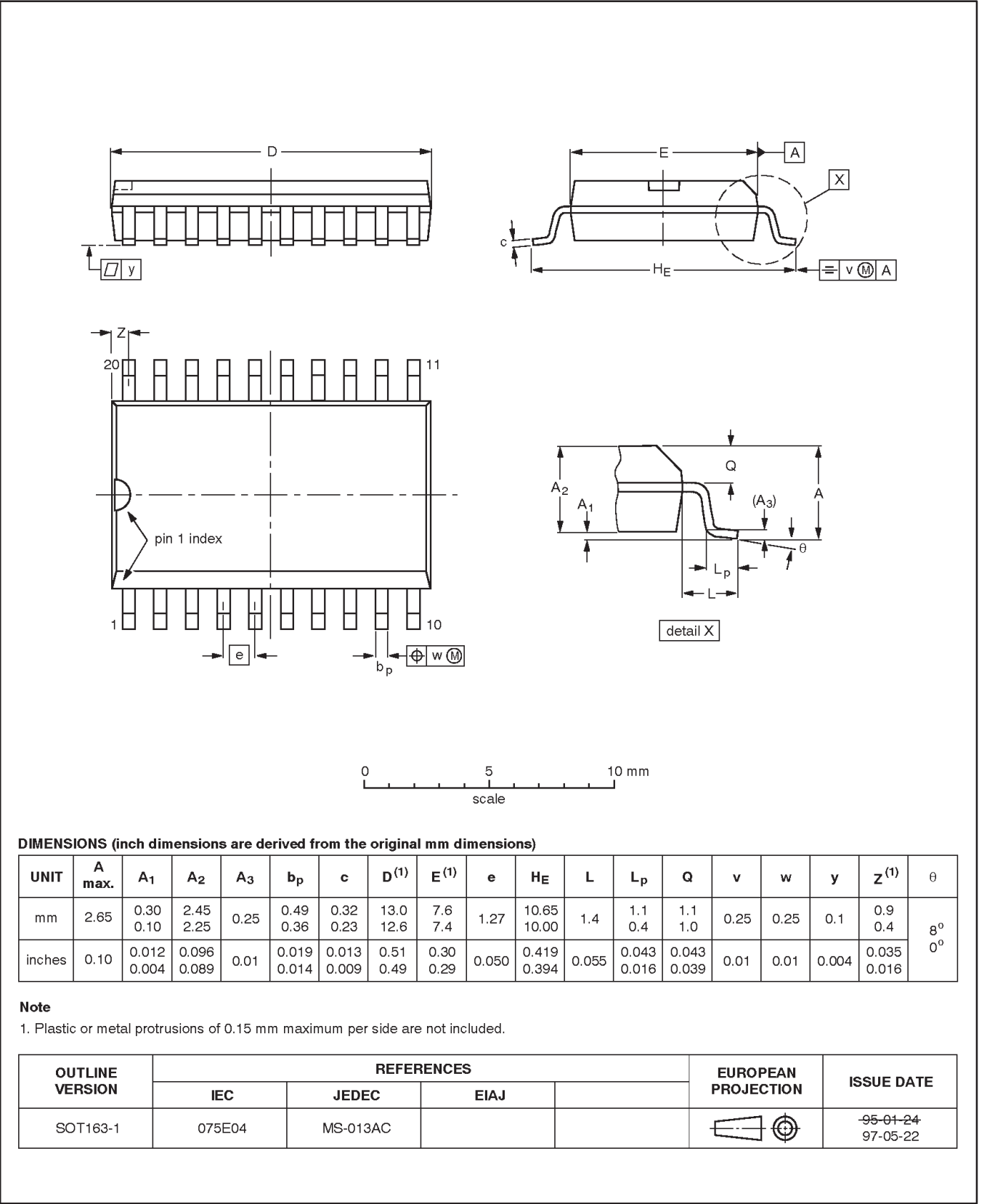


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SO20: plastic small outline package; 20 leads; body width 7.5 mm

SOT163-1



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Data sheet status

Data sheet status	Product status	Definition [1]
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

[1] Please consult the most recently issued datasheet before initiating or completing a design.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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