INTEGRATED CIRCUITS



Product specification Supersedes data of 1995 Sep 06 IC23 Data Handbook

1998 Jan 16



74ABT244

FEATURES

- Octal bus interface
- 3-State buffers
- Output capability: +64mA/-32mA
- Latch-up protection exceeds 500mA per Jedec Std 17
- ESD protection exceeds 2000 V per MIL STD 883 Method 3015 and 200 V per Machine Model
- Power-up 3-State
- Live insertion capacity
- Inputs are disabled during 3-State mode

QUICK REFERENCE DATA

DESCRIPTION

The 74ABT244 high-performance BiCMOS device combines low static and dynamic power dissipation with high speed and high output drive.

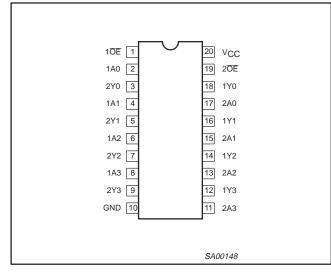
The 74ABT244 device is an octal buffer that is ideal for driving bus lines. The device features two Output Enables ($1\overline{OE}$, $2\overline{OE}$), each controlling four of the 3-State outputs.

SYMBOL	PARAMETER	CONDITIONS T _{amb} = 25°C; GND = 0V	TYPICAL	UNIT
t _{PLH} t _{PHL}	Propagation delay An to Yn	C _L = 50pF; V _{CC} = 5V	2.9	ns
C _{IN}	Input capacitance	$V_I = 0V \text{ or } V_{CC}$	4	pF
C _{OUT}	Output capacitance	Outputs disabled; $V_O = 0V$ or V_{CC}	7	pF
I _{CCZ}	Total supply current	Outputs disabled; V_{CC} =5.5V	50	μΑ

ORDERING INFORMATION

PACKAGES	TEMPERATURE RANGE	OUTSIDE NORTH AMERICA	NORTH AMERICA	DWG NUMBER
20-Pin Plastic DIP	–40°C to +85°C	74ABT244 N	74ABT244 N	SOT146-1
20-Pin plastic SO	–40°C to +85°C	74ABT244 D	74ABT244 D	SOT163-1
20-Pin Plastic SSOP Type II	–40°C to +85°C	74ABT244 DB	74ABT244 DB	SOT339-1
20-Pin Plastic TSSOP Type I	–40°C to +85°C	74ABT244 PW	74ABT244PW DH	SOT360-1

PIN CONFIGURATION

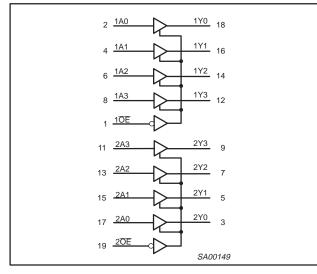


PIN DESCRIPTION

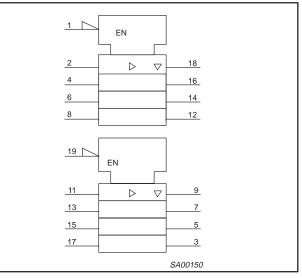
PIN NUMBER	SYMBOL	NAME AND FUNCTION			
2, 4, 6, 8	1A0 – 1A3	Data inputs			
11, 13, 15, 17	2A0 – 2A3	Data inputs			
18, 16, 14, 12	1Y0 – 1Y3	Data outputs			
9, 7, 5, 3	2Y0 – 2Y3	Data outputs			
1, 19	1 <u>0E</u> , 2 <u>0E</u>	Output enables			
10	GND	Ground (0V)			
20	V _{CC}	Positive supply voltage			

74ABT244

LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



FUNCTION TABLE

	INP	OUTF	PUTS		
1 <mark>0E</mark>	1An	2 <mark>0E</mark> 2An		1Yn	2Yn
L	L	L	L	L	L
L	н	L	н	н	н
н	х	н	х	Z	Z

H = High voltage level

L = Low voltage level X = Don't care Z = High impedance "off" state

ABSOLUTE MAXIMUM RATINGS^{1, 2}

SYMBOL	PARAMETER	CONDITIONS	RATING	UNIT
V _{CC}	DC supply voltage		-0.5 to +7.0	V
I _{IK}	DC input diode current	V _I < 0	-18	mA
VI	DC input voltage ³		-1.2 to +7.0	V
I _{OK}	DC output diode current	V _O < 0	-50	mA
V _{OUT}	DC output voltage ³	output in Off or High state	-0.5 to +5.5	V
I _{OUT}	DC output current	output in Low state	128	mA
T _{stg}	Storage temperature range		-65 to 150	°C

NOTES:

1. Stresses beyond those listed 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.

2. The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability. The maximum junction temperature of this integrated circuit should not exceed 150°C.

3. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

74ABT244

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIM	ITS	UNIT
STWBOL	FARAIVIETER	Min	Max	UNIT
V _{CC}	DC supply voltage	4.5	5.5	V
VI	Input voltage	0	V _{CC}	V
V _{IH}	High-level input voltage	2.0		V
V _{IL}	Low-level Input voltage		0.8	V
I _{ОН}	High-level output current		-32	mA
I _{OL}	Low-level output current		64	mA
Δt/Δv	Input transition rise or fall rate	0	5	ns/V
T _{amb}	Operating free-air temperature range	-40	+85	°C

DC ELECTRICAL CHARACTERISTICS

					LIMITS			
SYMBOL	PARAMETER	TEST CONDITIONS	Tai	_{mb} = +25	°C		-40°C 85°C	UNIT
			Min	Тур	Max	Min	Max	
V _{IK}	Input clamp voltage	$V_{CC} = 4.5V; I_{IK} = -18mA$		-0.9	-1.2		-1.2	V
		V_{CC} = 4.5V; I_{OH} = -3mA; V_I = V_{IL} or V_{IH}	2.5	2.9		2.5		V
V _{OH}	High-level output voltage	V_{CC} = 5.0V; I_{OH} = -3mA; V_I = V_{IL} or V_{IH}	3.0	3.4		3.0		V
		V_{CC} = 4.5V; I_{OH} = -32mA; V_I = V_{IL} or V_{IH}	2.0	2.4		2.0		V
V _{OL}	Low-level output voltage	V_{CC} = 4.5V; I_{OL} = 64mA; V_I = V_{IL} or V_{IH}		0.42	0.55		0.55	V
l _l	Input leakage current	$V_{CC} = 5.5V; V_I = GND \text{ or } 5.5V$		±0.01	±1.0		±1.0	μA
I _{OFF}	Power-off leakage current	V_{CC} = 0.0V; V_{O} or $V_{1} \leq 4.5V$		±5.0	±100		±100	μΑ
I _{PU/PD}	Power-up/down 3-State output current ³	V_{CC} = 2.0V; V_{O} = 0.5V; V_{I} = GND or V_{CC} ; V _{OE} = Don't care		±5.0	±50		±50	μΑ
I _{OZH}	3-State output High current	V_{CC} = 5.5V; V_{O} = 2.7V; V_{I} = V_{IL} or V_{IH}		5.0	50		50	μA
I _{OZL}	3-State output Low current	V_{CC} = 5.5V; V_{O} = 0.5V; V_{I} = V_{IL} or V_{IH}		-5.0	-50		-50	μΑ
I _{CEX}	Output HIgh leakage current	V_{CC} = 5.5V; V_{O} = 5.5V; V_{I} = GND or V_{CC}		5.0	50		50	μA
Ι _Ο	Short-circuit output current ¹	$V_{CC} = 5.5V; V_{O} = 2.5V$	-40	-100	-180	-40	-180	mA
I _{CCH}		V_{CC} = 5.5V; Outputs High, V_I = GND or V_{CC}		50	250		250	μΑ
I _{CCL}	Quiescent supply current	V_{CC} = 5.5V; Outputs Low, V_{I} = GND or V_{CC}		24	30		30	mA
I _{CCZ}		V_{CC} = 5.5V; Outputs 3-State; V _I = GND or V _{CC}		50	250		250	μΑ
		Outputs enabled, one data input at 3.4V, other inputs at V_{CC} or GND; $V_{CC} = 5.5V$		0.5	1.5		1.5	mA
ΔI_{CC}	Additional supply current per input pin ²	Outputs 3-State, one data input at 3.4V, other inputs at V _{CC} or GND; V _{CC} = 5.5V		50	250		250	μΑ
		Outputs 3-State, one enable input at 3.4V, other inputs at V_{CC} or GND; V_{CC} = 5.5V		0.5	1.5		1.5	mA

NOTES:

Not more than one output should be tested at a time, and the duration of the test should not exceed one second.
This is the increase in supply current for each input at 3.4V.
This parameter is valid for any V_{CC} between 0V and 2.1V with a transition time of up to 10msec. For V_{CC} = 2.1V to V_{CC} = 5V ± 10%, a transition time of up to 100µsec is permitted.

74ABT244

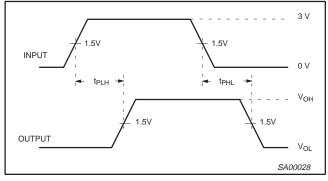
AC CHARACTERISTICS

GND = 0V; $t_R = t_F = 2.5 \text{ns}$; $C_L = 50 \text{pF}$, $R_L = 500 \Omega$

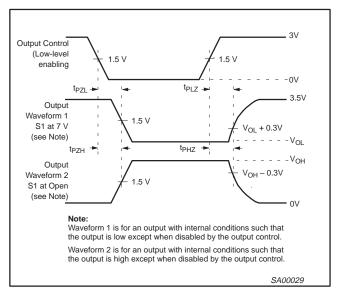
		WAVEFORM			74ABT	244		
SYMBOL	PARAMETER		T _a V	_{imb} = +25° _{CC} = +5.0	C V	$T_{amb} = -40^{\circ}$ $V_{CC} = +5.$	UNIT	
			Min	Тур	Мах	Min	Max	
t _{PLH} t _{PHL}	Propagation delay An to Yn	1	1.0 1.0	2.6 2.9	4.1 4.2	1.0 1.0	4.6 4.6	ns
t _{PZH} t _{PZL}	Output enable time to High and Low level	2	1.1 2.1	3.1 4.1	4.6 5.6	1.1 2.1	5.1 6.1	ns
t _{PHZ} t _{PLZ}	Output disable time from High and Low level	2	2.1 1.7	4.1 2.7	5.6 5.2	2.1 1.7	6.6 5.7	ns

AC WAVEFORMS

 V_{M} = 1.5V, V_{IN} = GND to 3.0V

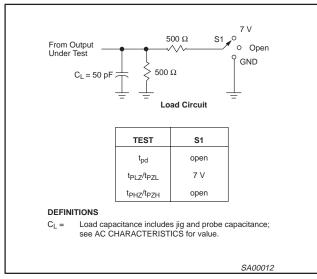


Waveform 1. Waveforms Showing the Input (An) to Output (Yn) Propagation Delays



Waveform 2. Waveforms Showing the 3-State Output Enable and Disable Times

TEST CIRCUIT AND WAVEFORMS

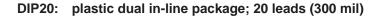


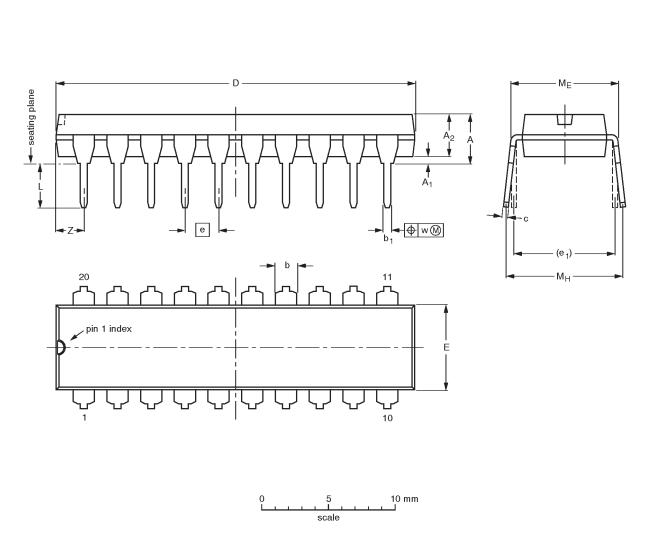
Product specification

SOT146-1

Octal buffer/line driver (3-State)

74ABT244





DIMENSIONS (inch dimensions are derived from the original mm dimensions)

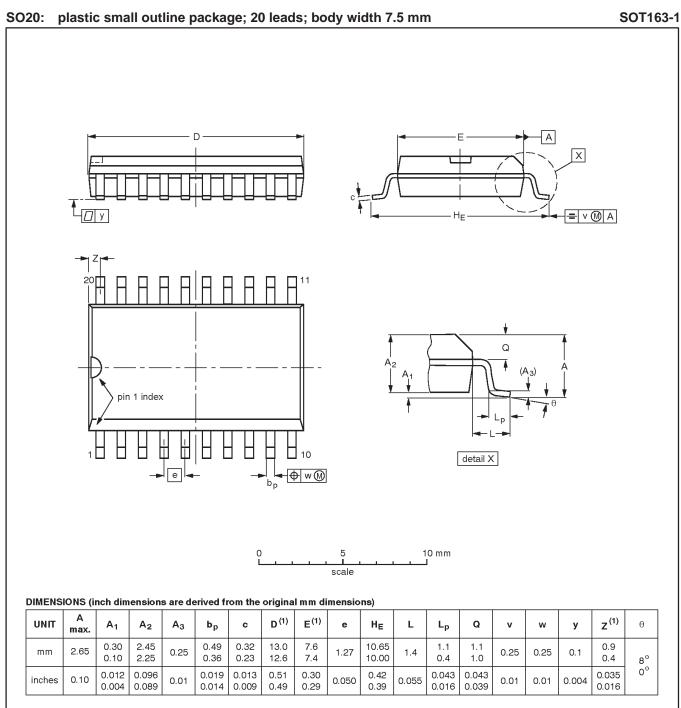
UNIT	A max.	A ₁ min.	A ₂ max.	b	b ₁	с	D ⁽¹⁾	E ⁽¹⁾	e	e ₁	L	M _E	M _H	w	Z ⁽¹⁾ max.
mm	4.2	0.51	3.2	1.73 1.30	0.53 0.38	0.36 0.23	26.92 26.54	6.40 6.22	2.54	7.62	3.60 3.05	8.25 7.80	10.0 8.3	0.254	2.0
inches	0.17	0.020	0.13	0.068 0.051	0.021 0.015	0.014 0.009	1.060 1.045	0.25 0.24	0.10	0.30	0.14 0.12	0.32 0.31	0.39 0.33	0.01	0.078

Note

1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

ſ	OUTLINE		REFER	RENCES	EUROPEAN	ISSUE DATE	
	VERSION	IEC	JEDEC	EIAJ	PROJECTION	ISSUE DATE	
	SOT146-1			SC603		-92-11-17 95-05-24	

74ABT244

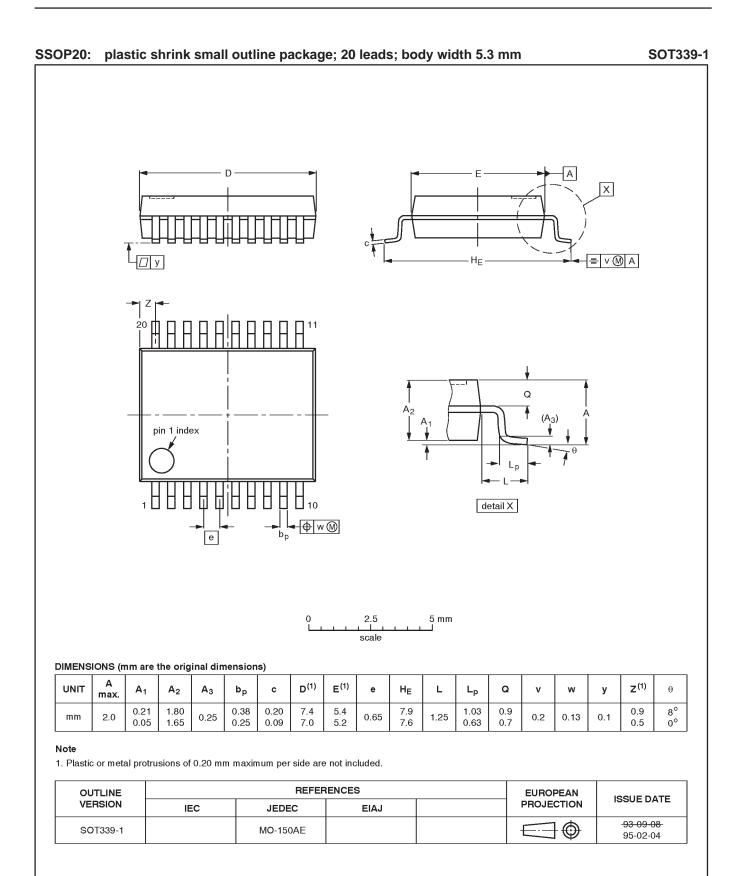


Note

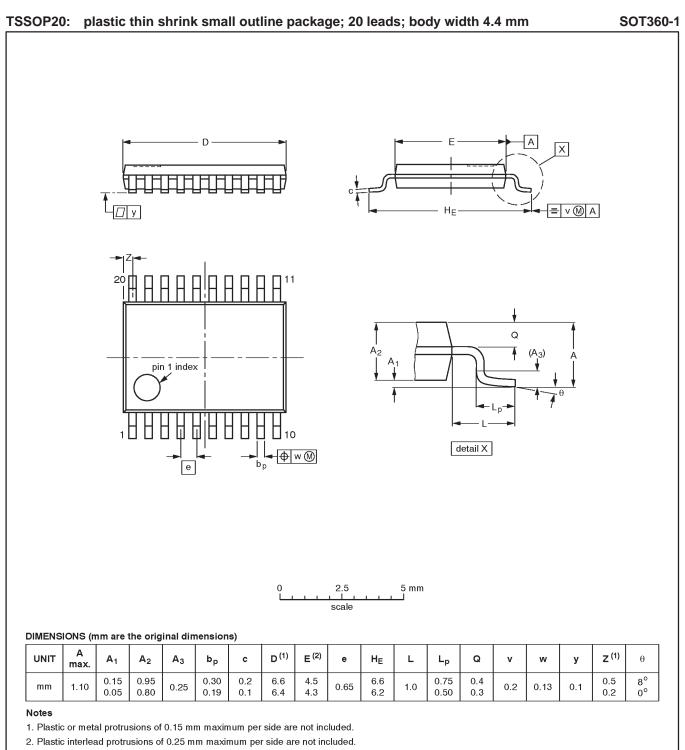
1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.

OUTLINE		REFERENCES			EUROPEAN ISSUE DAT		
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE	
SOT163-1	075E04	MS-013AC				-92-11-17 95-01-24	

74ABT244



74ABT244



OUTLINE		REFER	ENCES	EUROPEAN		
VERSION	IEC	JEDEC	EIAJ	PROJECTION	ISSUE DATE	
SOT360-1		MO-153AC			-93-06-16 95-02-04	

74ABT244

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 chages 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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									Advanced	earch / Selectio	n guides
Products	Logic Buf	fers/drivers 7	4ABT244D						Applications	Lookir	ig for
74ABT244			Previ	ew	Product information		Selection guide 😱				
Datasheet		Octa	buffer/lin	e drive	er (3-State)						
(Product v.2.0, 19 Pages, 1 Download da	Feat Appl Quic	eral description ures and ben ications k reference metrics/simila	efits	Block diagrams/pinni Pricing/ordering/avail Samples Products/packages ts		Quality/reliability/cher content Design support Print/email Disclaimers	mical				
Download all	documentatio	n All infor	mation hereun	der is sub	ject to the subsequent disclai	mers					
General descr	iption										Hide
					c and dynamic power dissi es. The device features tw					tate outputs.	
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Features and	benefits										Hide
Latch-up prot ESD protection Power-up 3-S Live insertion	rs pility: +64mA/- ection exceed on exceeds 20 State	ls 500mA per Jede 000 V per MIL STE		l 3015 an	ld 200 V per Machine Mod	el					
											Back to top
Parametrics/s	imilar produ	cts									Hide
Type number	Package	Package name	Nr of pins	Family	Logic switching levels	Output	drive capability(mA)	t _{pd} (ns)	Description		
74ABT244D	SOT163-1 (SO20)	SO20	20	ABT	TTL	-32/+64	mA	2.9	Octal Buffer/Line D	iver; Non-Invertir	ng (3-State)
74ABT244DB	SOT339-1 (SSOP20)	SSOP20	20	ABT	TTL	-32/+64	mA	2.9	Octal Buffer/Line D	iver; Non-Invertir	ng (3-State)
74ABT244N	SOT146-1 (DIP20)	DIP20	20	ABT	TTL	-32/+64	mA	2.9	Octal Buffer/Line D	iver; Non-Invertir	ng (3-State)

74ABT244PW

SOT360-1 (TSSOP20)

TSSOP20

20

ABT

TTL

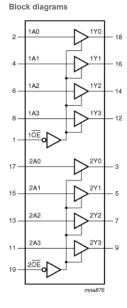
Similar products 74ABT244 links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

-32/+64 mA

2.9

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Octal Buffer/Line Driver; Non-Inverting (3-State)



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Type number	Ordering code (12NC)	Orderable part number	Region	Distributor	In stock	Order quantity	Inventory date	Buy online	Samples
74ABT244D	9350 275 10602	74ABT244D,602	EU	FUTURE ELECTRONICS UK	2,888		6/30/2011	Buy online	not available
			NA	DIGI-KEY CORPORATION	2,701		6/30/2011	Buy online	
			NA	AVNET ELECTRONICS MARKETING	1,605		6/30/2011	Buy online	
			NA	AVNET ELECTRONICS MARKETING	1,605		6/30/2011	Buy online	
			EU	ARROW EUROPE	1,558		6/30/2011	Buy online	
			AS	element14 APAC	1,134		6/30/2011	Buy online	
			NA	NEWARK	1,076		6/30/2011	Buy online	
			EU	FARNELL	1,076		6/30/2011	Buy online	
			NA	FUTURE ELECTRONICS	302		6/30/2011	Buy online	
			JAPAN	CHIP ONE STOP	no		6/27/2011	Buy online	
4ABT244D	9350 275 10623	74ABT244D,623	NA	DIGI-KEY CORPORATION	11,931		6/30/2011	Buy online	Order samples
			NA	DIGI-KEY CORPORATION	10,000		6/30/2011	Buy online	
			AS	FUTURE ELECTRONICS- ASIA	4,030		6/30/2011	Buy online	
			NA	FUTURE ELECTRONICS	2,000		6/30/2011	Buy online	
			AS	ARROW ASIA PAC LTD	2,000		6/30/2011	Buy online	
			EU	ARROW EUROPE AVNET ELECTRONICS	2,000		6/30/2011	Buy online	
			NA	MARKETING	1,605		6/30/2011	Buy online	
			NA	MOUSER ELECTRONICS	1,605		6/30/2011	Buy online	
			NA	MOUSER ELECTRONICS	1,605		6/30/2011	Buy online	
			AS	element14 APAC	1,134		6/30/2011	Buy online	
			NA	NEWARK	1,076		6/30/2011	Buy online	
			EU	FARNELL	1,076		6/30/2011	Buy online	
			JAPAN	CHIP ONE STOP	yes		6/27/2011	Buy online	
74ABT244DB	9350 649 00112	74ABT244DB,112	NA	AVNET ELECTRONICS MARKETING	2,866		6/30/2011	Buy online	not availab
			NA	AVNET ELECTRONICS MARKETING	2,866		6/30/2011	Buy online	
			JAPAN	CHIP ONE STOP	no		6/27/2011	Buy online	
4ABT244DB	9350 649 00118	74ABT244DB,118	NA	FUTURE ELECTRONICS	12,000		6/30/2011	Buy online	not availat
			AS	FUTURE ELECTRONICS- ASIA	4,000	4000	6/30/2011	Buy online	
			ASIA NA		4,000	1000	06/30/2011	Buy online	
			NA	DIGI-KEY CORPORATION DIGI-KEY CORPORATION	3,618 3,000		6/30/2011 6/30/2011	Buy online Buy online	
			EU	ARROW EUROPE	3,000		6/30/2011	Buy online	
			NA	AVNET ELECTRONICS MARKETING	2,866		6/30/2011	Buy online	
			NA	MOUSER ELECTRONICS	1,675		6/30/2011	Buy online	
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			JAPAN	CHIP ONE STOP	no		6/27/2011	Buy online	
4ABT244N	9350 275 20602	74ABT244N,602	AS	ARROW ASIA PAC LTD	1,440		6/30/2011	Buy online	Order samples
			EU	ARROW EUROPE	1,350		6/30/2011	Buy online	
			EU	FARNELL	379		6/30/2011	Buy online	
			NA	NEWARK	319		6/30/2011	Buy online	
			AS	element14 APAC	319		6/30/2011	Buy online	
			ASIA	WPI	270	720	06/30/2011	Buy online	
			JAPAN	CHIP ONE STOP	yes		6/27/2011	Buy online	
4ABT244PW	9351 764 20112	74ABT244PW,112	NA	AVNET ELECTRONICS MARKETING	3,400		6/30/2011	Buy online	not availab
			NA		3,400		6/30/2011	Buy online	
			NA EU	ARROW ELECTRONICS ARROW EUROPE	2,244		6/30/2011	Buy online	
			JAPAN	CHIP ONE STOP	1,800		6/30/2011	Buy online	
4ABT244PW	9351 764 20118	74ABT244PW,118	NA	FUTURE ELECTRONICS	no 11,890		6/27/2011 6/30/2011	Buy online Buy online	Order
			NA	DIGI-KEY CORPORATION	8,371		6/30/2011	Buy online	samples
			NA	DIGI-KEY CORPORATION	7,500		6/30/2011	Buy online	
			NA	AVNET ELECTRONICS MARKETING	3,400		6/30/2011	Buy online	
			NA	MOUSER ELECTRONICS	1,560		6/30/2011	Buy online	
			NA	MOUSER ELECTRONICS	1,560		6/30/2011	Buy online	
			NA	AVNET ELECTRONICS MARKETING	530		6/30/2011	Buy online	
	1	1		-				_	1
			AS	FUTURE ELECTRONICS- ASIA	30		6/30/2011	Buy online	

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Products/packa	ges						Hide
Type number	Orderable part number	Ordering code (12NC)	Product status	Package	Packing	Marking	ECCN
74ABT244D	74ABT244D,602	9350 275 10602	Volume production	SOT163-1 (SO20)	Tube (Signetics)	Standard Marking	

		1					
74ABT244D	74ABT244D,623	9350 275 10623	Volume production	SOT163-1 (SO20)	Reel Pack, SMD, 13" (Signetics)	Standard Marking	
74ABT244DB	74ABT244DB,112	9350 649 00112	Volume production	SOT339-1 (SSOP20)	Tube	Standard Marking	
74ABT244DB	74ABT244DB,118	9350 649 00118	Volume production	SOT339-1 (SSOP20)	Reel Pack, SMD, 13"	Standard Marking	
74ABT244N	74ABT244N,602	9350 275 20602	Volume production	SOT146-1 (DIP20)	Tube (Signetics)	Standard Marking	
74ABT244PW	74ABT244PW,112	9351 764 20112	Volume production	SOT360-1 (TSSOP20)	Tube	Standard Marking	
74ABT244PW	74ABT244PW,118	9351 764 20118	Volume production	SOT360-1 (TSSOP20)	Reel Pack, SMD, 13"	Standard Marking	

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Quality/reliability/chemical content

Type number	Orderable part number	Chemical content	RoHS	Leadfree conversion date	RHF	IFR (FIT)	MTBF (hours)	MSL	MSL LF
74ABT244D	74ABT244D,602	74ABT244D		week 4, 2004	G	1,33	7,52E+08	1	1
74ABT244D	74ABT244D,623	74ABT244D	EU/CN ROHECOMPLIANT	week 4, 2004	G	1,33	7,52E+08	1	1
74ABT244DB	74ABT244DB,112	74ABT244DB		week 13, 2005	G	1,33	7,52E+08	1	1
74ABT244DB	74ABT244DB,118	74ABT244DB	EU/CN RoH2COMPLIANT 🖻 😰	week 13, 2005	G	1,33	7,52E+08	1	1
74ABT244N	74ABT244N,602	74ABT244N		Always Pb-free	G	1,33	7,52E+08	NA	NA
74ABT244PW	74ABT244PW,112	74ABT244PW		week 7, 2005	D	1,33	7,52E+08	1	1
74ABT244PW	74ABT244PW,118	74ABT244PW		week 7, 2005	D	1,33	7,52E+08	1	1

Quality and reliability disclaimer

Design support

Application note Test Fixtures for High Speed Logic (v.2.0, 1998-04-02) Power considerations when using CMOS and BiCMOS logic devices (v.2.0, 2002-02-05)

Other type Functional selection guide ABT family (v.2.0, 2004-08-13)

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