EN29PL032 V.S. A29DL32x Specification Comparison

32Mbit (4 x 16-Bit) CMOS 3.0 Volt- only, Simultaneous-Read/Write Flash Memory

Part No. :	**EN29PL032**
Issued date :	**2008 / 09 / 25**
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1. Part No.

Eon : **EN29PL032**
AMIC : **A29DL32x**

2. Basic Features:

The following features are identical with each other.

- **JEDEC standard compatible pin-out and command sets.**
- **2.7 – 3.6 Voltage Simultaneous Read/Write Operation.**
- **CFI (Common Flash Interface) compliant**
- **Erase Suspend / Resume**
- **Unlock Bypass Program**
- **WP# / ACC (Write Protect/Acceleration)**
- **High Voltage Sector Protection and Temporary Sector Unprotect**

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3. Difference Comparison Table:

	A29DL32x		EN29PL032
VID	8.5 to 10.5		8.5 - 9.5
Pin to Pin	Yes for Word mode		Yes
Byte mode	Yes (PIN47: Byte/word mode select)		No (PIN47:NC)
Page read	No		4-words
Secure sector	No		64 words
FlexBank Architecture	DL322	2 Bank:4M,28M	4 Banks: 4M, 12M, 12M, 4M
	DL323	2 Bank:8M,24M	
	DL324	2 Bank:16M,16M	
Boot Sectors	DL322	4 Kword x 8 and 32 Kword x 7 boot sectors at the top or bottom	4 Kword x 8 and 32 Kword x 7 boot sectors at the top and bottom
	DL323	4 Kword x 8 and 32 Kword x 15boot sectors at the top or bottom	
	DL324	4 Kword x 8 and 32 Kword x 31boot sectors at the top or bottom	
CFI	Yes. AMIC's CFI table		Yes. EoN's CFI table
Program Suspend/Resume	No		Yes
Multi sector erase	Yes		No
Write Buffer Programming	No		32-word Write Buffer
PPB Lock Bit	No		Yes
Available package	48-pin TSOP, 48 ball FBGA		48-pin TSOP, 48 ball FBGA
Software Temporary sector protect/unprotect command	Yes		No

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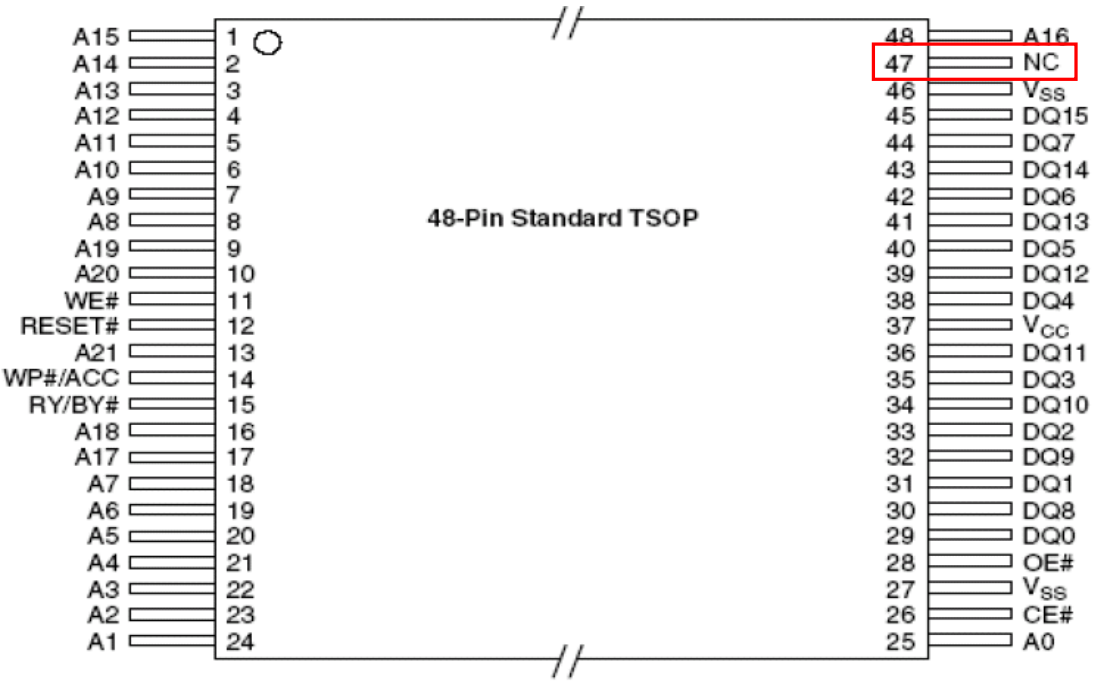
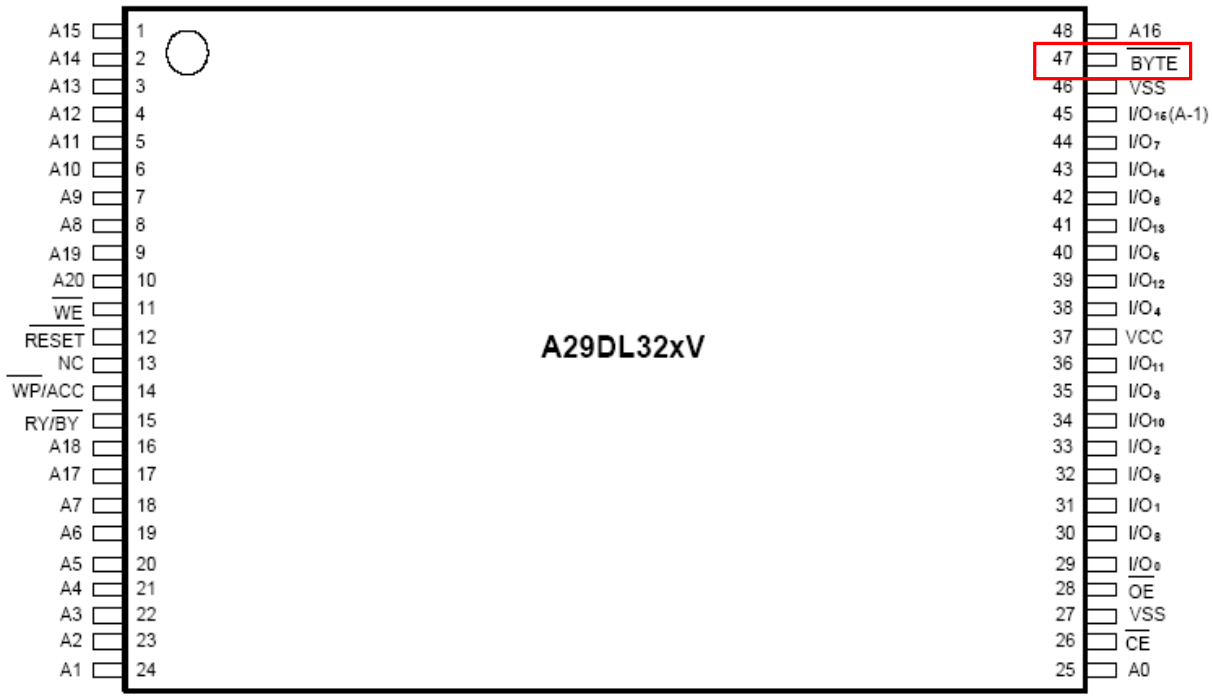
4. Pin Configurations Difference





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5. Autoselect Codes table Comparison:

EN29PL032:

Description		CE#	OE#	WE#	Amax to A12	A10	A9	A8	A7	A6	A5 to A4	A3	A2	A1	A0	DQ15 to DQ0
Manufacturer ID: Eon		L	L	H	BA	X	V_{ID}	H [1]	L	L	X	L	L	L	L	001Ch
								L								007Fh
Device ID	Read Cycle 1	L	L	H	BA	X	V_{ID}	X	L	L	L	L	L	L	H	227Eh
	Read Cycle 2	L										H	H	H	L	2202h (PL064) 220Ah (PL032)
	Read Cycle 3	L										H	H	H	H	2201h (PL064) 2201h (PL032)
Sector Protection Verification		L	L	H	SA	X	V_{ID}	X	L	L	L	L	L	H	L	0001h (protected), 0000h (unprotected)
Secured Silicon Indicator Bit (DQ7, DQ6)		L	L	H	BA (See Note)	X	V_{ID}	X	X	L	X	L	L	H	H	DQ6=1 (customer locked)

Note: L = Logic Low = V_{IL}, H = Logic High = V_{IH}, BA = Bank Address, SA = Sector Address, X = Don't care.

A29DL32x :

Description	$\overline{CE}$	$\overline{OE}$	$\overline{WE}$	A20 to A12	A11 to A10	A9	A8 to A7	A6	A5 to A4	A3	A2	A1	A0	I/O8 to I/O15		I/O7 to I/O0
														$\overline{BYTE}$ = V_{IH}	$\overline{BYTE}$ = V_{IL}	
Manufacturer ID: AMIC	L	L	H	BA	X	V_{ID}	X	L	X	L	L	L	L	X	X	37h
Device ID: A29DL322	L	L	H	BA	X	V_{ID}	X	L	X	X	X	L	H	22h	X	55h (T), 56h (U)
Device ID: A29DL323	L	L	H	BA	X	V_{ID}	X	L	X	X	X	L	H	22h	X	50h (T), 53h (U)
Device ID: A29DL324	L	L	H	BA	X	V_{ID}	X	L	X	X	X	L	H	22h	X	5Ch (T), 5Fh (U)
Continuation ID	L	L	H	X	X	V_{ID}	X	L	X	X	X	H	H	X	X	7Fh
Read Sector Status	L	L	H	SA	X	V_{ID}	X	L	X	L	L	H	L	X	X	01h (protected), 00h (unprotected)

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6. Command table compare:

EN29PL032:

Command (Notes)		Cycles	Bus Cycles (Notes 1–4)											
			Addr	Data	Addr	Data	Addr	Data	Addr	Data	Addr	Data	Addr	Data
Read (5)		1	RA	RD										
Reset (6)		1	XXX	F0										
Autoselect (Note 7)	Manufacturer ID	4	555	AA	2AA	55	(BA) 555	90	(BA) 100 (BA) 000	001C 007F				
	Device ID (10)	6	555	AA	2AA	55	(BA) 555	90	(BA) X01	227E	(BA) X0E	(10)	(BA) X0F	(10)
	Secured Silicon Sector Factory Protect (8)	4	555	AA	2AA	55	(BA) 555	90	X03	(8)				
	Sector Group Protect Verify(9)	4	555	AAA	2AA	55	(BA) 555	90	(SA) X02	XX00 / XX01				
Program		4	555	AA	2AA	55	555	A0	PA	PD				
Write to Buffer		6	555	AA	2AA	55	SA	25	SA	WC	PA	PD	WBL	PD
Program Buffer to Flash		1	SA	29										
Write to Buffer Abort Reset		3	555	AA	2AA	55	555	F0						
Chip Erase		6	555	AA	2AA	55	555	80	555	AA	2AA	55	555	10
Sector Erase		6	555	AA	2AA	55	555	80	555	AA	2AA	55	SA	30
Program/Erase Suspend (11)		1	BA	B0										
Program/Erase Resume (12)		1	BA	30										
CFI Query (13)		1	55	98										
Accelerated Program (15)		2	XX	A0	PA	PD								
Unlock Bypass Entry (15)		3	555	AA	2AA	55	555	20						
Unlock Bypass Program (15)		2	XX	A0	PA	PD								
Unlock Bypass Erase (15)		2	XX	80	XX	10								
Unlock Bypass CFI (13)(15)		1	XX	98										
Unlock Bypass Reset (15)		2	XXX	90	XXX	00								

Note : 1. A29DL32x doesn't have Write Buffer.
2. A29DL32x doesn't have Unlock Bypass Erase and CFI function.

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A29DL32x :

Command Sequence (Note 1)		Cycle	Bus Cycles (Notes 2–5)											
			First		Second		Third		Fourth		Fifth		Sixth	
			Addr	Data	Addr	Data	Addr	Data	Addr	Data	Addr	Data	Addr	Data
Read (Note 6)		1	RA	RD										
Reset (Note 7)		1	XXX	F0										
Autoselect (Note 8) Manufacturer ID	Word	4	555	AA	2AA	55	(BA)555	90	(BA)X00	37				
	Byte		AAA		555		(BA)AAA							
Autoselect (Note 8) Device ID	Word	4	555	AA	2AA	55	(BA)555	90	(BA)X01	(see Table5)				
	Byte		AAA		555		(BA)AAA		(BA)X02					
Autoselect (Note 8) Continuation ID	Word	4	555	AA	2AA	55	555	90	X03	7F				
	Byte		AAA		555		AAA		X06					
Autoselect (Note 8) Sector Protect Verify (Note 9)	Word	4	555	AA	2AA	55	(BA)555	90	(SA)	00/01				
	Byte		AAA		555		(BA)AAA		(SA)X04					
Command Temporary Sector Unprotect (Note15)	Word	3	555	AA	2AA	55	555	77						
	Byte		AAA		555		AAA							
Program	Word	4	555	AA	2AA	55	555	A0	PA	PD				
	Byte		AAA		555		AAA							
Unlock Bypass	Word	3	555	AA	2AA	55	555	20						
	Byte		AAA		555		AAA							
Unlock Bypass Program (Note 10)		2	XXX	A0	PA	PD								
Unlock Bypass Reset (Note 11)		2	XXX	90	XXX	00								
Chip Erase	Word	6	555	AA	2AA	55	555	80	555	AA	2AA	55	555	10
	Byte		AAA		555		AAA		AA A		555		AAA	
Sector Erase	Word	6	555	AA	2AA	55	555	80	555	AA	2AA	55	SA	30
	Byte		AAA		555		AAA		AAA		555			
Erase Suspend (Note 12)		1	XXX	B0										
Erase Resume (Note 13)		1	XXX	30										
CFI Query (Note 14)	Word	1	55	98										
	Byte		AA											

Note : EN29PL032 doesn't have software sector Protect/ Unprotect command.

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7. Conclusion

EN29PL032 is 4 banks architecture which can offer more flexibility for software utilization but A29DL32x series are all two banks architecture. However, EN29PL032 still can replace A29DL322 and A29DL324 without software architecture change. If customers use A29DL323, it could need software change.

Besides the bank architecture, EN29PL032 can't offer the Byte mode and Multi sector erase command. If users don't use the both function, then you don't mind the difference. To perform the continuous sector erasure, users must issue another sector erase command for the next sector to be erased after the previous one is completed.

The additional features of 4 banks architecture, Page mode read and 32 word programming write buffer of EN29PL032 can enhance flash performance. So EN29PL032 device is a good choice to fully replace A29DL32x.

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