



UM0404

Ameba Flash AVL

This document lists the Flashes available for Ameba-D and Ameba-Z.



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1 Flash Test Notice

1.1 Flash Level Standard

Level	Standard	Remark
3	This level includes the Flash which has passed the functional test, and with very rigorous test report provided by the certified third party/Flash vendor to ensure the stability of Flash.	Recommended
2	This level includes the Flash which has passed the functional test, and with test report provided partly by the certified third party/Flash vendor to ensure the stability of Flash, but the test standard in test report isn't rigorous.	Users must evaluate and verify the quality of Flash by themselves.
1	This level includes the Flash which has passed the function test, but with no test report provided by Flash vendor.	The stability of Flash cannot be guaranteed. Users must ask for test report from Flash vendor to ensure the stability of Flash, and evaluate & verify the quality of Flash by themselves.

1.2 Flash Test Report List

When submitting the Flash AVL requirement, in addition to the Flash-related documentations, Flash test reports must be provided together to ensure that this Flash has been strictly tested. Flash test reports must include the following test items at least, whether they are provided by the certified third party or Flash vendor.

Priority	Test item	Mandatory	Flash test report	Remark
1	Human Body Model (HBM)	Yes	Must be issued by one of the following organizations: <ul style="list-style-type: none"> ● Certified third party ● Flash vendor 	If these test reports are issued by the certified third party, this Flash is qualified to be listed in level 3; otherwise, level 2 in advance.
2	Charge Device Model (CDM)	Yes		
3	Machine Model (MM)	Yes		
4	Latch-up	Yes		
5	High Temperature Operating Life (HTOL)	Yes		
6	High Temperature Storage Life (HTSL)	Yes		
7	Endurance	Yes		
8	Uncycled High Temperature Data Retention (UCHTDR)	Yes		
9	Post-cycling High Temperature Data Retention (PCHTDR)	Yes		
10	Low Temperature Data Retention (LTDR)	Yes		
11	Early Life Failure Rate (ELFR)	Yes		
12	Low Temperature Operating Life (LTOL)	Yes		
13	Non-Volatile Memory Cycling Endurance (NVCE)	Yes		
14	Electromagnetic Interference (EMI)/Electromagnetic Compatibility (EMC)	Yes		
15	Endurance long run test report with high/low temperature and high/low voltage	No	Flash vendor	These test reports are optional to be provided by the Flash vendor. If provided, this Flash is qualified to be listed in level 3.
16	CP/FT test	No		
17	Compatibility report with different host	No		

NOTE

The availability of the Flash test reports will affect the final test results and Flash level.

2 Flash AVL

2.1 Ameba-D

The following sections list the Flashes of different vendors that have passed the test on Ameba-D platform. These Flashes are divided into three levels according to the Flash test result given by Realsil and the Flash test reports provided by the certified third party or Flash vendor.

2.1.1 Level 3

Based on the performance and quality, the Flashes of level 3 are recommended.

None.

2.1.2 Level 2

All the Flashes of level 2 have passed the function test and the stability of them can be guaranteed, but you must evaluate and verify the quality of Flash by yourself. Refer to [Flash Level Standard](#).

i NOTE

For 1M bytes memory, there is no need to test the 'over erase' item of the Flash.

2.1.2.1 GigaDevice

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
GD25Q80CSIG	0xC8	1MB	3.3V	4I/O	104MHz	-
GD25Q16EEIGR		2MB	3.3V	4I/O	104MHz	Pass
GD25Q32CSIG		4MB	3.3V	4I/O	104MHz	
GD25Q32ETIG		4MB	3.3V	4I/O	104MHz	
GD25Q64ESIG		8MB	3.3V	4I/O	104MHz	
GD25Q128ESIG		16MB	3.3V	4I/O	104MHz	
GD25WQ32ETIG		4MB	1.8V/3.3V	4I/O	66MHz	
MD25D80DSIG	0x51	1MB	3.3V	1I/2O	80MHz	

2.1.2.2 XMC

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Modify rtl8721dtp_flashcfg.c file	Over erase
XM25QH64AHIG	0x20	8MB	3.3V	4I/O	75MHz	Modify Flash_AVL to {0x20, 0x000000FF, FlashClass4, 0x000000FC, NULL}	Pass
XM25QH128AHIG		16MB	3.3V	4I/O	75MHz		
XM25QH64BHIG		8MB	3.3V	4I/O	133MHz	Modify Flash_AVL to {0x20, 0x000000FF, FlashClass3, 0x000000FC, NULL}	
XM25QH128BHIG		16MB	3.3V	4I/O	133MHz		
XM25QH16CJIG		2MB	3.3V	4I/O	108MHz	Modify Flash_AVL to 0x20, 0x000000FF, FlashClass1, 0x000043FC, NULL}	
XM25QH32CHIG		4MB	3.3V	4I/O	108MHz		
XM25QH64CHIG		8MB	3.3V	4I/O	133MHz		

2.1.2.3 Winbond

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
W25Q16JVSSIQ	0xEF	2MB	3.3V	4I/O	133MHz	
W25Q32JVSSIQ		4MB	3.3V	4I/O	133MHz	
W25Q32JVUUIQ		4MB	3.3V	4I/O	133MHz	
W25Q64JVSSIQ		8MB	3.3V	4I/O	133MHz	

W25Q128JVS1Q		16MB	3.3V	4I/O	133MHz	
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2.1.2.4 MXIC

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
MX25R1635FM2IH2	28C2	2MB	1.8V/3.3V	4I/O	80MHz	Pass
MX25R3235F		4MB	1.8V/3.3V	4I/O	80MHz	
MX25L3233FM2I-08G	0xC2	4MB	3.3V	4I/O	104MHz	
MX25L6433FM2I-08G		8MB	3.3V	4I/O	133MHz	
MX25L12833FM2I		16MB	3.3V	4I/O	133MHz	

2.1.2.5 Boya

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Modify rtl8721dip_flashcfg.c file	Over erase
BY25Q32BSSIG	0x68	4MB	3.3V	4I/O	108MHz	Modify Flash_AVL to {0x68, 0x000000FF, FlashClass2, 0x000043FC, NULL}	Pass
BY25Q32BSTIG		4MB	3.3V	4I/O	108MHz		
BY25Q64ASTIG		8MB	3.3V	4I/O	108MHz		

2.1.2.6 ISSI

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Modify rtl8721dip_flashcfg.c file	Over erase
IS25LP016D	0x9D	2MB	3.3V	4I/O	133MHz	Modify Flash_AVL to {0x9D, 0x000000FF, FlashClass3, 0x000000FC, NULL}	Pass
IS25LP032D		4MB	3.3V	4I/O	104MHz		

2.1.2.7 Zbit

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Modify rtl8721dip_flashcfg.c file	Over erase
ZB25V064ASIG	0x5E	8MB	3.3V	4I/O	104MHz	Modify Flash_AVL to {0x5E, 0x000000FF, FlashClass2, 0x000043FC, NULL}	Pass

2.1.2.8 HuaHong

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
BH25D16ASTIG	0x68	2MB	3.3V	1I/2O	108MHz	Pass

2.1.3 Level 1

All the Flashes of level 1 have only passed the function test, the stability of them cannot be guaranteed. Refer to [Flash Level Standard](#).

i NOTE

The 'over erase' item of the listed Flashes below has not been tested.

2.1.3.1 MXIC

Part number	Flash ID	Density	Voltage	I/O	Max. clock
MX25L1633E	0xC2	2MB	3.3V	4I/O	85MHz
MX25L3236F		4MB	3.3V	4I/O	104MHz (6 dummy cycles) 133MHz (10 dummy cycles)
MX25L6433F		8MB	3.3V	4I/O	80MHz (6 dummy cycles) 133MHz (10 dummy cycles)
		16MB	3.3V	4I/O	70MHz
MX25L12845G		16MB	3.3V	4I/O	70MHz
MX25L1606E		2MB	3.3V	2O	80MHz

MX25V8006E		1MB	3.3V	2O	70MHz
MX25V1635F		2MB	3.3V	4I/O	80MHz
MX25V8035F		1MB	3.3V	4I/O	104MHz
KH25L8006EM2I-12G		1MB	3.3V	2O	80MHz
KH25L1606EM2I-12G		2MB	3.3V	2O	80MHz
MX25R1635FM1ILO		2MB	1.8V/3.3V	4I/O	80MHz

2.1.3.2 Winbond

Part number	Flash ID	Density	Voltage	I/O	Max. clock
W25Q80DV	0xEF	1MB	3.3V	4I/O	104MHz
W25Q16DV		2MB	3.3V	4I/O	104MHz
W25Q32FV		4MB	3.3V	4I/O	104MHz
W25R64FV		8MB	3.3V	4I/O	104MHz
W25R128FV		16MB	3.3V	4I/O	104MHz
W25Q16JVSNIQ		2MB	3.3V	4I/O	104MHz

2.1.3.3 Micron

Part number	Flash ID	Density	Voltage	I/O	Max. clock
N25Q032A13ESE40E	0x20	4MB	3.3V	4I/O	108MHz
N25Q064A13ESED0E		8MB	3.3V	4I/O	108MHz
N25Q128A		16MB	3.3V	4I/O	108MHz
N25Q00AA13GSF40F		128MB	3.3V	4I/O	108MHz

2.1.3.4 GigaDevice

Part number	Flash ID	Density	Voltage	I/O	Max. clock
GD25Q80C	0xC8	1MB	3.3V	4I/O	120MHz
GD25Q64C		8MB	3.3V	4I/O	120MHz
GD25Q128C		16MB	3.3V	4I/O	80MHz
GD25D80TIG	0x51	1MB	3.3V	2O	80MHz
GD25D80SIG		1MB	3.3V	2O	80MHz

2.1.3.5 ESMT

Part number	Flash ID	Density	Voltage	I/O	Max. clock
EN25QH16A	0x1C	2MB	3.3V	4I/O	104MHz
EN25QH16B (2A)		2MB	3.3V	4I/O	104MHz
EN25Q80B		1MB	3.3V	4I/O	104MHz
EN25Q80BY1HM		1MB	3.3V	4I/O	104MHz
EN25QH32B (2B)		4MB	3.3V	4I/O	104MHz

2.1.3.6 XTX

Part number	Flash ID	Density	Voltage	I/O	Max. clock
XT25F16BSOIGU	0x0B	2MB	3.3V	2O	120MHz
XT25F16BSSIGU		2MB	3.3V	2O	120MHz
XT25F08BSSIGU		1MB	3.3V	4I/O	108MHz
XT25F08BSOIGU		1MB	3.3V	4I/O	108MHz

2.1.3.7 Boya

Part number	Flash ID	Density	Voltage	I/O	Max. clock
BY25D16	0x68	2MB	3.3V	2O	108MHz

2.1.3.8 LRC

Part number	Flash ID	Density	Voltage	I/O	Max. clock
LR25D80SDG	0x68	1MB	3.3V	2O	108MHz
LR25D80SSG		1MB	3.3V	2O	108MHz
LR25D16SDG		2MB	3.3V	2O	108MHz
LR25D16SSG		2MB	3.3V	2O	108MHz

2.1.3.9 FT

Part number	Flash ID	Density	Voltage	I/O	Max. clock
FT25H08	0x0E	1MB	3.3V	4I/O	120MHz
FT25H16S-RB	0x0E	2MB	3.3V	4I/O	80MHz/120MHz

2.1.3.10 FM

Part number	Flash ID	Density	Voltage	I/O	Max. clock
FM25Q64	0xA1	2MB	3.3V	4I/O	80MHz

2.2 Ameba-Z

The following sections list the Flashes of different vendors that have passed the test on Ameba-Z platform. These Flashes are divided into three levels according to the Flash test result given by Reaisil and the Flash test reports provided by the certified third party or Flash vendor.

2.2.1 Level 3

Based on the performance and quality, the Flashes of level 3 are recommended.

None.

2.2.2 Level 2

All the Flashes of level 2 have passed the function test and the stability of them can be guaranteed, but you must evaluate and verify the quality of Flash by yourself. Refer to Flash Level Standard.

i NOTE

For 1M bytes memory, there is no need to test the 'over erase' item of the Flash.

2.2.2.1 XMC

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin	Over erase
XM25UH16CJIG	0x46	2MB	3.3V	4I/O	108MHz	Set Flash ID as 0xC8	Pass

2.2.2.2 Winbond

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
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W25Q80DVSSIG	0xEF	1MB	3.3V	4I/O	104MHz	-
W25Q16JVSSIQ		2MB	3.3V	4I/O	133MHz	Pass

2.2.2.3 MXIC

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Over erase
MX25U51245GZ4I00	0xC2	64MB	1.8V	4I/O	84MHz	Untested

2.2.2.4 Zbit

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin	Over erase
ZB25VQ80ATIG	0x5E	1MB	3.3V	4I/O	120MHz	Set Flash ID as 0xC8	-
ZB25VQ16ATIG		2MB	3.3V	4I/O	104MHz		Pass

2.2.2.5 ISSI

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin	Over erase
IS25LP016D	0x9D	2MB	3.3V	4I/O	133MHz	Set Flash ID as 0xC2	Pass
IS25LP032D		4MB	3.3V	4I/O	104MHz		

2.2.2.6 TSINGTENG

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin	Over erase
TH25Q-16HB-MSCI	0xEB	2MB	3.3V	4I/O	104MHz	Set Flash ID as 0xC8	Pass

2.2.3 Level 1

All the Flashes of level 1 have only passed the function test, the stability of them cannot be guaranteed. Refer to Flash Level Standard.

NOTE

The 'over erase' item of the listed Flashes below has not been tested.

2.2.3.1 MXIC

Part number	Flash ID	Density	Voltage	I/O	Max. clock
MX25L1633E	0xC2	2MB	3.3V	4I/O	85MHz
MX25L3236F		4MB	3.3V	4I/O	104MHz (6 dummy cycles) 133MHz (10 dummy cycles)
MX25L6433F		8MB	3.3V	4I/O	80MHz (6 dummy cycles) 133MHz (10 dummy cycles)
MX25L12845G		16MB	3.3V	4I/O	70MHz
MX25L1606E		2MB	3.3V	2O	80MHz
MX25V8006E		1MB	3.3V	2O	70MHz
MX25V1635F		2MB	3.3V	4I/O	80MHz
MX25V8035F		1MB	3.3V	4I/O	104MHz
KH25L8006EM2I-12G		1MB	3.3V	2O	80MHz
KH25L1606EM2I-12G		2MB	3.3V	2O	80MHz
MX25R1635FM1I10		2MB	1.8V/3.3V	4I/O	80MHz

2.2.3.2 Winbond

Part number	Flash ID	Density	Voltage	I/O	Max. clock
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W25Q80DV	0xEF	1MB	3.3V	4I/O	104MHz
W25Q16DV		2MB	3.3V	4I/O	104MHz
W25Q32FV		4MB	3.3V	4I/O	104MHz
W25R64FV		8MB	3.3V	4I/O	104MHz
W25R128FV		16MB	3.3V	4I/O	104MHz
W25Q16JVSNIQ		2MB	3.3V	4I/O	104MHz

2.2.3.3 Micron

Part number	Flash ID	Density	Voltage	I/O	Max. clock
N25Q032A13ESE40E	0x20	4MB	3.3V	4I/O	108MHz
N25Q064A13ESED0E		8MB	3.3V	4I/O	108MHz
N25Q128A		16MB	3.3V	4I/O	108MHz
N25Q00AA13GSF40F		128MB	3.3V	4I/O	108MHz

2.2.3.4 GigaDevice

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin
GD25Q80C	0xC8	1MB	3.3V	4I/O	120MHz	-
GD25Q32C		4MB	3.3V	4I/O	120MHz	-
GD25Q64C		8MB	3.3V	4I/O	120MHz	-
GD25Q128C		16MB	3.3V	4I/O	80MHz	-
MD25D80TIG	0x51	1MB	3.3V	20	80MHz	Set Flash ID as 0xC2
MD25D80SIG		1MB	3.3V	20	80MHz	

2.2.3.5 ESMT

Part number	Flash ID	Density	Voltage	I/O	Max. clock
EN25QH16A	0x1C	2MB	3.3V	4I/O	104MHz
EN25QH16B (2A)		2MB	3.3V	4I/O	104MHz
EN25Q80B		1MB	3.3V	4I/O	104MHz
EN25Q80BY1HM		1MB	3.3V	4I/O	104MHz
EN25QH32B (2B)		4MB	3.3V	4I/O	104MHz

2.2.3.6 XTX

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin
XT25F16BSOIGU	0x0B	2MB	3.3V	20	120MHz	Set Flash ID as 0xEF
XT25F16BSSIGU		2MB	3.3V	20	120MHz	
XT25F08BSSIGU		1MB	3.3V	4I/O	108MHz	
XT25F08BSOIGU		1MB	3.3V	4I/O	108MHz	

2.2.3.7 Boya

Part number	Flash ID	Density	Voltage	I/O	Max. clock
BY25D16	0x68	2MB	3.3V	20	108MHz

2.2.3.8 LRC

Part number	Flash ID	Density	Voltage	I/O	Max. clock
LR25D80SDG	0x68	1MB	3.3V	20	108MHz

LR25D80SSG		1MB	3.3V	20	108MHz
LR25D16SDG		2MB	3.3V	20	108MHz
LR25D16SSG		2MB	3.3V	20	108MHz

2.2.3.9 FT

Part number	Flash ID	Density	Voltage	I/O	Max. clock	Set Flash ID in system.bin
FT25H08	0x0E	1MB	3.3V	4I/O	120MHz	Set Flash ID as 0xEF
FT25H16S-RB	0x0E	2MB	3.3V	4I/O	80MHz/120MHz	

2.2.3.10 FM

Part number	Flash ID	Density	Voltage	I/O	Max. clock
FM25Q08A	0xA1	1MB	3.3V	4I/O	104MHz
FM25Q08		1MB	3.3V	4I/O	104MHz
FM25Q16		2MB	3.3V	4I/O	104MHz