



# Conversion Guide

## Micron EOL M25P Products

# Micron M25P to Adesto FUSION and Standard Flash Conversion Guide

Designers, component engineers and sourcing teams are moving quickly to qualify alternatives that can support their long term demand and stabilize pricing due to the Micron EOL of all low density memory solutions.

The Adesto FUSION brand NOR Flash Memory is a highly compatible replacement for the Micron M25P series SPI products.

Conversion Guides are also available on our website for the Micron M45PE and the M25PE family of products.

The Adesto Fusion is pin and DC performance compatible to the Micron products, although consideration is needed with respect to the application command sets and Op Codes.

The Micron M25P family consists of selections ranging from 512Kbit to 32 Mbit. Adesto's FUSION is currently available in 512Kbit to 4 Mb with the 8 Mb and 16 Mb selections are on schedule for mass production release. As an alternative for those designs requiring memory density of 8 Mb to 32 Mbit today, the Adesto Standard Flash AT25SF family is included in this comparison.

Contact [micronconvert@adestotech.com](mailto:micronconvert@adestotech.com) for technical assistance , request samples and learn more about the Adesto Longevity Program .

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## Pin Identical Adesto Recommended Replacements

Micron Device	Recommended Replacement (pin identical)	Available	ADDITIONAL ADESTO SOLUTIONS Available Now <i>pin identical, wider voltage and LOWEST energy</i>
M25P05	AT25DN512C	Now	AT25DF512C
M25P10	AT25DN011	Now	AT25DF011 -or- AT25XE011
M25P20	AT25DF021A	Now	AT25DXE021A
M25P40	AT25DF041B	Now	AT25XE041B
M25P80	AT25DF081B	Q1_2018	AT25SF081
M25P16	AT25DF161A	Q2_2018	AT25SF161
M25P32	AT25SF321	Now	

## Exact Part Number Cross-Reference

Micron Part Number	Adesto Part Number	Available	Adesto Part Number	Available
M25P05-AVMN6P	AT25DN512C-SSHF-T	Now	AT25DF512C-SSHN-T	Now
M25P05-AVMN6TP	AT25DN512C-SSHF-T	Now	AT25DF512C-SSHN-T	Now
M25P10-AVMB3TP/Y	AT25DN011-MAHFHR-T	Now	AT25DF011-MAHNHR-T	Now
M25P10-AVMB6TG	AT25DN011-MAHF-T	Now	AT25DF011-MAHN-T AT25XE011-MAHN-T	Now
M25P10-AVMN3TP/Y	AT25DN011-SSHFHR-T	Now	AT25DF011-SSHNHR-T	Now
M25P10-AVMN6P	AT25DN011-SSHF-T	Now	AT25DF011-SSHN-T AT25XE011-SSHN-T	Now
M25P10-AVMN6TP	AT25DN011-SSHF-T	Now	AT25DF011-SSHN-T AT25XE011-SSHN-T	Now
M25P10-AVMN6TPYA	AT25DN011-SSHF-T	Now	AT25DF011-SSHN-T AT25XE011-SSHN-T	Now
M25P10-AVMP6G	AT25DN011-MAHF-T	Now	AT25XE011-MAHN-T AT25DF011-MAHN-T	Now
M25P10-AVMP6TG	AT25DN011-MAHF-T	Now	AT25XE011-MAHN-T AT25DF011-MAHN-T	Now
M25P10-V6D11	AT25DN011-DWF	Now	AT25DF011-DWF	Now
M25P16-V6D11	AT25DF161A-DWF	Q2_2018	AT25SF161-DWF	Now
M25P16-VMC6G	AT25DF161A-MAHN-T <sup>(1)</sup>	Q2_2018		
M25P16-VMC6TG	AT25DF161A-MAHN-T <sup>(1)</sup>	Q2_2018		
M25P16-VME6G	AT25DF161A-MHN-T <sup>(2)</sup>	Q2_2018		
M25P16-VME6TG	AT25DF161A-MHN-T <sup>(2)</sup>	Q2_2018		
M25P16-VMF3TPB	AT25DF161A-SHNHR-T	Q2_2018		
M25P16-VMF6P	AT25DF161A-SHN-T	Q2_2018	AT25SF161-SHD-T	Now
M25P16-VMF6TP	AT25DF161A-SHN-T	Q2_2018	AT25SF161-SHD-T	Now
M25P16-VMN3PB	AT25DF161A-SSHNHR-T	Q2_2018		
M25P16-VMN3TPB	AT25DF161A-SSHNHR-T	Q2_2018		
M25P16-VMN3YPB	AT25DF161A-SSHNHR-T	Q2_2018		
M25P16-VMN6P	AT25DF161A-SSHN-T	Q2_2018	AT25SF161-SSHD-T	Now
M25P16-VMN6PBA	AT25DF161A-SSHN-T	Q2_2018	AT25SF161-SSHD-T	Now
M25P16-VMN6TP	AT25DF161A-SSHN-T	Q2_2018	AT25SF161-SSHD-T	Now
M25P16-VMN6TPBA	AT25DF161A-SSHN-T	Q2_2018	AT25SF161-SSHD-T	Now
M25P16-VMN6YPBA	AT25DF161A-SSHN-T	Q2_2018	AT25SF161-SSHD-T	Now
M25P16-VMP6G	AT25DF161A-MHN-T	Q2_2018	AT25SF161-MHD-T	Now
M25P16-VMP6TG	AT25DF161A-MHN-T	Q2_2018	AT25SF161-MHD-T	Now
M25P16-VMW6G	AT25DF161A-SHN-T	Q2_2018	AT25SF161-SHD-T	Now
M25P16-VMW6TG	AT25DF161A-SHN-T	Q2_2018	AT25SF161-SHD-T	Now

## Exact Part Number Cross-Reference (cont'd)

Micron Part Number	Adesto Part Number	Available	Adesto Part Number	Available
M25P20-VMN3PB	AT25DF021A-SSHNHR-T	Now		
M25P20-VMN3TPB	AT25DF021A-SSHNHR-T	Now		
M25P20-VMN6PB	AT25DF021A-SSHN-T	Now	AT25XE021A-SSHN-T	Now
M25P20-VMN6TPB	AT25DF021A-SSHN-T	Now	AT25XE021A-SSHN-T	Now
M25P20-VMN6TPBA	AT25DF021A-SSHN-T	Now	AT25XE021A-SSHN-T	Now
M25P20-VMP6GB	AT25DF021A-MHN-T	Now	AT25XE021A-MHN-T	Now
M25P20-VMP6TGB	AT25DF021A-MHN-T	Now	AT25XE021A-MHN-T	Now
M25P32-VMF3TPB	AT25SF321-SHD-T	Now		
M25P32-VMW3TGB	AT25SF321-SHDHR-T	Now		
M25P32-VMW6TGBA	AT25SF321-SHD-T	Now		
M25P40-VMB3TPB	AT25DF041B-MAHN-T	Now	AT25XE041B-MAHN-T	Now
M25P40-VMB6TPB	AT25DF041B-MAHN-T	Now	AT25XE041B-MAHN-T	Now
M25P40-VMN3PB	AT25DF041B-SSHNHR-T	Now		
M25P40-VMN3TPB	AT25DF041B-SSHNHR-T	Now		
M25P40-VMN6PB	AT25DF041B-SSHN-T	Now	AT25XE041B-SSHN-T	Now
M25P40-VMN6PBA	AT25DF041B-SSHN-T	Now	AT25XE041B-SSHN-T	Now
M25P40-VMN6TPB	AT25DF041B-SSHN-T	Now	AT25XE041B-SSHN-T	Now
M25P40-VMN6TPBA	AT25DF041B-SSHN-T	Now	AT25XE041B-SSHN-T	Now
M25P40-VMP6GB	AT25DF041B-MHN-T	Now	AT25XE041B-MHN-T	Now
M25P40-VMP6TGB	AT25DF041B-MHN-T	Now	AT25XE041B-MHN-T	Now
M25P40-VMC6G	AT25DF041B-MAHN-T <sup>(1)</sup>	Now	AT25XE041B-MAHN-T <sup>(1)</sup>	Now
M25P40-VMC6TG	AT25DF041B-MAHN-T <sup>(1)</sup>	Now	AT25XE041B-MAHN-T <sup>(1)</sup>	Now
M25P80-VMC6G	AT25DF081B-MAHN-T <sup>(1)</sup>	Q1_2018	AT25SF081-MAHD-T	Now
M25P80-VMC6TG	AT25DF081B-MAHN-T <sup>(1)</sup>	Q1_2018		
M25P80-VMN3PB	AT25DF081B-SSHNHR-T	Q1_2018		
M25P80-VMN3TPB	AT25DF081B-SSHNHR-T	Q1_2018		
M25P80-VMN6P	AT25DF081B-SSHN-T	Q1_2018	AT25SF081-SSHD-T	Now
M25P80-VMN6PBA	AT25DF081B-SSHN-T	Q1_2018		
M25P80-VMN6TP	AT25DF081B-SSHN-T	Q1_2018	AT25SF081-SSHD-T	Now
M25P80-VMN6TPBA	AT25DF081B-SSHN-T	Q1_2018		
M25P80-VMP6G	AT25DF081B-MHN-T	Q1_2018	AT25SF081-MHD-T	Now
M25P80-VMP6TG	AT25DF081B-MHN-T	Q1_2018	AT25SF081-MHD-T	Now
M25P80-VMW6G	AT25DF081B-SHN-T	Q1_2018	AT25SF081-SHD-T	Now
M25P80-VMW6TG	AT25DF081B-SHN-T	Q1_2018	AT25SF081-SHD-T	Now
M25P80-VMW6TGBA	AT25DF081B-SHN-T	Q1_2018		

<sup>1</sup>Device Package dimensions are 2x3 mm versus the Micron MC package dimensions of 3x4 mm.

<sup>2</sup>The Micron ME device package is 6x8 mm versus the Adesto recommended replacement which is 5x6 mm.

## Architecture

Take advantage of Adesto Deep Power Down; less than half of Micron solutions

	Micron		Adesto		Adesto
<b>Feature</b>	M25P05		<b>AT25DN512C</b>		<b>AT25DF512C</b>
Main Memory Size	512 kbit (x8)		512 kbit (x8)		512 kbit (x8)
Page Program (byte)	1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	32k		32k		32k
Bulk Erase	✓		✓		✓

	M25P10		AT25DN011		AT25DF011		AT25XE011
Main Memory Size	1 Mb		1 Mb		1 Mb		1 Mb
Page Program (byte)	1 to 256		1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	32k		32k		32k		32k
Bulk Erase	✓		✓		✓		✓

	M25P20		AT25DF021A		AT25XE021A
Main Memory Size	2 Mb		2 Mb		2 Mb
Page Program (byte)	1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	64k		64k		64k
Bulk Erase	✓		✓		✓

□

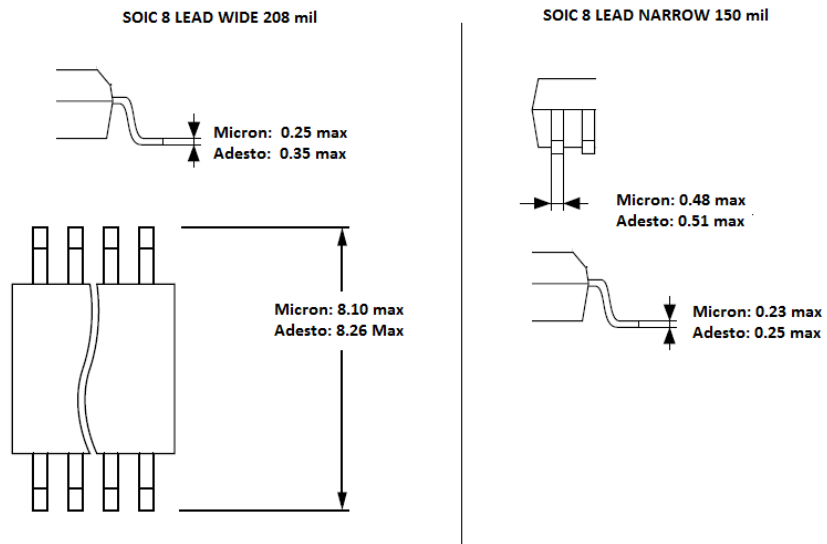
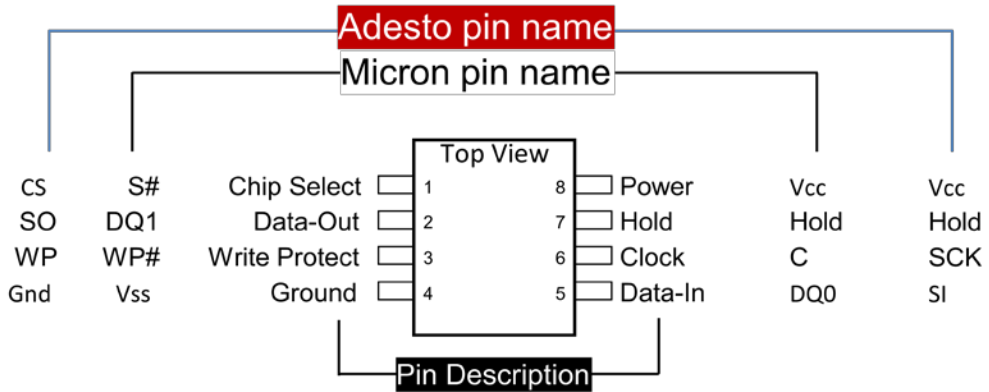
	M25P40		AT25DF041B		AT25XE041B
Main Memory Size	4 Mb		4 Mb		4 Mb
Page Program (byte)	1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	64k		64k		64k
Bulk Erase	✓		✓		✓

	M25P80		AT25SF081		AT25DF081B
Main Memory Size	8 Mb		8 Mb		8 Mb
Page Program (byte)	1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	64k		64k		64k
Bulk Erase	✓		✓		✓

	M25P16		AT25SF161		AT25DF161A
Main Memory Size	16 Mb		16 Mb		16 Mb
Page Program (byte)	1 to 256		1 to 256		1 to 256
Erase Sector Size (byte)	64k		64k		64k
Bulk Erase	✓		✓		✓

	M25P32		AT25SF321
Main Memory Size	32 Mb		32 Mb
Page Program (byte)	1 to 256		1 to 256
Erase Sector Size (byte)	64k		64k
Bulk Erase	✓		✓

Pin Assignment- Adesto pinout is an exact match



Device Package

Package Type	Micron Nomenclature	Adesto Nomenclature	Dimensional Comparison
Dual Flat No Lead MLP 8 TERMINAL	VQFPN (Pkg Code MP)	<b>8MA1 (Pkg Code M)</b>	Fully Compatible Replacement
SOIC 8 LEAD NARROW 150 mil	SO8N (Pkg Code MN)	<b>8S1 (Pkg Code SS)</b>	Fully Compatible Replacement*
SOIC 8 LEAD WIDE 208 mil	SO8W (Pkg Code MW)	<b>8S2 (Pkg Code S)</b>	Fully Compatible Replacement*

## Op Code Comparison

Adesto to Micron Op Code match

Function	Micron Op Code	Adesto Op Code
Write Enable	06h	06h
Write Disable	04h	04h
Read ID	9Fh	9Fh
Read Status Register	05h	05h
Read Data Bytes	03h	03h
Read Data Bytes @ higher speed	0Bh	0Bh
Page Program	02h	02h
Sector Erase	D8h	D8h
Deep Power Down	B9h	B9h
Release from Deep Power Down	Abh	Abh

## Function & Performance

Function	Micron Part#	Micron Value	Adesto Replacement Part#	Adesto Value
Operating Voltage	M25P05	2.3 to 3.6 V	AT25DF512C or AT25DN512C	1.65 to 3.6 or 2.3 to 3.6
	M25P10	2.3 to 3.6 V	AT25DF011 or AT25DN011	1.65 to 3.6 or 2.3 to 3.6
	M25P20	2.3 to 3.6 V	AT25DF021A or AT25XE021A	1.65 to 3.6
	M25P40	2.3 to 3.6 V	AT25DF041B or AT25XE041B	1.65 to 3.6
	M25P80	2.7 to 3.6 V	AT25SF081	2.3 to 3.6 V
	M25P16	2.7 to 3.6 V	AT25SF161	2.5 to 3.6 V
	M25P32	2.7 to 3.6 V	AT25SF321	2.5 to 3.6 V
Max Clock Freq	M25P05	50 Mhz	AT25DF512C or AT25DN512C	104 Mhz
	M25P10	50 Mhz	AT25DF011 or AT25DN011	104 Mhz
	M25P20	50 Mhz	AT25DF021A or AT25XE021A	104 Mhz
	M25P40	75 Mhz	AT25DF041B or AT25XE041B	85 Mhz
	M25P80	75 Mhz	AT25SF081	104 Mhz
	M25P16	75 Mhz	AT25SF161	104 Mhz
	M25P32	75 Mhz	AT25SF321	104 Mhz



## Function & Performance (cont'd)

Function	Micron Part#	Micron Value	Adesto Replacement Part#	Adesto Value
Read Status Register	All	Assert S#, load Op Code Deassert S# = standby mode	All	Assert CS/, load Op Cmd, Data Out, Deassert CS/ = standby mode
Enter Deep Power Down Mode	All	Assert S#, load Op Code Deassert S#	All	Assert CS/, load Op Code Deassert CS/
Exit Deep Power Down Mode	All	Assert S#, load Op Code Deassert S#, Delay = $t_{RES}$	All	Assert CS/, load Op Code Deassert CS/, Delay = $t_{edpd}$
Protection Mode-Software	All	Deep Power Down Command, Write Disable Command with W# asserted (hardware) Block Protect Bits SRWD (Write Disable)	All	Deep Power Down Command, Write Disable Command with WP asserted (hardware) Block Protect Bits SRWD (Write Disable)
Power Up Timing (time delay to write instruction)	All	$t_{PUW}$ max 10 $\mu$ s	All	$t_{PUW}$ max 5 $\mu$ s
Power Up Min Threshold ( $V_{WI}$ )	All	1.0 V min / 2.1 V max (spec $V_{WI}$ )	All	1.6 V min / 2.2 V max (spec $V_{WI}$ )
Minimum Delay Vcc min to Read Operation ( $t_{VCSL}$ )	M25P05, M25P10, M25P20, M25P40, M25P80	10 $\mu$ s	AT25xx512C, AT25xx011, AT25xx021A, AT25xx041B, AT25SF081	70 $\mu$ s
	M25P16, M25P32	30 $\mu$ s	AT25SF161, AT25SF321	20 $\mu$ s
Read Mfgr ID	All	Assert S#, load Op Code Deassert S# = standby mode	All	Assert S#, load Op Code Deassert S# = standby mode

## Function & Performance (cont'd)

Function	Micron Part#	Micron Value	Adesto Replacement Part#	Adesto Value
Mfg ID 3 byte Code	M25P05	20h 20h 10h	AT25xx512C	1Fh 65h 01h
	M25P10	20h 20h 11h	AT25xx011	1Fh 42h 00h
	M25P20	20h 20h 12h	AT25xx021A	1Fh 43h 00h
	M25P40	20h 20h 13h	AT25xx041B	1Fh 44h 00h
	M25P80	20h 20h 14h	AT25SF081	1Fh 85h 01h
	M25P16	20h 20h 15h	AT25SF161	1Fh 86h 01h
	M25P32	20h 20h 16h	AT25SF321	1Fh 87h 01h
Page Program Cyc Time ms (typ/max)	M25P05	1.4 / 5	AT25DF512C or AT25DN512C	1.5 / 3.5
	M25P10	1.4 / 5	AT25DF011 or AT25DN011	1.5 / 3.5
	M25P20	0.8 / 5	AT25DF021A or AT25XE021A	1.25 / 2.5
	M25P40	0.8 / 5	AT25DF041B OR AT25XE041B	1.25 / 2.5
	M25P80	0.64 / 5	AT25SF081	0.7 / 5
	M25P16	0.8 / 3	AT25SF161	0.7 / 5
	M25P32	.64 / 5	AT25SF321	0.7 / 5
Current-Standby (µA)	M25P05	50	AT25DF512C or AT25DN512C	25
	M25P10	50	AT25DF011 or AT25DN011	25
	M25P20	50	AT25DF021A or AT25XE021A	25
	M25P40	50	AT25DF041B OR AT25XE041B	25
	M25P80	50	AT25SF081	13
	M25P16	50	AT25SF161	13
	M25P32	50	AT25SF321	13

## Function & Performance (cont'd)

Function	Micron Part#	Micron Value	Adesto Replacement Part#	Adesto Value
Current-Deep Power Down ( $\mu\text{A}$ )	M25P05	5	AT25DF512C or AT25DN512C	5
	M25P10	5	AT25DF011 or AT25DN011	5
	M25P20	5	AT25DF021A or AT25XE021A	5
	M25P40	10	AT25DF041B OR AT25XE041B	5
	M25P80	10	AT25SF081	2
	M25P16	10	AT25SF161	2
	M25P32	10	AT25SF321	2
Current- Ultra Deep Power Down ( $\mu\text{A}$ )	M25P05	not available	AT25DF512C or AT25DN512C	0.2
	M25P10	not available	AT25DF011 or AT25DN011	0.2
	M25P20	not available	AT25DF021A or AT25XE021A	0.2
	M25P40	not available	AT25DF041B OR AT25XE041B	0.2
	M25P80	not available	AT25SF081	
	M25P16	not available	AT25SF161	
	M25P32	not available	AT25SF321	

Contact [miconconvert@adestotech.com](mailto:miconconvert@adestotech.com) for technical assistance as well as learning more about the Adesto Longevity Program.

Request a free Adesto FUSION Memory Sample Set at <http://www.adestotech.com/contact-support/sample-request/>

## Download Datasheets

Adesto Brand	Density	Product#	Webiste Link
FUSION	512 kb	AT25DN512C	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DN512C_037.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DN512C_037.pdf</a>
FUSION	512 kb	AT25DF512C	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DF512C_030.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DF512C_030.pdf</a>
FUSION	1 Mb	AT25DN011	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DN011_038.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DN011_038.pdf</a>
FUSION	1 Mb	AT25DF011	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DF011_032-1.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DF011_032-1.pdf</a>
FUSION	1 Mb	AT25XE011	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25XE011-059.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25XE011-059.pdf</a>
FUSION	2 Mb	AT25DF021A	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DF021A_042.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DF021A_042.pdf</a>
FUSION	2Mb	AT25XE021A	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25XE021A-061.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25XE021A-061.pdf</a>
FUSION	4 Mb	AT25DF041B	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25DF041B_040.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25DF041B_040.pdf</a>
FUSION	4 Mb	AT25XE041B	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25XE041B_062.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25XE041B_062.pdf</a>
Std. Flash	8 Mb	AT25SF081	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25SF081_045.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25SF081_045.pdf</a>
Std. Flash	16 Mb	AT25SF161	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25SF161_046.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25SF161_046.pdf</a>
Std. Flash	32 Mb	AT25SF321	<a href="http://www.adestotech.com/wp-content/uploads/DS-AT25SF321_047.pdf">http://www.adestotech.com/wp-content/uploads/DS-AT25SF321_047.pdf</a>