

RF/WIRELESS PRODUCTS

Telecommunication Devices

Fujitsu's Telecom IC product offering includes a wide range of leading edge RF/Wireless parts for use in diverse applications such as cellular telephones, cordless telephones, PCS/PCN systems, wireless PBX systems, wireless LAN/WAN systems, pagers, cable television converter boxes and a variety of portable wireless communication devices. The core product families for RF/Wireless applications include Prescalers, Phase-Locked Loops (PLLs), SingleChip PLL/Prescalers (Super PLLs), RF Analog Devices (Super Analog), and Piezoelectric Devices (SAW Filters and VCOs/Modulators). These products are manufactured to meet the high standard of quality and reliability that is found in all Fujitsu products.

- **Prescalers**

Fujitsu offers a wide range of prescaler devices capable of satisfying the technical requirements of today's applications. Features include devices covering the 200 MHz to 2.7 GHz range, low power consumption, and a multitude of divide ratios.

- **PLLs**

The Fujitsu family of PLLs offers a wide range of operation frequencies with low supply current and voltages to meet many diverse design requirements. A serial input programming capability is a feature of all Fujitsu's PLLs.

- **Super PLLs**

Fujitsu is one of only a few semiconductor manufacturers to offer single-chip PLL/Prescaler devices and was the creator of the industry standard MB1501. These devices are manufactured using an advanced BiCMOS process that combines high speed and low power consumption in a single chip. With the increased emphasis on board space reduction to improve cost, reliability, and overall end product size for portable applications, these single-chip devices are an ideal solution for wireless systems designers.

- **Super Analog**

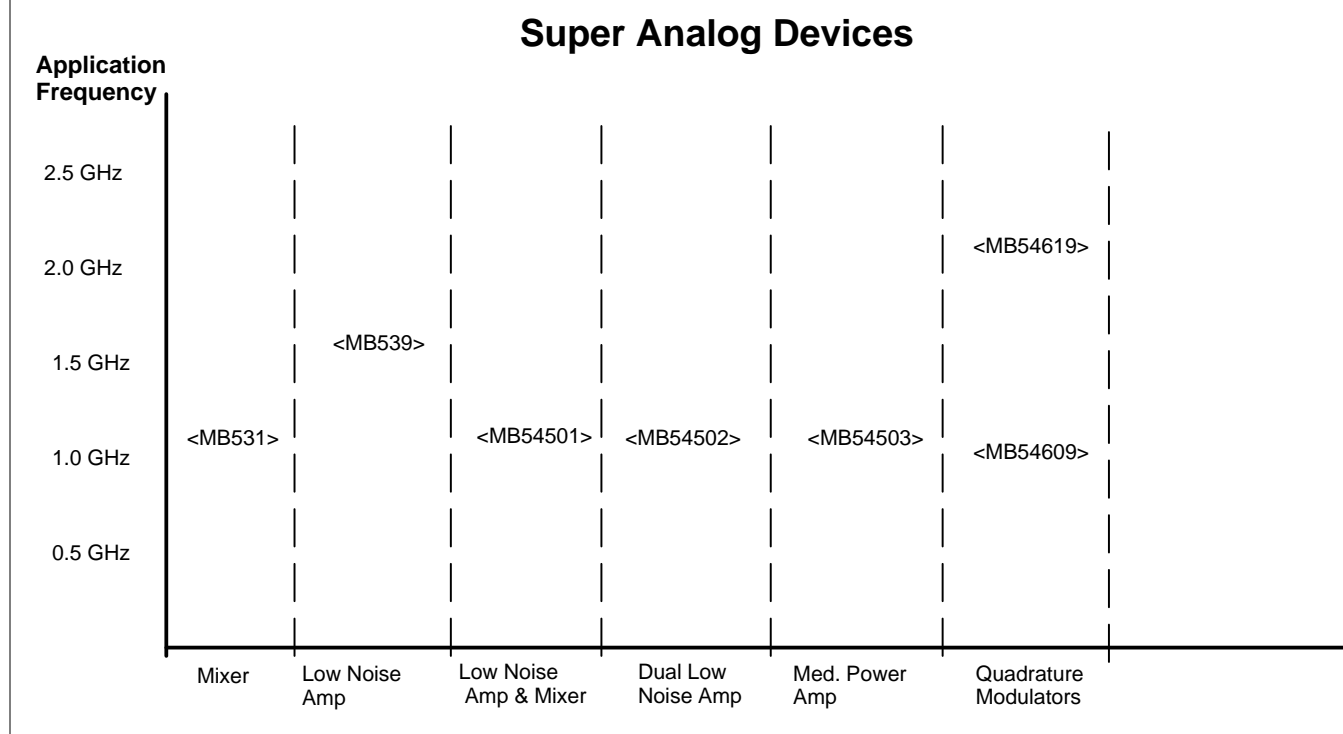
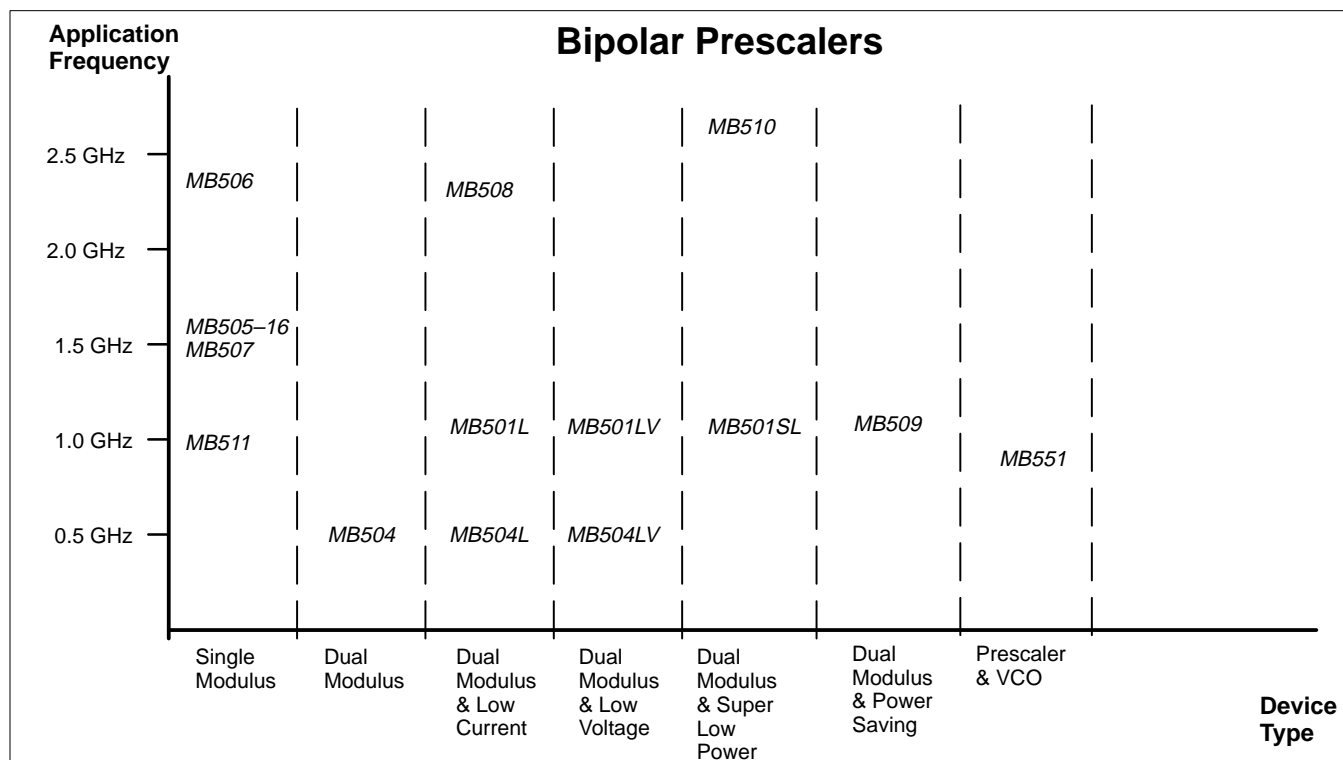
Included are a series of highly integrated Analog RF devices such as Low Noise Amplifiers (LNA), Modulators, Demodulators and Mixers that are typically used in the front ends of mobile and portable wireless communication systems. These include single and multi-function devices based on Fujitsu's advanced RF BiCMOS and Bipolar processes which are second to none.

- **Piezoelectric Devices**

Fujitsu's lithium tantalate piezoelectric bandpass SAW Filters provide sharp roll-off characteristics and excellent stability over temperature in very small 3.8 mm x 3.8 mm or 5 mm x 5 mm surface mount packages. Standard transmit and receive frequencies are available for AMPS, NTACS, ETACS, NMT/GSM, NTT, PDC and ISM/USA. This family of devices also includes a series of Voltage Controlled Oscillators (VCOs) and Modulators

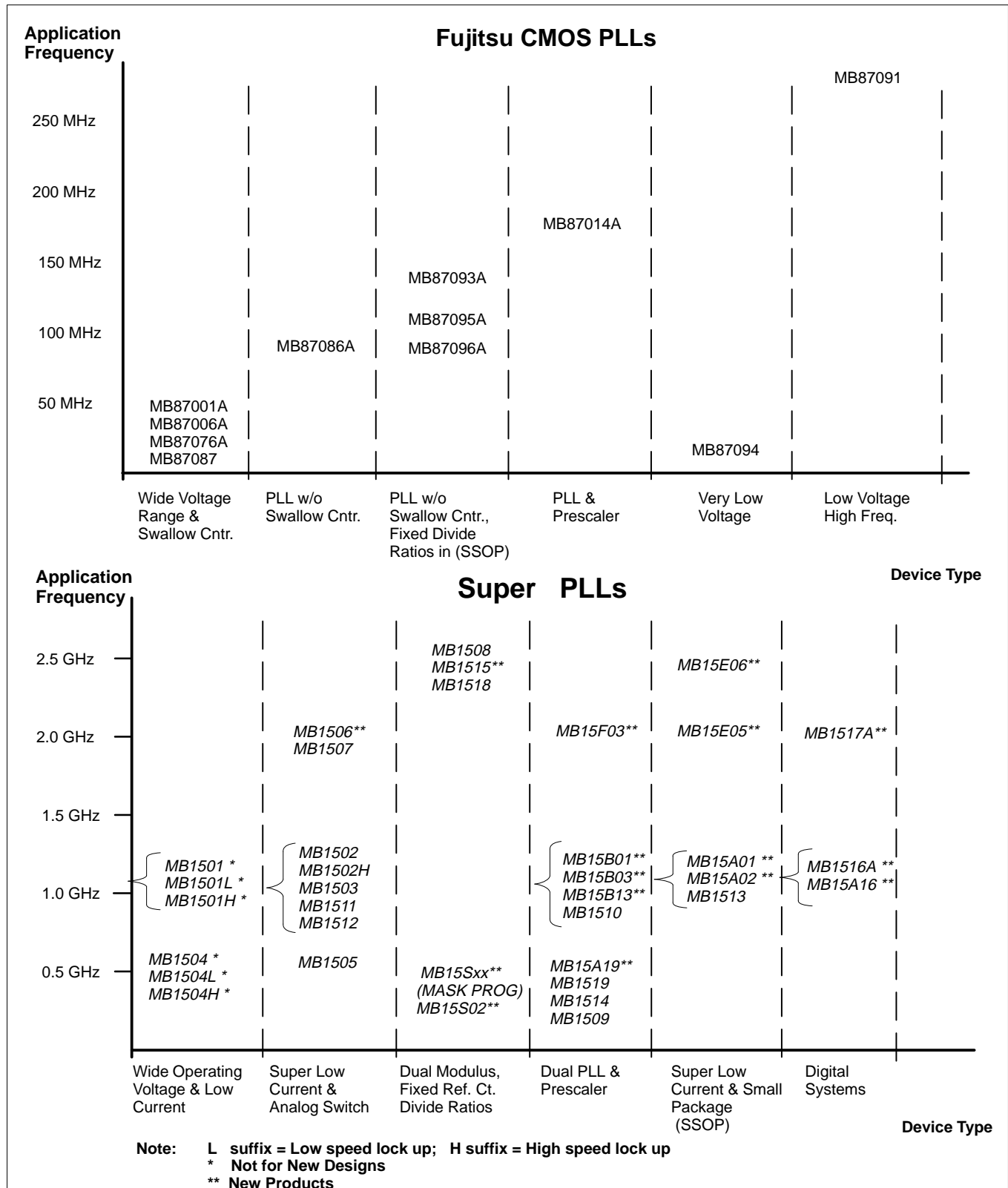
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Quick Selection Guide – Prescaler, Super Analog



RF/WIRELESS PRODUCTS

Quick Selection Guide – CMOS PLLs, Super PLLs



RF/WIRELESS PRODUCTS

Bipolar Prescalers – 200 MHz to 2.7 GHz

Device Part No.	Frequency (Maximum)	Divide Ratio	I _{cc} (Typ.)	V _{cc}	Package
MB501L	1.1 GHz	64/65, 128/129	10 mA	5 V	8-pin DIP, SOP
MB501LV	1.1 GHz	64/65, 128/129	12 mA	3 V	8-pin DIP, SOP
MB501SL	1.1 GHz	64/65, 128/129	5 mA	5 V	8-pin DIP, SOP
MB504	520 MHz	32/33, 64/65	10 mA	5 V	8-pin DIP, SOP
MB504L	520 MHz	32/33, 64/65	5 mA	5 V	8-pin DIP, SOP
MB504LV	520 MHz	32/33, 64/65	6 mA	3 V	8-pin DIP, SOP
MB505-16	1.6 GHz	128, 256	9 mA	5 V	8-pin DIP, SOP
MB506	2.4 GHz	64, 128, 256	18 mA	5 V	8-pin DIP, SOP
MB507	1.6 GHz	128/129, 256/257	18 mA	5 V	8-pin DIP, SOP
MB508	2.3 GHz	128/129, 256/257, 512/514	24 mA	5 V	8-pin DIP, SOP
MB509	1.1 GHz	64/65, 128/129	12 mA	5 V	8-pin DIP, SOP
MB510	2.7 GHz	128/144, 256/272	10 mA	5 V	8-pin DIP, SOP
MB511	1.0 GHz	1, 2, 8	23 mA	5 V	8-pin DIP, SOP

Prescaler/VCO

Device Part No.	Frequency (Maximum)	Divide Ratio	I _{cc} (Typ.)	V _{cc}	Package
MB551	1.0 GHz	128/129	16 mA	5 V	8-pin SOP

Super Analog Devices

Device Part No.	Frequency (Maximum)	Features	I _{cc} (Typ.)	V _{cc}	Package
MB531	1.1 GHz	Tx Mixer	12.7 mA	5 V	8-pin SSOP
MB539	1.6 GHz	Low Noise Amp	8 mA	5 V	8-pin SSOP
MB54501	1.1 GHz	LNA/Mixer	6 mA	3 V	16-pin SSOP
MB54502	1.1 GHz	Dual LNAs	4 mA	3 V	16-pin SSOP
MB54503	1.1 GHz	PA Driver Amp	26 mA	3.6 V	16-pin SSOP
MB54609	1.0 GHz	Modulator Quadrature	20 mA	3 V	20-pin SSOP
MB54619	2.0 GHz	Modulator	25 mA	3 V	20-pin SSOP

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Low Power CMOS Phase Locked Loops (PLLs)

Device Part No.	f_{IN} MHz @ 3V/5V (max)	Divide Ratio			I_{DD} mA @ 3V/5V	V_{DD}	Package
		N Prog. Ct.	A Swal- low	R Refer. Ct.			
MB87001A	10/13	5–1023	0–127	8–2048	2.0/3.0	2.7 – 5.5 V	16-pin DIP, SOP
MB87006A	10/17	5–1023	0–127	Binary 5–16383	2.5/3.5	3.0 – 6.0 V	16-pin DIP, SOP
MB87014A	–/180	5–1023	0–63	Binary 5–65535	–/ 8.0	4.5 – 5.5 V	16-pin DIP, SOP
MB87076	10/10	5–2047	0–127	Binary 5–16383	2.5/3.0	2.7 – 5.5 V	16-pin DIP, SOP
MB87086A	–/95	5–1023	–	Binary 5–65535	–/ 8.0	4.5 – 5.5 V	16-pin DIP, SOP
MB87087	10/17	5–1023	0–127	Binary 5–16383	2.5/3.5	3.0 – 6.0 V	16-pin DIP, SOP
MB87091	300/–	5–4095	0–63	Binary 5–16383	8.0/–	2.7 – 3.3 V	16-pin DIP, SOP, SSOP
MB87093A	–/145	725	–	64	–/10	4.5 – 5.5 V	16-pin SSOP
MB87094	15 @ 1.1 V	5–2047	0–127	Binary 5–4095	1 @ 1.1 V	1.1 – 1.7 V	16-pin SSOP
MB87095A	–/110	550	–	64	–/10	4.5 – 5.5 V	16-pin SSOP
MB87096A	–/90	750	–	128	–/10	4.5 – 5.5 V	16-pin SSOP

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BiCMOS Single-Chip PLL/Prescalers (Super PLLs)

Device Part No.	Prescaler		PLL			I _{CC} (typ)	V _{CC}	Package
	f _{IN} (max)	Divide Ratio	N Prog. Ct.	A Swallow Ct.	R Refer. Ct.			
MB15A01	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 6-16383	6.5 mA	3 V	16-pin SSOP
MB15B01**	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	13 mA	3 V	20-pin SSOP
MB1501*	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	15 mA	3–5 V	16-pin DIP, SOP
MB1501H*	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	15 mA	3–5 V	16-pin SOP
MB1501L*	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	15 mA	3–5 V	16-pin SOP
MB15A02	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 6-16383	7 mA	5 V	16-pin SSOP
MB1502	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	8 mA	5 V	16-pin SOP
MB1502H	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8-16383	8 mA	5 V	16-pin SOP
MB15B03**	1.1 GHz 0.3 GHz	64/65, 128/129 16/17, 32/33	Binary 5–2047	Binary 0–127	Binary 6–16383	10 mA	3 V	16-pin SSOP
MB15F03**	2.0 GHz 0.5 GHz	64/65, 128/129 16/17, 32/33	Binary 5–2047	Binary 0–127	Binary 6–16383	9 mA	3 V	16-pin SSOP
MB1503	1.1 GHz	128/129	Binary 16–2047	Binary 0–127	Binary 8–16383	8 mA	5 V	16-pin SOP
MB1504*	520 MHz	32/33 64/65	Binary 16–2047	Binary 0–127	Binary 8-16383	10 mA	3–5 V	16-pin SOP
MB1504H*	520 MHz	32/33 64/65	Binary 16–2047	Binary 0–127	Binary 8-16383	10 mA	3–5 V	16-pin SOP
MB1504L*	520 MHz	32/33 64/65	Binary 16–2047	Binary 0–127	Binary 8-16383	10 mA	3–5 V	16-pin SOP
MB15E05	2.0 MHz	64/65 128/129	Binary 5–2047	Binary 0–255	Binary 8-16383	6 mA	3 V	16-pin SSOP
MB1505	600 MHz	32/33 64/65	Binary 16–2047	Binary 0–63	Binary 8-16383	6 mA	5 V	16-pin SOP
MB15E06	2.5 GHz	64/65 128/129	Binary 5–2047	Binary 0–255	Binary 8-16383	7 mA	3 V	16-pin SSOP
MB1506	2.0 GHz	128/129 256/257	Binary 5–2047	Binary 0–255	Binary 8-16383	18 mA	5 V	20-pin SSOP

* Not for New Designs

** Dual PLL/prescaler set

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BiCMOS Single-Chip PLL/Prescalers (Super PLLs) continued

MB1507	2.0 GHz	128/129 256/257	Binary 16–2047	Binary 0–255	Binary 8–16383	18 mA	5 V	16-pin SOP
MB1508	2.5 GHz	256/272 512/528	Binary 32–4095	Binary 0–31	256/512 1024/2048	16 mA	5 V	20-pin SOP
MB1509**	400 MHz	32/33 64/65	Binary 16–2047	Binary 0–127	512, 1024	8 mA	3 V	20-pin SOP
MB15U10**	1.1 GHz	NA	Binary 1024– 131071	NA	Binary 6–4095	7 mA	3 V	20-pin SSOP
MB1510**	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	512, 1024	15 mA	3–5 V	20-pin SOP
MB15B11**	1.1 GHz 0.4 GHz	64/65, 128/129 32/33, 64/65	Binary 16–2047	Binary 0–127	Binary 8–16383	9.5 mA	3 V	20-pin SSOP
MB1511	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8–16383	7 mA	3–5 V	20-pin SSOP
MB1512	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8–16383	7 mA	3–5 V	20-pin SSOP
MB15B13**	1.1 GHz	64/65 128/129	Binary 16–2047	Binary 0–127	Binary 8–16383	13 mA	3 V	20-pin SSOP
MB1513	1.1 GHz	128/129	Binary 16–2047	Binary 0–127	Binary 8–16383	7 mA	3–5 V	20-pin SSOP
MB1514**	400 MHz	64/65	Binary 16–2047	Binary 0–127	1700	8 mA	3 V	20-pin SOP
MB1515	2.5 GHz	256/272 512/528	Binary 32–4095	Binary 0–31	256, 512 1024, 2048	6.5 mA	5 V	20-pin SSOP
MB15A16	1.1 GHz	NA	Binary 5–2047	Binary 0–127	Binary 6–16383	6.5 mA	3 V	16-pin SSOP
MB1516A	1.1 GHz	64/65 128/129	Binary 5–2047	Binary 0–127	Binary 6–16383	6.5 mA	3 V	16-pin SSOP
MB1517A	2.0 GHz	64/65 128/129	Binary 16–2047	Binary 0–255	Binary 6–16383	14 mA	3 V	16-pin SSOP
MB1518	2.5 GHz	512/528	Binary 32–511	Binary 0–31	512	16 mA	5 V	16-pin SOP
MB15A19**	600 MHz	64/65	Binary 16–2047	Binary 0–127	256, 2048	11 mA	3 V	20-pin SOP
MB1519**	600 MHz	64/65	Binary 16–2047	Binary 0–127	512, 1024	11 mA	3 V	20-pin SOP
MB15Sxx Series	300 MHz	16/17	Binary 5–4095	Binary 0–31	Binary 5–4095	3.5 mA	3 V	8-pin SSOP
MB15S02	284 MHz 116 MHz	16/17	Fixed 17 Fixed 7	Fixed 12 Fixed 4	Fixed 13 Fixed 13	3.5 mA	3 V	8-pin SSOP

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** Dual PLL/prescaler set