



电子元器件系列(中国.厦门) China.Xiamen
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8 4 bit Microcontrollers

OLMS63K Series

Part Number	Packages	ROM x 16bit	RAM (nibbles)	Ports	LCD Out	Clock [KHz]	Supply Voltage	Typ. Current	Operating Temperature	Notes	OTP-Version
MSM63182A	128-QFP, 107-pad, Chip	4064	384	36	1~16 x 32	32.768/ 2000	+0.9~5.5V	6μA	-20~+70°C	Buzzer, battery monitor	MSM63P180
MSM63184A	128-QFP, 123-pad, Chip	8160	640	44	1~16 x 40	32.768/ 2000	+0.9~5.5V	6μA	-20~+70°C	Buzzer, battery monitor, serial I/O	MSM63P180
ML63187B	100-TQFP, 100-QFP, Chip	16352	1024	8	1~16 x 64	32.768/ 2000	+0.9~5.5V	6μA	-20~+70°C	Melody, battery, monitor, 412 instructions	-
MSM63188A	176-QFP, 159-pad, Chip	16352	3584	56	1~16 x 64	32.768/ 2000	+0.9~5.5V	6μA	-20~+70°C	Melody, battery, monitor, mul/div, serial I/O	MSM63P180
ML63189B	128-QFP, Chip	32768	1536	20	1~16 x 64	32.768/ 2000	+0.9~5.5V	6μA	-20~+70°C	Melody, battery monitor, 412 instructions	-
ML63193	144-LQFP, Chip	65504	2048	24	1~16 x 64	32.768/ 2000	+0.9~5.5V	7.5μA	-20~+70°C	Melody, level detector, serial I/O, 30 or 80kHz RC oscillator	-
MSM63P180	176-LQFP	16352 (OTP)	3584	64	1~16 x 64	32.768/ 2000	+1.45~5.5V	60μA	0~+65°C	Melody, battery monitor, mul/div, serial I/O	-
ML63512A	48-TQFP, 64-TQFP	4096	128	32/36	-	32.768/ 1000	+0.9~5.5V	6μA	-20~+70°C	Melody, level detector, serial I/O, 30 or 80kHz RC oscillator	-
ML63514A	48-TQFP, 64-TQFP	8160	256	32/36	-	32.768/ 1000	+0.9~5.5V	6μA	-20~+70°C	Melody, level detector, serial I/O, 30 or 80kHz RC oscillator	-
ML63611	116-pad Chip	8160	1024	24	1~4 x 64	32.768/ 700	+1.3~1.7V +1.8~3.6V	tbd	-20~+70°C	Melody, ADC, battery monitor	-

OLMS64K Series

Part Number	Packages	ROM (bytes)	RAM (nibbles)	Ports	LCD Out	Clock [KHz]	Supply Voltage	Typ. Current	Operating Temperature	Notes	OTP- Version
MSM64162A	64-QFP, 80-QFP, Chip	2016	128	24	2/3/ 4 x 20	32.768/ 400	+1.25~1.7V +2.0~3.5V	5μA	-40~+85°C	2-ch temp. meas., buzzer, battery monitor	MSM64P164 (samples only)
MSM64164C	80-QFP, Chip	4064	256	28	2/3/ 4 x 30	32.768/ 400	+1.25~1.7V +2.0~3.5V	5μA	-40~+85°C	2-ch temp. meas., buzzer, 5V I/F	MSM64P164 (samples only)
ML64168	80-QFP	8160	512	20	2/3/4 x 120/93/64	32.768/ 700	+1.25~1.7V +2.0~3.5V	5μA	-40~+85°C	2-ch temp. meas., buzzer	MSM64P168 (samples only)
MSM64167E	80-QFP, Chip	4064	256	20	2/3/4 x 29/28/27	32.768/ 700	+2.6~3.6V	5μA	-40~+85°C	Dual slope-ADC, buzzer, 5V I/F	-
MSM64152A	60-QFP, Chip	1504	128	12	3/4 x 26	32.768	+1.25~1.7V (A) +2.5~3.5V (AL)	3μA	-40~+70°C	Melody	MSM64P155 (samples only)
MSM64153A	80-QFP, Chip	3040	160	14	3/4 x 36	32.768	+1.25~1.7V (A) +2.5~3.5V (AL)	3μA	-40~+70°C	Melody x 2	MSM64P155 (samples only)
MSM64155A	100-QFP, Chip	4064	256	18	3/4 x 60	32.768	+1.25~1.7V (A) +2.5~3.5V (AL)	3μA	-40~+70°C	Melody x 2	MSM64P155 (samples only)
MSM64158A	64-QFP, Chip	2528	128	10	3/4 x 36	32.768	+1.25~1.7V (A) +2.5~3.5V (AL)	3μA	-40~+70°C	Melody	MSM64P155 (samples only)

16 bit Microcontrollers / RTCs

16 bit OLMS66K Series

Part Number	Packages	ROM (bytes)	RAM (nibbles)	Ports	ADC	Clock	Cycle Time	Supply Voltage	Max. Current	Operating Temperature	Notes	OTP-Version
ML66517	80-QFP	64K	2048	64	10bit/ 8-ch	1 ~ 25MHz	80ns	+4.5~5.5V	60mA	-20~+85°C	Serial I/O, WDT, RTO, FRC, PWM, 3-PHASE PWM (6 outputs)	Flash: MSM66Q517
ML66525B	100-TQFP, 144 LFBGA	128K	6K	71	10bit/ 4-ch	12/16/ 24MHz	83ns	+2.4~3.6V	tbd	-30~+70°C	USB, serial port, 8bit PWM x 2, dual clock	Flash: ML66Q525B (MCP)
MSM66573	100-TQFP	64K	4096	83	10bit/ 8-ch	DC ~ 30MHz	67ns	+2.4~5.5V	55mA	-30~+70°C	Serial I/O, RTC, WDT, ART, FRC	MSM66P573 Flash: MSM66Q573
MSM66577	100-TQFP	128K	4096	83	10bit/ 8-ch	DC ~ 30MHz	67ns	+2.4~5.5V	90mA	-30~+70°C	Serial I/O, RTC, WDT, ART, FRC	Flash: MSM66Q577
MSM66587A	100-TQFP	64K	2048	80	8bit/ 4-ch	DC ~ 20MHz	100ns	+2.4~5.5V	70mA	-30~+70°C	Serial I/O, FRC, RTO, ART	MSM66P587 Flash: MSM66Q587

Real-Time Clocks

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
MSM6242	18-DIP, 24-SOP	8/16bit RTC, calendar	+2.2~6.0V	30μA	-40~+85°C
MSM62X42B	18-DIP, 24-SOP	8/16bit RTC, calendar, int. crystal	+2.2~5.5V	30μA	-40~+85°C

ARM-Based 32bit RISC Microcontrollers

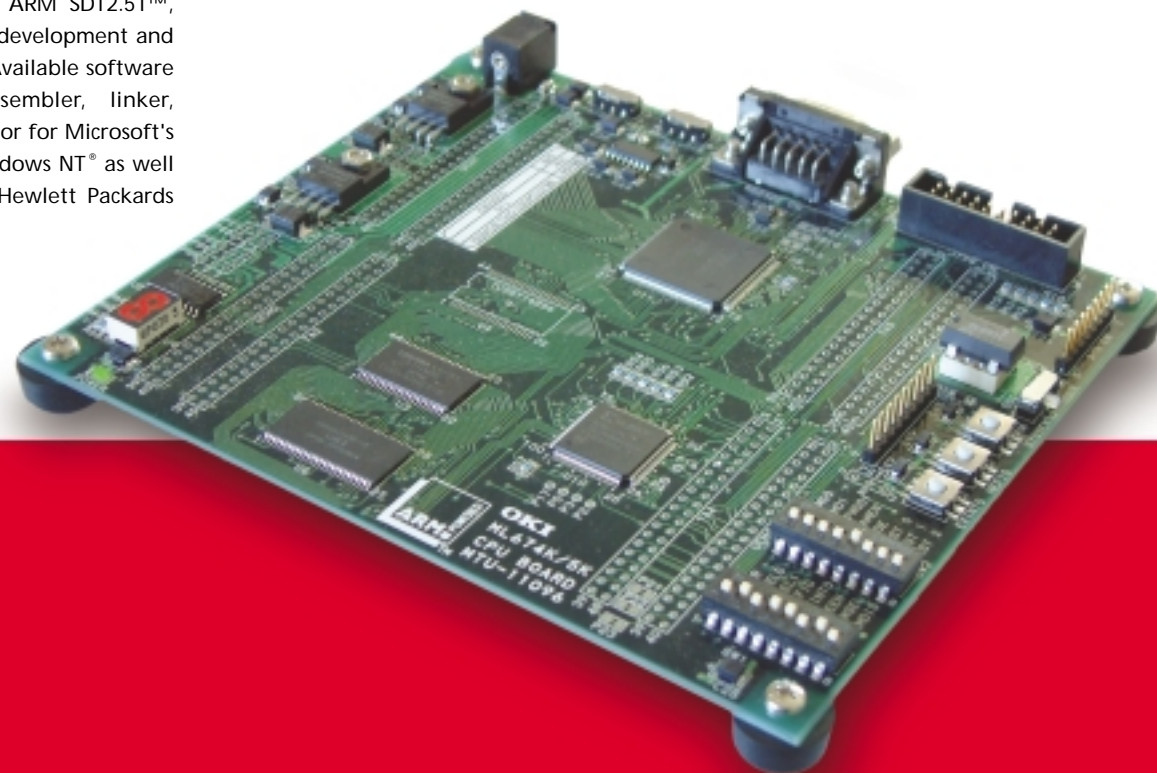
Part Number	Packages	Supply Voltage	Standard Temp. Range	ROM	RAM	Port Lines	Description
ML671000	128-QFP	+3.0~+3.6V	-40~+85°C	-	4KB	64	MCU with full speed USB 1.1 device controller and DMA controller
ML674000	128-lead TQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	-	8KB	32	General purpose μPLAT™-MCU with PWM, 10-bit-ADC, DMA controller
ML674001	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	-	32KB	42	General purpose μPLAT™-MCU with I ² C, PWM, 10-bit-ADC, DMA
ML67Q4002	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	256KB Flash (MCP)	32KB	42	General purpose μPLAT™-MCU with I ² C, PWM, 10-bit-ADC, DMA
ML67Q4003	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	512KB Flash (MCP)	32KB	42	General purpose μPLAT™-MCU with I ² C, PWM, 10-bit-ADC, DMA
ML675001	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	-	32KB	42	General purpose μPLAT™-MCU with 8KB unified cache, I ² C, PWM, 10-bit-ADC, DMA, max 60MHz
ML67Q5002	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	256KB Flash (MCP)	32KB	42	General purpose μPLAT™-MCU with 8KB unified cache, I ² C, PWM, 10-bit-ADC, DMA, max 60MHz
ML67Q5003	144-LQFP, 144-LFBGA	+3.0~+3.6V	-40~+85°C	512KB Flash (MCP)	32KB	42	General purpose μPLAT™-MCU with 8KB unified cache, I ² C, PWM, 10-bit-ADC, DMA, max 60MHz

ARM-Based Application Specific Microcontrollers

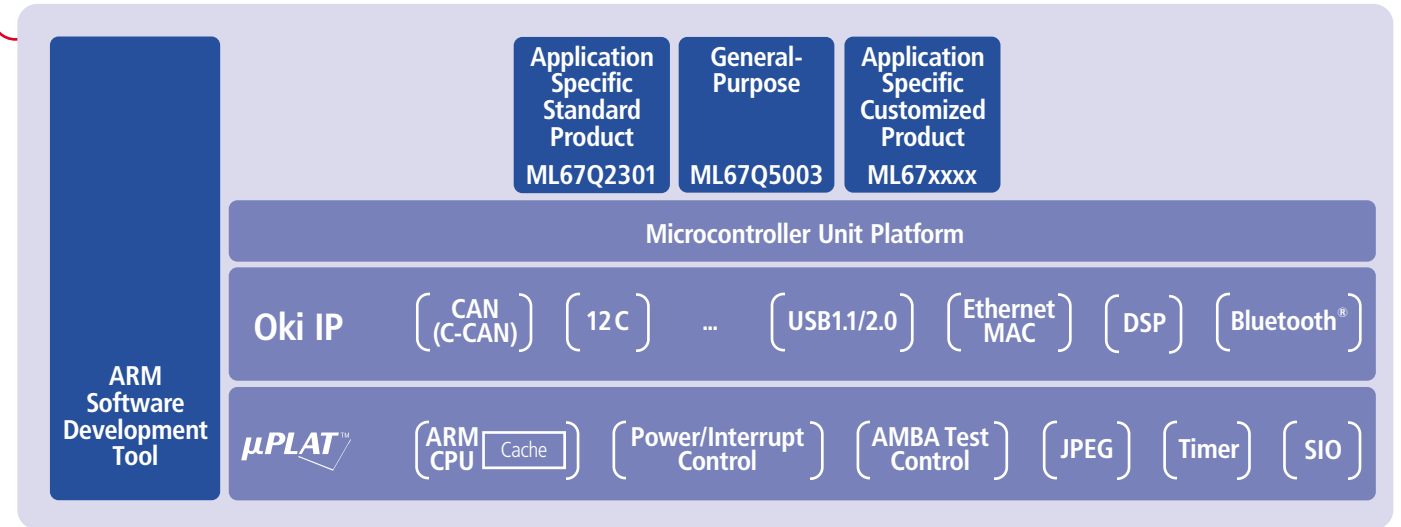
Part Number	Packages	Supply Voltage	Standard Temp. Range	ROM	RAM	Port Lines	Description
ML67Q5200	144-LFBGA	+3.0~+3.6V	-30~+70°C	256KB	32KB	74	μPLAT™-MCU with audio DSP for MP3/WMA
ML67Q2301	144-LQFP	+4.5~+5.5V	-40~+105°C	Flash (MCP) 384KB Flash	16KB	69	Automotive μPLAT™-MCU with 4 x CAN

ML674K/5K – CPU Board

In combination with the ARM SDT2.51™, this board will allow full development and debugging of software. Available software include C-compiler, assembler, linker, C-debugger and a simulator for Microsoft's Windows 95/98® and Windows NT® as well as for Sun's Solaris and Hewlett Packards HP-Unix® platforms.



ARM-Based Design Choices



ARM Core Platform-Based Design Methodology

Oki's award winning μPLAT™ design methodology reduces risk and significantly reduces design cycle time. Oki combines embedded ARM7™ and ARM9™ cores with AMBA™ bus-centric architecture with Oki's μPLAT™ integration platform and proven silicon technology to provide seamless and consistent system-on-chip development capabilities. Oki's rich library of IP blocks and fast prototyping supports a broad range of design possibilities.

ARM ASIC solutions
The ARM7TDMI is also available for ASIC implementations, using Oki's μPLAT™ Pack for 0.18μ and embedded arrays. Please contact your next Oki sales office for further details.



Jointly developed by ARM and Oki Electric as a complete, low-cost solution for Oki's ML674K/ML675K series ARM core general-purpose microcontroller products, the RealView® Developer Kit for Oki is the leading edge tool suite for software development. Being the most comprehensive tool package for writing, compiling, debugging and integrating systems, the kit is based on components of the ARM RealView development solution with functionality tailored to the specific requirements of Oki ARM7 MCU products. Comprised of the RealView targeted compiler, and a powerful GUI-

based RealView debugger, the complementary ARM RealView ICE Micro Edition module provides JTAG run control through a standard 8 MHz JTAG TAP at data rates of 100 KB/second. The industry-leading optimization facilities of the RealView Compiler help the developer to reduce system memory cost, through smaller code size and increased system performance. A low price can be offered since the functionality is precisely tailored to Oki's ARM7 controllers. Moreover, a fully functional evaluation version restricted by the number of run cycles or by a 60 day time-out is available.

Major Gate Array Families

Family Name	Process	Core Voltage	I/O Voltage	Typ. Delay	Family Size	Raw Gate Range	Usable Gate Range	I/O Range
MG113P/114P/115P	0.25µm 3,4,5LM	2.5V	3/5V tol	61ps	4	657K to 2.5M	388K to 1.6M	308 to 588
MSM13Q/14Q	0.35µm 3,4LM	3.3V	3/5V tol	77ps	6	157K to 1M	105K to 651K	144 to 352
MSM12R/13R	0.5µm 2,3LM	3.3V	3/5V tol	120ps	8/5	17K to 773K	8K to 464K	104 to 504
MSM30R/32R	0.5µm 2,3LM	3.3V	3/5V tol	120ps	5/10	27K to 613K	22K to 368K	104 to 384
MG38R	0.5µm 3LM	5V	3/5V	122ps	6	12K to 162K	9K to 98K	80 to 256

Embedded Array Families

Family Name	Process	Core Voltage	I/O Voltage	Typ. Delay	Family Size	Raw Gate Range	Usable Gate Range	I/O Range
(NEW) MG74K/75K/76K	0.15µm 4,5,6LM	1.5V	3/5V tol	28ps	21	212K to 25M	161K to 10.4M	68 to 868
MG73M/74M/75M	0.16µm 3,4,5LM	1.8V	3/5V tol	37ps	16	444K to 12.1M	287K to 4.9M	148 to 668
MG73N/74N/75N	0.22µm 3,4,5LM	2.5V	3/5V tol	40ps	20	44K to 9.4M	29K to 3.5M	68 to 868
MG73P/74P/75P	0.25µm 3,4,5LM	2.5V	3/5V tol	61ps	21	23K to 5.5M	20K to 2.8M	68 to 868
MG73Q/74Q	0.35µm 3,4LM	3.3V	3/5V tol	77ps	21	9K to 2M	6K to 904K	68 to 868
MSM98Q/99Q	0.35µm 3,4LM	3.3V	3/5V tol	62ps	18	214K to 1.4M	128K to 740K	176 to 432
MSM92R	0.5µm 3LM	3.3V	3/5V tol	110ps	36	14K to 1.2M	12K to 543K	80 to 624
MSM98R	0.5µm 3LM	3.3V	3/5V	110ps	36	9K to 773K	7K to 387K	80 to 624

Standard Cell Families

Family Name	Process	Core Voltage	I/O Voltage	Typ. Delay	Family Size	Raw Gate Range	Usable Gate Range	I/O Range
MG87P3/87P4/87P5	0.25µm 3,4,5LM	2.5V	3/5V tol	48ps	21	24K to 5.5M	20K to 2.8M	68 to 868

General Features

- Extensive macrocell library including:
 - Phase locked loops (PLLs)
 - High density single- and dual-port RAM up to 600MHz (generated with ARTISAN™ or VIRAGE™ RAM compiler)
 - Real time clock
 - JTAG boundary scan
 - Large IP database including PCI bus controller, PCMCIA support, UART, Ethernet, MAC, USB device controller, USB hub, 1394 controller, ARM7TDMI etc.
- Multiple options for testability
 - Scan, JTAG, BIST
 - Automatic testpattern generation with scan flip-flop macrocells, obtaining fault coverage in excess to 95% (using TetraMax™)
 - Support of automated scan insertion by Synopsys DFT™
- Flexible mixed 3/5V operations
- Flexible VSS/VDD pin locations
- Programmable output currents of 2, 4, 8, 16 and 24mA
- Configurable I/O cells with CMOS or TTL level inputs, open-drain and PECL push-pull, 3-state, PCI, slew-rate controlled output options and additional GTL I/O options for 0.5µ products
- Gated oscillators from 32KHz to over 65MHz
- Clock tree macrocells with clock skew guaranteed to be ≤ 0.5ns (for 0.5µ products) with a fan-out of ≥ 9000 at 75MHz
- Support of a wide range of design tools including Synopsys™, Cadence VerilogXL™, ModelSim™ etc.
- 10 prototypes included in NRE, up to 500 prototypes at initial build and risc production option

ADPCM Recording LSIs

Part Number	Packages	Function	ADC/DAC	Sampling [kHz]	External Memory	Rec Time*	Internal LPF	Supply Voltage	Max. Current	Clock Frequency	Operating Temperature
ML2302	64-TQFP, 71-W-CSP	ADPCM recorder, 2x1024bit FIFO, speaker amplif., PCM, ADPCM, 2-7bit ADPCM2	14bit	4~25.6	CD-ROM, other mass media	64ms buffer	-40dB/oct.	+2.7~+3.6V	20mA	16.384MHz	-10~+70°C
MS87V1021	32-TSOP	fast-forward, fast-rewind, ADPCM/ADPCM2 recorder	14bit	4~10.6	internal 2Mbit DRAM internal 512Kbit ROM	2min.	-40dB/oct.	+2.7~+3.6V	15mA	4.096MHz	-20~+70°C
MSM6588	44-QFP	ADPCM recorder	12bit	4~16	~4Mbit Serial Register	4.3min.	-40dB/oct.	+4.5~+5.5V	15mA	4.096MHz - 8.192MHz	-40~+85°C
MSM6588L	44-QFP, 44-TQFP	ADPCM recorder	12bit	4~16	~4Mbit Serial Register	4.3min.	-40dB/oct.	+2.7~+3.6V	15mA	4.096MHz - 8.192MHz	-40~+85°C
MSM6688	56S-QFP	ADPCM recorder	12bit	4~16	~32Mbit Serial Register	34min.	-40dB/oct.	+4.5~+5.5V	30mA	4.096MHz - 8.192MHz	-40~+85°C
MSM6688L	56S-QFP, 64-TQFP	ADPCM recorder	12bit	4~16	~32Mbit Serial Register	34min.	-40dB/oct.	+2.7~+3.6V	30mA	4.096MHz - 8.192MHz	-40~+85°C
MSM9841	56-QFP	ADPCM/ADPCM2 recorder, 1024bit FIFO, stereo	14bit (Two DACs)	4~44.1	CD-ROM, other mass media	64ms buffer	-40dB/oct.	+2.7~+5.5V	30mA	4.096MHz/5.6448MHz	-40~+85°C

*calculated for 4kHz sampling frequency

Serial Voice Memories

Part Number	Packages	Capacity	Supply Voltage	Max. Current	Operating Temperature	Target LSIs	Function
MSM6684B	26(20)-SOJ	4Mbit	+3.5~+5.5V	20mA	0~+70°C	MSM6688	Serial voice register
MSM66V84B	16(20)-SOJ	4Mbit	+2.7~+3.6V	10mA	0~+70°C	MSM6688L	Serial voice register
MSM6685A	26(20)-SOJ	8Mbit	+3.5~+5.5V	20mA	0~+70°C	MSM6688	Serial voice register

Analog Flash Recording LSIs

Part Number	Packages	Function	Sampling [kHz]	External Memory	Rec Time*	Internal LPF	Supply Voltage	Max. Current	Clock Frequency	Operating Temperature
ML2500B	32-TSOP I	Analog Storage recorder; Internal 1 Megacell Flash	4~6.4	not required	4.2min.	-40dB/oct.	+2.7~+3.3V	45mA	Internal RC osc. or 4.0 - 8.192MHz	-10~+70°C
ML2502	30-SSOP	Analog Storage recorder; Internal 128 Kilocell Flash	4~6.4	not required	32sec.	-40dB/oct.	+2.7~+3.3V	40mA	Internal RC osc.	-10~+70°C

*calculated for 4kHz sampling frequency

Speech Playback LSIs

Part Number	Packages	Function	Sampling [kHz]	Internal Memory	Play Time*	Internal DAC/ LPF	Supply Voltage	Max. Current	Clock Frequency	Operating Temperature
ML2201	8-SSOP	Non-linear PCM (shrink of MSM9831)	4~16	384Kbit ROM	12sec.	10bit/-40dB	+2.0~+5.5V	10mA	4.096MHz	-40~+85°C
ML2213	14-SSOP	ADPCM/PCM, melody	4~16	1.5Mbit ROM	90sec.	12bit/-40dB	+2.2~+5.5V	4mA	4.096,8.192, 16.384MHz	-40~+85°C
ML2215	20-SSOP	ADPCM/PCM, melody	4~16	3Mbit ROM	180sec.	12bit/-40dB	+2.2~+5.5V	4mA	4.096,8.192, 16.384MHz	-40~+85°C
(NEW) ML2240	80-TQFP	PCM/ADPCM2, 4-channel mixer, stereo, 128 Mbit ext. ROM, phrase control table	4~48	-	variable	14bit/-40dB and 1bit PWM	+2.7~+5.5V	40mA	4.096MHz	-40~+85°C
(NEW) ML2252	44-QFP	PCM/ADPCM2, 2-channel mixer, "volume control", phrase control table	4~48	1Mbit ROM	64.5sec.	14bit/-40dB	+2.7~+5.5V	40mA	4.096MHz	-40~+85°C
(NEW) ML2254	44-QFP	PCM/ADPCM2, 2-channel mixer, "volume control", phrase control table	4~48	4Mbit ROM	261sec.	14bit/-40dB	+2.7~+5.5V	40mA	4.096MHz	-40~+85°C
(NEW) ML22Q54	44-QFP	Internal Flash ROM version for ML225x family	4~48	4Mbit Flash ROM	261sec.	14bit/-40dB	+2.7~+3.6V	60mA	4.096MHz	0~+70°C
MSM6585	18-DIP, 24-SOP, 30-SSOP	ADPCM decoder	4~32	-	variable	12bit/-40dB	+4.5~+5.5V	10mA	640kHz	-40~+85°C
MSM6650	64-QFP, Chip	Eva-chip of MSM665X series	4~32	-	69min.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6652A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	288Kbit ROM	16.9sec.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6653A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	544Kbit ROM	31.2sec.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6654A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	1Mbit ROM	63.8sec.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6655A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	1.5Mbit ROM	96.5sec.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6656A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	2Mbit ROM	129.1sec.	12bit/-40dB	+2.4~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM6658A	18-DIP, 24-SOP, Chip	ADPCM/PCM, 2-channel, echo, melody, beep, random play, fading, phrase control table	4~32	4Mbit ROM	260sec.	12bit/-40dB	+3.5~+5.5V	10mA	3.5 - 4.5MHz	-40~+85°C
MSM66P56	20-DIP, 24-SOP	OTP of MSM6656	4~32	2Mbit OTP	129.1sec.	12bit/-40dB	+3.5~+5.5V	20mA	3.5 - 4.5MHz	-40~+85°C
MSM9802	18-DIP, 24-SOP, Chip, 30-SSOP	Non-linear or straight PCM, phrase control table	4~16	512Kbit	16sec.	10bit/-40dB	+2.7~+5.5V	16mA	3.5 - 4.5MHz	-40~+85°C
MSM9803	18-DIP, 24-SOP, Chip, 30-SSOP	Non-linear or straight PCM, phrase control table	4~16	1Mbit	32.4sec.	10bit/-40dB	+2.7~+5.5V	16mA	3.5 - 4.5MHz	-40~+85°C
MSM9805	18-DIP, 24-SOP, Chip, 30-SSOP	Non-linear or straight PCM, phrase control table	4~16	2Mbit ROM	65.1sec.	10bit/-40dB	+2.7~+5.5V	16mA	3.5 - 4.5MHz	-40~+85°C
MSM98P05	20-DIP, 24-SOP	OTP of MSM9805, sample only	4~16	2Mbit OTP	65.1sec.	10bit/-40dB	+2.7~+5.5V	20mA	3.5 - 4.5MHz	-10~+40°C
MSM9810B	64-QFP	ADPCM/ADPCM2 8-channel mixer, 128 Mbit ext. ROM	4~32	-	139min.	14bit/-40dB	+3.5~+5.5V	15mA	4.096MHz	-40~+85°C
MSM9811	64-QFP	ADPCM/ADPCM2 4-channel mixer, 128 Mbit ext. ROM	4~32	-	139min.	14bit/-40dB	+3.5~+5.5V	15mA	4.096MHz	-40~+85°C
MSM9831	8-SOP	Non-linear PCM, phrase control table	4~16	384Kbit ROM	12sec.	10bit/-40dB	+2.0~+5.5V	8mA	3.5 - 4.5MHz	-40~+85°C
MSM9836	24-SOP	Non-linear or straight PCM, phrase control table	4~16	3Mbit ROM	98sec.	10bit/-40dB	+2.0~+5.5V	16mA	3.5 - 4.5MHz	-40~+85°C
MSM9842	56-QFP	ADPCM/ADPCM2, FIFO buffer, stereo	4~44.1	1024bit FIFO	64ms buffering	14bit/-40dB (Two DACs)	+2.7~+5.5V	30mA	4.096MHz - 5.6448MHz	-40~+85°C
MSM9845	56-QFP	ADPCM/ADPCM2, FIFO buffer, stereo, I ² S-interface, sample rate converter	4~44.1	1024bit FIFO	64ms buffering	14bit/-40dB (Two DACs)	+2.5~+5.5V	40mA	16.9344MHz/ 24.576MHz	-40~+85°C

*Playback times are based on the lowest bit-rate and the devices own memory address range without expansions, calculated for 4kHz sampling frequency



Swing'n Ringer is our trademark symbolizing our range of music ringer chips primarily designed for mobile and cordless phones. The LSIs are easy to integrate, providing MIDI music with fantastic sound quality.

Sound Generators

Part Number	Packages	Function	Polyphony	Supply Voltage	Active/Standby Current (max.)	Operating Temperature
ML2857	64-TQFP, 64-FBGA, 47-W-CSP	PCM sound generator, Oki original MIDI format support	12 (5 timbres)	+2.7~+3.3V	60mA	-20~+85°C
ML2860	64-TQFP, 48-W-CSP	GM sound generator, SMF support, internal headphone amplifier, ADPCM synthesizer	24/32 (16 timbres)	+2.7~+3.3V	60mA/10µA	-20~+85°C
(NEW) ML2870A	62-W-CSP, 48-QFN	GM sound generator, SMF support, ADPCM synthesizer	32 (16 timbres)	+2.5~+3.6V	36mA/15µA	-20~+85°C
(NEW) ML2864	49-W-CSP	GM sound generator, SMF support, ADPCM/PCM synthesizer	64 (16 timbres)	+2.7~+3.6V	60mA/tbd	-20~+85°C

Note: Please appreciate that sound generators are not offered for musical instruments and toy applications, such as keyboards. Full detailed data sheets are provided against non-disclosure agreement.

Amplifiers

Part Number	Packages	Output Power	Supply Voltage	Typ/Max. Current	Operating Temperature	Function
MSA180	8-DIP, 8-SOP, Chip	0.4W	+2.0~+6.0V	4.2/80mA	-40~+85°C	Piezo driver, adjustable gain
MSC1157	8-DIP, 8-SOP, Chip	0.3W	+2.0~+6.0V	1.6/400mA	-20~+70°C	Speaker driver, adjustable gain

Speech Control Processor (Text-To-Speech)

Part Number	Packages	Interface	Input Data	Sampling Frequency	Speech Data Output	Memory interface	Supply Voltage	Max. Current	Clock Frequency	Operating Temperature	Languages
ML2110	144-LQFP	ser/par	ASCII (8bit DOS or ISO8859-1); SAMPA	16kHz	12bit DAC	SRAM, DRAM, ROM, and FLASH	+3.0~+3.6V	120mA	33MHz	-40~+85°C	UK English; French; Spanish; German; Italian; Dutch (all female + male voice); text or sampa phonetic input

Text-To-Speech Memory for ML2110

Part Number	Languages	Packages	Total Capacity	Access [ns]	Organisation	Supply Voltage	Max. Current	Max. Standby
MR27V3202F-6MTP/MA-GEF	German female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6NTP/MA-GEM	German male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6PTP/MA-FRF	French female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6RTP/MA-FRM	French male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6STP/MA-GBF	UK English female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6TTP/MA-GBM	UK English male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-6UTP/MA-SPF	Spanish female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-7ATP/MA-SPM	Spanish male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-7BTP/MA-ITF	Italian female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-7CTP/MA-ITM	Italian male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-7DTP/MA-DTF	Dutch female	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA
MR27V3202F-7ETP/MA-DTM	Dutch male	44-TSOP II, 44-SOP	32Mbit	120	2M x 16/4M x 8	+2.7~3.6V	40mA	500µA

VFD Front Panel Controllers

Part Number	Packages	Duty	Data Clock [Hz]	Anode Driver	Grid Driver	Dimming	Supply Voltage	Max. Current	Operating Temperature
ML9212	56-QFP	1/2, 1/3	2M	32	Ext.	10-bit digital	8.0~18.0V	5mA	-40~+105°C
ML9213	80-QFP	1/2, 1/3	2M	56	Ext.	10-bit digital	8.0~18.0V	5mA	-40~+105°C

VFD Grid and Anode Drivers

Part Number	Packages	Type	Data Clock [Hz]	Outputs	Sink Current	Source Current	Display Voltage	Logic Supply	Max. Logic Current	Operating Temperature	Notes
MSC1212-01	64-QFP	Grid/Anode	500K	48	+0.2mA	-6mA	+8~+18V	+4.5~5.5V	6mA	-40~+105°C	-
MSC1162A	60-SSOP	Grid/Anode	4M	40	+1mA	-40mA	+10~+65V	+4.5~5.5V	6.65mA	-40~+85°C	bidir S/R
MSC1163	60-SSOP	Anode	4M	40	+2mA	-2mA	+10~+65V	+4.5~5.5V	6.65mA	-40~+85°C	bidir S/R
ML9261/62	70-SSOP	Grid/Anode	4M	60	+1mA	-40mA	+20~+60V	+3.0~5.5V	10µA	-40~+85°C	-

VFD Controllers with Drivers

Part Number	Packages	Type	Digits	Grid Drivers	Anode Driver	CG ROM/RAM	Data Clock	Driver Voltage	Logic Supply	Max. Logic Current	Operating Temperature	Notes
ML9203	100-QFP	5 x 7Dot	1~16 x 2	16	72	240/16Chr	1MHz	-20~-60V	+3.0~5.5V	4mA (5V)	-40~+85°C	2 ports, 3bit dimming
ML9206	64-QFP, 64-SSOP	5 x 7Dot	1~16	16	35	248/8Chr	2MHz	-20~-60V	+3.0~5.5V	4mA (5V)	-40~+85°C	2 ports, 8bit dimming
ML9207	80-QFP	5 x 7Dot	9~24 x 1	24	39	240/16Chr	2MHz	-20~-60V	+3.0~5.5V	6mA (5V)	-40~+85°C	4 ports, 10bit dimming

VFD Clocks

Part Number	Packages	Duty	Type	Other Functions	Supply Voltage	Max. Logic Current	Operating Temperature
MSM5547	44-QFP	Static	Segment	12H AM/PM, 64Hz output	+4.0~16V	2mA	-30~+85°C
MSC1210	32-SSOP, 32-DIP	Duplex	7-Segment	12H AM/PM, 4 level brightness adjust	+4.0~16V	1mA	-40~+85°C

LCD Dashboard Panel Controllers

Part Number	Packages	Duty	Display Voltage	Data in	Driver Outputs	Data Clock [MHz]	Logic Supply Voltage	Max. Logic Current	Operating Temperature	Notes
ML9060	Bump chip	1/1, 1/2	+4.5~16V	1	2Com, 160Seg	1	+2.7~5.5V	TBD	-40~+85°C	ascadable
MSM6786	56S-QFP	1/3, 1/4	+4.5~5.5V	1	4Com, 29Seg	2	+4.5~5.5V	0.4mA	-40~+85°C	LED, 5x6 keyscan, int bias resistors
MSM9004-01/02	64-QFP	1/3, 1/4	+3.7~5.5V	1	4Com, 49Seg	2	+4.5~5.5V	0.65/1mA	-40~+85°C	Int osc (-02)
MSM9004-03/04	64-QFP	1/4	+3.7~5.5V	1	4Com, 50Seg	2	+4.5~5.5V	0.65/1mA	-40~+85°C	Int osc (-04)
MSM9006-01	64-QFP	1/3	+4.5~5.5V	1	3Com, 41Seg	2	+4.5~5.5V	0.45mA	-40~+85°C	5x5 keyscan, 1 LED, 5 I/O
MSM9006-02	64-QFP	1/4	+4.5~5.5V	1	4Com, 41Seg	2	+4.5~5.5V	0.45mA	-40~+85°C	5x5 keyscan, 1 LED, 5 I/O
ML9090A-01	128-QFP	1/8, 1/9, 1/10	+6~16V	1	10Com, 80Seg	1	+2.7~5.5V	0.95mA	-40~+85°C	5 x 5 keyscan, built-in bias voltage gen.
ML9090A-02	128-QFP	1/16, 1/17, 1/18	+6~16V	1	18Com, 80Seg	1	+2.7~5.5V	0.95mA	-40~+85°C	5 x 5 keyscan, built-in bias voltage gen.
ML9051-G	Bump Chip	1/49	+6~18V	1/8	49Com, 132Seg	5	+3.7~5.5V	1mA	-40~+85°C	ascadable int. bias voltage generation frame reversal/line reversal
ML9055A	TCP	1/16	+9~16V	1/8	128Com, 128Seg	9	+1.8~3.0V	0.5mA	-40~+85°C	4-level grey scale int. bias voltage generation

LCD Common and Segment Drivers

Part Number	Packages	Display Voltage	Duty	Data in	Shift Register	Driver Outputs	Ron [kOhm max.]	Data Clock [MHz]	Logic Supply Voltage	Max. Logic Current	Operating Temperature
MSM5259	56S-QFP	1/8~1/16	+3.5~6V	1	unidir	40Seg	10	3.3	+2.5~6.0V	0.5mA	-30~+85°C
MSM5298A	80-QFP/TQFP	1/64~1/256	+8~28V	1	bidir	68Com	3	1	+4.5~5.5V	100µA	-20~+85°C
MSM5299A	100-QFP	1/64~1/256	+8~28V	4	bidir	80Seg	4	3.4	+4.5~5.5V	3mA	-20~+85°C
MSM5299C	100-QFP	1/64~1/256	+8~28V	4	bidir	80Seg	4	3.4	+4.5~5.5V	3mA	-20~+85°C
MSM5839C	56S-QFP	1/32~1/64	+4~11V	1	unidir	40Seg	10	2.0	+4.5~5.5V	100µA	-20~+85°C
MSM6698	100-QFP	1/64~1/240	+18~28V	1	bidir	80Com	2	1	+2.7~5.5V	300µA	-20~+75°C
MSM6778B	TCP	1/100~1/256	+18~28V	1	bidir	120Com	2	1	+2.7~5.5V	400µA	-40~+85°C
MSM6779B	TCP	1/64~1/256	+14~28V	4	bidir	160Seg	3	4	+2.7~5.5V	2mA	-40~+85°C
MSM6599B	100-QFP	1/64~1/256	+18~28V	4	unidir	80Seg	3	6.5	+4.5~5.5V	1.5mA	-20~+75°C

LCD Character Controllers

Part Number	Packages	Duty	Display Voltage	Data in	Driver Outputs	Character ROM/RAM	Display Type	Logic Supply Voltage	Max. Logic Current	Operating Temperature
MSM6665C-02	128-QFP, Chip	1/9, 1/17	+3~8V	1	17Com, 80Seg	256patterns/-	5 x 7, cursor, arbitrator	+2.5~5.5V	1.3mA	-40~+85°C
ML9041-01	Bump Chip	1/9, 1/12, 1/17	+2.8~7V	1/4/8	17Com, 100Seg	192Chr/12Chr	5 x 7/5 x 10, cursor	+2.5~5.5V	1.2mA	-40~+85°C
ML9044	Bump chip, TCP	1/9, 1/12, 1/17	+2.8~7V	1/4/8	17Com, 120Seg	192Chr/12Chr	5 x 7/5 x 10	+2.5~5.5V	1.2mA	-40~+85°C
ML9040A/B	80-QFP	1/8, 1/11, 1/16	+3.0~6.0V	8	16Com, 40Seg	192Chr/12Chr	5 x 7/5 x 10	+4.5~5.5V	0.8mA	-20~+75°C

ADPCM CODECS

Part Number	Packages	ITU-T	Interface	Analog Output	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
ML7029	30-SSOP	G.711, G.726	μ-Law	1.3Vpp, 20kΩ	10.368	+2.7~3.6V	12mA	-25~+70°C	MCU control, programmable gain, evaluation board
MSM7540	28-SOP	G.711, G.721	A-Law, 14bit linear	2.226Vpp	10.368	+4.5~5.5V	24mA	25~+70°C	-
MSM7540L	28-SOP	G.711, G.721	A-Law, 14bit linear	1.3Vpp, 350Ω	10.368	+2.7~3.6V	12mA	-25~+70°C	Low power
MSM7560	28-SOP	G.711, G.721	μ-Law, 14bit linear	2.226Vpp	10.368	+4.5~5.5V	24mA	-25~+70°C	-
MSM7560L	28-SOP	G.711, G.721	μ-Law, 14bit linear	1.3Vpp, 350Ω + 120nF	10.368	+2.7~3.6V	12mA	-25~+70°C	Low power
MSM7570-01	32-TSOP I	G.711, G.726	A-Law, μ-Law	2.226Vpp, 350Ω + 120nF	19.2/12.288	+4.5~5.5V	28mA	-25~+70°C	DTMF, MCU control, VOX
MSM7570L-01 MSM7570L-02	32-TSOP I	G.711, G.726	A-Law, A-Law	1.3Vpp, 350Ω + 120nF	19.2/12.288	+2.7~3.6V	14mA	-25~+70°C	Low power, MCU control,DTMF, VOX, 01/02 differ in ringing tone frequencies
MSM7590L-01	32-TSOP I	G.711, G.726	A-Law, A-Law μ-Law	1.3Vpp, 350Ω + 120nF	10.368	+2.7~3.6V	14mA	-25~+70°C	Low power, DTMF, VOX, MCU control
MSM7580	28-SOP	G.721	A-Law, μ-Law	-	-	+4.5~5.5V	10mA	-30~+80°C	2-ch transcoder
MSM7581	100-TQFP	G.721	A-Law, μ-Law	-	-	+2.7~5.5V	8mA	-30~+80°C	4-ch transcoder

Modem Circuits

Part Number	Packages	Function	Modulation	Standard	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7510	16-DIP, 24-SOP	300bps, FDX modem	FSK	ITU-T V.21	3.58	+2.7~5.5V	10mA	-40~+85°C	Single-rail line hybrid
MSM7512B	16-DIP, 24-SOP	1200bps, HDX modem	FSK	ITU-T V.23	3.58	+2.7~5.5V	10mA	-40~+85°C	Single-rail line hybrid, 75bps back channel
MSM7715	44-QFP	300bps, FDX modem,telemeter	FSK	ITU-T V.21	3.58	+2.5~3.6V	6mA	-40~+85°C	DTMF transceiver, CPT
MSM6882-3	22-DIP, 24-SOP	1200-2400bps modem, baseband filter	MSK	CCIR Rec.623	3.6864/7.3728	+3.0~4.0V	8mA	-25~+70°C	COS or SIN FFSK, SC filter
MSM6882-5	22-DIP, 24-SOP	1200-2400bps modem, baseband filter	MSK	CCIR Rec.623	3.6864/7.3728	+4.5~5.5V	11mA	-25~+70°C	COS or SIN FFSK, SC filter
MSM6948-3	18-DIP, 24-SOP	1200bps modem	MSK	-	3.6864	+3.0~4.0V	10mA	-30~+70°C	SC filter, master clock output
MSM6948	18-DIP, 24-SOP	1200bps, modem	MSK	-	3.6864	+4.75~5.25V	6mA	-25~+70°C	SC filter, master clock output
MSM7532	56S-QFP	1200-2400bps modem, baseband filter	MSK	-	3.6864	+1.8~5.5V	33mA	-30~+70°C	Compander, highpass, limiter, splatter, deemphasis
ML7012-05	64-QFP	built-in protocol 2400bps modem	-	V.22 bis, V.22, V.21, V.23	11.0592	+2.7~3.6V	65mA	-20~+70°C	AT commands DTMF, 7.42 LAP-M

Echo/Noise Cancellers

Part Number	Packages	Function	Can Time	Input I/F	Echo Type	Clock [MHz]	Supply Voltage	Max. Current	Operating Temperature	Notes
ML7021	28-SSOP	Single EC	8ms	μ-Law	Line + Acoustic	19.2	+2.7~5.5V	30mA	-40~+85°C	2100Hz tone detector
MSM7602-001	28-SSOP	Single EC	23ms	μ-Law	Line + Acoustic	19.2	+2.7~5.5V	45mA	-40~+85°C	-
MSM7602-011	56-QFP	Single EC (cascadable)	23ms master 31ms slave (209ms max.)	μ-Law	Line + Acoustic	19.2	+2.7~5.5V	45mA	-40~+85°C	cascadable
MSM7603B-003	28-SSOP	Single EC	55ms	μ-Law/A-Law	Line + Acoustic	19.2	+2.7~5.5V	70mA	-40~+85°C	-
MSM7617-001	64-QFP	Dual EC	55ms/channel	μ-Law	Line + Acoustic	17.5 ~20	+4.5~5.5V	130mA	-40~+85°C	-
MSM7731-02	64-QFP	Dual EC/NC, dual Codec slope filter, stand alone mode	Echo: 59ms Noise: 8, 13.5, 17dB	μ-Law, 16-bit linear	Line + Acoustic	19.2	+2.7~3.6V	50mA	-40~+85°C	selectable MCU and stand-alone modes, normal- and short-frame-sync

PCM Voice CODECS

Part Number	Packages	ITU-T	Coding	Analog Output	Channels	Supply Voltage	Max. Current	Operating Temperature	Notes
MSM7507-01 MSM7507-02 MSM7507-03	24-SOP, 20-SSOP	G.714	μ-Law/A-Law μ-Law A-Law	2.6Vpp, 1.2kΩ	1	+4.75~5.25V	10mA	-30~+85°C	balanced output
MSM7578V MSM7578H MSM7579	24-SOP, 20-SSOP, 16-DIP	G.711	μ-Law/A-Law μ-Law A-Law	2.4Vpp, 600Ω	1	+4.75~5.25V	9mA	-30~+85°C	single-ended output
MSM7702-01 MSM7702-02 MSM7702-03	24-SOP	G.711	μ-Law/A-Law μ-Law A-Law	2.0Vpp, 1.2kΩ	1	+2.7~3.8V	9mA	-30~+85°C	single-ended output
MSM7704-01 MSM7704-02 MSM7704-03	24-SOP	G.711	μ-Law/A-Law μ-Law A-Law	2.0Vpp, 1.2kΩ	2	+2.7~3.8V	14mA	-30~+85°C	single-ended output
MSM7705-01	44-QFP	G.711	μ-Law/A-Law	3.4Vpp, 600Ω	4	+4.75~5.25V	28mA	-30~+85°C	single-ended output
MSM7717-01 MSM7717-02	24-SOP, 20-SSOP	G.711	μ-Law/A-Law μ-Law	4.0Vpp, 1.2kΩ	1	+2.7~3.8V	14mA	-30~+85°C	balanced output
ML7000-01	24-SOP, 20-SSOP	G.714	μ-Law/A-Law	5.2Vpp, 1.2kΩ	1	+4.75~5.25V	12mA	-30~+85°C	balanced output, short frame sync. only
ML7001-01	24-SOP, 20-SSOP	G.714	μ-Law/A-Law	4.0Vpp, 1.2kΩ	1	+2.7~3.3V	10mA	-30~+85°C	balanced output, short frame sync. only
MSM7716	30-SSOP, 32-TSOP @ 8kHz	G.714	14bit linear, 2's complement	2.0Vpp, 500Ω	1	+2.7~3.6V	14mA	-30~+85°C	balanced output
ML7022-01	30-SSOP	G.711	μ-Law	3.4Vpp, 600Ω	2	+4.75~5.25V	18mA	-40~+85°C	line card CODEC, SLIC I/F latches
ML7033	64-QFP	-	μ-Law/A-Law, 14bit linear	3.4Vpp, 20kΩ	2	+4.75~5.25V	35mA (2ch) 22mA (1ch)	-40~+85°C	line card CODEC, SLIC I/F (best solution with Intersil RSLIC series), time slot management
ML7041	48-TPQFP	-	μ-Law, A-Law, 14bit linear, 2's complement	2.6Vpp, 8kΩ 1.3Vpp, 32kΩ x 2 1.3Vpp, 20kΩ	1	+2.4~3.3V	11mA (Codec only)	-40~+85°C	balanced output, low-dropout regulator, speaker amplifier I2C-MCU I/F, short-frame-sync
MSM6895	80-QFP	G.711	μ-Law	3.0Vpp, 3kΩ	1	+4.75~5.25V	10mA	-10~+70°C	balanced output DTMF/TONE
MSM7502	80-QFP	G.711	μ-Law/A-Law	3.6Vpp, 1.2kΩ	1	+4.75~5.25V	10mA	-10~+70°C	balanced output all tones, par MCU I/F
MSM7732-01	30-SSOP	-	μ-Law/A-Law, 14bit linear, 2's complement	1.3Vpp, 32Ω	1	+2.4~3.3V	11mA	-40~+85°C	Audio CODEC, balanced, DTMF generator, direct earphone connection, short frame sync.

FIFO Memories

Total Capacity	Organisation	Part Number	Packages	Cycle Times [ns]	Re-fresh	Supply Voltage	Max. Current [mA]		Operating Temperature	Notes
							Operating	Standby		
2MBit	512R x 512C x 8	MSM518221A	28-ZIP, 28-SOJ, 28-SOP	25/30	Self	+4.5~5.5V	60/50	5	0~+70°C	FIFO-type, write mask, data skip
2MBit	512R x 512C x 8	MSM51V8221A	28-ZIP, 28-SOJ, 28-SOP	30	Self	+3.0~3.6V	35	3	0~+70°C	FIFO-type, write mask, data skip
2MBit	512R x 512C x 8	MSM518222A	28-ZIP, 28-SOJ, 28-SOP	25/30	Self	+4.5~5.5V	60/50	5	0~+70°C	FIFO-type, write mask, cascadable, data skip
2MBit	512R x 512C x 8	MSM51V8222A	28-ZIP, 28-SOJ, 28-SOP	30	Self	+3.0~3.6V	35	3	0~+70°C	FIFO-type, write mask, cascadable, data skip
3MBit	512R x 512C x 12	MSM5412222B	40-SOJ, 44-TSOP(2)	23/25	Self	+4.5~5.5V	60/50	5	0~+70°C	FIFO-type, write mask, cascadable, data skip
3MBit	512R x 512C x 12	MSM54V12222B	40-SOJ, 44-TSOP(2)	30	Self	+3.0~3.6V	60	3	0~+70°C	FIFO-type, write mask, cascadable, data skip
4MBit	261214 x 8 x 2	MS8104160A	100-TQFP	20/25/30	Self	+4.5~5.5V	170/150/120	5	0~+70°C	FIFO-type
4MBit	261214 x 8 x 2	MS81V04160A	100-TQFP	25/30	Self	+3.0~3.6V	80	3	0~+70°C	FIFO-type
4MBit	261214 x 8 x 2	MS8104166A	100-TQFP	20/25/30	Self	+4.5~5.5V	170/150/120	5	0~+70°C	FIFO-type
4MBit	261214 x 8 x 2	MS81V04166A	100-TQFP	25/30/40	Self	+3.0~3.6V	80/80/60	3	0~+70°C	FIFO-type
5.6MBit	583680 x 10	MS81V05200	70-TSOP(2)	14	Self	+3.0~3.6V	150	6	0~+70°C	FIFO-type
6MBit	401408 x 16	MS81V06160	70-TSOP(2)	83/66	Self	+3.0~3.6V	210/170	6	0~+70°C	FIFO-type
10MBit	663552 x 16	MS81V10160	70-TSOP(2)	83/66	Self	+3.0~3.6V	210/170	6	0~+70°C	FIFO-type

Line by Line Access Memories

Total Capacity	Organisation	Part Number	Packages	Cycle Times [ns]	Re-fresh	Supply Voltage	Max. Current [mA]		Operating Temperature	Notes
							Operating	Standby		
2.7MBit	768 x 304 x 12	MSM548331	44-TSOP(2)	30	Self	+3.0~3.6V	50	10	0~+70°C	LINE-type, cascadable, write mask, data skip
3.3MBit	960 x 290 x 12	MSM548332	44-TSOP(2)	30/50	Self	+3.0~3.6V	75/50	10	0~+70°C	LINE-type, cascadable, write mask, data skip
5.4MBit	768 x 290 x 24	MSM5424331	70-TSOP(2)	60	Self	+2.8~3.3V	90	5	0~+70°C	LINE-type, cascadable, write mask, triple port, block access

Line Memory

Total Capacity	Organisation	Part Number	Packages	Cycle Times [ns]	Re-fresh	Supply Voltage	Max. Current [mA]		Operating Temperature	Notes
							Operating	Standby		
40KB	5048 x 8	MSM514212	28-ZIP	28/34	-	+4.5~5.5V	42/36/31	-	0~+70°C	Serial line memory, delay bits 40 to 5048

Multiport Video DRAMs

Total Capacity	Organisation	Part Number	Packages	RAM-Port	SAM-Port	Cycle Times [ns]	Refresh	Supply Voltage	Max. Current [mA]		Operating Range	Notes
									Operating	Standby		
1MBit	256K x 4	MSM514252A	28-ZIP, 28-SOJ	512 x 512 x 4	512 x 4	70/80/100	512/8ms	+4.5~5.5V	120/110/100	8	0~+70°C	FPM, Basic Func
1MBit	256K x 4	MSM514262	28-ZIP, 28-SOJ	512 x 512 x 4	512 x 4	70/80/100	512/8ms	+4.5~5.5V	120/110/100	8	0~+70°C	FPM, Extd Functions 1
1MBit	128K x 8	MSM518121A	40-ZIP, 40-SOJ	512 x 256 x 8	256 x 8	70/80/100	512/8ms	+4.5~5.5V	120/110/100	8	0~+70°C	FPM, Basic
1MBit	128K x 8	MSM518122	40-ZIP, 40-SOJ	512 x 256 x 8	256 x 8	70/80/100	512/8ms	+4.5~5.5V	120/110/100	8	0~+70°C	FPM, Extd Functions 1
2MBit	256K x 8	MSM548262	40-ZIP, 44(40)-TSOP(2)	512 x 512 x 8	512 x 8	60/70/80	512/8ms	+4.5~5.5V	140/130/120	8	0~+70°C	FPM, Basic
2MBit	256K x 8	MSM548263	40-ZIP, 44(40)-TSOP(2)	512 x 512 x 8	512 x 8	60/70/80	512/8ms	+4.5~5.5V	140/130/120	8	0~+70°C	FPM, Extd Functions 1
4MBit	256K x 16	MSM5416262	64-SSOP	512 x 512 x 16	512 x 16	50/60/70	512/8ms	+4.5~5.5V	180/170/160	9	0~+70°C	FPM, Extd Functions 1
4MBit	256K x 16	MSM5416263	64-SSOP	512 x 512 x 16	512 x 16	50/60/70	512/8ms	+4.5~5.5V	180/170/160	9	0~+70°C	FPM, Extd Functions 2
4MBit	256K x 16	MSM5416273	64-SSOP	512 x 512 x 16	512 x 16	50/60/70	512/8ms	+4.5~5.5V	180/170/160	8	0~+70°C	FPM, 2CAS, Extd Functions 2
4MBit	256K x 16	MSM54V16273	64-SSOP	512 x 512 x 16	512 x 16	60/70	512/8ms	+3.0~3.6V	160/150	8	0~+70°C	Extd PM, 2CAS, Extd Functions 2
4MBit	256K x 16	MSM5416282	64-SSOP	512 x 512 x 16	512 x 16	50/60/70	512/8ms	+4.5~5.5V	180/170/160	8	0~+70°C	FPM, 2WE, Extd Functions 1
4MBit	256K x 16	MSM5416283A	64-SSOP	512 x 512 x 16	512 x 16	50/60/70	512/8ms	+4.5~5.5V	180/170/160	8	0~+70°C	Extd PM, 2WE, Extd Functions 2
4MBit	256K x 16	MSM54V16283	64-SSOP	512 x 512 x 16	512 x 16	60/70	512/8ms	+3.0~3.6V	160/150	8	0~+70°C	Extd PM, 2WE, Extd Functions 2

High-Speed P²ROMs

Total Capacity	Organisation	Part Number	Packages	Access [ns]	Supply Voltage	Max. Current	
						Operating	Standby
4MBit	512K x 8	MR27V401E	32-SOP, 32-TSOP (1)	80	+3.0~3.6V	25mA	50µA
4MBit	512K x 8/256K x 16	MR27V402E	44-TSOP(2)	80(OTP)/70(P2)	+3.0~3.6V	30mA	50µA
8MBit	512K x 16/1M x 8	MR27V802D/F	42-DIP, 44-SOP, 44-TSOP(2)	100/80	+2.7~3.3V, +3.0~3.6V	35mA 40mA	50µA
16MBit	1M x 16/2M x 8	MR27V1602E/F	44-SOP, 44-TSOP(2), 48-TSOP(1)	90	+3.0~3.6V	30mA	50µA
32MBit	2M x 16/4M x 8	MR27V3202F	44-SOP, 44-TSOP(2), 48-TSOP(1)	90	+5V	50mA	50µA
32MBit	2M x 16/4M x 8	MR27T3202F	44-SOP, 44-TSOP(2), 48-TSOP(1)	90	+3V	50mA	50µA
64MBit	4M x 16/8M x 8	MR27V6402G	44-SOP, 44-TSOP(1), 48-TSOP(2)	80	+3.0~3.6V	30mA	10µA
64MBit	4M x 16/4M x 8	MR27T6402G	44-SOP, 44-TSOP(1), 48-TSOP(2)	90	+2.7~3.6V	30mA	10µA
128MBit	8M x 16/16M x 8	MR27V12800J	48-TSOP(1)	80	+3.0~3.6V	25mA	10µA
128MBit	8M x 16/16M x 8	MR27T12800J	48-TSOP(1)	90	+2.7~3.6V	25mA	10µA

3.3V Page Mode P²ROMs

Total Capacity	Organisation	Part Number	Packages	Page	Access [ns]	Supply Voltage	Max. Current	
							Operating	Standby
8MBit	512K x 16/1M x 8	MR27V852E	42-DIP, 42-SOJ	8w	100 (random) 30 (page)	+3.0~3.6V	80mA	50µA
16MBit	1M x 16/2M x 8	MR27V1652E	42-DIP, 44-SOP	8w	100 (random) 30 (page)	+3.0~3.6V	100mA	50µA

3.3V Synchronous P²ROMs

Total Capacity	Organisation	Part Number	Packages	Burst Length	Max. Frequency	CAS Latency	Supply Voltage	Max. Current	
								Operating	Standby
64MBit	2M x 32/4M x 16	MR27V6466F	86-TSOP(2)	4, 8	100MHz	4, 5, 6	+3.0~3.6V	250mA	100µA

Scan Converter

Part Number	Packages	Function	Supply Voltage	Active Current	Operating Temperature
ML87V2301	208-LQFP	SDTV/HDTV up to W-XGA, OSD, gamma correction, scaling	+3.0~3.6V +2.25~2.75V	180mA max.	0~+70°C
(NEW) ML87V2302	208-LQFP	as ML87V2301, but additionally 256-colour OSD and SXGA	+3.0~3.6V +2.25~2.75V	tbd	0~+70°C

Noise Reduction FIFOs

Part Number	Packages	Function	Embedded Memory	Supply Voltage	Active Current	Standby Current	Operating Temperature
ML87V2103	100-QFP	Noise reduction, progressive conversion, field-recursive	3.9Mbit FIFO	+3.0~3.6V	120mA max.	5mA max.	0~+70°C
(NEW) ML87V2104	100-QFP	Noise reduction, flicker-free conversion, field-recursive	4.4Mbit FIFO	+3.0~3.6V	100mA max.	10mA max.	0~+70°C
ML87V2105	100-TQFP	Noise reduction only, frame-recursive	5.3Mbit FIFO	+3.0~3.6V	80mA max.	5mA max.	0~+70°C

LCD Graphic Display Controllers

Part Number	Packages	Embedded Memory	Operating Frequency	Display Memory	Display Size	Display Colors	Supply Voltage	Active Current	Notes	Operating Temperature
(NEW) ML87V3104	100-TQFP	4Mbit DRAM	15MHz max.	1M pixel (max.)	1024 x 1024	STN: 4096 TFT: 65535	+3.0~3.6V	55mA max.	scroll, subscreen, hardware cursor	-40~+85°C
ML87V3116	tbd	8Mbit SDRAM	~33MHz (tbd)	4M pixel	VGA (tbd)	TFT: 65535	+2.7~3.6V	tbd	MJPEG/JPEG (de)-compression, rotation and shrinking function	tbd



Interface and Protocol Controllers

Part Number	Packages	Function	Supply Voltage	Max. Current	Operating Temperature
(NEW) ML60842	100-BGA, 100-TQFP	USB 2.0 full speed, OTG controller	+2.7~3.6V	50mA	0~+70°C
ML60851E	44-QFP,44-TQFP, 56-LGA	USB 2.0 full speed, printer device controller	+3.0~3.6V	55mA	0~+70°C
ML60852A	44-QFP,44-TQFP, 56-LGA	USB 2.0 full speed, device controller (6 endpoints)	+3.0~+3.6V	50mA	0~+70°C
MSM6636	18-DIP, 24-SOP, 18-QFJ	SAE J1850 PWM, serial host interface	+4.5~5.5V	10mA (f=16MHz)	-40~+125°C
MSM6636B	24-SOP	SAE J1850 PWM, parallel host interface	+4.5~5.5V	10mA	-40~+125°C
ML69240-C51	44-QFP	Dual smart card reader IC	+4.5~5.5V	25mA	-40~+85°C
ML9620	44-TQFP	CAN protocol controller V2.0B	+3.0~5.5V	tbd	-40~+125°C

Longwave Time Code RF Receiver

Part Number	Packages	Functions	Sensitivity	Supply Voltage	Active Current Consumption	Standby Current Consumption	Operating Temperature
ML6190A	20-SSOP	RF amplifier, AGC, rectifier, slicer and time code output	1µVrms	+1.1~3.6V	38µA max.	0.1µA max.	-25~+85°C

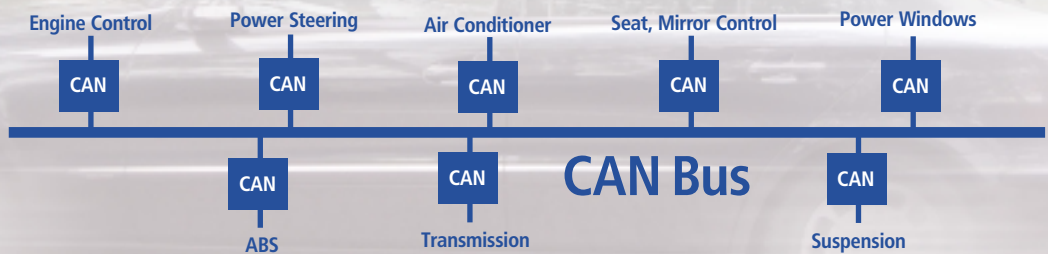
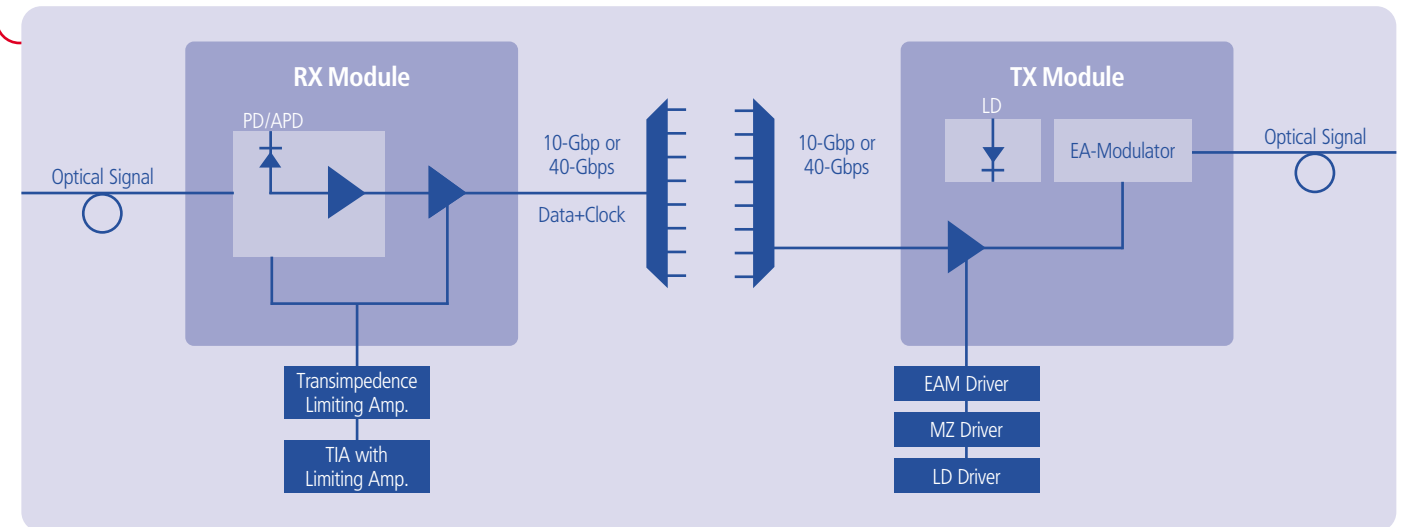
10G EAM (Electro Absorption Modulator) Driver

Part Number	Data Rate	Application	Vs (typ.)	Iss (max.)	Output Amplitude (min.)	Tr/Tf (typ.)	X point Control	Package	Remark
KGA4145	11.1Gbps	OC-192Tx	-5.2V	300mA	2.7Vpp	25ps	35 to 80%	Die	Output Amplitude Control: 1Vpp to 3Vpp
KGL4145JW	11.1Gbps	OC-192Tx	-5.2V	300mA	2.7Vpp	25ps	35 to 80%	26pin QFP (5.0 x 5.2mm)	Output Amplitude Control: 1Vpp to 3Vpp

10G MZ/LN (Mach-Zehnder/Lithium Niobate) Driver

Part Number	Data Rate	Application	Vs (typ.)	Iss (typ.)	Output Amplitude (min.)	Tr/Tf (typ.)	X point Control	Package
KGL4126F	10.7Gbps	OC-192Tx	-5.2V	210mA	5.0Vpp	28ps	40 to 60%	20 pin QFP (12mm sq.)
KGL4126FA	10.7Gbps	OC-192Tx	-5.2V	210mA	6.0Vpp	30ps	45 to 55%	20 pin QFP (12mm sq.)
KGL4126HA	11.3Gbps	OC-192Tx	-5.2V	210mA	5.5Vpp	30ps	45 to 55%	32 pin QFP (7 mm sq.)
KGL4136HD	10.7Gbps	OC-192Tx	-5.2V	200mA	3.8Vpp	32ps	40 to 60%	32 pin QFP (7 mm sq.)
KGL4156JD	11.3Gbps	OC-192Tx	-5.2/+3.3V	tbd	3.3Vpp	tbd	tbd	26 pin QFP (5 x 5.2 mm sq.)

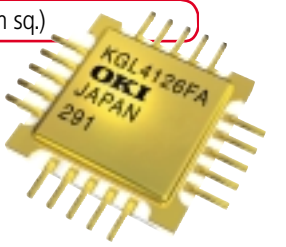
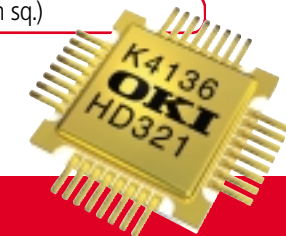
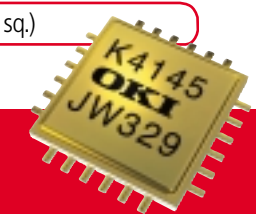
10-Gbps and 40-Gbps Tx/Rx GaAs ICs



20pin QFP (12mm sq.)

32pin QFP (7mm sq.)

26pin QFP (5mm sq.)



10G LD (Laser Diode) Driver

Part Number	Data Rate	Application	Vs (typ.)	I _{ss} (typ.)	Modulation Current (typ.)	Tr/Tf (typ.)	X point Control	Package
KGA4165	10.7Gbps	10G Ethernet Tx	3.3V	140mA	25 to 70mA pp	27ps	35 to 65%	Die
KGA4175	10.7Gbps	10G Ethernet Tx	3.3V	150mA	20 to 50mA pp	24ps	40 to 60%	Die
KGL4175JW	10.7Gbps	10G Ethernet Tx	3.3V	150mA	20 to 50mA pp	24ps	40 to 60%	26pin QFP (5 x 5.2mm)
KGL4145JP	11.1Gbps	10G Ethernet Tx	5V	230mA	75mA (@ 25ohm)	24ps	40 to 60%	26pin QFP (5 x 5.2mm)

10G Transimpedance Amplifier

Part Number	Data Rate	Application	V _o (typ.)	P _o (typ.)	Transimpedance (typ.)	Optical Sensitivity (typ.)	Package	Remark
KGA4143	10.7Gbps	OC-192Rx	+3.3V	0.4W	2.0kΩ (differential)	-19dBm	Die	TIA, Differential Output, Output Offset Adjustment, Power Monitor
KGA4141	10.7Gbps	OC-192Rx	+3.3V	0.5W	36kΩ (differential)	-19dBm	Die	TIALA, Differential Output, Threshold Control, Power Monitor

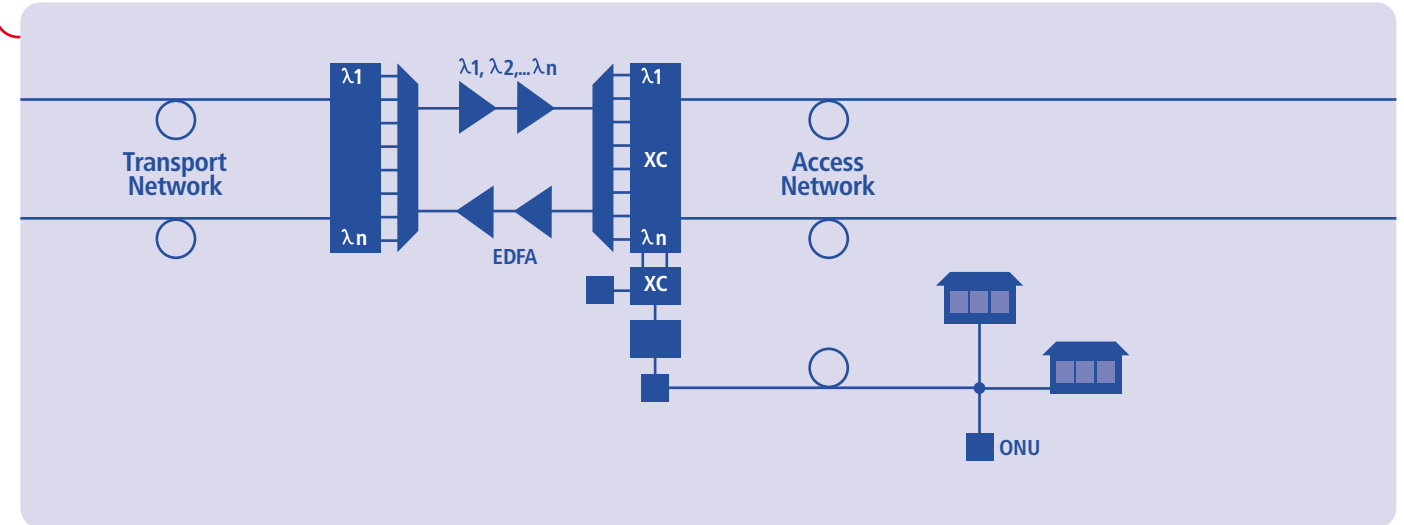
14GHz Broadband Amplifier

Part Number	Band Width	Application	V _S (typ.)	I _{ss} (max.)	Small Signal Gain (typ.)	Output Amplitude (typ.)	Package
KGL4117H	14GHz	OC-192Rx	-5.2V	140mA	15dB	1.0Vpp	32pin QFP (7mm sq.)

40G Broadband Amplifier

Part Number	Application	V _o (typ.)	P _o (typ.)	Band width (typ.)	Gain (typ.)	Output Power (typ.)	Package	Remark
KGA8011	OC-768Tx	+3.3V	0.36W	> 40GHz	14.0dB	-	Die	-
KGM8011	OC-768Tx	+4.2V	0.84W	100kHz-40GHz	20.0dB	3.0Vpp	Module	Ask for GPPO option

Fibre Optic Devices for Network Systems



2.5G APD ROSA*

Part Number	Data Rate	Application	Wave-length	TIA Supply Voltage	APD Break-down Voltage	Bandwidth (typ.)	Respon-sivity (typ.)	Sensitivity (typ.)	Overload (typ.)	Output	Package	Remark
OF3635R-C3	2.5Gbps	OC- 48 Gb-Ethernet SFP or SFF	1250nm to 1620nm	+3.3V	<40V	2.0GHz	23KV/W	-34dBm	-3dBm	Differen-tial	5 lead coax Ø 1.25mm Ferrule	w/TIA

*ROSA: Receiver Optical Sub Assembly

2.5G LD TOSA*

Part Number	Data Rate	Application	Wavelength	Operating Temperature	Fiber Output Power	LD Type	Package	Remark
OL3415L-2	2.5Gbps	OC- 48, Gb-Ethernet SFP or SFF	1310nm	0~+85°C	min. 0dBm	DFB	4 lead coax Ø 1.25mm Ferrule	Monitor PD, Isolator
OL5415L-2	2.5Gbps	OC- 48, Gb-Ethernet SFP or SFF	1550nm	0~+85°C	min. 3dBm	DFB	4 lead coax Ø 1.25mm Ferrule	Monitor PD, Isolator
OLx415L-3-Wnnn	2.5Gbps	OC- 48, Gb-Ethernet SFP or SFF	1470-1610nm 8 wavelength	0~+85°C	-	DFB	4 lead coax Ø 1.25mm Ferrule	Monitor PD, Isolator
OL5416L-2	2.5Gbps	OC- 48, Gb-Ethernet SFP or SFF	1550nm	0~+85°C	min. 3dBm	DFB	4 lead coax Ø 1.25mm Ferrule	Monitor PD

*TOSA: Transmitter Optical Sub Assembly

2.5G PIN-PD and ADP

Part Number	Data Rate	Application	Wave-length	TIA Supply Voltage	Bandwidth (typ.)	Respon-sivity (typ.)	Sensitivity (typ.)	Overload (typ.)	Output	Package	Remark
OD8621B	1.25Gbps	Gb-Ethernet Fiber Channel	1250nm to 1620 nm	+3.3V	1.6GHz	2.2KV/W	-27dBm	0dBm	Differential	5 lead coax w/SMF	w/TIA
OD8619B	2.5Gbps	OC-48 2xFC	1250nm to 1620nm	+3.3V	1.85GHz	2.0KV/W	-23dBm	0dBm	Differential	5 lead coax w/SMF	w/TIA
OF3621B-C3	1.25Gbps	Gb-Ethernet Fiber Channel	1250nm to 1620nm	+3.3V	1.1GHz	18KV/W	-36.5dBm	-5dBm	Differential	5 lead coax w/SMF	w/TIA
OF3634B-C3	2.5Gbps	OC-48 2xFC	1250nm to 1620nm	+3.3V	1.85GHz	23KV/W	-34dBm	-3dBm	Differential	5 lead coax w/SMF	w/TIA

10G PIN-PD

Part Number	Data Rate	Application	Wave-length	TIA Supply Voltage	Sensitivity (typ.)	Overload (typ.)	Output	Package	Remark
OD9658N	10.7Gbps	OC-192 Transponder	1250nm to 1620nm	+3.3V	-18dBm	0dBm	Differential	Ceramic Gull Wing w/SMF	w/TIALA, LOS
OD9241N	10.7Gbps	OC-192 Transponder	1250nm to 1620nm	-5.2V	-19dBm	3dBm	Differential	MSA w/SMF	w/TIA

10G EML (Electro Absorption Modulated Laser)

Part Number	Data Rate	Application	Wavelength	Operating Temperature	Average Output Power	Extinction Ratio (typ.)	Package	Remark
OL5160M	10.7Gbps	OC-192 Transponder 40km	1550nm	0~+75°C	min. -1dBm	10dB	cooled Butterfly	w/EA-Driver, Bias T, Isolator
OL5161M	10.7Gbps	OC-192 Transponder 80km	1550nm	0~+75°C	min. -1.5dBm	10dB	cooled Butterfly	w/EA-Driver, Bias T, Isolator

10G PIN-PD ROSA*

Part Number	Data Rate	Application	Wave-length	TIA Supply Voltage	Transimpedence (typ.)	Sensitivity (typ.)	Overload (typ.)	Output	Package	Remark
OD8641R	10.7Gbps	XFP	1250nm to 1620nm	+3.3V	2500Ω	-17dBm	0dBm	Differential	LC-ROSA	w/TIA
OD8642R	10.7Gbps	XPAK, X2	1250nm to 1620nm	+3.3V	2500Ω	-17dBm	0dBm	Differential	SC-ROSA	w/TIA

*ROSA: Receiver Optical Sub Assembly

10G LD TOSA*

Part Number	Data Rate	Application	Wavelength	Operating Temperature	Output Power	LD Type	Package	Remark
OL3356L	10.7Gbps	XFP	1310nm	0~+70°C	min. 0.5mW (Ave.)	DFB	LC-TOSA	w/Bias T
OL3358L	10.7Gbps	XPAK, X2	1310nm	0~+70°C	min. 0.5mW (Ave.)	DFB	SC-TOSA	w/Bias T

*TOSA: Transmitter Optical Sub Assembly

40G EAM (Electro Absorption Modulator)

Part Number	Data Rate	Application	Wavelength	Insertion Loss	Extinction Ratio	PDL	α parameter	Cut-off Frequency	Package
OM5642W-30B	40Gbps	Optical Gating	1550nm	Typ. 9dB max. 10dB	Typ. 20dB min. 17dB (0 to -4V)	Typ. 0.5dB max. 1dB	-	min. 30GHz	w/TEC V- Connector
OM5653C-30B	40Gbps	OC-768 Transmitter	1550nm	Typ. 7.5dB max. 9dB	Typ. 20dB min. 17dB (0 to -4V)	-	< 0.5	min. 30GHz	w/TEC V- Connector
OM5753C-30B	40Gbps	OC-768 Transmitter	1550nm	Typ. 7.5dB max. 9dB	Typ. 20dB min. 17dB (0 to -4V)	-	< 0.5	min. 30GHz	w/TEC V- Connector

40G EML (Electro Absorption Modulated Laser)

Part Number	Data Rate	Application	Wavelength	Output Power	Static Extinction Ratio	SMSR	α parameter	Cut-off Frequency	Package
OL5155M	40Gbps	OC-768 VSR	1530nm to 1565nm	min. 3dBm	Typ. 16dB min. 14dB (0 to -3V)	min. 35dB	< 0.5	min. 30GHz	w/TEC V- Connector

Pulsed LD for Test Measurement Instruments


Part Number	Output Power	Wavelength	Wave Tolerance	Fiber	TEC	Package
OL3204N-100/P20	100mW	1310nm	+/- 20nm	SMF	yes	DIL
OL3204N-150/P20	150mW	1310nm	+/- 20nm	SMF	yes	DIL
OL3204N-25/P10-W60	25mW	1360nm	+/- 10nm	SMF	yes	DIL
OL4204N-50/P10-W10	50mW	1410nm	+/- 10nm	SMF	yes	DIL
OL5204N-100/P20	100mW	1550nm	+/- 20nm	SMF	yes	DIL
OL5204N-120/P20	120mW	1550nm	+/- 20nm	SMF	yes	DIL
OL5206N-120/P20	120mW	1550nm	+/- 20nm	SMF	no	DIL
OL6204N-30/AP10	30mW	1625nm	+/- 10nm	SMF	yes	DIL
OL6204N-50/AP10	50mW	1625nm	+/- 10nm	SMF	yes	DIL
OL6204N-100/AP10	100mW	1625nm	+/- 10nm	SMF	yes	DIL
OL6206N-100-AP15	100mW	1625nm	+/- 15nm	SMF	no	DIL
OL3489N-150/P20	150mW	1300nm	+/- 20nm	MMF 62.5	no	Coax
OL399N-150/P20	150mW	1300nm	+/- 20nm	MMF 50	no	Coax
OL395N-80/P20	80mW	1310nm	+/- 20nm	SMF	no	Coax
OL395N-100/P20	100mW	1310nm	+/- 20nm	SMF	no	Coax
OL595N-40/P20	40mW	1550nm	+/- 20nm	SMF	no	Coax
OL595N-60/P20	60mW	1550nm	+/- 20nm	SMF	no	Coax
OL595N-70/P20	70mW	1550nm	+/- 20nm	SMF	no	Coax

CW-DWDM DFB-LD

Part Number	Output Power	Wavelength	Operating Temperature	Fiber	Includes	Package
OL5104L-20-Wnnnn	20mW	C & L-band 100GHz spacing	0~+60°C	PANDA	Monitor PD, Isolator, TEC	Butterfly
OL5104L-40-Wnnnn	40mW	C-band 100GHz spacing	0~+60°C	PANDA	Monitor PD, Isolator, TEC	Butterfly

Optical Service Channel LD

Part Number	Wavelength	LD Type	Output Power	Operating Temperature	TEC	Includes	Package
OL6201N-5A10	1625nm	FP	5mW	-20~+65°C	yes	Monitor PD	DIL
OL6492N/A	1625nm	FP	2mW	0~+65°C	no	Monitor PD	Coax
OL4109L-5	1480nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	Butterfly
OL5109L-5A	1510nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	Butterfly
OL6109L-5A	1625nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	Butterfly
OL6109L-5B	1650nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	Butterfly
OL4207L-5	1480nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	DIL
OL5207L-5A	1510nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	DIL
OL6207L-5A	1625nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	DIL
OL6207L-5B	1650nm	DFB	5mW	-20~+65°C	yes	Monitor PD, Isolator	DIL
OL492L-2	1480nm	DFB	2mW	0~+65°C	no	Monitor PD, Isolator	Coax
OL592L-A	1510nm	DFB	2mW	0~+65°C	no	Monitor PD, Isolator	Coax
OL692L-A	1625nm	DFB	2mW	0~+65°C	no	Monitor PD, Isolator	Coax




DIP
Dual-in-line Package
Pin Counts 8, 16, 18, 20, 24, 28, 32, 36, 40, 42, 48
Pitches 2.5mm
OKI Suffix RA
Remarks 100mil pitch type



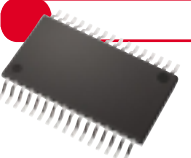
SDIP
Shrink Dual-in-line Package
Pin Counts 30, 42, 64
Pitches 1.778mm
OKI Suffix RC
Remarks 70mil pitch type



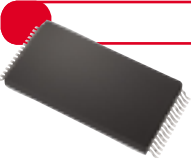
ZIP
Zig-Zag In-line Package
Pin Counts 20, 24, 28, 40
Pitches 1.27mm
OKI Suffix RD
Remarks 50mil pitch type



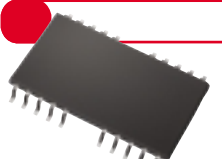
SOP
Small Outline Package
Pin Counts 8, 10, 16, 24, 28, 32, 40
Pitches 1.27mm
OKI Suffix MA
Remarks heat resistant



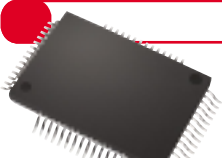
SSOP
Shrink Small Outline Package
Pin Counts 8, 14, 20, 30, 32, 64, 70
Pitches 0.65, 0.80, 0.95, 1.00mm
OKI Suffix MB
Remarks under 50mil pitch



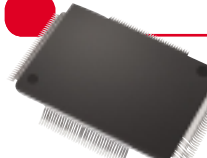
TSOP Type I
Thin Small Outline Package Type I
Pin Counts 32
Pitches 0.50mm
OKI Suffix TA
Remarks Leads on short side



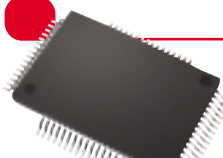
TSOP Type II
Thin Small Outline Package Type II
Pin Counts 26(20), 26(24), 28, 28(24), 40, 44, 48, 50, 50(44), 54, 66, 70(64), 86
Pitches 0.65, 0.80, 1.27mm OKI Suffix TA
Remarks Leads on long side




QFP
Quad Flat Package
Pin Counts 44, 56, 64, 80, 100, 128, 136, 144, 160, 176, 208, 240, 272, 304
Pitches 0.50, 0.65, 0.80, 1.00mm OKI Suffix GA
Remarks heat resistant




LQFP
Low Profile Quad Flat Package
Pin Counts 144, 176, 208
Pitches 0.50, 0.65, 0.80mm
OKI Suffix GS
Remarks 1.20mm or 1.27mm body thickness



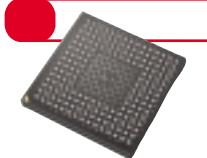
TQFP
Thin Quad Flat Package
Pin Counts 44, 48, 64, 80, 100, 120
Pitches 0.50, 0.65, 0.80mm
OKI Suffix TB
Remarks 1.20mm or 1.27mm body thickness




SOJ
Small Outline J-Lead
Pin Counts 26(20), 26(24), 28, 28(24), 32, 36, 40, 42, 50
Pitches 0.80, 1.27mm OKI Suffix JA
Remarks Two J-lead rows



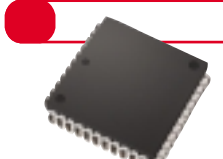
SHP
Surface Horizontal Package
Pin Counts 20, 30, 32, 64, 70
Pitches 0.65, 0.80, 0.95, 1.00mm
OKI Suffix MB
Remarks under 50mil pitch



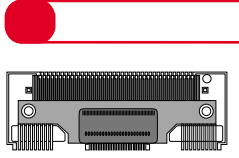
BGA / FBGA / W-CSP
Ball Grid Array
Pin Counts 48 - 352
Pitches 0.5 - 1.27mm
OKI Suffix LA, HB
Remarks Epoxy package, lead free balls possible



QFN
Quad Flat No Leads
Pin Counts 48
Pitches 0.5mm OKI Suffix GD
Remarks No gull-wing leads, improved EMI performance, co-planarity, heat dissipation



QFJ
Quad Flat J-Lead
Pin Counts 18, 20, 22, 28, 32, 44, 68, 84
Pitches 1.27mm OKI Suffix JB
Remarks 4 J-lead rows, formerly known as PLCC, 50mil pitch type



TCP
Tape Carrier Package
Base film material Upilex®, Kapton® V
OKI Suffix VA
Remarks Tape widths: 35/48/70mm (wide/super wide)
Film thickness 75/125µm

A particular strength of OKI is its IC packaging technology. The variations range from DIP, SDIP, ZIP, BGA, SOP, SSOP, TSOP, QFP, TQFP, LQFP, QFJ, SOJ, SHP, FBGA and TCP all the way up to special packaging forms, such as Memory Modules, Tape Carrier Package, Ball Grid Array, Bump Chip and more. For information about further packages and more detailed specification, please refer to our information on the websites.