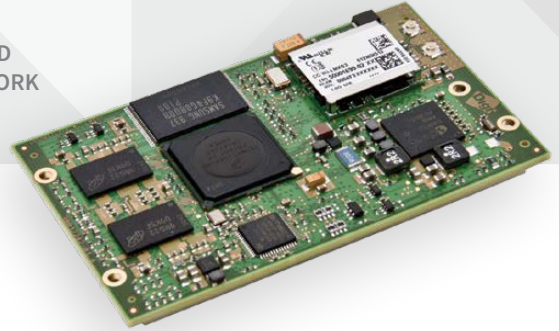




HIGH-END CORE  
MODULES WITH WIRED  
AND WIRELESS NETWORK  
CONNECTIVITY



# CONNECTCORE® i.MX53 / Wi-i.MX53

High-end Cortex-A8 System-on-Module solution delivers industry-leading performance, low-power operation, and fully integrated 802.11a/b/g/n + Ethernet networking

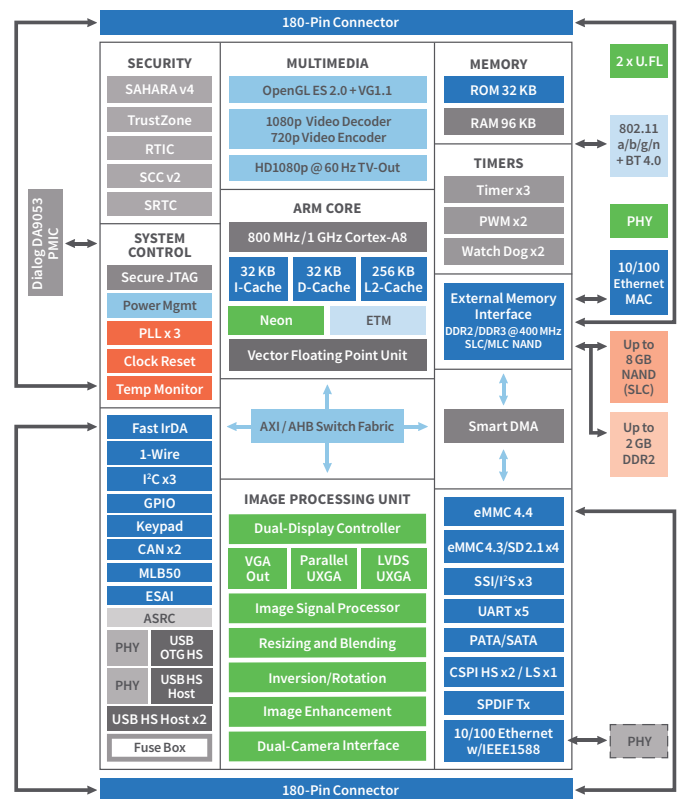
The network-enabled ConnectCore for i.MX53 module family is a highly integrated and future-proof System-on-Module (SoM) solution based on the new Freescale® i.MX53 application processor. It offers a high-performance 1 GHz ARM® Cortex™-A8 core, wired and wireless connectivity options, powerful 1080p/720p video encoding/decoding capabilities and a complete peripheral set.

The ConnectCore for i.MX53 family builds on the successful ConnectCore for i.MX51 modules by providing a form factor compatible option with significantly improved processing, memory, video and connectivity capabilities. It is a scalable and energy-efficient module family, ideal for medical devices, security/surveillance equipment, industrial applications and digital signage.

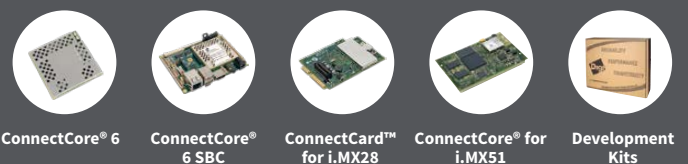
## BENEFITS

- High-performance 32-bit System-on-Module
- Long-term product availability solution
- Single and dual 10/100 Mbit Ethernet networking
- Pre-certified 802.11a/b/g/n Wi-Fi interface
- High-performance 2D/3D Graphics Processing Unit
- Hardware video processing with 1080p decoding
- Low-emission design with FCC Class B compliance
- ZigBee, cellular and satellite connectivity options
- Industrial operating temperature support

## BLOCK DIAGRAM



## RELATED PRODUCTS



## SPECIFICATIONS

ConnectCore® i.MX53

| ConnectCore® Wi-i.MX53

PROCESSOR	
PROCESSOR MODEL	Freescale® i.MX53 (i.MX535/i.MX537)
SPEED GRADES	800/1000 MHz
CORE TYPE	ARM® Cortex™-A8
CACHE MEMORY	32k L1 I-Cache, 32k L1 D-Cache, 256k L2-Cache (unified)
INTERNAL RAM	128 KB (secure/non-secure)
VECTOR FLOATING POINT	Yes
NEON MEDIA ACCELERATION	Yes
MEMORY	
FLASH	Up to 8 GB NAND flash
RAM	Up to 2 GB DDR2
DEBUG	
SECURE JTAG	Yes
ETM/ETB	Yes
POWER MANAGEMENT	
POWER MODES	Run, Wait, Stop, Low-power screen refresh
WAKE-UP EVENTS	GPIO, keypad, RTC (day/time of day), SD card/USB cable insertion, battery/charger attach
DYNAMIC VOLTAGE AND FREQUENCY SCALING	Yes
BACKLIGHT DRIVERS	3
BATTERY MANAGEMENT	Yes
REAL-TIME CLOCK	
BATTERY BACKUP (EXTERNAL)	Yes
SECURITY	
HARDWARE ENCRYPTION/DECRYPTION	AES, DES/3DES, RC4, C2; RSA, ECC; MD5, SHA-1/224/256
RANDOM NUMBER GENERATOR	Yes
RUN TIME INTEGRITY CHECKER	Yes
SECURE RAM (INTERNAL)	Yes
FUSE BOX (E-FUSES)	64 Bits (application-specific use)
PHYSICAL TAMPER DETECTORS	Yes
TIMERS	
GENERAL PURPOSE TIMER	32-bit up-counter with clock source selection; 2 input capture channels; 3 output compare channels, forced compare
ENHANCED PERIODIC INTERRUPT TIMER	32-bit down-counter with clock source selection; Set-and-forget/free-running modes; Precision interrupt generation
WATCHDOG	Yes
THERMAL MANAGEMENT	
TEMPERATURE MONITOR	On-chip sensor, precision 0 to 135°C ±5°C; Software support for thermal-aware Dynamic Frequency and Voltage Scaling (DFVS)
CONNECTIVITY	
UART	Up to 3 channels with bit rates up to 4 MHz, IrDA 1.0 support
IRDA INFRARED	Medium InfraRed (0.576/1.152 Mbps), Fast InfraRed (4 Mbps)
CAN	CAN 2.0b, up to 2 channels, up to 1 Mbps each (available on i.MX537 variant)
CSPI	Master and slave mode; Bit rate up to 25 Mbps (master)
ECSPI	Up to 2 eCSPI channels, master and slave mode; Bit rates up to 66.5 Mbps (master)
I2C	Up to 3 channels, master/slave (7-/10-bit addressing); All: Standard (100 kbps) and fast (400 kbps) mode
SD/SDIO/MMC/EMMC	Up to 4 ports, 1-/4-/8-bit modes; MMC: Up to 416 Mbps (8-bit mode), SD/SDIO: Up to 200 Mbps (4-bit mode) eMMC 4.4: Ultra high speed, up to 832 Mbps
P-ATA	Up to 66 MB/s data rate ; PIO mode (0,1,2,3,4), multi-word DMA mode (0,1,2), Ultra DMA mode (0,1,2,3,4,5)
SATA	SATA II, up to 1.5 Gbps
USB 2.0 HIGH-SPEED	Up to 3 USB 2.0 High-Speed Host ports, one with integrated PHY; Up to 1 USB 2.0 OTG port with integrated PHY
MEDIA LOCAL BUS (MLB)	MOST (Media Oriented Systems Transport) interface, up to 50 Mbps
1-WIRE	Yes
ISO 7816 (SIM/SMART CARD)	Yes

## SPECIFICATIONS

## ConnectCore® i.MX53

## | ConnectCore® Wi-i.MX53

## CONNECTIVITY - CONTINUED

KEYPAD	8x8 keypad matrix
PWM	2
ADC (10-BIT)	Up to 4 channels
GPIO	Up to 128 GPIOs
EXTERNAL MEMORY BUS	16-bit data/28-bit address in non-multiplexed address/data mode 16-bit or 32-bit data/28-bit address in multiplexed address/data mode

## MULTIMEDIA

CAMERA	Two parallel camera ports, up to 20-bit, up to 120 MHz peak
DISPLAY	5 interfaces available - with total rate of all interfaces up to 180 Mpixels/sec, 24 bpp Up to 2 displays can be driven simultaneously (screen refresh) Concurrent asynchronous access to 2 additional devices, e.g. display controllers and smart displays Parallel: 2 24-bit display ports, up to 165 Mpixels/sec, e.g. UXGA @ 60 Hz LVDS: 1 port up to 165 Mpixels/sec or 2 ports up to 85 Mpixels/sec, e.g. WXGA @ 60 Hz 1 TV-out/VGA port, up to 150 Mpixels/sec, e.g. 1080p60
IMAGE PROCESSING UNIT	Image enhancements, video/graphics combining, resizing, rotation/inversion, color conversion/correction
VIDEO PROCESSING UNIT	MPEG-4, H.263, H.264, MPEG-2, VC-1, DivX, RV10, MJPEG; 1080p30 decode, 720p30 encode
GPU (2D/3D)	33 million triangles/sec, 200 million pixels/sec raw; OpenVG 1.0, OpenGL ES Common Profile v1.0/v1.1/Direct3D Mobile, OpenGL ES Profile v2.0
TOUCHSCREEN INTERFACE (4-WIRE)	Yes
SPDIF (TX)	Yes
I <sup>2</sup> S/AC97/SSI	Up to 3 channels
ESAI	Multi-channel digital audio, up to 1.4 Mbps each channel
ASRC	Yes

## ETHERNET

PHYSICAL LAYER	10/100Base-T
DATA RATES	10/100 Mbps, auto-sensing
DUPLEX MODE	Full or half duplex, auto-sensing
IEEE 1588	Yes, primary interface only (available on i.MX537 variant)

## POWER OVER ETHERNET (802.3AF)

POWER OVER ETHERNET	Development board ready for 802.3af PoE application kit (sold separately)
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## WIRELESS LAN

STANDARD	N/A	802.11a/b/g/n (2.4/5 GHz)
ANTENNA CONNECTORS	N/A	2 x U.FL
DUAL DIVERSITY	N/A	Yes
FREQUENCY BANDS	N/A	2.412 - 2.484 GHz; 4.900 - 5.850 GHz
DATA RATES	N/A	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps (MCS 0-7)
MODULATION	N/A	DBPSK, DQPSK, CCK, BPSK, QPSK, 16-QAM, 64-QAM
802.11N FEATURES	N/A	A-MPDU / A-MSDU, PSMP, MTBA, STBC, Greenfield Preamble, RIFS
TRANSMIT POWER (±2 DBM)	N/A	802.11b: 17 dBm typical; 802.11g/n: 15 dBm typical; 802.11a: 12 dBm typical
SECURITY	N/A	WEP, WPA-PSK/WPA2-Personal, WPA/WPA2 Enterprise, 802.11i
QOS	N/A	WMM, WMM-PS, 802.11e
ROAMING ENHANCEMENTS	N/A	802.11k/r
EXTENDED RANGE (802.11N)	N/A	Yes
RADIO CERTIFICATIONS	N/A	USA, Canada, EU, Japan

POWER REQUIREMENTS<sup>1</sup>

TYPICAL / IDLE	700 mA @ 3.75 V / 200 mA @ 3.75 V
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<sup>1</sup> Baseline power consumption based on standard use case without WLAN and Ethernet. See Hardware Reference Manual for more detailed information.

<sup>2</sup> Contact your local distributor or Digi sales office for details.

## SPECIFICATIONS

# ConnectCore® i.MX53

# | ConnectCore® Wi-i.MX53

### MECHANICAL

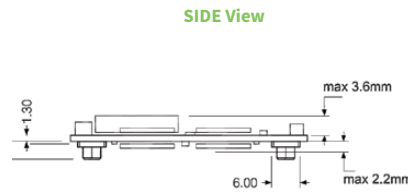
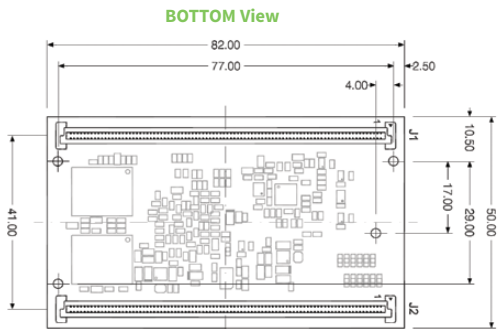
<b>DIMENSIONS (L X W X H)</b>	82 mm x 50 mm x 6.5 mm	82 mm x 50 mm x 8 mm
<b>MODULE CONNECTORS</b>	2 x 180-pin board-to-board connectors, 0.8 mm pitch (Mating connector FCI P/N 61083-184409LF or similar)	

### ENVIRONMENTAL

<b>OPERATING TEMPERATURE</b>	-40°C to +85°C (i.MX537 variant, 800 MHz); -20°C to +70°C (i.MX535 variant, 1 GHz)
<b>STORAGE TEMPERATURE</b>	-40° C up to +85° C (-40° F to +185° F)
<b>RELATIVE HUMIDITY</b>	5% to 90% (non-condensing)
<b>ALTITUDE</b>	12,000 feet (3,658 meters)
<b>TEMPERATURE / CLIMATE TESTS</b>	IEC 60068-2-1 (Ab/Ad Cold: 16 h with -40°C), IEC 60068-2-2 (Bb/Bd: Dry heat: 16 h with +85°C), IEC 60068-2-78 (Damp heat steady state: 16h with +40°C and 93%rH)
<b>VIBRATION / SHOCK TESTS</b>	IEC 60068-2-6 Method Fc, IEC 60068-2-64 Method Fh, IEC 60068-2-27 Method Ea

### REGULATORY APPROVALS

<b>FCC PART 15 CLASS B</b>	Yes
<b>FCC PART 15 SUB C SECTION 15.247</b>	Yes
<b>IC RSS-210 ISSUE 5 SECTION 6.2.2(O)</b>	Yes
<b>EN55022:2006 CLASS B</b>	Yes
<b>ICES-003, CLASS B</b>	Yes
<b>VCCI, CLASS B</b>	Yes
<b>EN55024:1998 +A1:2001, A2:2003</b>	Yes
<b>EN61000-3-2:2006</b>	Yes
<b>EN61000-3-3:1995 +A1:2001, A2:2005</b>	Yes
<b>EN60950-1:2001 (UL60950-EQUIVALENT)</b>	Yes
<b>CSA C22.2, NO. 60950</b>	Yes



## PART NUMBERS

## DESCRIPTION

<b>CC-WMX-KD69-VK</b>	ConnectCore Wi-i.MX53 module, 1 GHz, 512 MB Flash, 512 MB RAM, 2x Ethernet, 802.11abgn, single pack
<b>CC-WMX-KD69-VM</b>	ConnectCore Wi-i.MX53 module, 1 GHz, 512 MB Flash, 512 MB RAM, 1x Ethernet, 802.11abgn, single pack
<b>CC-WMX-KD69-VM-B</b>	ConnectCore Wi-i.MX53 module, 1 GHz, 512 MB Flash, 512 MB RAM, 1xEthernet, 802.11abgn, 25-piece bulk pack
<b>CC-WMX-KD79-VK</b>	ConnectCore Wi-i.MX53 module, 1 GHz, 512 MB Flash, 1 GB RAM, 2x Ethernet, 802.11abgn, single pack
<b>CC-WMX-KD79-VK-B</b>	ConnectCore Wi-i.MX53 module, 1 GHz, 512 MB Flash, 1 GB RAM, 2x Ethernet, 802.11abgn, 25-piece bulk pack
<b>CC-MX-LD6A-ZM</b>	ConnectCore i.MX53 module, 800 MHz, 1 GB Flash, 512 MB RAM, 1x Ethernet, Industrial Temp, single pack
<b>CC-MX-LD79-ZK</b>	ConnectCore i.MX53 module, 800 MHz, 512 MB Flash, 1 GB RAM, 2x Ethernet, Industrial Temp, single pack

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