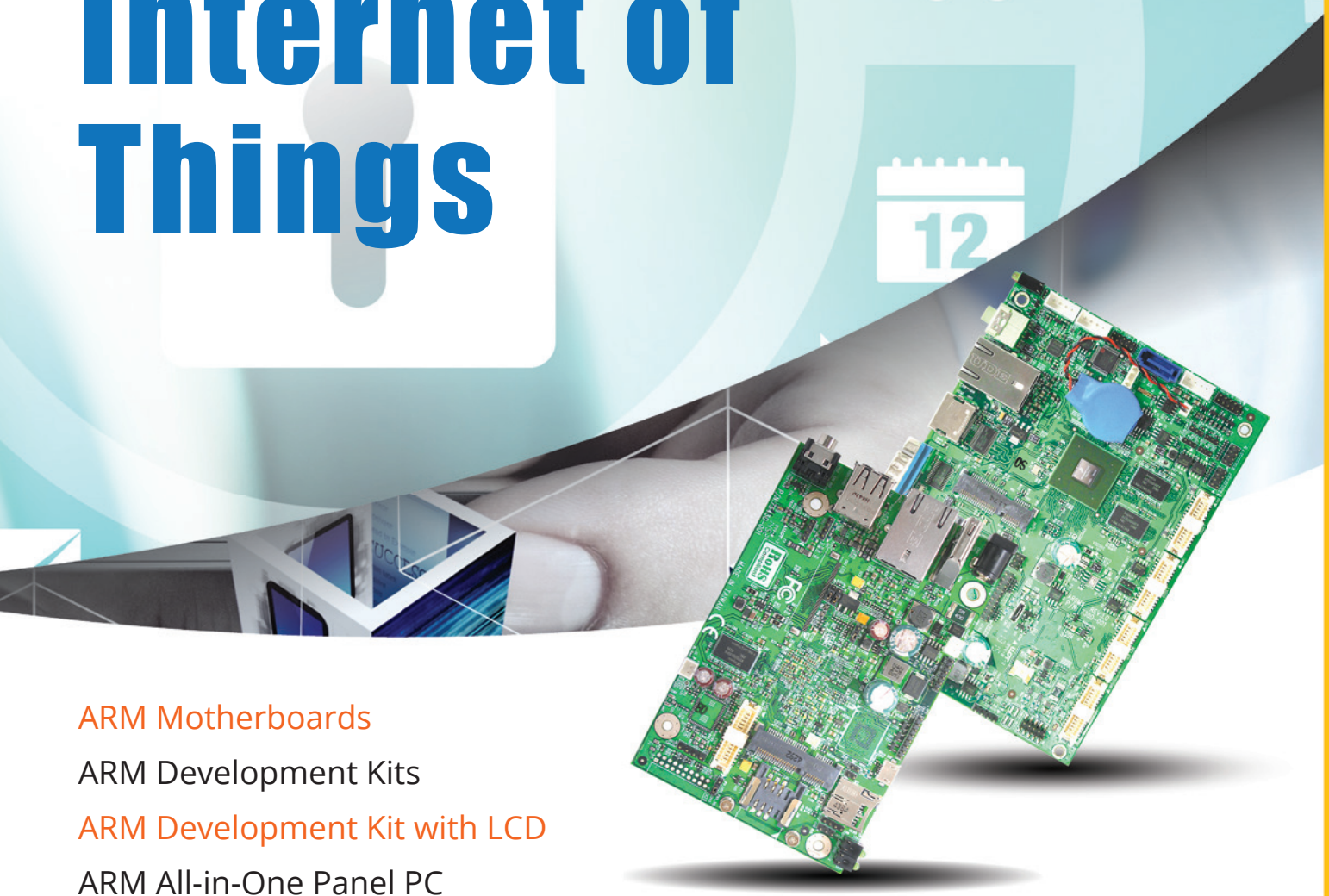
Embedded ARM Computing

bcm ADVANCED RESEARCH

Intelligent Computing Design for the

Internet of Things



ARM Motherboards

ARM Development Kits

ARM Development Kit with LCD

ARM All-in-One Panel PC

SMARC Module Development Kits

Custom ODM & OEM

freescale Connect Proven Partner

www.bcmcom.com

BCM Cortex A9 ARM Boards

BCM's standard i.MX6 Cortex A9 products provide OEMs with excellent off-the-shelf solutions ready for integration into their own systems

The Freescale i.MX6 Quad family encompasses a quad-core platform providing high-performance multimedia processing. Integrated FlexCAN, MLB busses, PCI Express® and SATA-2 provide excellent connectivity, while integration of LVDS, MIPI display port, MIPI camera port and HDMI v1.4 makes it an ideal platform for leading-edge consumer, automotive and industrial multimedia applications. For customers requiring lower performance, BCM provides a single core series of ARM motherboards while performances and cost are balanced.





Product Name	AR6MXQ	AR6MXS	AR6MXCS
System			
Onboard CPU	i.MX6 Quad Core	i.MX6 Solo Core	i.MX6 Solo Core
Onboard Memory	1GB DDR3	1GB DDR3	512MB DDR3
Onboard Storage	4GB eMMC	Optional	Optional
Power Range	9V ~ 24V DC	9V ~ 24V DC	5V DC
Dimension	5.7 in x 4 in	5.7 in x 4 in	4.72" x 3.07"
OS Support			
Android	Ver. 4.0.4, 4.3.1, 4.4.2	Ver. 4.0.4, 4.3.1, 4.4.2	Ver. 4.3.1
Linux	Kernel Version 3.0.35_4.1.0, Ubuntu 12.04	Kernel Version 3.0.35_4.1.0, Ubuntu 12.04	Kernel Version 3.0.35_4.1.0, Ubuntu 12.04
Other	Yocto	Yocto	Yocto
Rear I/O			
Video Interface	1 x HDMI	1 x HDMI	1 x HDMI
Audio	1 x Line-Out	1 x Line-Out	1 x Line-Out
LAN	1 x RJ-45	1 x RJ-45	1 x RJ-45
USB	2 x USB	2 x USB	2 x USB, 1 x USB OTG
COM	1 x COM	1 x COM	n/a
Power	1 x DC-in	1 x DC-in	1 x DC-in
SD/SIM Card Slot	1 x SD, 1 x SIM	1 x SD, 1 x SIM	1 x uSD, 1 x SIM
Onboard I/O			
Expansion	1 x Mini PCIe	1 x Mini PCIe	1 x Half Size mini-PCIe
Video Interface	2 x LVDS, 1 x MIPI-CSI, 1 x MIPI-DSI	1 x LVDS and 1 x MIPI-CSI	1 x LVDS
USB	2 x USB and 1 x USB OTG	2 x USB and 1 x USB OTG	1 x USB
COM / UART	1 x RS232 and 1 x TTL	1 x RS232 and 1 x TTL	1 x RS232 and 1 x TTL
Other	1 x GPIO, 1 x SATA, 1 x SATA Power	1 x GPIO	1 x GPIO, 1 x I²C, 1 x CAN Bus

Product Name	SMA-IMX6QI		REV-SA01
System			
Onboard CPU	i.MX6 Quad Core		n/a
Onboard Memory	1GB DDR3		n/a
Onboard Storage	4GB eMMC		n/a
Power Range	3V ~ 5.25V		9V ~ 24V DC
Dimension	3.23" x 1.97"		5.75" x 3.98"
Form Factor	SMARC Module		SMARC Carrier Board
OS Support	Android, Linux, Yocto		
Graphics	HD 1080p Encode and Decode. 2D/3D Acceleration		
LAN/Ethernet	10/100/1000 Mbit/sec	Rear I/O	2 x RJ-45, 2 x USB and 1 x mini USB, 1 x COM, 1 x HDMI and 1 x VGA
USB	Supports two USB 2.0 Port (One OTG)		
COM	Supports 2 x RX/TX (Ser1/3); 2 x UART (Ser0/2)		
Display	Supports Parallel LCD 18/ 24-bit; LVDS Single Ch. 18/ 24-bit; HDMI		
Image Capture Interfaces	Supports 2 Interfaces (PCAM, CSI)		
Additional Interfaces	Supports up to 3 PCIex1, MLB150, 12 x GPIOs, SDIO, SATA eMMC, 2 x SPI, 5 x I2C, 1 x I2S, SPDIF, WDT, 2 x CAN, JTAG, Battery and System Management	Onboard I/O	1 x mini-PCIe Socket, 1 x LVDS, 1 x USB, 1 x COM, 1 x SD, 1 x SIM, I²C, RTC, 2 x CAN BUS, GPIO, 1 x SATA, Mic-in
Operating Temperature	Supports Industrial Temperature: -40°C to 85°C		0 ~ 60°C (32 ~ 140°F)

ARM Panel PC

BCM provides a 10 inch all-in-one Panel PC with PCAP Touch and equipped with either BCM's AR6MXQ or AR6MXS i.MX6 Cortex A9 ARM motherboard inside delivering quad core or solo core performance operated with Android or Linux OS.

This falness ARM Panel PC provides rich external I/O interfaces enabling secondary display through HDMI connector as well as connecting to multiple peripherals via USB, and COM ports. The system supports blue-tooth or Wi-Fi via module connected to mini-PCIe slot. Options of 100x100mm and 75x75mm VESA mounting holes provide easy installation.

Ideal applications include Retail POS, interactive digital signage, industrial control, fastfood in-store environmental control terminal.

Wall Mount

Supports 2nd Display via External HDMI

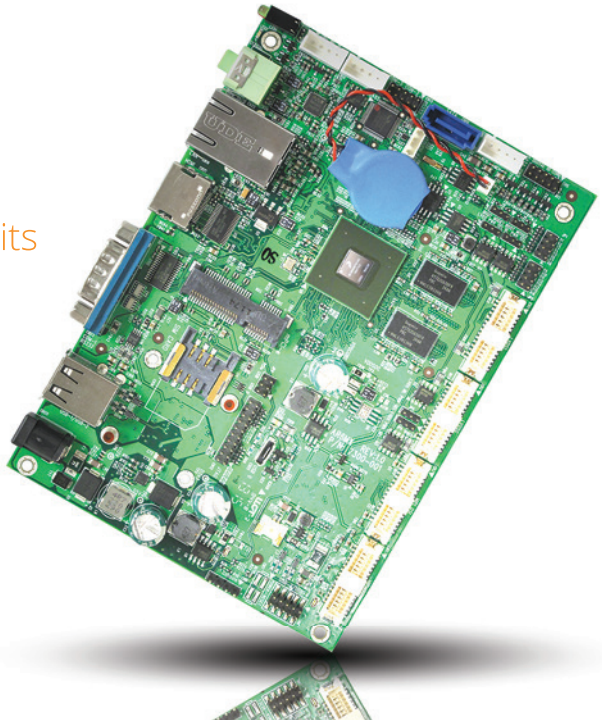
Ordering Name	Onboard CPU	Onboard Memory	Storage	Description
PPC10W-6MXQ	i.MX6 Quad Core	1GB DDR3	4GB eMMC	10" Wide Screen i.MX6 Quad Core Fanless Panel PC with touch screen, power adapter
PPC10W-6MXS	i.MX6 Solo Core	1GB DDR3	Optional	10" Wide Screen i.MX6 Solo Core Fanless Panel PC with touch screen, power adapter

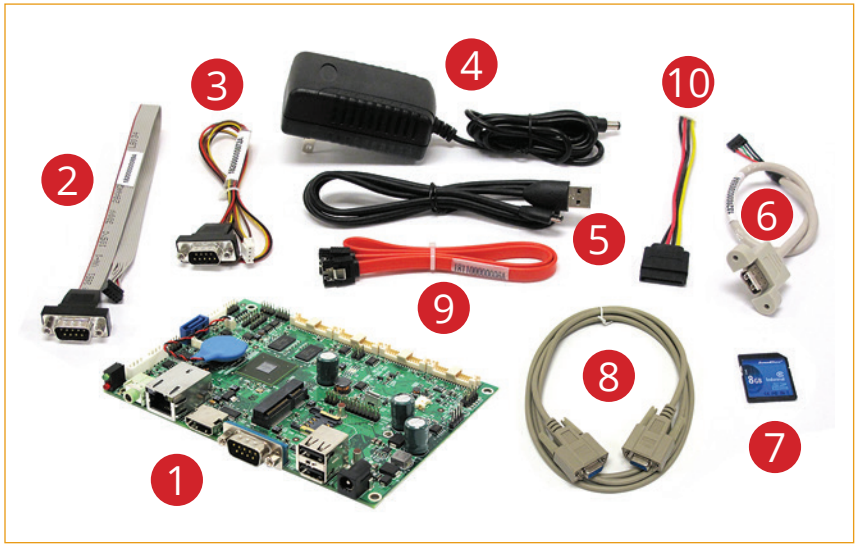
* OS, SD card, Wi-Fi module and antenna are NOT included.

3.5″ SBC ARM Dev. Kits

Freescale i.MX6 Quad/Solo Core ARM Development Kits available in Android or Linux Versions

For customers looking to test drive BCM's i.MX6 products, BCM provides an ARM Development Tool Kit. This development kit is designed to create the highest probability of a successful out of box experience. The kit includes everything needed to boot to the target O/S (Linux or Android) by simply connecting a monitor and plugging in power. This kit is available in both Solo Core and Quad Core versions. An industrial grade Type 6 SD card is included pre-loaded with Android or Linux Ubuntu or Yocto operating system.





3.5″ SBC ARM Development Kit Includes the following accessories	
1	AR6MXQ/AR6MXS Motherboard
2	DB9 Cable for COM2
3	DB9 Cable for COM3
4	Power Adapter
5	USB OTG Cable
6	USB Cable for USB3 or USB4
7	8GB SD Card with OS
8	Null-modem Serial Cable
Optional Items	
9	SATA Cable
10	SATA Power Cable

Ordering Name	Onboard CPU	Onboard Memory	Onboard Storage	Description
AR6MXQ	i.MX6 Quad Core	1GB DDR3	4GB eMMC	Freescale i.MX6 Cortex A9 Quad Core 1.0 GHz ARM Motherboard (5.7 in x 4 in)
AR6MXQ-DEV-AN	i.MX6 Quad Core	1GB DDR3	4GB eMMC	AR6MXQ Development Kit with Android OS
AR6MXQ-DEV-LX	i.MX6 Quad Core	1GB DDR3	4GB eMMC	AR6MXQ Development Kit with Linux OS
AR6MXS	i.MX6 Solo Core	1GB DDR3	Optional	Freescale i.MX6 Cortex A9 Solo Core 1.0 GHz ARM Motherboard (5.7 in x 4 in)
AR6MXS-DEV-AN	i.MX6 Solo Core	1GB DDR3	Optional	AR6MXS Development Kit with Android OS
AR6MXS-DEV-LX	i.MX6 Solo Core	1GB DDR3	Optional	AR6MXS Development Kit with Linux OS

10″ LCD ARM Development Kits

Turn-key testing with 10″ LCD with Touch Screen and pre-loaded Android or Linux OS

For turn-key testing with an LCD touch display, BCM offers a 10 inch touch LCD & enclosure solution using Freescale i.MX6 Cortex A9 quad core or solo core fanless systems. The rugged metal enclosure measures 10.25″ x 6.375″ x 1.25″. In addition, this development kit includes an 8GB SD card pre-loaded with Android or Linux OS, a Wi-Fi module and two antennas making it convenient for customers to evaluate.

The 10 inch LCD ARM development kit provides an ideal platform to test performance and scalability prior to moving forward with BCM's PPC10W-6MXQ/S standard Panel PC products, or engaging in BCM's quick-turn custom design services for a feature-specific product design for qualifying OEMs.

Ordering Name	Onboard CPU	Onboard Memory	Storage	Description
AR6MXQ-LCD-AN	i.MX6 Quad Core	1GB DDR3	4GB eMMC	AR6MXQ Development Kit with 10″ LCD, enclosure and Android OS
AR6MXQ-LCD-LX	i.MX6 Quad Core	1GB DDR3	4GB eMMC	AR6MXQ Development Kit with 10″ LCD, enclosure and Linux OS
AR6MXS-LCD-AN	i.MX6 Solo Core	1GB DDR3	Optional	AR6MXS Development Kit with 10″ LCD, enclosure and Android OS
AR6MXS-LCD-LX	i.MX6 Solo Core	1GB DDR3	Optional	AR6MXS Development Kit with 10″ LCD, enclosure and Linux OS

* The above LCD development kit comes with a 10 inch touch LCD, enclosure, power adapter, Null-modem Serial Cable, USB OTG Cable, SD card with pre-loaded OS, Wi-Fi module, two antennas.

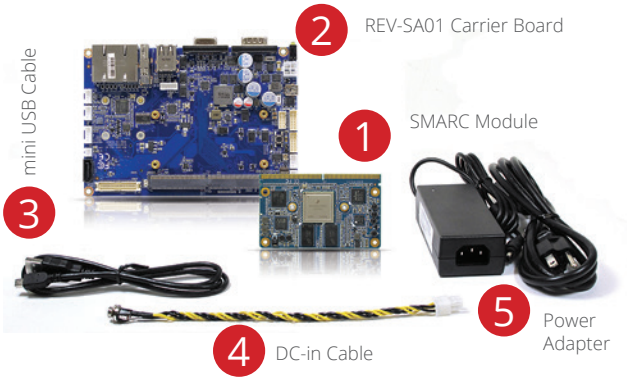
SMARC Module Development Kits

Smart Mobility ARChitecture (SMARC) provides OEMs with low power optimization, cost efficiency, scalable performance and quick time-to-market solutions

BCM SMA-IMX6QI SMARC module comes standard with the i.MX6 Quad Core with industrial temperature range, 1GB DDR3, and 4GB eMMC onboard. For a turn-key test drive, we provide a full featured carrier board (REV-SA01) with dual Gbit Ethernet, dual CAN Bus, HDMI, LVDS, in a 3.5" SBC form factor, as well as one power adapter, one DC-in cable, a mini USB cable, and comes pre-loaded Android, Linux, or Yocto OS on the onboard eMMC chip according to customer's requirement. Together this complete turn-key SMARC module development kit is targeted to OEMs that require quick time to market with low design risk for their highly custom board design solutions.

The SMARC module adopts SoC architecture allowing small form factor design which benefits applications that require low power, portability, and space constrained environments.

SMARC Development Kit



The SMARC module is an ultra small form factor measures only 3.23" x 1.97" (82 x 50mm)

Install a SMARC module on the 3.5 inch carrier board

Ordering Name	Onboard CPU	Onboard Memory	Onboard Storage	Description / Kit includes
SMA-IMX6QI	i.MX6 Quad Core	1GB DDR3L	4GB eMMC	SMARC Module, 3.23" x 1.97" (82mm x 50mm) Industrial Temperature
REV-SA01				SMARC Module Carrier Board, 5.75" x 3.98" (146mm x 101mm)
SMA-IMX6QI-DVA	i.MX6 Quad Core	1GB DDR3L	4GB eMMC	Development kit includes one SMA-IMX6QI SMARC Module and one REV-SA01 Evaluation Carrier Board. Cables and Power Adapter. Pre-loaded with Android OS
SMA-IMX6QI-DVL	i.MX6 Quad Core	1GB DDR3L	4GB eMMC	Development kit includes one SMA-IMX6QI SMARC Module and one REV-SA01 Evaluation Carrier Board. Cables and Power Adapter. Pre-loaded with Linux OS
SMA-IMX6QI-DVY	i.MX6 Quad Core	1GB DDR3L	4GB eMMC	Development kit includes one SMA-IMX6QI SMARC Module and one REV-SA01 Evaluation Carrier Board. Cables and Power Adapter. Pre-loaded with Yocto OS

Low Cost ARM Development Kits

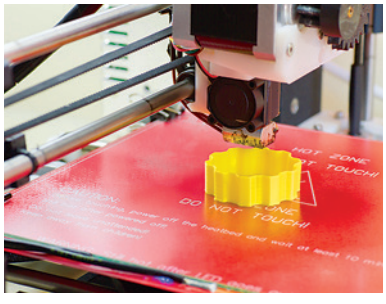
Cost is Important - AR6MXCS ARM Micro Board provides Low Power, Full Features, and Great Quality

AR6MXCS is the perfect solution for OEMs looking for a cost effective, ARM based industrial and long-life single board computer (SBC). It is a full feature, ready-to-use, ultra-compact and fanless SBC powered by the onboard Freescale i.MX6 Cortex A9 Solo Core CPU enabling efficient development of smart devices with a balance between processing and graphics performance with competitive pricing. The AR6MXCS is a compact 4.7"x3" (120x78mm) form factor and it operates on 5V DC power. It is a palm size single board computer ready to use out of the box complete with either an Android or Linux BSP.

BCM also provides the AR6MXCS ARM Development Kit for OEMs looking to either test drive or quickly implement this solution with minimum effort and the highest probability for a successful out of box experience.

AR6MXCS Development Kit

Ordering Name	Onboard CPU	Onboard Memory	Storage	Description / Kit includes
AR6MXCS	i.MX6 Solo Core	512MB DDR3	Optional	Freescale i.MX6 ARM Micro Board, 4.72" x 3.07" (120mm x 78mm)
AR6MXCS-DEV-AN	i.MX6 Solo Core	512MB DDR3	8GB uSD	Development kit includes one AR6MXCS motherboard, 8 GB MicroSD Card pre-loaded with Android OS, USB to TTL Cable, USB OTG Cable and 5V AC Adapter
AR6MXCS-DEV-LX	i.MX6 Solo Core	512MB DDR3	8GB uSD	Development kit includes one AR6MXCS motherboard, 8 GB MicroSD Card pre-loaded with Linux OS, USB to TTL Cable, USB OTG Cable and 5V AC Adapter


Why Choose an ARM Platform?

Low Power, Cost Saving, SoC Single Chip Design, Ready for the Internet of Things (IoT) Applications

Ultra Low Power and Mobility

The RISC architecture enables the processor to handle instruction sets in a simpler and more efficient way. This allows for reduced power consumption which in turn creates less heat which is essential for portable, battery operated, hand-held, and fanless devices.

Low Cost Embedded System

The simplified nature of ARM technologies is ideal for digital products or appliances that require reasonable compute performance or multimedia capabilities over an extended life-cycle but require low upfront equipment costs and ongoing operational costs.

Ultra Small Form Factor Design

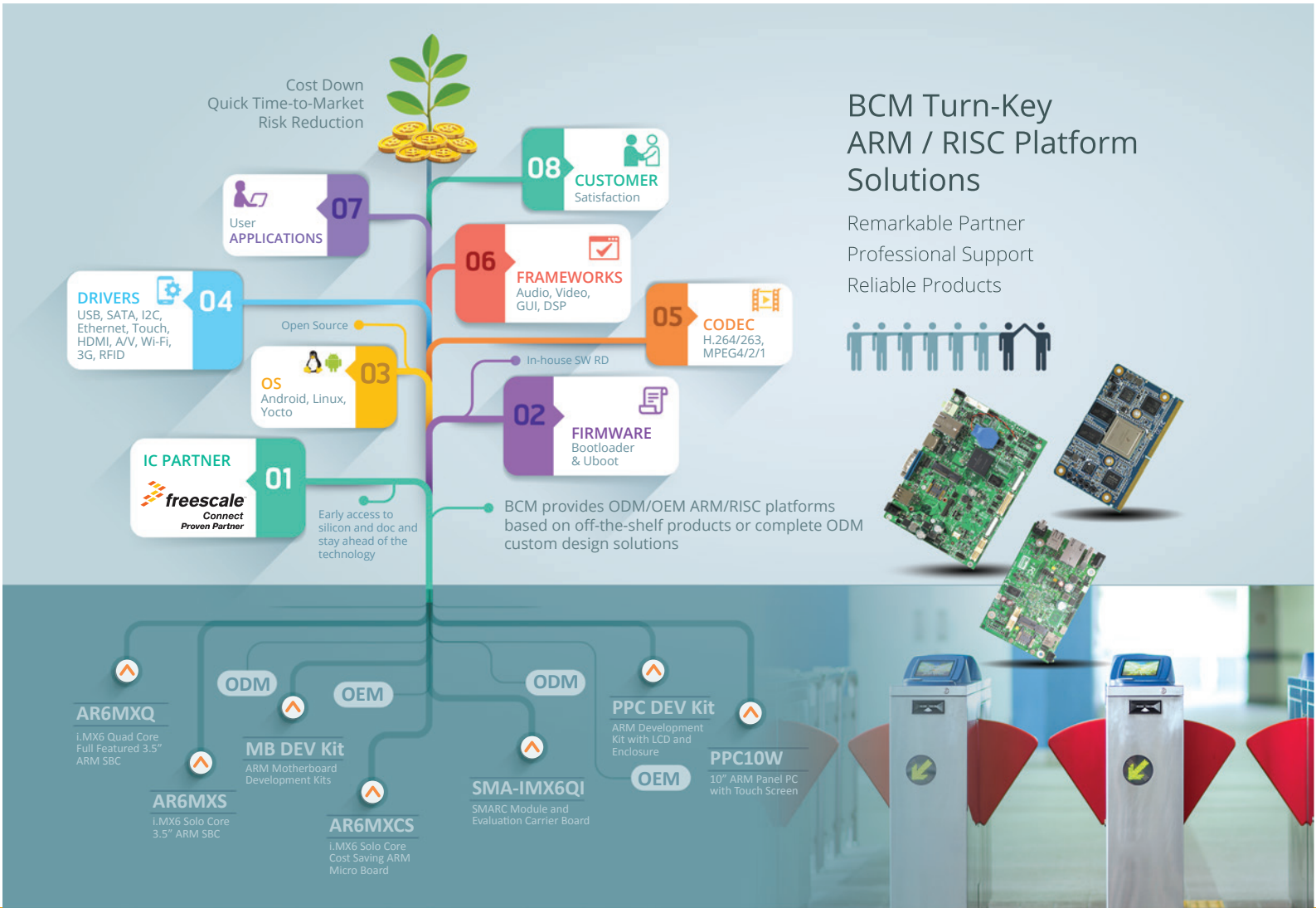
RISC based processors are much smaller which enable ultra small form factors or simplified designs ideal for space constrained applications such as embedded appliances, portable devices, mobile applications, hand-held devices, small size panel PC, HMI applications, or cost constrained products that require simple compute or multimedia capabilities for low cost digital appliances, input devices, consoles, or security nodes.

Stable Performance

The simplified instruction set combined with less heat and less power consumption helps systems using ARM technology to maintain stable performance and extend their battery for hours of operation.

BCM ARM Solutions

In addition to the common smartphone and tablet products, ARM-based computing devices can be found in a growing number of embedded applications such as set-top-box, machine input device, POS, Kiosk, intelligent machinery, in-vehicle PC, compact digital signage and media player, hand-held game console, smart Human Machine Interface (HMI) devices, home automation, and machine-to-machine (M2M) devices, just to name a few. All of the devices mentioned above carry the same feature requirements including compact design, mobility, low power, and fanless operation. These features are delivered by the extraordinary characteristics of the ARM architecture combining low-power consumption and using reduced instruction set processors, yet providing scalability by offering single, dual, or quad core processor options, together enabling ultra small form factor computing design with extremely extended battery life and excellent performance. In order to help our clients achieve their goals and shorten the development process on ARM based applications, BCM provides complete turn-key ARM solution services for each of our ARM products as well as our world class ODM custom design services:



Custom Design ODM/OEM & Manufacturing

BCM Custom Designs ARM Industrial Motherboards for Industrial Applications across various market segments

BCM's complete turn-key custom OEM/ODM design services for ARM motherboards and systems provides customers with reduced project risk and lower development costs while accelerating time to market.

Our custom design OEM/ODM services include the following:

- ARM Motherboards: Single Board Computers (SBC), SMARC Modules, SMARC Module carrier boards, and custom form factors
- Industrial Computing System Design: from board level to system platform including barebone, industrial computer, Panel PC, Open Frame Module
- Mechanical Design, ID Design: CAD drawing and 3D modeling, thermal simulations
- Software Engineering Support: Android, Linux and Yocto BSP debug
- Regulatory Compliance: FCC, CE, UL Certifications

Medical Ultrasound Machine

The Benefits of BCM's Turn-Key Custom Design Service:

- Customer defines the specification
- US based PM and RD team
- We ensure the design can achieve a minimum 5-7 year life-cycle prior to last-time-buy
- Designed for 24-hour operation - 365 days per year
- Holistic BOM & Revision Control
- Manufactured in our own ISO9001/14001 facilities
- Low Volume Manufacturing: 360-500/order for customized products
- Full Mechanical & Thermal design capabilities
- Flexible NRE

Auto Repair Equipment

Parking Meter

Kiosk

Auto Repair Equipment

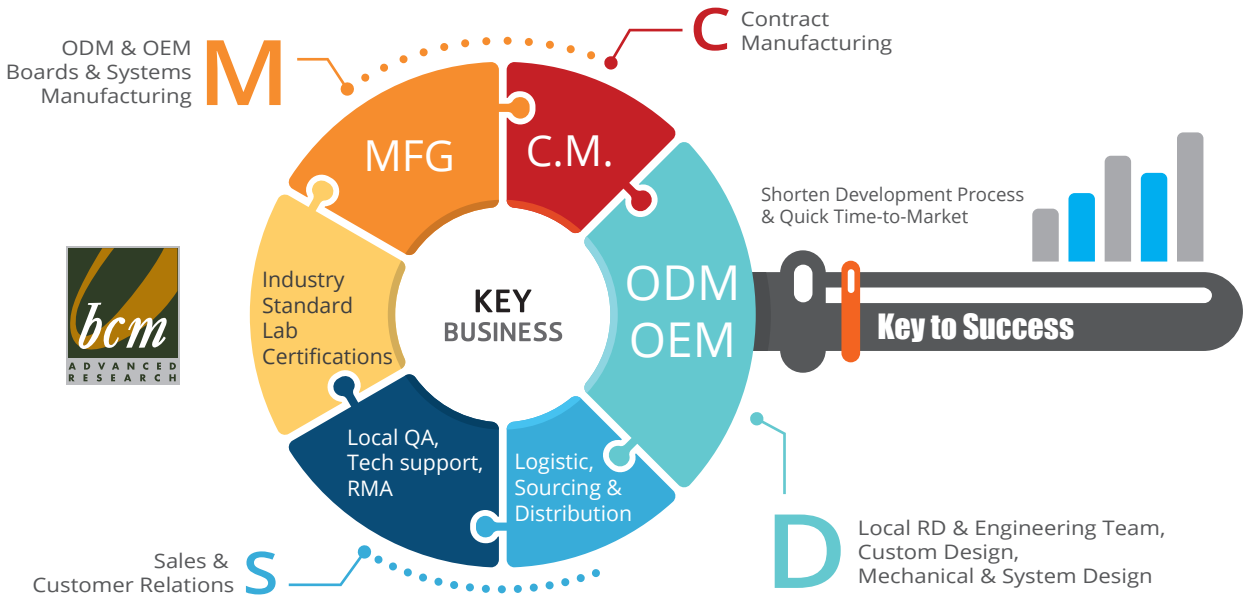
Digital Vending Machine

Digital Scale

About BCM

A Leading Company in Long Life Industrial Motherboards & Intelligent Computing Systems Since 1990

BCM Advanced Research (BCM), a worldwide provider of long life embedded motherboards and systems, is a Proven Partner of Freescale® Semiconductor by demonstrating our robust design and manufacturing capabilities using Freescale's i.MX6 Family of ARM processors. Since 1990, BCM has been providing custom and off-the-shelf motherboard and embedded systems solutions to top OEMs in market segments such as medical, industrial automation, retail, gaming & lottery, security, digital media, test & measurement, communications and transportation market segments.



BCM is a Proven Partner of Freescale Semiconductor

Freescale's Proven Partner is an endorsement of BCM's ability to support its OEM customers with Freescale i.MX ARM processor products and custom board designs. It gives customers the confidence to take advantage of BCM's complete turn-key custom OEM/ODM design services for i.MX series motherboards and systems that effectively provide OEMs with reduced project risk and lower development and product costs while accelerating time to market.

The benefits of working with a Freescale Proven Partner are many including early access to silicon and documentation for speeding time-to-market for customers looking to stay ahead of the technology curve. In addition, engaging with an experienced and credentialed design partner lowers development costs and risks allowing projects to launch on-time, and on-budget. Also, it allows OEM's to benefit from the Proven Partner's design efficiencies and economies of scale often resulting in a lower unit cost to go along with the engineering design cost savings and reduced design risks.

BCM Advanced Research
11 Chrysler, Irvine, CA 92618 USA
949.470.1888
BCMSales@bcmcom.com

ARROW ELECTRONICS, INC.

AVNET electronics marketing

freescale Connect Proven Partner