

Separate Sheet

Main Product Specifications of the R-Car V3M Starter Kit

Board Function	Item	Description	Note
CPU	Arm® Cortex®-A53	800 MHz dual core, with NEON/VFPv4, L1\$ I/D 32K/32K, L2\$ 512K	
	Arm Cortex R7	800 MHz, with VFPv3, L1\$ I/D 32K/32K, I/D-TCM 32K/32K, lock-step	
Memory	SoC Internal	448KBytes System RAM	
	DDR	2 GBytes (6.4 GBytes/s) DDR3L-1600, 32-bit wide	
	HyperFlash (bootable)	64 MiBytes Hyper Flash (RPC, reduced pin-count) (512 Mbits, 160 MHz, 320 MBytes/s)	alternative to on-board Hyper/QSPI flash memory: 2ch QSPI (max. 80 MHz, 80 MBytes/s)
	QSPI Flash (bootable)	64MiBytes QSPI (512 Mbits, 80 MHz, 80 MBytes/s)	
	eMMC	32GiBytes eMMC (HS200) [available only for PCB V3.00 and later]	available
	Parallel SRAM/ROM (bootable)	-	Available (shared with many other functions)
Video out	HDMI	no native HDMI; derived from LVDS by converter HDMI connector (type A, 19 pins) HDMI 1.4, up to 1080p60, 165 MHz, (no audio)	alternative to on-board connector (shared with trace and LVDI)
	RGB (parallel)	-	RGB888 (shared with many other functions)
	LVDS	-	1 channel (4+1CLK differential pairs) TIA/EIA-644, max 148.5 MHz, (shared with trace and HDMI)

Video in	Serial	-	MIPI-CSI2, 1 channel (4-lanes) VC/DT supported, up to 1.5Gbps/lane
	Parallel	-	2 channels, RGB/YCbCr/Raw, max 100 MHz (shared with many other functions)
Interfaces	Ethernet AVB	PHY + RJ45 connector (100/1000)	alternative to on-board PHY: RGMII V1.3 interface (2.5V)
	SCIF	1 channel via Mini-USB-B (via FT232 USB-to-UART bridge)	up to 3 additional channels (shared) (on-board channel optionally)
	HSCIF	-	up to 4 channels (shared)
	MSIOF (SPI)	-	up to 3 channels (SPI/IIS, master/slave, 66 MHz) (shared)
	CAN-FD	-	up to 2 channels, 8Mbps (shared)
	I2C	For on-board peripherals	up to 5 channels, 400kHz, master/slave (shared)
	DigRF	-	available
Timer	PWM	-	Up to 5 channels (shared)
HMI	output	3 LEDs at GPIOs	-
	input	4 DIP-switches at GPIOs	-
ADC		-	8 channels, 12-bit
GPIOs		-	14 GPIOs by default, up to 105 GPIOs (shared)
Reset		Reset button (and LED)	Input and output
Power		5V/3A input PMIC for all required voltages (OTP) Power button	Power-up/down signals Power-good status
Boot Source		HyperFlash, QSPI, SCIF, JTAG debugger	QSPI Flash, SCIF, JTAG debugger, parallel ROM
Debug IF	JTAG debug	20-pin (2.54mm) Arm_EML ("Lauterbach")	available
	JTAG trace	EMT-A53-16K/R7-4K	available
	Parallel trace	On-board connector for LVDS pod (shared with LVDS)	Available (shared with LVDS and HDMI)
Clocks		All necessary clocks on-board	-
Mode		Can be configured by CPLD, DIPSW, USB or software	-
Cooling		Heat-sink and fan	-

Expansion		-	CoM Express connector (440-pin) backwards-compatible to H3 Starter Kit
Interrupts		-	NMI, IRQ on GPIOs
Size		95 x 95 mm (equivalent to CoM Express type 6)	-
SoC		Soldered	-

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