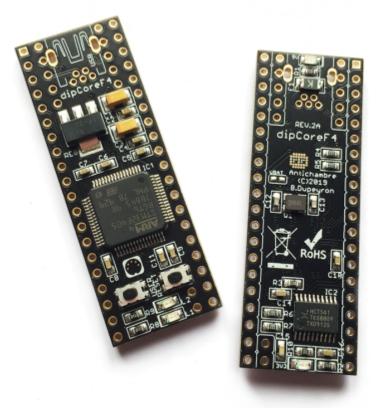
# dipCoreF4

A reduced Core for your MIDIbox App, an STM32F405RG in a DIP40 format.



### Features

- MIOS32 uses same processor family and drivers(no deep change).
- Same internal hardware as Disco or wCore (speed, memory, peripherals, etc...) .
- Board pinout and package compatible with a MIOS8 PIC
- USB connector onboard. 2 OTG are available, second(new) USB is Host only.





- 5V power input and led.
- 3.3V regulator and led on board.
- 74HCT541 on board for the 5V output ports.
- User and Reset buttons.
- 2 user leds.
- 12 extra pins for USB, buttons and leds.
- Your favorite Core is now a current component easy to integrate.

All commons MIOS32 ports are available except:

- General purpose J10x ports were removed.
- LCD port was reduced to a serial one, no more pins J15.D0-D7, no back-light power supply.
- 2 UART only(2 MIDI In/2Out).
- 2 AIN channels only(e.g. pedal inputs).
- SPI slave only supported by J19(SPI3).

Check the dipBoardF4 for more details

### Download

dipCoreF4 eagle lib for easy integration in your design.

dipcoref4\_beta.zip

### Pinout

The dipCoreF4 and the legacy MIOS32 ports.

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dipCoreF4

1	RESET	41	J1.ID1	🖻 🔍 🗛 ເອ 🌑 🜑	VBUS/5V(IN)	46	J16.SO	40
2	USER-BUTTON	42	GND		GND	46	J16.SI	39
3	J4.SC1	43	J1.DP1	00	J1.DM1	48	J16.SC	38
4	J4.SD1	44	J1.DM2	0 0 0000 0 0	J1.OV2	49	J16.RC1	37
5	J11.MI1	45	J1.DP2	C OdipCoreF40 0	J1.EN2	50	J18.RX	36
6	J11.MO1			0 777			J18.TX	35
7	J5.A0			C			J16.RC2	34
8	J5.A1			o 0			J15.CS1	33
9	J19.RC2			CZ C6 C4			VBAT/3V3(OUT)	32
10	J8/9.RC2			C ( C C C C C C C C C C C C C C C C C C			GND	31
11	3V3(OUT)			O INNINININI ICI O			J15.SCL	30
12	GND			О 🖁 🛛 🏭 О 📕 О 📕 О			J15.SDA	29
13	SWDIO			SHERT RETE			J15.DC	28
14	SWCLK			C SONJERNIS			J15.CS2	27
15	J19.RC1						J11.MI2	26
16	J19.SC			• 🖢 👩 = 🔟 • •			J11.MO2	25
17	J19.SO						J4.SD2	24
18	J19.SI						J4.SC2	23
19	J8/9.SO				LED.2	51	J8/9.SC	22
20	J8/9.SI			S 100 00 00 00 00 00 00 00 00 00 00 00 00	LED.1	52	J8/9.RC1	21

Check dipBoardF4 for more details about the connectors.

#### First, was a chart.

This chart gives you the equivalence between the different pinout and functions.



	PIC / MIOS8	STM32F4 / MIOS32							
				dipCoreF4			DISCO / wCore		
				upcorer4			DISCOTWCOR	5	
DIP40		DIP40	LQFP64	STM32 F415RG	MOS32 Function	LQFP100	STM32F 407VG	Discovery	
	MIOS8 Function	ā	Ľ	S L	Σű	Ľ	2 <del>8</del> 2	F4 Pin	Pin name
ΨÎ	<b>•</b> •		<b>•</b>	*	<b>*</b>	Ψ.	Y	*	*
2	J5 RA0	2	14	GPIO	USER BUTT	23	USER BUTT	P1.12	PA0(6)-WKUP(5)
3	J5 RA1	3	58	I2C1_SCL	J4B.SC	92	I2C1_SCL	P2.23	PB6
- 4	J5 RA2	4	59	I2C1_SDA	J4B.SD	93	USART1_RX	P2.24	PB7
5	J5 RA3	5	17	USART2_RX	J11.MI1	26	USART2_RX	P1.13	PA3(5)
6	J5 RA4	6	16	USART2_TX	J11.MO1	25	USART2_TX	P1.14	PA2(5)
7	J5 RA5	7	15	ADC123_IN1	J5.A0	24	ADC123_IN1	P1.11	PA1(5)
8	J5 RE0	8	25	ADC12_IN15	J5.A1	34	ADC12_IN15	P1.19	PC5(s)
9	J5 RE1	9	40	SP3_RC2(GPIO)	J19.RC2	66	LCD:SER/E2	P2.46	PC9
10	J5 RE2	10	26	SPI2_RC2(GPIO)	J8/9.RC2	35	ADC12_IN8	P1.22	PB0(5)
13	OSC1	13	46	JTMS-SVDIO		72	JTMS-SVDIO	P2.42	PA13
- 14	OSC2	- 14	49	JTCK-SWCLK		76	JTCK-SWCLK	P2.39	PA14
15	J6/7_RC	15	50	SPI3_:RC1(NSS)	J19.RC1	77	SPI3_NSS:RC1	P2.40	PA15
16	J6/7_SC	16	55	SPI3_SCK	J19.SC	89	SPI3_SCK	P2.28	PB3
17	J6/7_SO	17	57	SPI3_MOSI	J19.SO	91	SPI3_MOSI	P2.26	PB5
18	J6/7_SI	18	56	SPI3_MISO	J19.SI	90	SPI3_MISO	P2.25	PB4
19	J8/9 S0	19	11	SPI2_MOSI	J8/9.SO	18	N.U.	P1.9	PC3(5)
20	J8/9 SI	20	10	SPI2_MISO	J8/9.SI	17	ADC123_IN12	P1.10	PC2(5)
21	J8/9 RC	21	27	SPI2_RC1(GPIO)	J8/9.RC1	36	ADC12_IN9	P1.21	PB1(5)
22	J8/9 SC J10 SC	22	34	SPI2_SCK	J8/9.SC	52	SPI2_SCK	P1.37	PB13
23	J10 RC	23	30	I2C2_SDA	J4A,SC	48	I2C2_SDA	P1.35	PB11
24	J10 SO	24	29	12C2_SCL	J4A,SD	47	12C2 SCL	P1.34	PB10
25	JIITX	25	51	UART4_TX	J11.MO2	78	DAC_CK(discovery)	P2.37	PC10
26	JIIBX	26	52	UART4_RX	J11.MI2	79	LCD:SER/RV	P2.38	PC11
27	J14	20	8	GPIO	J15.CS2	15	OTG_FS_EN	P1.8	PC0(5)
28	J15 RS J10 MD	21	54	GPIO	J15.DC	83	UART5_RX	P2.34	PD2
20	J15 RV J10 MO	20	53	GPIO	J15.SDA	80		P2.34 P2.35	
							UART5_TX		PC12 PC1(5)
30	J15 E	30	9	GPIO	J15.SCL	16	ADC123_IN11	P1.7	
	J15 D0	33	33	GPIO	J15.CS1	51	SPI2_NSS:RC1	P1.36	PB12
34	J15 D1	34	24	SPI1_RC2(GPI0)	J16.RC2	33	ADC12_IN14	P1.20	PC4(5)
35	J15 D2	35	62	CAN1_TX	J18.TX	96	I2C1_SDA	P2.20	PB9
36	J15 D3	36	61	CANI_RX	J18.RX	95	SP3_RC2	P2.19	PB8
37	J15 D4	37	20	SPI1_RC1(NSS)	J16.RC1	29	ADC12_IN4	P1.16	PA4(5)
38	J15 D5	38	21	SPI1_SCK	J16.SC	30	SPI1_SCK	P1.15	PA5(s)
39	J15 D6		22	SPI1_MISO	J16.SI	32	SPII_MOSI	P1.17	PA7(5)
40	J15 D7		23	SPI1_MOSI	J16.SO	31	SPII_MISO	P1.18	PA6(5)
		41	43	OTG_FS_ID	J1.ID1	69	OTG_FS_ID	P2.41	PA10
		43	45	OTG_FS_DP	JI.DP1	71	OTG_FS_DP	CN5 (USB)	PA12
		44	35	OTG_HS_DM	J1.DM2	53	SPI2_MISO	P1.38	PB14
		45	36	OTG_HS_DP	J1.DP2	54	SPI2_MOSI	P1.39	PB15
		46	42	OTG_FS_VBUS	J1.VBUS	68	OTG_FS_VBUS	P2.44	PA9
		48	44	OTG_FS_DM	JI.DM1	70	OTG_FS_DM	CN5 (USB)	PA11
		49	3	OTG_HS_OC	J1.0C2	8	J10/D9	P2.9	PC14(3)-OSC32_IN(5)
		50	4	OTG_HS_EN	J1;EN2	9	J10/D10	P2.10	PC15(3)-OSC32_OUT(5)
		51	38	LED BLUE	LED.2	64	DAC_MCK(discovery)	P2.48	PC7
		52	37	LED RED	LED.1	63	USART6_TX	P2.47	PC6
			2	N.U.		7	J10/D8	P2.12	PC13(3)
			5	OSC_IN		12	N.U.	P2.7	PH0(5)-OSC_IN
			6	OSC_OUT		13	N.U.	P2.8	PH1(5)-OSC_OUT
			28	N.U.		37	SPII_RC1	P1.24	PB2
			39	N.U.		65	LCD:SER/E1	P2.45	PC8
			41	N.U.		67	LCD:RS	P2.43	PA8

## BOM

Due to the small SMD, which is sometime a difficulty to solder, the board is already assembled by

manufacturer, except the connectors. The mini-USB is optional.

Qty	Value	Package	Parts	Mouser	Reichelt	Conrad	LCSC	Notes
Head	lers	-		-		-		<u></u>
3	1*20	male		649-68000-420HL			C50981	Termination Post Length max 2.57mm
Conr	nector		-			-	-	
1	mini-USB	ТНТ	USB	571-1734510-1			no!	for other ref take care about restricted area!

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### 407VG vs 405RG

Legacy STM32F407 and 405 share the same characteristics.

The 405RG is a TQFP64, a 10x10mm package and only 64 pins.

No Ethernet MAC and camera interface.

B see offenenesSTRUEY See No.BroughtomRegineration to build of the ATM offenence hands to build of the CPU at AT AccessionPageLEPE 4 torticalLEPE 4 torticalCoreAm Catus MAAm Catus MACore And Catus MAIsiaIsiaCore And Catus MAIsiaIsiaCore And Catus MAIsiaIsiaCore And Catus MAIsiaIsiaCore And State (SP)IsiaIsiaCore And State (SP)I	Compare Attributes		×
DescriptionDescription with DEP and FUL 1 Mays Fund with DEP and FUL 1 Mays Fund with DEP and FUL 1 Mays Fund with DEP and FUL 1 Mays Evence. Fund with DEP and FUL 1 Mays Event Mays Even Mays Event	Show Differences	STM32F405RG 🗙	STM32F407VG 🗙
CrewAmtOrgenUMAmtOrgenUMAmtOrgenUMOpenating Programs (MM2)SigSigC-Processor typeC-Processor typeSigSigCAM Sar (SIG)SigSigFLAL BSD (POQ)SigSigCAL Sar (SIG)SigSigCall Sar (SIG)SigSigThree (b) (SIG)SigSigChar Sar (SIG)SigSig	Description	Cortex-M4 core with DSP and FPU, 1 Mbyte	Cortex-M4 core with DSP and FPU, 1 Mbyte Flash, 168 MHz CPU, ART Accelerator,
ConstructionConstruction(Particing Frequency (Mir)58Co-Processor free-Co-Processor free-Construction-Construct	Package	LQFP 64 10x10x1.4	LQFP 100 14x14x1.4
(ricossion speed)188188Co-Procession frequency (Mirst)Co-Procession frequency (Mirst)FLASE SSE (REG) (Forog)10241024Data State (REG)RAM Lase (REG)12-Compression (REG)12-Compression (REG)12-Compression (REG)12-ADD Converters (Fort Catantine)14-Compression (REG)Compression (REG) <td>Core</td> <td>Arm Cortex-M4</td> <td>Arm Cortex-M4</td>	Core	Arm Cortex-M4	Arm Cortex-M4
TurnCarbonest registeringFLASH (B) (Frog)FLASH (B) (Frog)Bat E2PRO (B) (non)JCCarbone (B) (100)Times (b) (120)JTimes (b) (120)JC Convertes (12-bit channes)JC Convertes (12-bit channes)		168	168
(max)FLAST Size (RE) (Prog)10241024PLAST Size (RE) (Prog)10241024Data ESPRON (B) (nom)192122Times (ty) (16 bit)1212Times (ty) (16 bit)22Other timer functions22AD Converters (12-bit channes)102AD Converters (12-bit channes)102Converters (12-bit channes)22Converters (12-bit channes)22Converters (12-bit channes)102Converters (12-bit channes)22Converters (12-bit channes)22<	Co-Processor type	-	-
Des ESPRO (a)			-
NA bise (b)192192Times (b) (b Di)1212Times (b) (b Di)22Other time function22AD Converters (12-bit channes)163AD Converters (12-bit channes)163AD Converters (12-bit channes)122Converters (12-bit	FLASH Size (kB) (Prog)	1024	1024
Interc (bp) (12 bit)1212Times (bp) (12 bit)22Other timer functions22AD Converters (12-bit channes)1616AD Converters (12-bit channes)Converters (12-bit channes)DiA Converters (12-bit channes)ComparatorComparatorConverters (14-bit channes)Dispay controlierConverters (14-bit channes)Converters (14-bit channes)Converters (14-bit channes)ComparatorConverters (14-bit channes)Converters (14-bit channes)ComparatorConverters (14-bit channes)Converters (14-bit channes)Catt (14)Catt (15)Catt (15)Catt (15)Catt (15) <t< td=""><td>Data E2PROM (B) (nom)</td><td>-</td><td>-</td></t<>	Data E2PROM (B) (nom)	-	-
Times (b) (22 MC2Times (b) (22 MC2Oher time functions2AD Converter (12-bit channes)16AD Converter (12-bit channes)1-Comparator-<	RAM šize (kB)	192	192
Other time Turchons21 WDG, 24-bit cours nounter, RTC21 WDG, 24-bit cours nounter, RTCAD Converters (12-bit channes)1616AD Converters (14-bit channes)22Di Converters (14-bit channes)22Di Converters (14-bit channes)22Comparator12Comparator52Converters (14) (12 bit)22Dispis controller02CAN (19)22CAN (19)33SP (19)33SP (19)33Dist Type108 OTG PS + USB OTG PS HSUSB OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HSUSB OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS HSDist Type108 OTG PS + USB OTG PS HS108 OTG PS + USB OTG PS	Timers (typ) (16 bit)	12	12
AC Convertes (12-bit channes)1616AC Convertes (15-bit channes)DA Convertes (15-bit channes)2-ComparatorKo (High Current)51CallDispis controlierCAM (typ)CAM (typ)CAM (typ)Call (typ)Call (typ)Call (typ)Call (typ)Call (typ)Call (typ)Call (typ)Call (typ)Call (typ)Connethyl supportsoConnethyl supportsoCall (typ)Call (typ) <td< td=""><td>Timers (typ) (32 bit)</td><td>2</td><td>2</td></td<>	Timers (typ) (32 bit)	2	2
AC converse (16-bit channe)-DA Converse (16-bit channe)2Comparator2Comparator3Dispicontrolier3CAK (typ)2CAK (typ)2CAK (typ)3CAK (typ)3CAK (typ)2Cak (typ)3Cak (typ)3Cak (typ)2Cak (typ)2Cannet (typ)2Cak (typ)2Cannet (typ)2Cak (typ)2	Other timer functions	2 x WDG, 24-bit down counter, RTC	2 x WDG, 24-bit down counter, RTC
DA Converters (tp) (12 bit)2Comparator-106 (High Current)51Dispia controlier-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-SP (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CAN (tp)-CART (tp)-Canactivity supported-Connectivity supported-Catalitationaria-	A/D Converters (12-bit channels)	16	16
Comparation-ION (High Current)5152Dispisy controllerCAN (typ)CAN (typ)CAN (Typ)CAN (Typ)SP (typ)SP (typ)DISD TOF S+ USB OTG FSHUSB OTG FS + USB OTG FSHUSB TOF S+ USB OTG FSHUSB OTG FS + USB OTG FSHUART (typ)Consectivity supportedAdditional strain InterfacesParalle InterfacesTNG (typ)1.6-Supply Outrant (Juk) (typ) (tun)Supply Outrant (Juk) (typ) (tun)Supply Current (Juk) (typ) (tun)-	A/D Converters (16-bit channels)	-	-
No (High Current)51S2Display controllerCAN (typ)22CAN (typ)IC (typ)33SPI (typ)33SPI (typ)22USB TJPUSB OTG FS + USB OTG FSHSUSB OTG FS + USB OTG FSHSUSB TJP44UART (typ)22Connectivity supportedIntegrated op-ampsAdditional Serial InterfacesFSMC, SD/MMCFSMC, SD/MMCParallel InterfacesFSMC, SD/MMC-Supply Voltage (V) (mai)1.83.6Supply Voltage (V) (mai)1.63.6Supply Current (µA) (tp) (Lowest power mode)1.71.7Operating Temperature (*C) (mai)ADC converters (typ)ADC converters (typ)ADD c	D/A Converters (typ) (12 bit)	2	2
Display controller-Display controller-CAN (typ)2CAN (typ)-CAN FD (typ)-IZC (typ)3SPI (typ)3SPI (typ)2USB TypeUSB OTG FS + USB OTG FSHSUSB TypeUSB OTG FS + USB OTG FSHSUSB Type2Consectivity supported-10-Consectivity supported-10-Additional Serial Interfaces-FSMC, SD/MMC-Crypto -HASH-Supply Voltage (v) (min)1.8Supply Voltage (v) (min)1.6Supply Voltage (v) (min)2.1Supply Current (µA) (typ) (Lowest power mode)-Supply Current (µA) (typ) (Rum power mode)-Supply Current (µA) (typ) (Rum power mode)-ADIC Converters (typ)-ADIC Converters (typ)-ADIC Channels (typ)	Comparator	-	-
CAN (tp)22CAN (tp)22CAN FD (tp)IZC (tp)33IZC (tp)33SPI (tp)22USB TypeUSB OTG FS + USB OTG FS HSUSB OTG FS + USB OTG FS HSUSATT (tp)44UART (tp)22Connectivity supportedconnectivity supportedAdditional Serial InterfacesFSMC, SDIMMCCrypto-HASHSupply Votage (V) (min)18-Supply Votage (V) (min)183.6Supply Votage (V) (min)1.7.17Supply Votage (V) (min)1.9.16Supply Votage (V) (min)1.9.16Supply Votage (V) (min)1.9.17Supply Votage (V) (min).16.16Supply Votage (V) (min).16.16Supply Votage (V) (min).17.17Supply Votage (V) (min).16.16Supply (Urrent (LA) (tp) (Lowest Bing (Ling	I/Os (High Current)	51	82
CAN FD (hp)CAN FD (hp)iz (hp)33iz (hp)33iz (hp)1-iz (hp)11USB TypeUSB OTG FS + USB OTG FSHSUSB OTG FS + USB OTG FSHSUART (hp)44integrated op-ampsconnectivity supportedAdditional serial interfacesFSMC, SD/MMCEbemetParalel interfaces-EbemetrtNG (hp)1%-supply Voltage (v) (min)1%-supply Voltage (v) (min)1%-supply Voltage (v) (min)supply (current (LA) (hp) (Fum supply (Lowert)supply (current (LA) (hp) (Fum supply (Lowert)supply (Current (LA) (hp) (Fum supply (Lowert)supply (Lowert)supply (Lowert)supply (Lowert)supply (Lowert) <td< td=""><td>Display controller</td><td>-</td><td>-</td></td<>	Display controller	-	-
rac (typ)33sPi (typ)33sPi (typ)22USB TypeUSB OTG FS + USB OTG FS HSUSB OTG FS + USB	CAN (typ)	2	2
APP (typ)33SP (typ)33IZS (typ)22USB TypeUSB OTG FS + USB OTG FS HSBUSB OTG FS + USB OTG FSHSUSART (typ)44UART (typ)22connectivit supportedintegrated op-ampsAdditional Saral InterfacesFSMC, SD/MMCEthemetParallel InterfacesFSMC, SD/MMCFSMC, SD/MMCCrypto-HASHSMPSSupply Voltage (V) (mar)1616Supply Voltage (V) (mar)1735Supply Current (µA) (typ) (Lowet power mode)ADConverters (typ)ADC Donverters (typ)ADC Donverters (typ)ADD converters (typ)-	CAN FD (typ)	-	-
its typ22USB TypeUSB OTG FS + USB O	I2C (typ)	3	3
USB TypeUSB OTG FS + USB OTG FSHSUSB OTG FS + USB OTG FSHSUSART (typ)44UART (typ)22Connectivity supportedintegrated op-ampsAdditional Serial interfaces-EthemetParallel InterfacesFSMC, SDI/M/CFSMC, SDI/M/CCrypto-HASHRTNG (typ)truetrueSupply Voltage (V) (min)1.81.8Supply Voltage (V) (max)3.63.6Supply Current (µA) (typ) (Lowest mode (per Mhz))-10-10Operating Temperature (*C) (max)1.01.05A/D Converters (typ)Number of Channels (typ)Number of Channel	SPI (typ)	3	3
L.USART (typ)4UART (typ)2Connectivity supported-integrated op-amps-Jaditional Serial interfaces-Parallel interfacesFSMC, SD/MMCCrypto-HASH-Supply Voltage (V) (min)1.8Supply Voltage (V) (max)3.6Supply Voltage (V) (max)1.7Supply Voltage (V) (max)1.6Supply Voltage (V) (max)1.6Supply Current (µA) (typ) (Lowest)1.7Operating Temperature (°C) (max)1.0AUC converters (typ)-AUD converters (typ)-	12\$ (typ)	2	2
UART (typ)22Connectivity supportedIntegrated op-ampsAdditional Serial Interfaces-EthernetParallel InterfacesFSMC, SDMMCFSMC, SDMMCCrypto-HASHTRNG (typ)truetruesupply Voltage (V) (min)1818Supply Voltage (V) (man)3636supply Voltage (V) (man)1717Supply Current (µA) (typ) (Lowest mode (per Mnz))-40-40Operating Temperature (°C) (man)105105ADC Converters (typ)AUD Converters (typ) <td< td=""><td>USB Туре</td><td>USB OTG FS + USB OTG FS/HS</td><td>USB OTG FS + USB OTG FS/HS</td></td<>	USB Туре	USB OTG FS + USB OTG FS/HS	USB OTG FS + USB OTG FS/HS
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Integrated op-ampsAdditional Serial Interfaces-EhernetParallel InterfacesFSMC, SD/MMCFSMC, SD/MMCCrypto-HASHTRNG (typ)truetrueSMPSSupply Voltage (V) (min)1.81.8Supply Voltage (V) (max)3.63.6Supply Current (µA) (typ) (Lowest)1.71.7Supply Current (µA) (typ) (Rum)Supply Current (µA) (typ) (Rum)Operating Temperature (°C) (max)105-AD Converters (typ)AUD converters (typ)<	UART (typ)	2	2
Additional Serial Interfaces-EthernetParallel InterfacesFSMC, SD/MMCFSMC, SD/MMCCrypto-HASHTRNG (typ)truetrueSMPSSupply Voltage (V) (min)1.81.8Supply Voltage (V) (max)3.63.6Supply Current (µA) (typ) (Lowset)1.71.7Supply Current (µA) (typ) (Run)215215Operating Temperature (°C) (max)1.051.05A/D Converters (typ)A/D Converters (			-
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A/D Converters (typ)		-	-
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	Number of Channels (typ)	-	_

#### ST STM32F4xx series

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#### In MIOS32

We use the same peripheral drivers same family, some compilation defined conditions were added for the specific pinout and type, number of ports. toDo

For any questions, informations or observations do not hesitate to contact me (Forum). Antichambre.

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