

# C2000™ MCU Digital Power Selection Guide

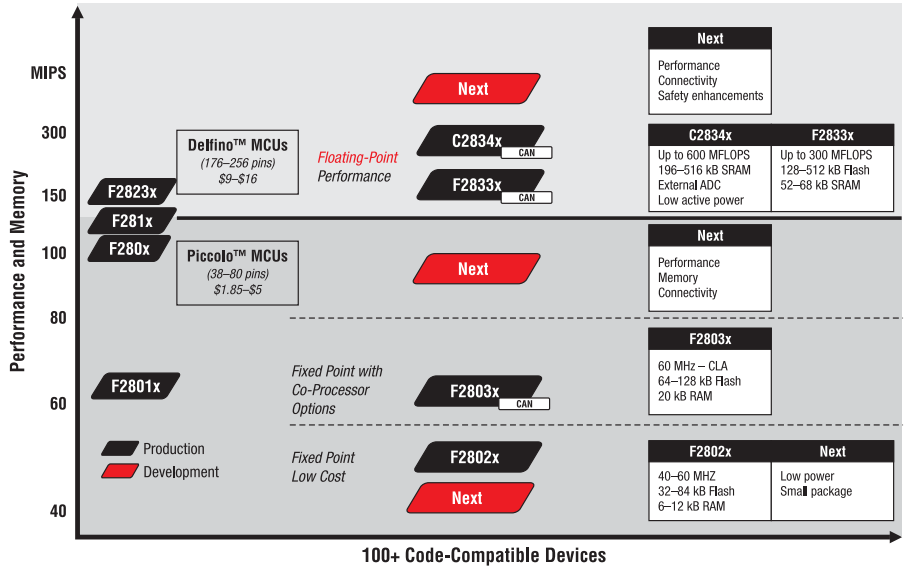


TMS320C2000™ MCUs are used today in digital power systems from telecom rectifiers to non-isolated DC/DC and green energy-generation applications such as solar inverters, wind turbines and hybrid/electric vehicles.

C2000 MCUs are optimized for real-time embedded control applications like digital power by integrating fast 12-bit ADCs and the most sophisticated PWM-generation technology with a high-performance 32-bit MCU CPU. The C2000 PWM allows duty cycle modulation with 150-ps accuracy and the flexibility to support any power stage topology easily.

With controlSUITE™ software, TI offers extensive digital power resources – from software to hardware to training. The Digital Power Library consists of functions which greatly simplify software development without compromising real-time performance. Real-world hardware development kits demonstrate power conversion at real load levels. Hands-on and self-paced training is available to both those with digital experience and those without. Find out more at [www.ti.com/controlsuite](http://www.ti.com/controlsuite).

## C2000 MCU Digital Power Solutions



## TMS320C2000 MCU Selection Table

Device (TMS320x)	Processor			Memory			Control Interfaces						Communication Ports						Core Supply (Volts)	GPIO Pins	On-Chip Oscillator/Regulator	Pin/Package	Max Temp	1KU Pricing†		
	Speed (MHz)	DMA	CLA	RAM (KB)	Flash (KB)	ROM (KB)	PWM Channels	HiRes PWM	Quadrature Encoder	Event Captures	Timers*	12-Bit ADC Channels/Conversion Time (ns)	Comparators	McBSP	I <sup>2</sup> C	UART /SCI	SPI	LIN							CAN	External Memory Bus
<b>F2803x Piccolo™ MCUs**</b>																										
<b>F28035PN</b>	60	—	Yes	20	128	Boot	15	7	1	1	12	16 / 217	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	4.60-5.62
<b>F28035PAG</b>	60	—	Yes	20	128	Boot	13	6	1	1	11	14 / 217	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	4.41-5.43
<b>F28034PN</b>	60	—	—	20	128	Boot	15	7	1	1	12	16 / 217	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	3.91-4.77
<b>F28034PAG</b>	60	—	—	20	128	Boot	13	6	1	1	11	14 / 217	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	3.75-4.61
<b>F28033PN</b>	60	—	Yes	20	64	Boot	15	7	1	1	12	16 / 217	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	4.28-5.22
<b>F28033PAG</b>	60	—	Yes	20	64	Boot	13	6	1	1	11	14 / 217	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	4.11-5.05
<b>F28032PN</b>	60	—	—	20	64	Boot	15	7	1	1	12	16 / 217	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	3.64-4.44
<b>F28032PAG</b>	60	—	—	20	64	Boot	13	6	1	1	11	14 / 217	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	3.49-4.29
<b>F28031PN</b>	60	—	—	20	64	Boot	15	0	1	1	12	16 / 500	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	3.13-3.91
<b>F28031PAG</b>	60	—	—	20	64	Boot	13	0	1	1	11	14 / 500	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	2.97-3.71
<b>F28030PN</b>	60	—	—	12	32	Boot	15	0	1	1	12	16 / 500	3	—	1	1	2	1	1	—	3.3	44	Yes / Yes	80 LQFP	AEC-Q100 (125°C)	2.94-3.67
<b>F28030PAG</b>	60	—	—	12	32	Boot	13	0	1	1	11	14 / 500	3	—	1	1	1	1	1	—	3.3	26	Yes / Yes	64 TQFP	AEC-Q100 (125°C)	2.79-3.49
<b>F2802x Piccolo MCUs</b>																										
<b>F28027PT</b>	60	—	—	12	64	Boot	9	4	0	1	9	13 / 217	2	—	1	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	AEC-Q100 (125°C)	2.85-3.47
<b>F28027DA</b>	60	—	—	12	64	Boot	9	4	0	1	9	7 / 217	1	—	1	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	AEC-Q100 (125°C)	2.85-3.35
<b>F28026PT</b>	60	—	—	12	32	Boot	9	4	0	1	9	13 / 217	2	—	1	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	AEC-Q100 (125°C)	2.75-3.24
<b>F28026DA</b>	60	—	—	12	32	Boot	9	4	0	1	9	7 / 217	1	—	1	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	AEC-Q100 (125°C)	2.65-3.12
<b>F28023PT</b>	50	—	—	12	64	Boot	9	4	0	1	9	13 / 325	2	—	1	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	AEC-Q100 (125°C)	2.55-3.00
<b>F28023DA</b>	50	—	—	12	64	Boot	9	4	0	1	9	7 / 325	1	—	1	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	AEC-Q100 (125°C)	2.45-2.88
<b>F28022PT</b>	50	—	—	12	32	Boot	9	4	0	1	9	13 / 325	2	—	1	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	AEC-Q100 (125°C)	2.35-2.76
<b>F28022DA</b>	50	—	—	12	32	Boot	9	4	0	1	9	7 / 325	1	—	1	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	AEC-Q100 (125°C)	2.25-2.65

Continued on following page.

New products are listed in bold red.

**TMS320C2000™ MCU Selection Table (continued)**

Device (TMS320x)	Processor			Memory			Control Interfaces					Communication Ports							Core Supply (Volts)	GPIO Pins	On-Chip Oscillator/ Regulator	Pin/ Package	Max Temp	1KU Pricing†		
	Speed (MHz)	DMA	CLA	RAM (KB)	Flash (KB)	ROM (KB)	PWM Channels	HiRes PWM	Quadrature Encoder	Event Captures	Timers*	12-Bit ADC Channels/ Conversion Time (ns)	Comparators	McBSP	I <sup>2</sup> C	UART /SCI	SPI	LIN							CAN	External Memory Bus
<b>F2802x Piccolo™ MCUs (continued)</b>																										
<b>F28021PT</b>	40	—	—	10	64	Boot	9	—	0	1	9	13 / 500	2	—	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	125°C	2.30	
<b>F28021DA</b>	40	—	—	10	64	Boot	9	—	0	1	9	7 / 500	1	—	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	125°C	2.20	
<b>F28020PT</b>	40	—	—	6	32	Boot	9	—	0	1	9	13 / 500	2	—	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	125°C	2.10	
<b>F28020DA</b>	40	—	—	6	32	Boot	9	—	0	1	9	7 / 500	1	—	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	125°C	1.99	
<b>F280200PT</b>	40	—	—	6	16	Boot	8	—	0	0	8	13 / 500	2	—	1	1	—	—	—	3.3	22	Yes / Yes	48 LQFP	125°C	1.89	
<b>F280200DA</b>	40	—	—	6	16	Boot	8	—	0	0	8	7 / 500	1	—	1	1	—	—	—	3.3	20	Yes / Yes	38 TSSOP	125°C	1.85	
<b>C2834x Delfino™ (Floating-Point) MCUs</b>																										
<b>C28346</b>	300	Yes	—	516	—	Boot	24	9	3	6	19	—	—	2	1	3	2	—	2	16 or 32-bit	1.2	88	—	256 BGA, AEC-Q100 (125°C)	16.39-20.73	
<b>C28345</b>	200	Yes	—	516	—	Boot	24	9	3	6	19	—	—	2	1	3	2	—	2	16 or 32-bit	1.1	88	—	256 BGA, AEC-Q100 (125°C) 179 BGA	14.42-18.25	
<b>C28344</b>	300	Yes	—	260	—	Boot	24	9	3	6	19	—	—	2	1	3	2	—	2	16 or 32-bit	1.2	88	—	256 BGA, AEC-Q100 (125°C)	12.78-16.17	
<b>C28343</b>	200	Yes	—	260	—	Boot	24	9	3	6	19	—	—	2	1	3	2	—	2	16 or 32-bit	1.1	88	—	256 BGA, AEC-Q100 (125°C) 179 BGA	11.25-14.23	
<b>C28342</b>	300	Yes	—	196	—	Boot	16	6	2	4	14	—	—	1	1	3	2	—	2	16 or 32-bit	1.2	88	—	256 BGA, AEC-Q100 (125°C)	10.17-12.87	
<b>C28341</b>	200	Yes	—	196	—	Boot	16	6	2	4	14	—	—	1	1	3	2	—	2	16 or 32-bit	1.1	88	—	256 BGA, AEC-Q100 (125°C) 179 BGA	8.95-11.32	
<b>F2833x Delfino (Floating-Point) MCUs</b>																										
F28335	150	Yes	—	68	512	Boot	18	6	2	6	16	16 / 80	—	2	1	3	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	15.65-19.80	
F28334	150	Yes	—	68	256	Boot	16	6	2	4	14	16 / 80	—	2	1	3	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	14.75-18.66	
F28332	100	Yes	—	52	128	Boot	16	4	2	4	14	16 / 80	—	1	1	2	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	13.85-17.52	
<b>F28x Fixed-Point MCUs</b>																										
F28235	150	Yes	—	68	512	Boot	18	6	2	6	16	16 / 80	—	2	1	3	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	14.55-18.41	
F28234	150	Yes	—	68	256	Boot	16	6	2	4	14	16 / 80	—	2	1	3	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	13.72-17.35	
F28232	100	Yes	—	52	128	Boot	16	4	2	4	14	16 / 80	—	1	1	2	1	—	2	16 or 32-bit	1.9	88	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	12.88-16.29	
F2812††	150	—	—	36	256	Boot	16	—	2	6	8	16 / 80	—	1	—	2	1	—	1	16-bit	1.9	56	—	179 BGA, AEC-Q100 (125°C) 176 LQFP	15.75-17.25	
F2810/ F2811††	150	—	—	36	128- 256	Boot	16	—	2	6	8	16 / 80	—	1	—	2	1	—	1	—	1.9	56	—	128 LQFP AEC-Q100 (125°C)	13.85-18.70	
F2809	100	—	—	36	256	Boot	16	6	2	4	14	16 / 80	—	—	1	2	4	—	2	—	1.8	35	—	100 BGA, AEC-Q100 (125°C) 100 LQFP	12.95-16.35	
F2806/ F2808	100	—	—	20- 36	64- 128	Boot	16	4	2	4	14	16 / 160	—	—	1	2	4	—	1- 2	—	1.8	35	—	100 BGA, AEC-Q100 (125°C) 100 LQFP	8.70-14.75	
F28044	100	—	—	20	128	Boot	16	16	—	—	24	16 / 80	—	—	1	1	1	—	—	—	1.8	35	—	100 LQFP	125°C	9.95-10.90
F2801/ F2802	100	—	—	12	32- 64	Boot	8	3	1	2	9	16 / 160	—	—	1	1	2	—	1	—	1.8	35	—	100 BGA, AEC-Q100 (125°C) 100 LQFP	5.80-9.00	
F2802-60/ F2801-60	60	—	—	12	32- 64	Boot	8	3	1	2	9	16 / 267	—	—	1	1	2	—	1	—	1.8	35	—	100 LQFP	125°C	3.95-5.20
F28015/ F28016	60	—	—	12	32	Boot	10	4	0	2	10	16 / 267	—	—	1	1	1	—	0-1	—	1.8	35	—	100 BGA, AEC-Q100 (125°C) 100 LQFP	3.25-4.35	

All devices available in Pb-Free/Green packaging.

\*Timers include CPU timers, PWM timers, eCAP timers, and watchdog timers.

\*\* F2803x devices will also be available in a 56 QFN package mid-2010.

†Prices are quoted in U.S. dollars and represent 2010 suggested resale pricing. All prices are subject to change.

††Also available as ROM devices. Minimum quantity order for all C28x™ ROM devices is 10K units, NRE charge is \$11,000.

**New products are listed in bold red.**

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