

# Gopher: Find Me A Microcontroller



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What do you do when you start a new microcontroller project? Crack the product catalog or log onto a vendor's Web site? Sticking with paper is tedious. A single vendor can have literally hundreds of chips that are potential candidates for your next project. Using a vendor's Web site is better but what about comparing products or searching with criteria that the vendor does not support? That is what GruntWare's Gopher is for.

Gopher is essentially a front-end to a database of microcontroller specifications. The application starts with a set of basic filters, including the vendor as well as basic criteria such as the number of serial ports or CAN ports (Fig. 1). This is on par with what most vendor sites provide but its cross vendor support makes comparisons significantly easier.

But where Gopher shines is in its detailed search criteria (Fig. 2). There are literally pages of details allowing you to fine tune the search for peripheral specifications down to the bit or temperature detail. The search options are Gopher-specific, but they're easy to learn and utilize. The challenge, really, is the number of options. Unfortunately, there is no grouping of the options even into major categories such as Analog Peripherals or Memory. There are literally hundreds of options, which is obviously good, but knowing what to use and finding them is not.

The final result is a list of chips with all their details (Fig. 3). This is where the big nit is. The list has hundreds of columns. It is possible to hide and size columns. It is also possible to do more than one search, but typically you need to print out the result to see everything.

Of course, while I'm nitpicking, another chink in the armor is Gopher's inability to save results in a spreadsheet or data format where they could be manipulated or used in reports—since justification of a selection is often part of the job.

For an initial release, Gopher is worth the investment. The time you save easily offsets its cost. Just think of how many hours you would spend browsing the Internet to get this kind of information especially if you have not chosen your supplier.

Gopher is priced at \$299 plus shipping.

GruntWare

www.gruntwareinc.com

**Pre-Conditions for Pin Sharing That Must Be Met Before Searching** What Does This Mean?

<input type="text" value="0"/>	Number of analog comparisons required (GPIO)	<b>Serial Communications (GPIO)</b>	<input type="text" value="0"/>	Nbr of CAN Interfaces
<input type="text" value="0"/>	Total number of external Timer Compare signals that are required (Timers / GPIO)	<input type="text" value="0"/>	Nbr of LIN Interfaces	
<input type="text" value="2"/>	Number of Timer Captures that are required (Timers/GPIO)	<input type="text" value="1"/>	Nbr of I2C Interfaces	
<input type="text" value="4"/>	Number of A/D MCU pins required (if you use a mux, only indicate the number of A/D MCU pins required. If you required differential ended inputs, enter two times the required number) (ADCchans / GPIO)	<input type="text" value="0"/>	Nbr of SCI Interfaces	
<input type="text" value="0"/>	Number of D/A outputs required. (DAC / GPIO)	<input type="text" value="1"/>	Nbr of SPI Interfaces	
<input type="text" value="2"/>	Number of UART's required. (GPIO)	Number of Timers Required: 2		
<input type="text" value="0"/>	Number of external I/O Triggers required that are exclusive of the ones stated above (GPIO)			
<input type="text" value="0"/>	Number of GPIOs required that are exclusive of the ones stated above (GPIO)			

**Optional Parameters that are Commonly Specified** What Does This Mean?

CPU Size (Number of data bits) <input type="radio"/> n/a <input type="radio"/> 4 <input checked="" type="radio"/> 8 <input type="radio"/> 16 <input type="radio"/> 32 <input type="radio"/> 64	Program Memory Type <input type="radio"/> n/a <input checked="" type="radio"/> Flash <input type="radio"/> OTP <input type="radio"/> EROM <input type="radio"/> Mask	<input type="checkbox"/> Vcc (Min)
<input type="text"/> Program Memory Size in Bytes (nn,nnn) (Min)		<input type="checkbox"/> Vcc (Max)
<input type="text"/> RAM Memory Size in Bytes (nn,nnn) (Min)		<input type="checkbox"/> Operating Temp (Min)
		<input type="checkbox"/> Operating Temp (Max)

Project Name: test

[< here to begin](#)

## Step 1: Pre-conditions

Gopher - Parameter Search

### Parametric Search

Multiple Vendor Search  
Master Label List

Search 0 Parts Found [Allowable Expressions](#) [Print Options](#)  
[Expression Tips](#)  
[Show Existing Data](#)

[Clear List](#)

1 PartNbr		21 Ext_Triggers		41 Timers_12bit		61 XY_Cntrl	
2 Status		22 Timer_Nbrs		42 Timers_14bit		62 Tot_Ad_Space	
3 CPU		23 Timer_CAP	>=2	43 Timers_16bit		63 Int_Cache	
4 CPU_Size	=8	24 Timer_Cmp		44 Timers_18bit		64 Ext_Cache	
5 RAM		25 UART		45 Timers_24bit		65 MMU	
6 FROM	>=0	26 UART_Nbrs	>=2	46 Timers_32bit		66 MPU	
7 PROM		27 CAN		47 Bus_Size		67 EMIF	
8 EROM		28 LIN		48 MCU_Freq		68 Ex_Bus_Ctl	
9 MROM		29 I2C	=Y	49 Bus_Freq		69 DMA	
10 Sply_V_Min		30 SCI		50 MIPS		70 DMA_Chans	
11 Sply_V_Max		31 SPI	=Y	51 FLOPS		71 Clk_PLL	
12 Oper_Temp_Min		32 WDT		52 Min_Instr_Exec		72 On_Chip_Osc	
13 Oper_Temp_Max		33 RTC		53 Dheystones		73 Sub_Clk	
14 ADC_Chans	=4	34 POR		54 Nbr_Instr		74 Freq_Div	
15 ADC_Resol		35 BOR		55 Mpy_Instr		75 OSD	
16 Analog_Cmp		36 PeiphPinSel		56 MAC_Instr		76 LVD	
17 DAC_Chans		37 Vol_Price		57 M_MAC		77 Core_Sply_V	
18 DAC_Resol		38 Descr		58 PEAK_MAC		78 IO_Sply_V	
19 OpAmps		39 Timers_8bit		59 FPU		79 IO_V_Min	
20 GPIO		40 Timers_10bit		60 Barrel_Shifter		80 IO_V_Max	

<Prev 1-80 **81-160** 161-240 241-320 321-400 >Next

Project Name: test < Back Exit

## Step 2: Refine the search conditions

Gopher - Searched Data Results

1571 Parts Found

Hide Columns Hide Blank Columns Un-Hide Search Print List

	Vendor	PartNbr	Status	CPU	CPU Size	RAM	FROM	FROM	EROM	MROM	Sply_V_Min	Sply_V_Max	Oper_Temp_t
1	ATM	AT89C2051	Production	8051	8	128	2048				2.7	6	-40
2	ATM	AT89C4051	Production	8051	8	128	4096				2.7	6	-40
3	ATM	AT89C5115	Production	8051	8	512	16384		2048		3	5.5	-40
4	ATM	AT89C5130A-M	Production	8051	8	1280	16384		1024		2.7	5.5	-40
5	ATM	AT89C5131A-L	Production	8051	8	1280	32768		1024		3	3.6	-40
6	ATM	AT89C5131A-M	Production	8051	8	1280	32768		1024		2.7	5.5	-40
7	ATM	AT89C5132	Production	8051	8	2304	65536				2.7	3.6	-40
8	ATM	AT89C51AC2	Production	8051	8	1280	32768		2048		3	5.5	-40
9	ATM	AT89C51AC3	Production	8051	8	2304	65536		2048		3	5.5	-40
10	ATM	AT89C51CC01	Production	8051	8	1280	32768		2048		3	5.5	-40
11	ATM	AT89C51CC02	Production	8051	8	512	16384		2048		3	5.5	-40
12	ATM	AT89C51CC03	Production	8051	8	2304	65536		2048		3	5.5	-40
13	ATM	AT89C51ED2	Production	8051	8	2048	65536		2048		2.7	5.5	-40
14	ATM	AT89C51IC2	Production	8051	8	1280	32768				2.7	5.5	-40
15	ATM	AT89C51ID2	Production	8051	8	2048	65536		2048		2.7	5.5	-40
16	ATM	AT89C51RB2	Production	8051	8	1280	16384				2.7	5.5	-40
17	ATM	AT89C51RC	Production	8051	8	512	32768				4	6	-40
18	ATM	AT89C51RC2	Production	8051	8	1280	32768				2.7	5.5	-40
19	ATM	AT89C51RD2	Production	8051	8	2048	65536				2.7	5.5	-40
20	ATM	AT89C51RE2	Production	8051	8	8448	131072				2.7	5.5	-40
21	ATM	AT89C51SND1C	Production	8051	8	2304	65536		4096		2.7	3.6	-40
22	ATM	AT89C51SND2C	Production	8051	8	2304	65536		4096		2.7	3.6	-40
23	ATM	AT89C59wD	Production	8051	8	256	20480				4	6	-40
24	ATM	AT89LP2052	Production	8051	8	256	2048				2.4	5.5	-40
25	ATM	AT89LP213	Production	8051	8	128	2048				2.4	5.5	-40
26	ATM	AT89LP214	Production	8051	8	128	2048				2.4	5	-40
27	ATM	AT89LP216	Production	8051	8	128	2048				2.4	5.5	-40
28	ATM	AT89LP4052	Production	8051	8	256	4096				2.4	5.5	-40
29	ATM	AT89LS51	Production	8051	8	128	4096				2.7	4	-40
30	ATM	AT89LS52	Production	8051	8	256	8192				2.7	4	-40
31	ATM	AT89LV95	Production	8051	8	256	20480				2.7	5.5	-40
32	ATM	AT89S2051	Production	8051	8	256	2048				2.7	5.5	-40
33	ATM	AT89S4051	Production	8051	8	256	4096				2.7	5.5	-40
34	ATM	AT89S51	Production	8051	8	128	4096				4	5.5	-40
35	ATM	AT89S52	Production	8051	8	256	8192				4	5.5	-40
36	ATM	AT89S8262	Production	8051	8	256	13280		2048		2.7	5.5	-40

### Step 3: List of results