Flash MCU Order Code Guide

Atmel	Intel	Philips	AMD	Microchip	Zilog	Matra	Dallas	Siemens	Motorola	Hitachi	SGS-Thomson
AT89C51	i80C31 i80C51 i87C51	PCx80C31 SC80C31 PCx80C51 SC80C51 SC87C51	8751 87C51	PIC16C73 PIC16C74	Z84C01, Z84C50, Z08614 Z80C30, Z85C30, Z86C15 Z85230, Z850230, Z86C30 Z16C01, Z16C02, Z86E30 ZZ16C03, Z8036 Z8536, Z8038 Z5380, Z53C80 Z86C40, Z86E40 Z0802	80C31 80C51	DS5000FP DS5001FP	SAB8051 SAB8031		HD6301VI HD6301X0 HD6303R HD6303X HD6303Y HD6305V0 HD6305X0 HD6305X1 HD6395X2	
AT89C55	i87C54 i80C54	P80C54 P87C54			Z86C61, Z86C62 Z86C63, Z86C64 Z86E61, Z86E64 Z86C72, Z86C73 Z86E63, Z86L72			SAB-C502	68HC(L)11L5 68HC(L)11L6 68HC711L6 68HC(L)11E8 68HC(L)11E9 68HC711E9 68HC11G5 68HC711G5 68HC11E20		ST7291C4B1 ST7291C4M1 ST7291C4LB1 ST72E91C4F1 ST72T91C4B1 ST72T91C4M ST7271N3B1 ST7271N5B1 ST72E71N5D1 ST72T71N5B1
AT89C52	i80C52 i87C52	P80C32 P80C52 P87C52	87C52T2 8753		Z86C21 Z86E22, Z08614, Z86E21 Z086E23, Z86E22	80C32 80C52	DS5000 DS5000T DS2250	SAB8052 SAB8032Q SABC501-1R	HC11	HD6305Y0 HD6305Y1 HD6305Y2	80C652 87C652 80C654
	i87C51FA	S8XC51FA			Z086E23, Z86C43, Z86L29		DS2250T	SABC501-L			
AT89C2051		S83C752 S87C752 S83C751 C87C751		PIC16C5 PIC16C54A PIC16LC54A PIC16CR57A PIC16CLR57A PIC16C55, PIC16C57 PIC16C71, PIC16LC71 PIC16C84, PIC16LC84 PIC16C62, PIC16C64 PIC16C65	Z86C08, Z86E08, Z86C80 Z86C09, Z86C19, Z86E08 Z86C17, Z86L29, Z86C17 Z86E09, Z86C08,Z86C11 Z86E08, Z86C30, Z86C07 Z86E30, Z86C40, Z86E07 Z86E40, Z86C05 Z86B07 Z86C31				HC05	HD6305U0	87C751 87C752 80CL31
AT89C1051		S83C750 S876750		PIC16C62X, PIC16C56 PIC16C61, PIC16C71 PIC16C84	Z86E09, Z86L03, Z86E03 Z86C06, Z86L06 Z86L06, Z86C16, Z86L16 Z86C06, Z86E04, Z86C04				HCC705JI		

socket & software compatible

Note: Unshaded columns do not suggest socket/code compatibility, but suggest a potential use for the Atmel device.

Explanation of Manufacturer's Codes

Atmel

Prefix Device Suffix

AT 89CXX-X X X X - 5

- Flash Microcontroller
- C = parallel programming
  S = serial programming
- Speed
  -12 = 0-12 MHz
  -16 = 0-16 MHz
  -20 = 0-20 MHz
  -24 = 0-24 MHz
- Package
  D = Cerdip
  J = Plastic J-Lead Chip Carrier
  L = Leadless Chip Carrier
  P = Plastic DIP
  S = SOIC
  Q = PQFP
  T = TQFP
  W = Die
- Temperature Range
  C = Commercial
  I = Industrial
  M = Military
  A = Automotive
- Processing
  Blank = Standard
  /883 = MIL-STD-883, Class B Fully Compliant
- 5 = 5-volt programmable
  blank = 12-volt programmable

Microchip

Part XX X /XX XXX

- Device
  PIC16C54
  PIC16C55
  PIC16C56
  PIC16C57
  PIC16C61
  PIC16C62
  PIC16C64
  PIC16C65
  PIC16C71
  PIC16C73
  PIC16C84
  PIC16C74
- Oscillator Type
  RC
  XT
  HS
  LP
- Temperature Range
  = 0˚C to +70˚C (T for tape/reel)
  I = -40˚C to +85˚C (S for tape/reel)
  E = -40˚C to +125˚C
- Package
  P = PDIP
  SO = 300 mil SOIC (Gull Wing Lead)
  SP = 28L PDIP (300 mil)
  SS = SSOP (209 mil)
  JW = CERDIP Window
  S = Die in Waffle Pack
- Pattern
  3-digit Pattern Code for QTP
  (blank for OTP/Window Parts)

Examples

PIC16C54 - XT/PXXX = "XT" oscillator, commercial temp., PDIP, QTP pattern

PIC16C55 - XTI/SO = "XT" oscillator, industrial temp., SOIC (OTP device)

PIC16C55 - JW = Commercial temp. CERDIP with WINDOW

Dallas

X X XXXXX X X

- Package Type
  D = 40-pin Ceramic DIP
  R = 44-pin Ceramic Leadless Chip Carrier
  P = 40-pin Plastic DIP
  N = 44-pin Plastic Leadless Chip Carrier
- Device Number/Description
  87C51/87C52T2
  8 bit CMOS Microprocessors
  87C51 – 4K EPROM
  87C52T2 – 8K EPROM
- Speed Option
  Blank = 3.5 to 12 MHz
  -1 = 3.5 to 16 MHz
- Optional Processing
  Blank = Standard
- Temperature Range
  Blank = Commercial (0˚C to +70˚C)
  I = Industrial (-40˚C to +85˚C)

Valid Combinations	
D, R, P, N ID, IR, IP, IN	87C51
	87C51-1
	87C52T-2
	87C52T2-1

Dallas

DSXXXX(X) - X - XX

- Part Number
- T = clock
  blank = no clock
- Memory
  08 = 8K bytes
  32 = 32K bytes
  64 = 64K bytes
- Speed
  08 = 8 MHz
  12 = 12 MHz
  16 = 16 MHz

Example

DS000T-08-12 Clock, 8K bytes, 12 MHz

Zilog

Z86 E 04 08 P E C XXXX

- Microcontroller Prefix
- Version
- Program Memory Size
- Clock Speed
- Package
  Preferred
  D = Cerdip
  P = Plastic DIP
  V = Plastic Leaded Chip Carrier
  S = SOIC (Small Outline Integrated Circuit)
  K = Cerdip Window (EPROM)
  Longer Lead Time
  A = VQFP (Very Small QFP)
  C = Ceramic Sidebrazed
  E = Ceramic Window Lid
  F = Plastic Quad Flatpack
  G = Ceramic PGA (Pin Grid Array)
  I = PCB Chip Carrier
  L = Ceramic LCC (Leadless Chip Carrier)
  N = Cerquad
  R = Ceramic Protopak
  T = Low Profile Protopak
- Temperature Range
  Preferred
  Standard: S = 0˚C to +70˚C
  Longer Lead Time
  Extended: E = -40˚C to +85˚C
  Military: M = -55˚C to +125˚C
- Environmental Flow
  Preferred
  C = Plastic Standard
  E = Hermetic Standard
  F = Protopak Standard
  Longer Lead Time
  A = Hermetic Stressed
  B = 883 Class B Military
  D = Plastic Stressed
  J = JAN 28510 Military
- Special Lot Number (optional)
- Mask Rom Code Number

Example

Z86E0812PSC CMOS Z8 OTP, 12 MHz, Plastic DIP, 0˚C to +70˚C, Plastic Standard Flow

SGS - Thomson

ST62 T 15 B 6 /HWD

- Prefix
- Device
  E = EPROM (windowed)
  T = OTP (One Time Progr.)
  blank = Mask (ROM)
- Memory/Pins
  10 = 2K/20 pins
  15 = 2K/28 pins
  20 = 4K/20 pins
  25 = 4K/28 pins
  40 = 8K/80 pins
  42 = 8K/64 pins
  45 = 8K/52 pins
  60 = 4K/20 pins
  65 = 4K/28 pins
- Package
  F = Ceramic DIL (windowed)
  S = Ceramic SO (windowed)
  B = Plastic DIL
  M = SO
  G = Ceramic Quad Flat Pack (windowed)
  Q = Plastic Quad Flat Pack
- Temperature Range
  0˚C to +70˚C
  -40˚C to +85˚C
- ST621x/ST622x device option:
  /HWD = Hardware Watch Dog
  /SWD = Software Watch Dog

Explanation of Manufacturer's Codes (Continued)

Siemens

SAB 80CXXA – # – X

- X: P = 40-pin DIP; N = 44-pin PLCC
- #: No number = 12 MHz; 16 = 16 MHz; 20 = 20 MHz
- XX: 1 = 4K bytes ROM; 2 = 8K bytes ROM; 3 = ROMLESS; 5 = ROM

Examples

SAB 8051A-16-P	40-pin DIP, 16 MHz
SAB 8051A-16-N	44-pin PLCC, 16 MHz
SAB 8051A-20-P	40-pin DIP, 20 MHz
SAB 8051A-20-N	44-pin PLCC, 20 MHz with 4K byte mask-programmable ROM

Intel

X X XXXXX XXXXX

- XXXXX: Up to 6 characters for customer-specific requirements
- XXXXX: Up to 15 characters for device types
- X: Package Type
  - A = Ceramic Pin Grid Array
  - C = Ceramic Dual In-Line Package
  - D = Cerdip Dual In-Line Package
  - KU = Plastic Quad Flatpack Package, Fine Pitch, Die Up
  - N = Plastic Leaded Chip Carrier
  - P = Plastic Dual In-Line Package
  - R = Ceramic Leadless Chip Carrier
  - S = Quad Flatpack Package
  - U = Plastic Dual In-Line Package (Shrink)
- X: Temperature Range
  - L = Extended operating range (-40°C to +85°C) express product /w 160 ± 8 hrs. dynamic burn-in
  - Q = Commercial operating range (-0°C to +70°C) express product /w 160 ± 8hrs. dynamic burn-in
  - T = Extended operating range (-40°C to +85°C) express product without burn-in

Examples

N80C196KR	PLCC, 16 MHz, Comm. Temp. Range
LN87C54	PLCC, 12 MHz, Extended Temp. Range (Express)

Phillips

Example 1: P8 X C XXX E B P N

- X: 0 = ROMLESS; 3 = ROM; 7 = EPROM/OTP
- XXX: This can be 2 or 3 digits
- E: Speed — E = 16 MHz; G = 20 MHz; I = 24 MHz
- B: Temperature — B = 0°C to +70°C; F = -40°C to +85°C; H = 40°C to +125°C
- P: Philips Package Code — A = Plastic Leaded Chip Carrier (PLCC); B = Quad Flat Pack (QFP); F = Hermetic Cerdip (window); L = CerQuad (window); P = Plastic Dual In-Line; LA = Ceramic Leaded Chip Leaded Carrier (window)
- N: Philips North American Package Code — A = Plastic Leaded Chip Carrier (PLCC); B = Quad Flat Pack (QFP); F = Hermetic Cerdip (window); KA = CerQuad (window); N = Plastic Dual In-Line; LA = Ceramic Leaded Chip Leaded Carrier

Exceptions:
P80C32 = ROMless;
P80C52 = ROM

Example 2: SC 8 X C XXX B C C N 40

- X: 0 = ROMLESS; 3 = ROM; 7 = EPROM/OTP
- XXX: This can be 2 or 3 digits
- B: Revision (optional)
- C: Temperature — B = Commercial (0°C to +70°C); A = Industrial (-40°C to +85°C)
- C: Speed — B = 0.5 to 12 MHz; C = 12 MHz; G = 16 MHz; L = 20 MHz; P = 24 MHz; Y = 33 MHz
- N: Package Code — A = Plastic Leaded Chip Carrier (PLCC); B = Quad Flat Pack (QFP); FA = Hermetic Cerdip (window); KA = CerQuad (window); N = Plastic Dual In-Line
- 40: Pin Count

Exceptons:
SC80C31 = ROMless;
SC80C51 = ROM

Example 3: SC 8 X C XXX -1 N 24

- X: 0 = ROMLESS; 3 = ROM; 7 = EPROM/OTP
- -1: Speed/Temperature Range
  - -1 = 12 MHz, 0°C to +70°C
  - -2 = 12 MHz, -40°C to +85°C
  - -3 = 0.5 to 12 MHz, 0°C to +70°C
  - -4 = 16 MHz, 0°C to +70°C
  - -5 = 16 MHz, -40°C to +85°C
  - -6 = 12 or 16 MHz, -55°C to +85°C
- N: Package Code — A = Plastic Lea ded Chip Carrier (PLCC); B = Quad Flat Pack (QFP); FA = Hermetic Cerdip (window); KA = CerQuad (window); N = Plastic Dual In-Line
- 24: Pin Count

Matra

I S 80C51 -1 :R

- :R: Packing — :R = Tape and Reel; :RD = Dry Pack/Tape & Reel; :D = Dry Pack
- -1: Miscellaneous — MB: MIL STD 883C cond B; SB: Compliant with SCC9000/B; SC: Compliant with SCC9000/C; Blank = 12 MHz; -1 = 16 MHz; -S = 20 MHz; -30 = 30 MHz; -36 = 36 MHz; -40 = 40 MHz; -42 = 42 MHz; -L = 2.7V to 5.5V, 0 to 6 MHz; µ-L = 2.7V to 5.5V, 0 to 16 MHz
- 80C51: ROM Code: XXX; Secrete ROM: FXXX
- 80C51: Device Type — 80C31/80C51; 80C32/80C52; 80C154/83C154; 80C154D; 80C31µ/80C51µ; 80C32µ/80C52µ; 80C154µ/83C154µ; 80C154Dµ; 80C31E: RT version
- I: Package Type — C = Side Brazed; X = Dice form; S = PLCC; R = Leadless Chip Carrier; V = V quad flat pack, 1.4 mm; T = T quad flat pack, 1 mm; Q = CERQUAD; D = Cerdip; P = Plastic DIL; F = Flat Pack
- I: Temperature Range — Blank = Commercial; I = Industrial (-40°C to +85°C); A = Automotive (-40°C to +125°C); M = Military (-55°C to +125°C); X = Dice Probed at 25°C only; Q = Commercial with Burn-in (48H/125°C); L = Industrial with Burn-in (48H/125°C)