Features

- High Performance, Low Power AVR[®] 8-Bit Microcontroller
- Advanced RISC Architecture
 - 123 Powerful Instructions Most Single Clock Cycle Execution
 - 32 x 8 General Purpose Working Registers
 - Fully Static Operation
- Non-volatile Program and Data Memories
 - 2/4/8K Byte of In-System Programmable Program Memory Flash (ATtiny261/461/861)
 - Endurance: 10,000 Write/Erase Cycles
 - 128/256/512 Bytes In-System Programmable EEPROM (ATtiny261/461/861)
 Endurance: 100,000 Write/Erase Cycles
 - 128/256/512 Bytes Internal SRAM (ATtiny261/461/861)
 - Programming Lock for Self-Programming Flash Program and EEPROM Data Security
- Peripheral Features
 - 8/16-bit Timer/Counter with Prescaler
 - 8/10-bit High Speed Timer/Counter with Separate Prescaler
 3 High Frequency PWM Outputs with Separate Output Compare Registers
 - Programmable Dead Time Generator
 - Universal Serial Interface with Start Condition Detector
 - 10-bit ADC
 - 11 Single Ended Channels
 - 16 Differential ADC Channel Pairs
 - 15 Differential ADC Channel Pairs with Programmable Gain (1x, 8x, 20x, 32x)
 - Programmable Watchdog Timer with Separate On-chip Oscillator
 - On-chip Analog Comparator
- Special Microcontroller Features
 - debugWIRE On-chip Debug System
 - In-System Programmable via SPI Port
 - External and Internal Interrupt Sources
 - Low Power Idle, ADC Noise Reduction, and Power-down Modes
 - Enhanced Power-on Reset Circuit
 - Programmable Brown-out Detection Circuit
 - Internal Calibrated Oscillator
- I/O and Packages
 - 16 Programmable I/O Lines
 - 20-pin SOIC, 32-pad MLF and 20-lead TSSOP
- Operating Voltage:
 - 2.7 5.5V for ATtiny261/461/861
- Speed Grade:
 - ATtiny261/461/861: 0 8 MHz @ 2.7 5.5V, 0 16 MHz @ 4.5 5.5V
 - Operating temperature: Automotive (-40°C to +125°C)
- Low Power Consumption
 - Active Mode: 1 MHz, 2.7V: 380 μ A
 - Power-down Mode: 0.1 μ A at 2.7V



8-bit **AVR**[®] Microcontroller with 2/4/8K Bytes In-System Programmable Flash

ATtiny261 ATtiny461 ATtiny861

Automotive

Preliminary

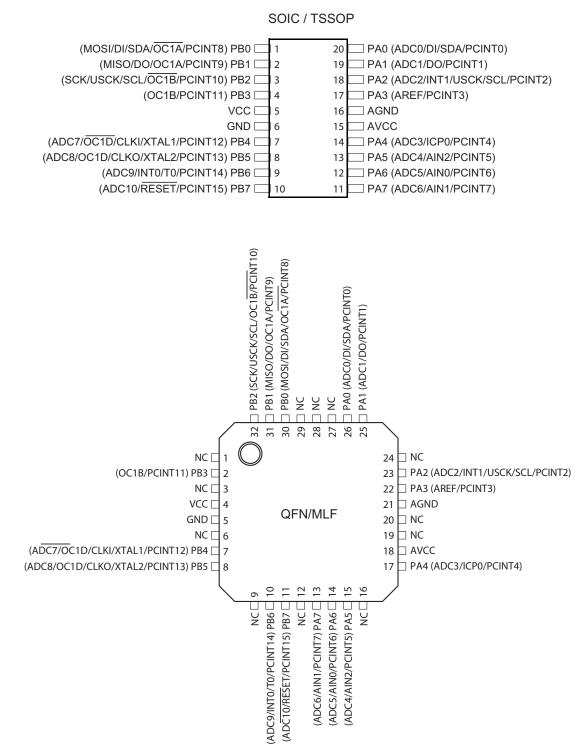
Summary





1. Pin Configurations

Figure 1-1. Pinout ATtiny261/461/861



Note: The large center pad underneath the QFN/MLF package should be soldered to ground on the board to ensure good mechanical stability.

1.1 Disclaimer

Typical values contained in this data sheet are based on simulations and characterization of other AVR microcontrollers manufactured on the same process technology. Min and Max values will be available after the device is characterized.

1.2 Automotive Quality Grade

The ATtiny261/461/861 have been developed and manufactured according to the most stringent requirements of the international standard ISO-TS 16949. This data sheet contains limit values extracted from the results of extensive characterization (Temperature and Voltage). The quality and reliability of the ATtiny261/461/861 have been verified during regular product qualification as per AEC-Q100 grade 1.

As indicated in the ordering information paragraph, the product is available in only one temper ture grade, Table 1-2.

| Temperature | Temperature Identifier | Comments |
|-------------|---------------------------|-----------------------------------|
| -40; +125 | Z | Full Automotive Temperature Range |

 Table 1-1.
 Temperature Grade Identification for Automotive Products





2. Overview

The ATtiny261/461/861 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATtiny261/461/861 achieves throughputs approaching 1 MIPS per MHz allowing the system designer to optimize power consumption versus processing speed.

2.1 Block Diagram

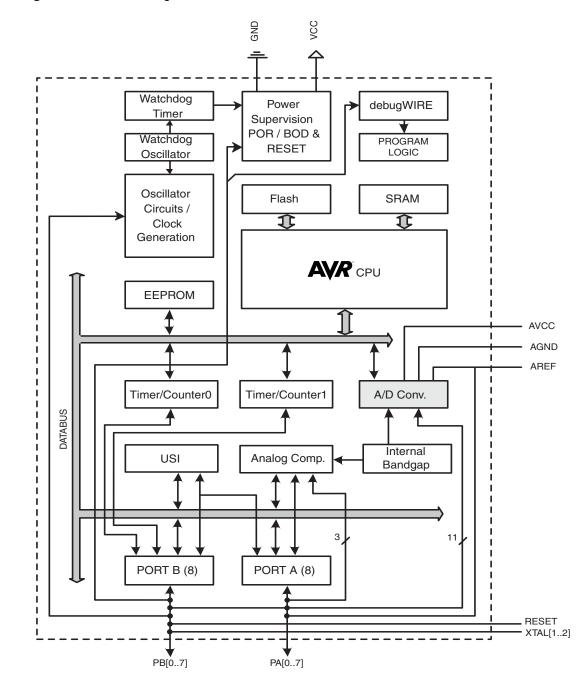


Figure 2-1. Block Diagram

4 ATtiny261/461/861

The AVR core combines a rich instruction set with 32 general purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers.

The ATtiny261/461/861 provides the following features: 2/4/8K byte of In-System Programmable Flash, 128/256/512 bytes EEPROM, 128/256/512 bytes SRAM, 6 general purpose I/O lines, 32 general purpose working registers, one 8-bit Timer/Counter with compare modes, one 8-bit high speed Timer/Counter, Universal Serial Interface, Internal and External Interrupts, a 4-channel, 10-bit ADC, a programmable Watchdog Timer with internal Oscillator, and three software selectable power saving modes. The Idle mode stops the CPU while allowing the SRAM, Timer/Counter, ADC, Analog Comparator, and Interrupt system to continue functioning. The Power-down mode saves the register contents, disabling all chip functions until the next Interrupt or Hardware Reset. The ADC Noise Reduction mode stops the CPU and all I/O modules except ADC, to minimize switching noise during ADC conversions.

The device is manufactured using Atmel's high density non-volatile memory technology. The On-chip ISP Flash allows the Program memory to be re-programmed In-System through an SPI serial interface, by a conventional non-volatile memory programmer or by an On-chip boot code running on the AVR core.

The ATtiny261/461/861 AVR is supported with a full suite of program and system development tools including: C Compilers, Macro Assemblers, Program Debugger/Simulators, In-Circuit Emulators, and Evaluation kits.





3. Instruction Set Summary

| Mnemonics | Operands | Description | Operation | Flags | #Clocks |
|------------------|-------------------|---|--|--------------------|-----------|
| ARITHMETIC AND L | OGIC INSTRUCTIONS | 8 | | | |
| ADD | Rd, Rr | Add two Registers | $Rd \leftarrow Rd + Rr$ | Z,C,N,V,H | 1 |
| ADC | Rd, Rr | Add with Carry two Registers | $Rd \leftarrow Rd + Rr + C$ | Z,C,N,V,H | 1 |
| ADIW | Rdl,K | Add Immediate to Word | Rdh:Rdl ← Rdh:Rdl + K | Z,C,N,V,S | 2 |
| SUB | Rd, Rr | Subtract two Registers | $Rd \leftarrow Rd - Rr$ | Z,C,N,V,H | 1 |
| SUBI | Rd, K | Subtract Constant from Register | $Rd \leftarrow Rd - K$ | Z,C,N,V,H | 1 |
| SBC | Rd, Rr | Subtract with Carry two Registers | $Rd \leftarrow Rd - Rr - C$ | Z,C,N,V,H | 1 |
| SBCI | Rd, K | Subtract with Carry Constant from Reg. | $Rd \leftarrow Rd - K - C$ | Z,C,N,V,H | 1 |
| SBIW | Rdl,K | Subtract Immediate from Word | $Rdh:Rdl \leftarrow Rdh:Rdl - K$ | Z,C,N,V,S | 2 |
| AND | Rd, Rr | Logical AND Registers | $Rd \leftarrow Rd \bullet Rr$ | Z,N,V | 1 |
| ANDI | Rd, K | Logical AND Register and Constant | $Rd \gets Rd \bullet K$ | Z,N,V | 1 |
| OR | Rd, Rr | Logical OR Registers | $Rd \leftarrow Rd \lor Rr$ | Z,N,V | 1 |
| ORI | Rd, K | Logical OR Register and Constant | $Rd \leftarrow Rd \lor K$ | Z,N,V | 1 |
| EOR | Rd, Rr | Exclusive OR Registers | $Rd \leftarrow Rd \oplus Rr$ | Z,N,V | 1 |
| COM | Rd | One's Complement | $Rd \leftarrow 0xFF - Rd$ | Z,C,N,V | 1 |
| NEG | Rd | Two's Complement | Rd ← 0x00 – Rd | Z,C,N,V,H | 1 |
| SBR | Rd,K | Set Bit(s) in Register | $Rd \leftarrow Rd \lor K$ | Z,N,V | 1 |
| CBR | Rd,K | Clear Bit(s) in Register | $Rd \leftarrow Rd \bullet (0xFF - K)$ | Z,N,V | 1 |
| INC | Rd | Increment | $Rd \leftarrow Rd + 1$ | Z,N,V | 1 |
| DEC | Rd | Decrement | $Rd \leftarrow Rd - 1$ | Z,N,V | 1 |
| TST | Rd | Test for Zero or Minus | $Rd \leftarrow Rd \bullet Rd$ | Z,N,V | 1 |
| CLR | Rd | Clear Register | $Rd \leftarrow Rd \oplus Rd$ | Z,N,V | 1 |
| SER | Rd | Set Register | $Rd \leftarrow 0xFF$ | None | 1 |
| BRANCH INSTRUC | | | | Hono | · · · · · |
| RJMP | k | Relative Jump | $PC \leftarrow PC + k + 1$ | None | 2 |
| IJMP | ĸ | Indirect Jump to (Z) | $PC \leftarrow Z$ | None | 2 |
| RCALL | k | Relative Subroutine Call | $PC \leftarrow PC + k + 1$ | None | 3 |
| ICALL | ĸ | Indirect Call to (Z) | $PC \leftarrow Z$ | None | 3 |
| RET | | Subroutine Return | $PC \leftarrow STACK$ | None | 4 |
| RETI | | Interrupt Return | PC ← STACK | I | 4 |
| CPSE | Rd,Rr | Compare, Skip if Equal | if (Rd = Rr) PC \leftarrow PC + 2 or 3 | None | 1/2/3 |
| CP | Rd,Rr | Compare | Rd – Rr | Z, N,V,C,H | 1 |
| CPC | Rd,Rr | Compare with Carry | Rd – Rr – C | Z, N,V,C,H | 1 |
| CPI | Rd,K | | Rd – K | | 1 |
| | Rr, b | Compare Register with Immediate | | Z, N,V,C,H | 1/2/3 |
| SBRC | | Skip if Bit in Register Cleared | if $(\operatorname{Rr}(b)=0) \operatorname{PC} \leftarrow \operatorname{PC} + 2 \operatorname{or} 3$ | None | 1/2/3 |
| SBRS | Rr, b | Skip if Bit in Register is Set | if $(\text{Rr}(b)=1) \text{PC} \leftarrow \text{PC} + 2 \text{ or } 3$ | None | |
| SBIC | P, b | Skip if Bit in I/O Register Cleared | if $(P(b)=0) PC \leftarrow PC + 2 \text{ or } 3$ | None | 1/2/3 |
| SBIS | P, b | Skip if Bit in I/O Register is Set | if $(P(b)=1) PC \leftarrow PC + 2 \text{ or } 3$ | None | 1/2/3 |
| BRBS | s, k | Branch if Status Flag Set | if (SREG(s) = 1) then PC←PC+k + 1 | None | 1/2 |
| BRBC | s, k | Branch if Status Flag Cleared | if (SREG(s) = 0) then PC←PC+k + 1 | None | 1/2 |
| BREQ | k | Branch if Equal | if (Z = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRNE | k | Branch if Not Equal | if $(Z = 0)$ then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRCS | k | Branch if Carry Set | if (C = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRCC | k | Branch if Carry Cleared | if (C = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRSH | k | Branch if Same or Higher | if (C = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRLO | k | Branch if Lower | if (C = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRMI | k | Branch if Minus | if (N = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRPL | k | Branch if Plus | if (N = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRGE | k | Branch if Greater or Equal, Signed | if (N \oplus V= 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRLT | k | Branch if Less Than Zero, Signed | if (N \oplus V= 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRHS | k | Branch if Half Carry Flag Set | if (H = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRHC | k | Branch if Half Carry Flag Cleared | if (H = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRTS | k | Branch if T Flag Set | if (T = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRTC | k | Branch if T Flag Cleared | if (T = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRVS | k | Branch if Overflow Flag is Set | if (V = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRVC | k | Branch if Overflow Flag is Cleared | if (V = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRIE | k | Branch if Interrupt Enabled | if (I = 1) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BRID | k | Branch if Interrupt Disabled | if (I = 0) then PC \leftarrow PC + k + 1 | None | 1/2 |
| BIT AND BIT-TEST | INSTRUCTIONS | | | | |
| SBI | P,b | Set Bit in I/O Register | I/O(P,b) ← 1 | None | 2 |
| | P,b | Clear Bit in I/O Register | $I/O(P,b) \leftarrow 0$ | None | 2 |
| CBI | | | | 1 | 1 |
| LSL | Rd | Logical Shift Left | $Rd(n+1) \leftarrow Rd(n), Rd(0) \leftarrow 0$ | Z,C,N,V | 1 |
| | Rd Rd | Logical Shift Left Logical Shift Right | $\begin{aligned} & Rd(n+1) \leftarrow Rd(n), Rd(0) \leftarrow 0 \\ & Rd(n) \leftarrow Rd(n+1), Rd(7) \leftarrow 0 \end{aligned}$ | Z,C,N,V Z,C,N,V | 1 |

ATtiny261/461/861

| Mnemonics | Operands | Description | Operation | Flags | #Clocks |
|-------------------------------|-----------------|-----------------------------------|--|---------|---------|
| ROR | Rd | Rotate Right Through Carry | $Rd(7) \leftarrow C, Rd(n) \leftarrow Rd(n+1), C \leftarrow Rd(0)$ | Z,C,N,V | 1 |
| ASR Rd Arithmetic Shift Right | | Rd(n) ← Rd(n+1), n=06 | Z,C,N,V | 1 | |
| SWAP | Rd Swap Nibbles | | Rd(30)←Rd(74),Rd(74)←Rd(30) | None | 1 |
| BSET | S | Flag Set | $SREG(s) \leftarrow 1$ | SREG(s) | 1 |
| BCLR | S | Flag Clear | $SREG(s) \leftarrow 0$ | SREG(s) | 1 |
| BST | Rr, b | Bit Store from Register to T | $T \leftarrow Rr(b)$ | Т | 1 |
| BLD | Rd, b | Bit load from T to Register | $Rd(b) \leftarrow T$ | None | 1 |
| SEC | | Set Carry | C ← 1 | С | 1 |
| CLC | | Clear Carry | C ← 0 | С | 1 |
| SEN | | Set Negative Flag | N ← 1 | N | 1 |
| CLN | | Clear Negative Flag | N ← 0 | N | 1 |
| SEZ | | Set Zero Flag | Z ← 1 | Z | 1 |
| CLZ | | Clear Zero Flag | Z ← 0 | Z | 1 |
| SEI | | Global Interrupt Enable | ← 1 | | 1 |
| CLI | | Global Interrupt Disable | 1 ← 0 | 1 | 1 |
| SES | | Set Signed Test Flag | S ← 1 | S | 1 |
| CLS | | Clear Signed Test Flag | S ← 0 | S | 1 |
| SEV | | Set Twos Complement Overflow. | V ← 1 | V | 1 |
| CLV | 1 | Clear Twos Complement Overflow | $\vee \leftarrow 0$ | v | 1 |
| SET | | Set T in SREG | T ← 1 | T | 1 |
| CLT | | Clear T in SREG | T ← 0 | T | 1 |
| SEH | | Set Half Carry Flag in SREG | H ← 1 | Н | 1 |
| CLH | | Clear Half Carry Flag in SREG | H ← 0 | Н | 1 |
| DATA TRANSFER | INSTRUCTIONS | oldar Hair odný Hag in orkeo | | | |
| MOV | Rd, Rr | Move Between Registers | $Rd \leftarrow Rr$ | None | 1 |
| MOVW | Rd, Rr | | $Rd+1:Rd \leftarrow Rr+1:Rr$ | None | 1 |
| LDI | Rd, K | Copy Register Word Load Immediate | $Rd \leftarrow K$ | None | 1 |
| LD | Rd, X | Load Indirect | | | 2 |
| | | | $Rd \leftarrow (X)$ | None | 2 |
| LD LD | Rd, X+ | Load Indirect and Post-Inc. | $Rd \leftarrow (X), X \leftarrow X + 1$ | None | 2 |
| LD | Rd, - X | Load Indirect and Pre-Dec. | $X \leftarrow X - 1, Rd \leftarrow (X)$ | None | 2 |
| | Rd, Y | Load Indirect | $Rd \leftarrow (Y)$ | None | - |
| LD | Rd, Y+ | Load Indirect and Post-Inc. | $Rd \leftarrow (Y), Y \leftarrow Y + 1$ | None | 2 |
| LD | Rd, - Y | Load Indirect and Pre-Dec. | $Y \leftarrow Y - 1, Rd \leftarrow (Y)$ | None | 2 |
| LDD | Rd,Y+q | Load Indirect with Displacement | $Rd \leftarrow (Y + q)$ | None | 2 |
| LD | Rd, Z | Load Indirect | $Rd \leftarrow (Z)$ | None | 2 |
| LD | Rd, Z+ | Load Indirect and Post-Inc. | $Rd \leftarrow (Z), Z \leftarrow Z+1$ | None | 2 |
| LD | Rd, -Z | Load Indirect and Pre-Dec. | $Z \leftarrow Z - 1, Rd \leftarrow (Z)$ | None | 2 |
| LDD | Rd, Z+q | Load Indirect with Displacement | $Rd \leftarrow (Z + q)$ | None | 2 |
| LDS | Rd, k | Load Direct from SRAM | $Rd \leftarrow (k)$ | None | 2 |
| ST | X, Rr | Store Indirect | $(X) \leftarrow Rr$ | None | 2 |
| ST | X+, Rr | Store Indirect and Post-Inc. | $(X) \leftarrow Rr, X \leftarrow X + 1$ | None | 2 |
| ST | - X, Rr | Store Indirect and Pre-Dec. | $X \leftarrow X - 1, (X) \leftarrow Rr$ | None | 2 |
| ST | Y, Rr | Store Indirect | $(Y) \leftarrow Rr$ | None | 2 |
| ST | Y+, Rr | Store Indirect and Post-Inc. | $(Y) \leftarrow Rr, Y \leftarrow Y + 1$ | None | 2 |
| ST | - Y, Rr | Store Indirect and Pre-Dec. | $Y \leftarrow Y - 1, (Y) \leftarrow Rr$ | None | 2 |
| STD | Y+q,Rr | Store Indirect with Displacement | $(Y + q) \leftarrow Rr$ | None | 2 |
| ST | Z, Rr | Store Indirect | $(Z) \leftarrow Rr$ | None | 2 |
| ST | Z+, Rr | Store Indirect and Post-Inc. | $(Z) \leftarrow Rr, Z \leftarrow Z + 1$ | None | 2 |
| ST | -Z, Rr | Store Indirect and Pre-Dec. | $Z \leftarrow Z - 1, (Z) \leftarrow Rr$ | None | 2 |
| STD | Z+q,Rr | Store Indirect with Displacement | $(Z + q) \leftarrow Rr$ | None | 2 |
| STS | k, Rr | Store Direct to SRAM | $(k) \leftarrow Rr$ | None | 2 |
| LPM | | Load Program Memory | $R0 \leftarrow (Z)$ | None | 3 |
| LPM | Rd, Z | Load Program Memory | $Rd \leftarrow (Z)$ | None | 3 |
| LPM | Rd, Z+ | Load Program Memory and Post-Inc | $Rd \leftarrow (Z), Z \leftarrow Z+1$ | None | 3 |
| SPM | | Store Program Memory | (z) ← R1:R0 | None | |
| IN | Rd, P | In Port | $Rd \leftarrow P$ | None | 1 |
| OUT | P, Rr | Out Port | P ← Rr | None | 1 |
| PUSH | Rr | Push Register on Stack | STACK ← Rr | None | 2 |
| POP | Rd | Pop Register from Stack | $Rd \leftarrow STACK$ | None | 2 |
| MCU CONTROL IN | STRUCTIONS | | | | |
| NOP | | No Operation | | None | 1 |
| | 1 | Sleep | (see specific descr. for Sleep function) | None | 1 |
| SLEEP | | Olcop | | | |
| SLEEP WDR | | Watchdog Reset | (see specific descr. for WDR/Timer) | None | 1 |





4. Ordering Information

| Table 4-1. Engineering Samples Delivery only | | | | |
|--|----------------------------|------------------|------------------------|-----------------------------|
| Ordering Code ⁽²⁾ | Speed (MHz) ⁽³⁾ | Power Supply (V) | Package ⁽¹⁾ | Operation Range |
| ATtiny261-ESSZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C) |
| ATtiny261-ESMZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C) |
| ATtiny261-ESXZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C) |
| | | | | |
| ATtiny461-ESSZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C) |
| ATtiny461-ESMZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C) |
| ATtiny461-ESXZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C) |
| | | | | |
| ATtiny861-ESSZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C) |
| ATtiny861-ESMZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C) |
| ATtiny861-ESXZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C) |

Table 4-2. Available Product Offering

| Ordering Code ⁽²⁾ | Speed (MHz) ⁽³⁾ | Power Supply (V) | Package ⁽¹⁾ | Operation Range |
|--|--|------------------|------------------------|-----------------------------|
| ATtiny261-15SZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C) |
| ATtiny261-15MZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C) |
| ATtiny261-15XZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C) |
| | | | · | |
| ATtiny461-15SZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C |
| ATtiny461-15MZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C |
| ATtiny461-15XZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C |
| L. L | L. L | | l | |
| ATtiny861-15SZ | 16 | 2.7 - 5.5 | TG | Automotive (-40° to +125°C |
| ATtiny861-15MZ | 16 | 2.7 - 5.5 | PN | Automotive (-40° to +125°C |
| ATtiny861-15XZ | 16 | 2.7 - 5.5 | 6G | Automotive (-40° to +125°C |

Notes: 1. This device can also be supplied in wafer form. Please contact your local Atmel sales office for detailed ordering information and minimum quantities.

2. Pb-free packaging, complies to the European Directive for Restriction of Hazardous Substances (RoHS directive). Also Halide free and fully Green.

3. For Speed vs. $V_{\text{CC}}, \text{see Figure 23.3 on page 189}$

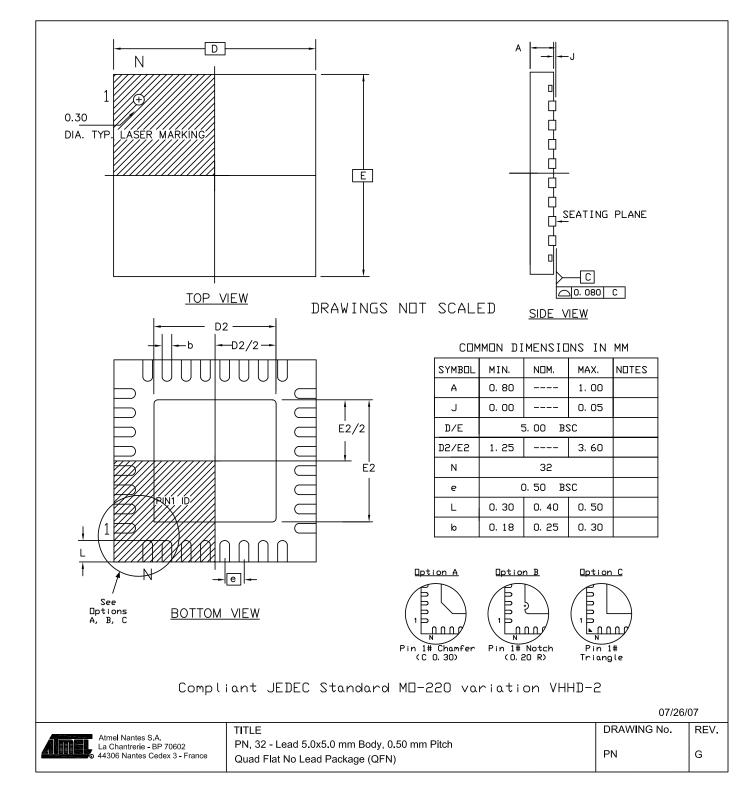
| Package Type | | | | |
|---|---|--|--|--|
| PN 32-pad, 5.0 x 5.0 mm Body, Lead Pitch 0.50 mm, Quad Flat No Lead Package (QFN) | | | | |
| TG 20-lead, 0.300" Wide Body Lead, Plastic Gull Wing Small Outline Package (SOIC) | | | | |
| 6G | 20-leads, 4.4x6.5mm body - 0.65mm Pitch - Lead Length: 0.6mm Thin Shrink Small Outline Package (TSSOP) | | | |



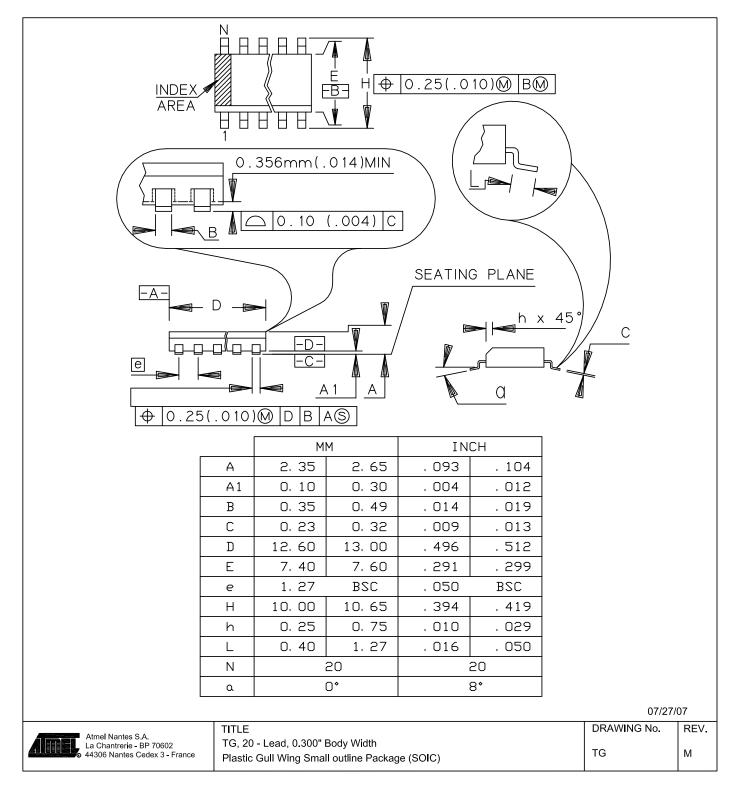


5. Packaging Information

5.1 PN



5.2 TG







NOTES: SOIC STANDARD NOTES

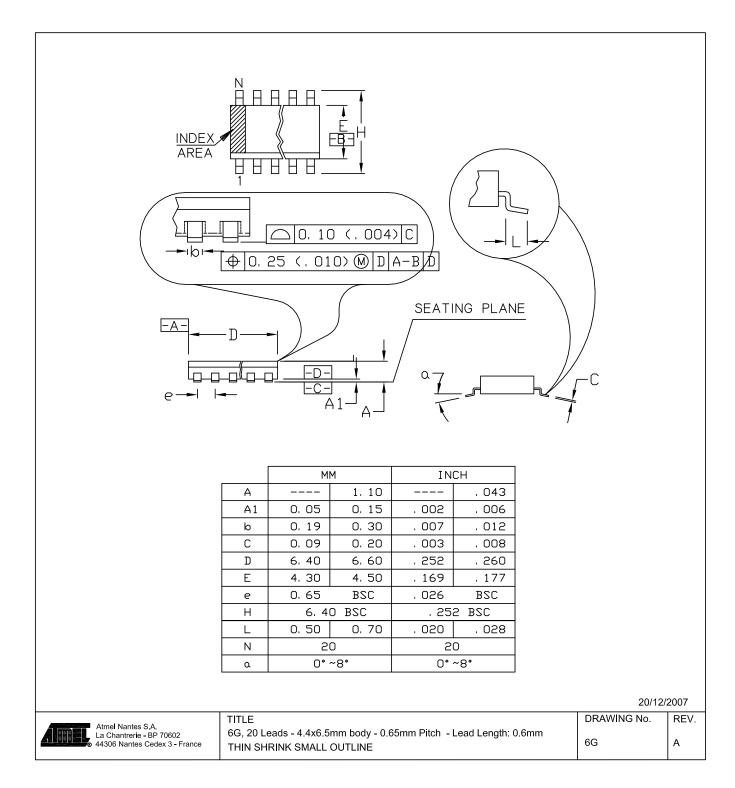
1. DIMENSIONING & TOLERANCING CONFORM TO ASME Y14.5M. - 1982.

2. "D" AND "E" DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTUSIONS. MOLD FLASH OR PROTUSIONS SHALL NOT EXCEED 0.15mm (0.006 INCH) PER SIDE.

3. THE CHAMFER "h" IS OPTIONAL.

ATtiny261/461/861

5.3 6G







6. Errata

6.1 Errata ATtiny261

The revision letter in this section refers to the revision of the ATtiny261 device.

6.1.1 Rev A

No known errata.

6.2 Errata ATtiny461

The revision letter in this section refers to the revision of the ATtiny461 device.

6.2.1 Rev B

No known errata.

6.3 Errata ATtiny861

The revision letter in this section refers to the revision of the ATtiny861 device.

6.3.1 Rev B

No known errata.

7. Datasheet Revision History

7.1 Rev. 7753A – 11/07

- 1. First Datasheet Draft Initial Automotive Version. Started from Industrial Datasheet doc2588 rev.B 01/07
- 7.2 Rev. 7753B 08/08
 - 1. Added 6G product offering to Ordering Information.





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Atmel Japan

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Product Contact

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Literature Requests www.atmel.com/literature

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