1-chip MICROCOMPUTER FOR TELEPHONE SET S-7292AF

The S-7292AF is a CMOS 4-bit microcomputer for telephone sets, which integrates ROM, RAM, timers, a serial I/O, I/O ports and a dialer circuit on one chip. It features low voltage operation and low current consumption. At power failure, it is powered solely by telephone line input. It is usable for wireless telephone set and multi-function telphone set.

■ Features

Characteristics

- Power supply voltage: 1.7 to 5.5 V (PULSE mode, a crystal used)
  2.0 to 5.5 V (DTMF mode)
- Current consumption: Running: 0.20 mA typ. in PULSE mode, 2.4V operation
  0.35 mA typ. in DTMF mode, 2.4V operation
  Standby: 2.5 μA max., 2.4V operation
- Instruction execution time : 17.9 μs (operating frequency : 224kHz)

Hardware functions

- ROM : 3K×16 bits
- RAM : 768×4 bits
- I/O line : 33 [10 inputs, 12 outputs, 11 I/O (including key interface)]
- Serial I/O : 1 ch (8-bit clock syncronization)
- Timer : Timer 1 (8-bit general-purpose timer with reload function)
  Timer 2 (8-bit dial pulse timer)
  Interval timer (selectable from 150 / 300Hz)
- Watchdog timer
- 4 pins for telephone use : HS ($\overline{\text{HS}}$), $\overline{\text{BEEP}}$, $\overline{\text{KT}}$, TONE-OUT
- Interrupt function: Internal (three), external (four)
- Oscillation circuit : Crystal or ceramic oscillator (3.579545MHz)

Software

- Instruction: 35 basic instruction sets (166 when addressing modes are included)
- 16-level subroutine nesting

Package

- 44-pin QFP

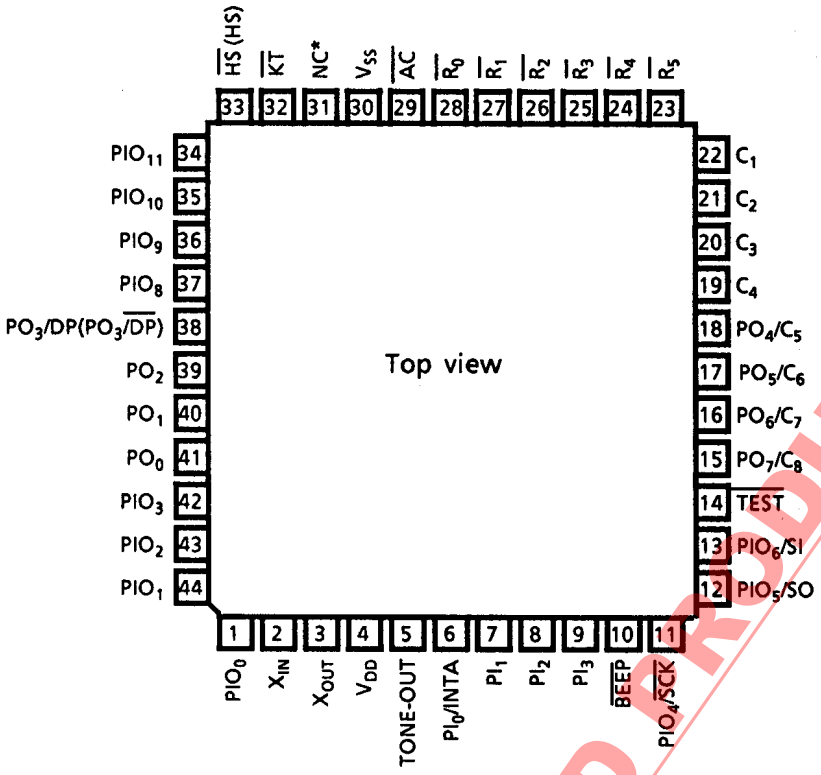
OTP version

- S-72P92AF (its electrical characteristics differ from those of S-7292AF)

■ Applications

- Standard telephone set, wireless telephone set, answering machine
- Personal facsimile

■ Pin Assignments



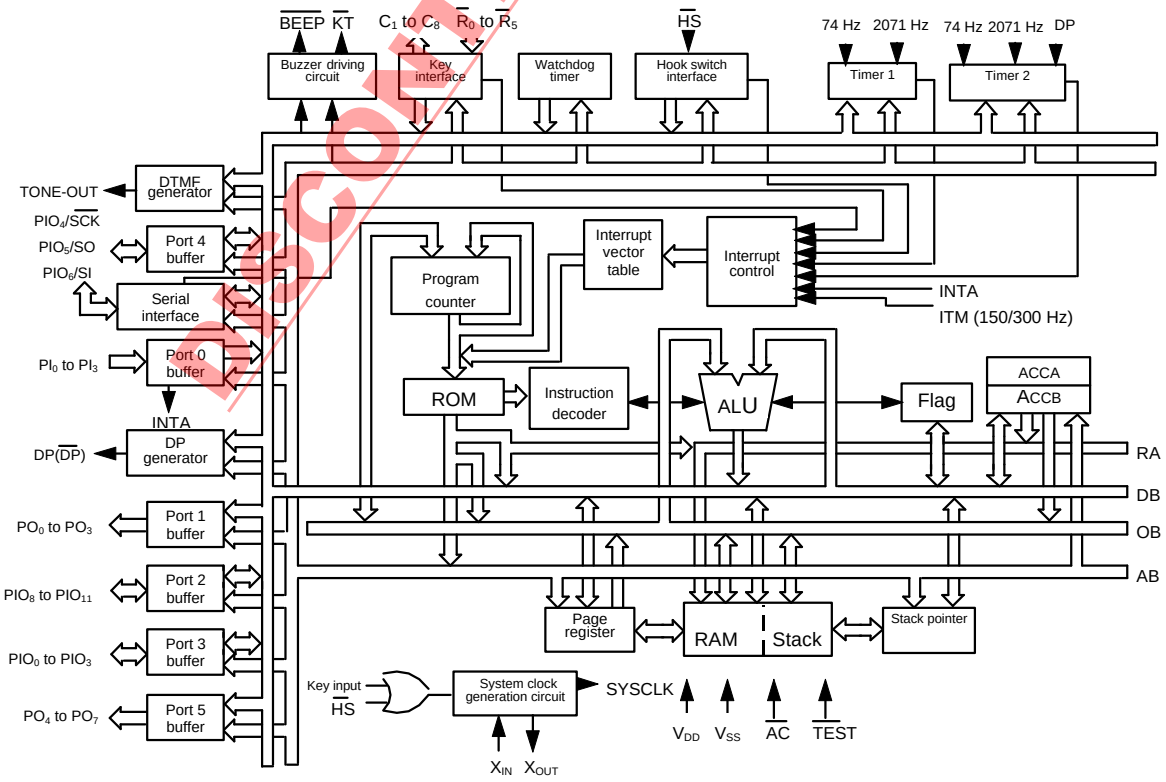
( ) : mask option
*NC is V_{PP} for S-72P92AF

■ Terminal Functions

Pin name	I/O	Functions
V_{SS}	—	COMMON potential terminal
V_{DD}	—	Positive power supply
$\overline{TEST}$	Input	Test, usually connected to V_{DD} (built-in pull-up resistor)
$\overline{AC}$	Input	Reset (built-in pull-up resistor, schmitt trigger input)
X_{IN} X_{OUT}	Input Output	Crystal/ceramic oscillator connection terminal for system clock oscillation or DTMF signal generation
$\overline{HS}$	Input	Hook switch input
$\overline{BEEP}$	Output	Buzzer output
TONE-OUT	Output	DTMF signal output (Pch open-drain output)
$\overline{KT}$	Output	Key-in-tone output
$\overline{R}_0$ to $\overline{R}_5$	Input	Row signal input (built-in pull-up resistor)
C_1 to C_4	Output	Column signal output (see the description of PO_4 to PO_7 for C_5 to C_8)
PI_0 to PI_3	Input	4-bit input port (Port 0). PI_0 is shared with the following function: PI_0/INTA : external interrupt (schmitt trigger input)
PO_0 to PO_3	Output	4-bit output port (Port 1). PO_3 is shared with the following function: PO_3/DP($PO_3/\overline{DP}$) : dial pulse output
PO_4 to PO_7	Output	4-bit output port (Port 5). PO_4 to PO_7 are shared with Column signal outputs as follows: PO_4/C_5 , PO_5/C_6 , PO_6/C_7 , PO_7/C_8
PIO_0 to PIO_3	I/O	4-bit input/output port (Port 3), selectable in bit unit.
PIO_4 to PIO_6	I/O	3-bit input/output port (Port 4), selectable in bit unit. PIO_4 to PIO_6 are shared with Column signal outputs as follows (PIO_4 and PIO_6 are schmitt trigger input): $PIO_4/\overline{SCK}$: serial clock input/output PIO_5/SO : serial data output PIO_6/SI : serial data input
PIO_8 to PIO_{11}	I/O	4-bit input/output port (Port 2), selectable in bit unit.
NC	—	V_{PP} terminal for S-72P92AF

■ Block Diagram

The S-7292AF blocks connect with a 4-bit data bus(DB), 4-bit address bus(AB), 4-bit RAM address bus(RA) and 12-bit operation bus(OB).

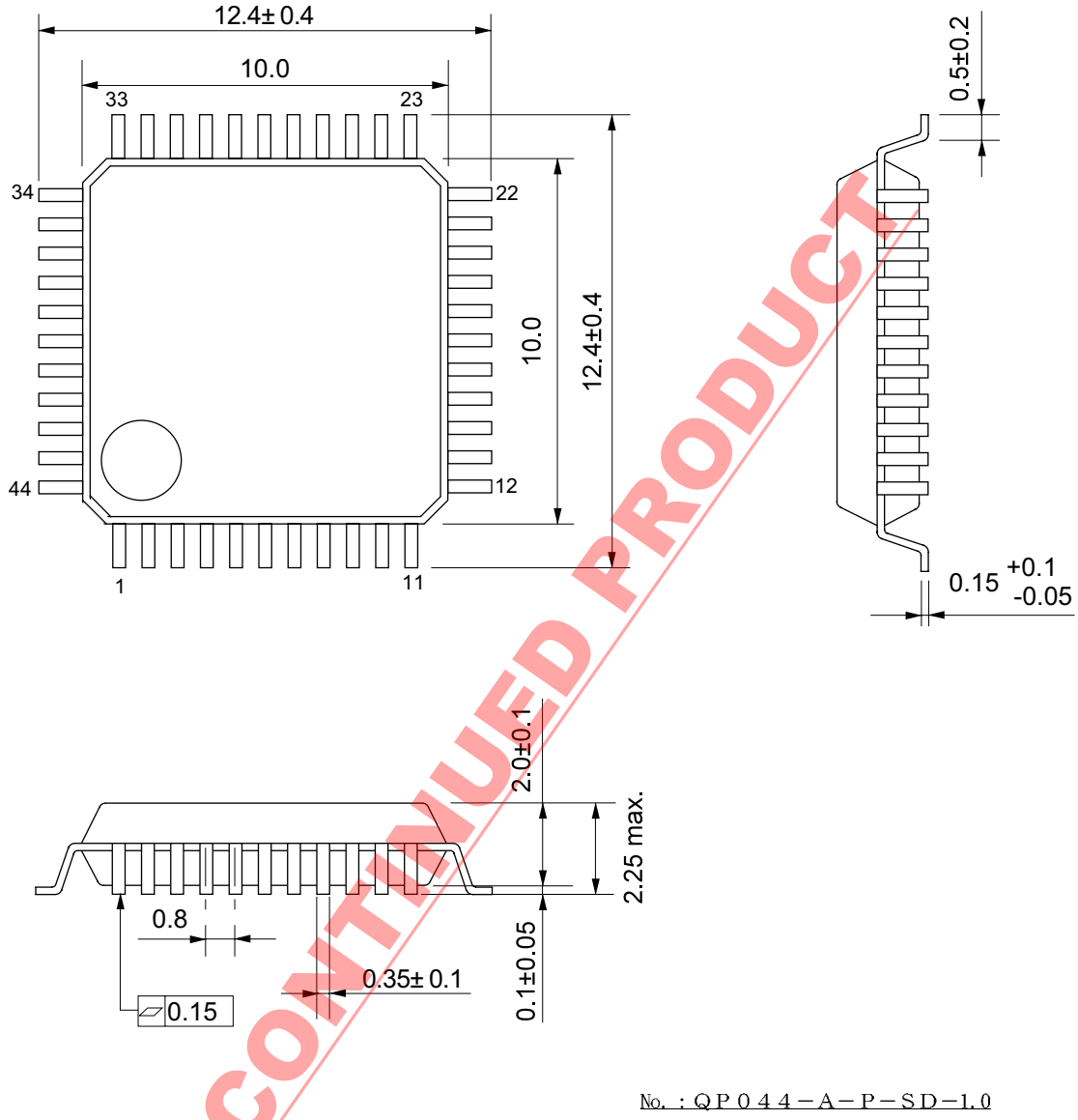


■ 44-pin QFP

QP044-A 990531

●Dimensions

Unit:mm



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