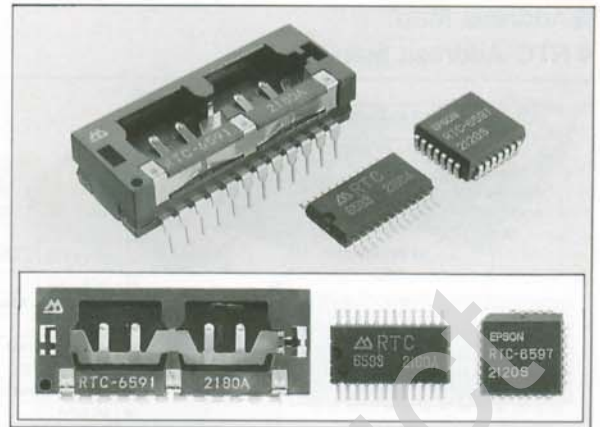


REAL TIME CLOCK MODULE FOR PC/AT[®]

RTC-658X/659X

- A built-in crystal resonator makes the product efficient and adjustment free.
- Provides 114 bytes of backed-up RAM.
- Extended alarm function (659X series).
- Low current consumption.
- Batteries (BR1225) are option for RTC-6581/6591 only. (Batteries are packed separately from the RTC.)

※PC/AT is a trademark of IBM corporation in USA.



Actual size

Specifications(characteristics)

Absolute Maximum Rating

Item	Symbol	Condition	Rating	Unit	
Supply voltage	V_{DD}	$V_{DD} - V_{SS}$	-0.3 to +7.0	V	
Input voltage	V_{IN}	Input pin	$V_{SS} - 0.3$ to $V_{DD} + 0.3$	V	
Storage temperature	T_{STG}	Discreat Component	6581/6591	-40 to +85	°C
			6583/6593 6587/6597	-55 to +125	
Soldering conditions	T_{SOL}	6581/6591	260°C or less for 10 seconds or less. Package Temp. should be 150°C or less		
		6583/6593 6587/6597	Twice under 260°C within 10 seconds or under 230°C within 3 minutes.		

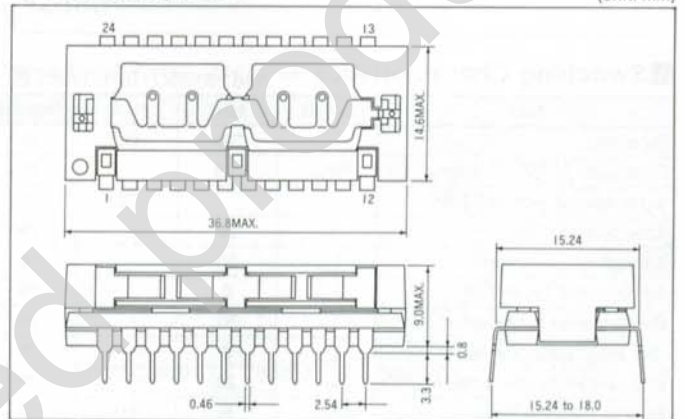
Operating Range, Frequency and DC Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}	$V_{DD} - V_{SS}$	4.5	5.0	5.5	V
Operating temperature	T_{OPR}		-10		+70	°C
Frequency tolerance	$\Delta f/fo$	$T_a = 25^\circ\text{C}, V_{DD} = 5\text{V}$			5 ± 20	ppm
Temperature characteristics	top	$T_a = -10$ to 70°C 25°C standard			+10 -120	ppm
Voltage characteristics	fv	$T_a = \text{stable}$			± 6	ppm/V
Aging	fa	$T_a = 25^\circ\text{C}, V_{DD} = 5\text{V}$ First year			± 5	ppm/Y
Input Voltage	High level	V_{IH}	2.2		$V_{DD} + 0.3$	V
	Low level	V_{IL}	-0.3		0.8	V
Output Voltage	High level	V_{OH}	$V_{DD} = 5\text{V}$ $I_{LOAD} = -4\text{mA}$	2.4		V
	Low level	V_{OL}	$V_{DD} = 5\text{V}$ $I_{LOAD} = +4\text{mA}$		0.4	V
Power supply current	I_{DD}	Output unloaded		3	10	mA
Battery supply current	I_{BAT}	$V_{BAT} = 3\text{V}$ $V_{DD} = 0\text{V}$		0.5	1.0	μA

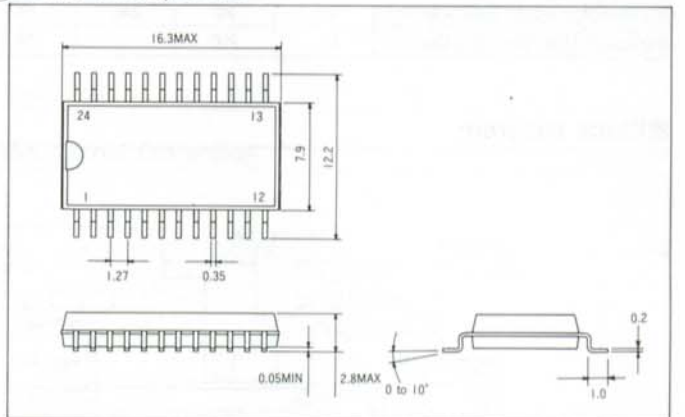
External Dimension

● RTC-6581/6591

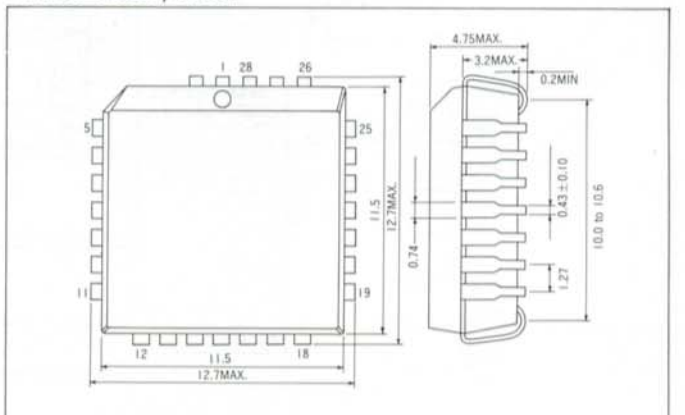
(Unit: mm)



● RTC-6583/6593



● RTC-6587/6597



Address Map

RTC Address Map

00	14 BYTES	00 H	0	Seconds
13		0D H	1	Seconds Alarm
14		0E H	2	Minutes
			3	Minutes Alarm
	114 BYTES		4	Hours
			5	Hours Alarm
			6	Day of the Week
			7	Day of Month
			8	Month
			9	Year
			10	Register A
			11	Register B
			12	Register C
			13	Register D
127			7F H	14
			127	

Extended Alarm Address Map (RTC-659X only)

00	8 BYTES	00H	0	Extended Seconds Alarm
			1	Extended Minutes Alarm
			2	Extended Hours Alarm
			3	Extended Day of the Week Alarm
			4	Extended Day of Month Alarm
			5	Extended Month Alarm
			6	Register 6
07		07H	7	Register 7

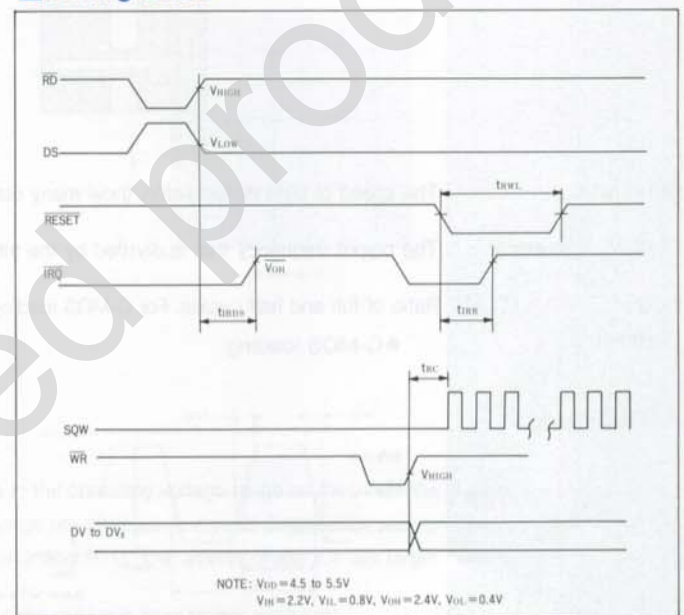
Switching Characteristic

Item	Symbol	Min.	Max.	Unit
Reset pulse width	T_{RWL}	5	—	μ S
Oscillation start up time	T_{RL}	—	1	s
IRQ release from DS low	t_{IRDS}	—	2	μ S
IRQ release from reset low	t_{IRR}	—	2	μ S
VRT bit delay	t_{VRTD}	—	1	μ S

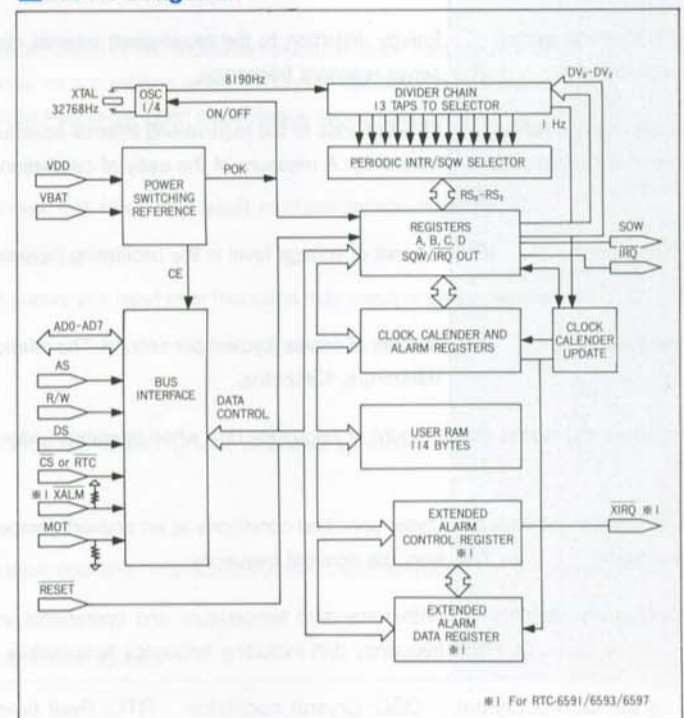
Terminal Functions

Terminal	Function	Pin No.					
		6581	6591	6583	6593	6587	6597
MOT	Mode select (input)	1	1	1	1	2	2
AD0 to 7	Multiplexed bi-direction address/data buses	4 to 11	4 to 11	4 to 11	4 to 11	5 to 10 12, 14	5 to 10 12, 14
VSS	Power supply (grand)	12	12	12	12	15	15
\overline{CS}	Real time clock select (input)	13	—	13	—	16	—
\overline{RTC}	Real time clock select (input)	—	13	—	13	—	16
AS	Address strobe (input)	14	14	14	14	17	17
R/W	Read/Write (input)	15	15	15	15	19	19
DS	Data strobe (input)	17	17	17	17	21	21
RESET	Reset (input)	18	18	18	18	22	22
\overline{IRQ}	Interrupt request (output)	19	19	19	19	23	23
V _{BAT}	Back-up power supply	—	—	20	20	24	24
\overline{XIRQ}	Extended alarm interrupt request (output)	—	21	—	21	—	25
\overline{XALM}	Extended alarm select (input)	—	22	—	22	—	26
SQW	Square wave output	23	23	23	23	27	27
V _{DD}	Power supply (+5V)	24	24	24	24	28	28
NC	Not connected internally	Others	Others	Others	Others	Others	Others
NP	No physical pin	—	—	—	—	3,4	3,4

Timing Chart



Block Diagram



#1 For RTC-6591/6593/6597