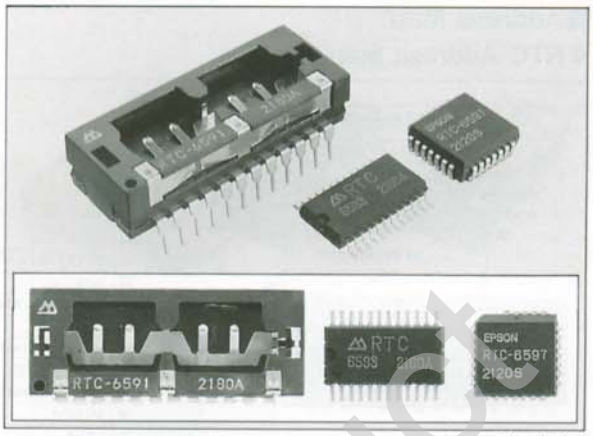
REAL TIME CLOCK MODULE FOR PC/AT※
RTC-658X/659X

- 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.		

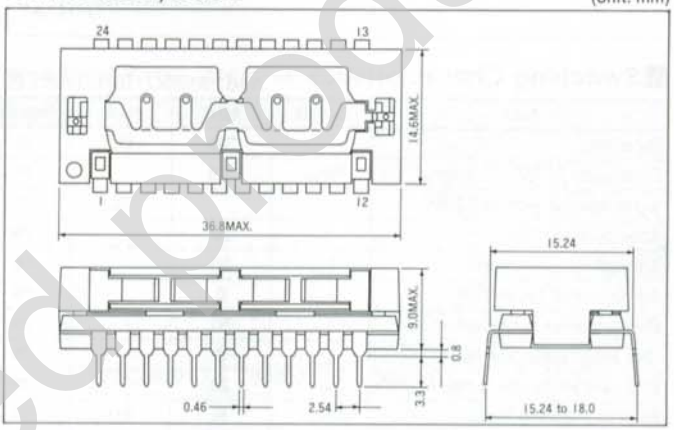
■Operating Range, Frequency and DC Characteristics

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		Δf/fo	Ta=25°C, V_{DD}=5V			5±20	ppm
Temperature characteristics		top	Ta=−10 to 70°C 25°C standard			+10 −120	ppm
Voltage characteristics		fv	Ta=stable			±6	ppm/V
Aging		fa	Ta=25°C, V_{DD}=5V 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}=5V I_{LOAD}=−4mA	2.4			V
	Low level	V_{OL}	V_{DD}=5V I_{LOAD}=+4mA			0.4	V
Power supply current		I_{DD}	Output unloaded		3	10	mA
Battery supply current		I_{BAT}	V_{BAT}=3V V_{DD}=0V		0.5	1.0	μA

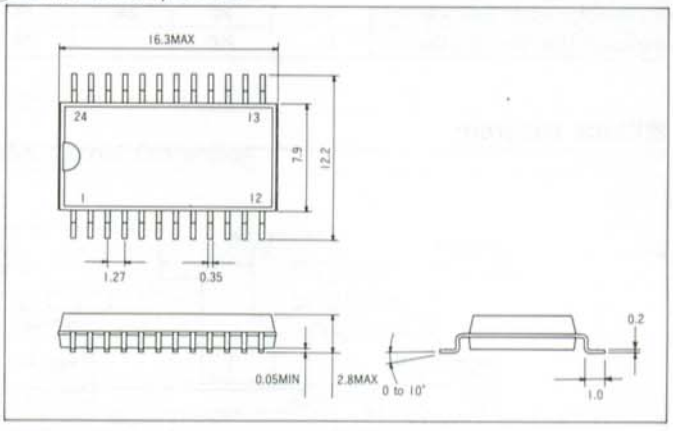
■External Dimension

●RTC-6581/6591

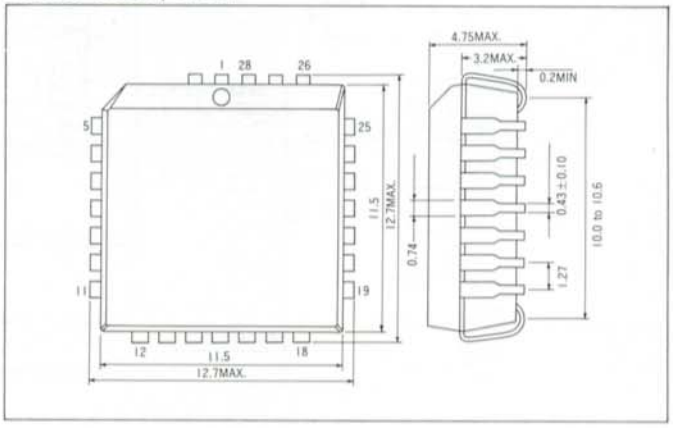
(Unit: mm)



●RTC-6583/6593



●RTC-6587/6597



■Address Map

●RTC Address Map

00	14 BYTES	00 H	0	Seconds
			1	Seconds Alarm
			2	Minutes
13		0D H	3	Minutes Alarm
14	114 BYTES	0E H	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
			14	General purpose RAM
127		7F H	127	

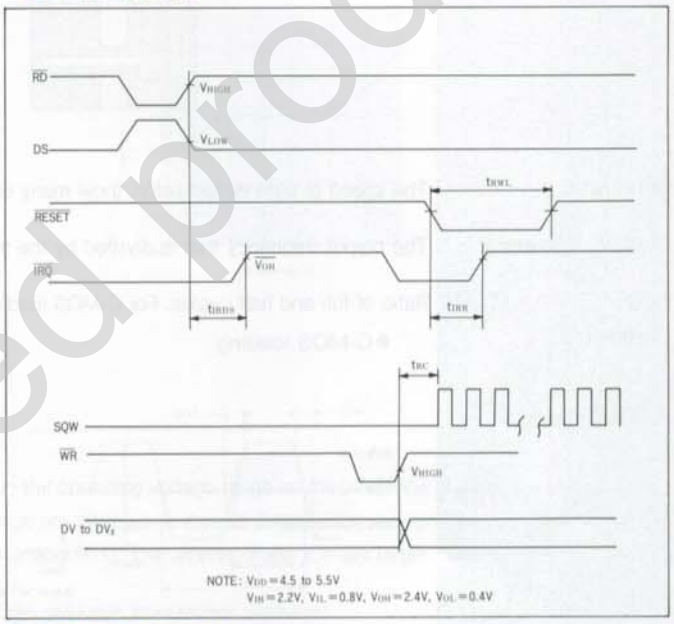
●Extended Alarm Address Map (RTC-659X only)

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	—	μs
Oscillation start up time	T_{RL}		1	s
IRQ release from DS low	t_{IRDS}	—	2	μs
IRQ release from reset low	t_{IRR}	—	2	μs
VRT bit delay	t_{VRTD}	—	1	μs

■Timing Chart



■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/$\overline{W}$	Read/Write (input)	15	15	15	15	19	19
DS	Data strobe (input)	17	17	17	17	21	21
$\overline{RESET}$	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 phisical pin	—	—	—	—	3,4	3,4

■Block Diagram