4. RATINGS

4-1. Absolute maximum ratings

The absolute ratings of PPMC-104 are as specified in Table 4-1.

Table 4-1 (Table of Absolute Maximum Ratings)

Item	Symbol	Rating	Unit
Supply voltage	Vcc	-0.5 to +7	V
Input voltage	Vin	-0.5 to +Vcc + 0.5	V
Power consumption (Ta=85 °C)	Pd	500	mW
Operating temperature	Topr	-40 to +85	°C
Storage temperature	Tstg	-65 to +150	°C
Soldering temperature (10s)	Tsolder	260	°C

Use of PPMC-104 beyond the absolute maximum ratings may result in deterioration and permanent damage.

4-2. DC Characteristics

The DC characteristics of PPMC-104 are as shown in Table 4-2.

Table 4-2 (Table of DC Characteristics)

Item		Symbol	Min.	Max.	Unit	Condition
Low level input voltage	RESET		-0.3	0.25Vcc	V	
	X1		-0.3	0.2Vcc		
	Other		-0.3	0.3Vcc		
High level output voltage	RESET		0.75Vcc	Vcc + 0.3	V	IOL = 1.6mA
	X1		0.8Vcc	Vcc + 0.3		
	Other		0.7Vcc	Vcc + 0.3		
Low level output voltage	All output terminals	VOL		0.45	V	
High level output voltage	AUXO0 - AUXO3	VCH	2.4		V	IOH = -400microA
	Other		0.75Vcc			IOH = -100microA
Input current		Idr	-1.0	-3.5	mA	Vext = 1.5V Rext = 1.1kohm
Input leakage current		ILI	0.02 (Typ)	±5	microA	0.0 ≤ Vin ≤ Vcc
Output leakage current		ILO	0.05 (Typ)	±10	microA	0.0 ≤ Vin ≤ Vcc -0.2
Current consumption		ICC	35 (Typ)	50	mA	f = 16MHz
Input capacity	All input pins	CIN		10	PF	f = 1MHz

4-3. AC Characteristics

4-3-1. RD and WR separate bus mode

(1) Register read operation

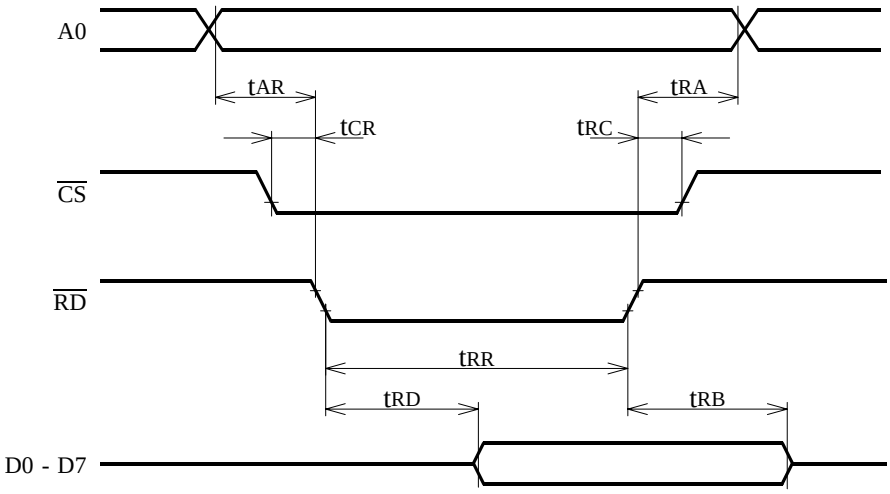


Fig. 4-1 (RD and WR Separate Bus Mode Register Read Timing)

Table 4-3 (RD and WR Separate Bus Mode Register Read Parameters)

Item	Symbol	Min	Max	Unit
A_0 set time to $\overline{RD}$	t_{AR}	20		ns
A_0 hold time after $\overline{RD}$	t_{RA}	5		ns
$\overline{CS}$ set time to $\overline{RD}$	t_{CR}	0		ns
$\overline{CS}$ hold time after $\overline{RD}$	t_{RC}	0		ns
$\overline{RD}$ pulse width	t_{RR}	120		ns
$\overline{RD}$ to data output delay	t_{RD}		100	ns
Data hold time after $\overline{RD}$	t_{RB}	10	90	ns

(V_{CC} = +5V $\pm$10%, Ta = -20 to 70°C)

(2) Register write operation

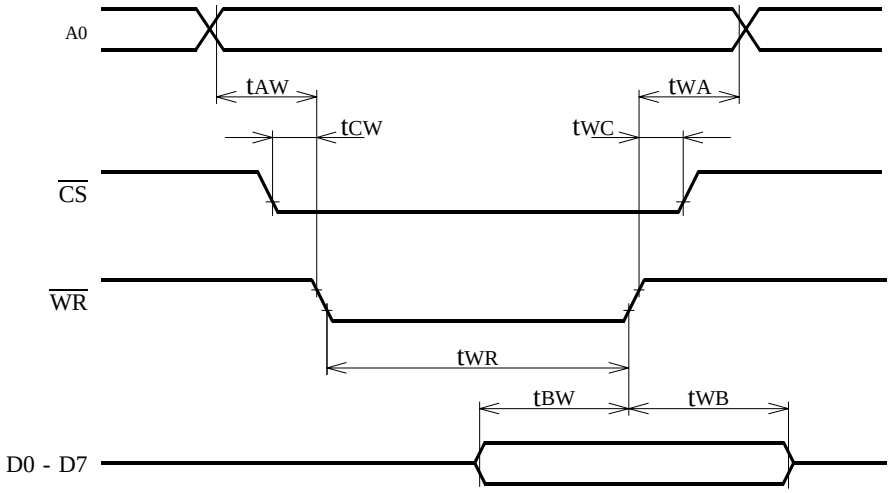


Fig. 4-2 (RD and WR Separate Bus Mode Register Write Timing)

Table 4-4 (RD and WR Separate Bus Mode Register Write Parameters)

Item	Symbol	Min	Max	Unit
A0 set time to $\overline{WR}$	t_{AW}	20		ns
A0 hold time after $\overline{WR}$	t_{WA}	5		ns
$\overline{CS}$ set time to $\overline{WR}$	t_{CW}	0		ns
$\overline{CS}$ hold time after $\overline{WR}$	t_{WC}	0		ns
$\overline{WR}$ pulse width	t_{WR}	120		ns
Data setup to $\overline{WR}$	t_{BW}	80		ns
Data hold time after $\overline{WR}$	t_{WB}	10		ns

(V_{CC} = +5V $\pm$10%, Ta = -20 to 70°C)

4-3-2. $\overline{DS}$ and R/$\overline{W}$ bus mode

(1) Register read operation

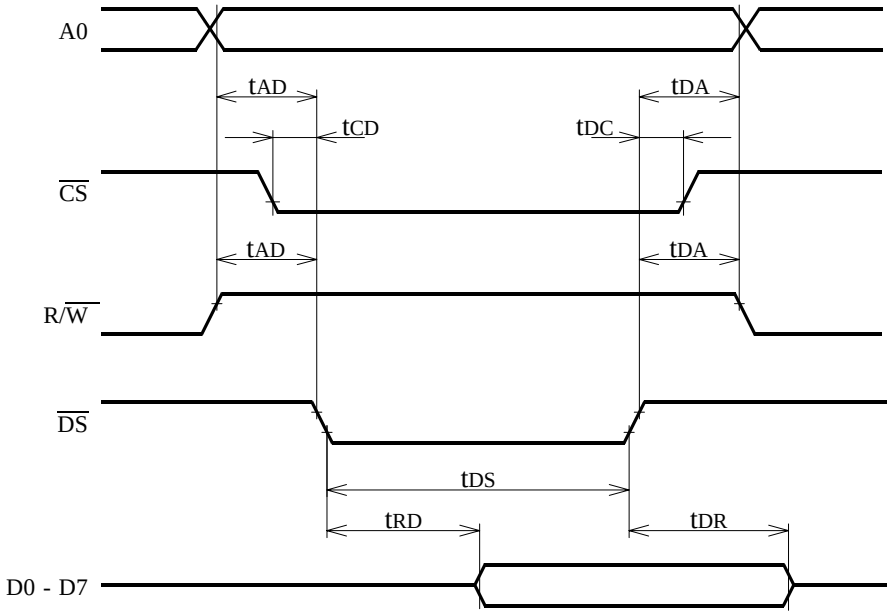


Fig. 4-3 ($\overline{DS}$ and R/$\overline{W}$ Bus Mode Register Read Timing)

Table 4-5 (DS and R/W Bus Mode Register Read Parameters)

Item	Symbol	Min	Max	Unit
A_0, R/$\overline{W}$ set time to $\overline{DS}$	t_{AD}	20		ns
A_0, R/$\overline{W}$ hold time after $\overline{DS}$	t_{DA}	5		ns
$\overline{CS}$ set time to $\overline{DS}$	t_{CD}	0		ns
$\overline{CS}$ hold time after $\overline{DS}$	t_{DC}	0		ns
$\overline{DS}$ pulse width	t_{DS}	120		ns
$\overline{DS}$e to data output delay	t_{RD}		100	ns
Data hold time after $\overline{DS}$	t_{DR}	10	90	ns

(V_{CC} = +5V ±10%, Ta = -20 to 70°C)

(2) Register write operation

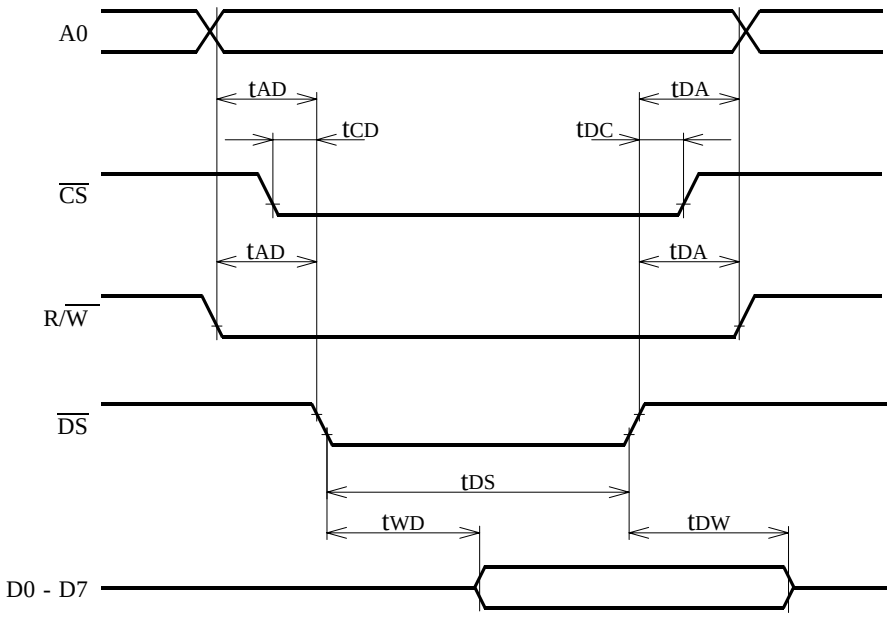


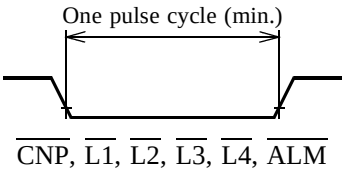
Fig. 4-4 ($\overline{DS}$, R/$\overline{W}$ Bus Mode Register Write Timing)

Table 4-6 (DS, R/W Bus Mode Register Write Parameters)

Item	Symbol	Min	Max	Unit
A_0, R/$\overline{W}$ set time to DS	t_{AD}	20		ns
A_0, R/$\overline{W}$ hold time after DS	t_{DA}	5		ns
$\overline{CS}$ set time to $\overline{DS}$	t_{CD}	0		ns
$\overline{CS}$ hold time after $\overline{DS}$	t_{DC}	0		ns
$\overline{DS}$ pulse width	t_{DS}	120		ns
$\overline{DS}$ to data output delay	t_{WD}	80		ns
Data hold time after $\overline{DS}$	t_{DW}	10		ns

(V_{CC}= +5V $\pm$10%, Ta = -20 to 70°C)

4-3-3. Alarm and limit signal input timing



These signals must assert at least one pulse cycle.

Fig. 4-5 (Alarm and Limit Signal Input Timing)

4-4. Outline drawings

4-4-1. Outline drawing of PPMC-104BFP

[Unit : mm]

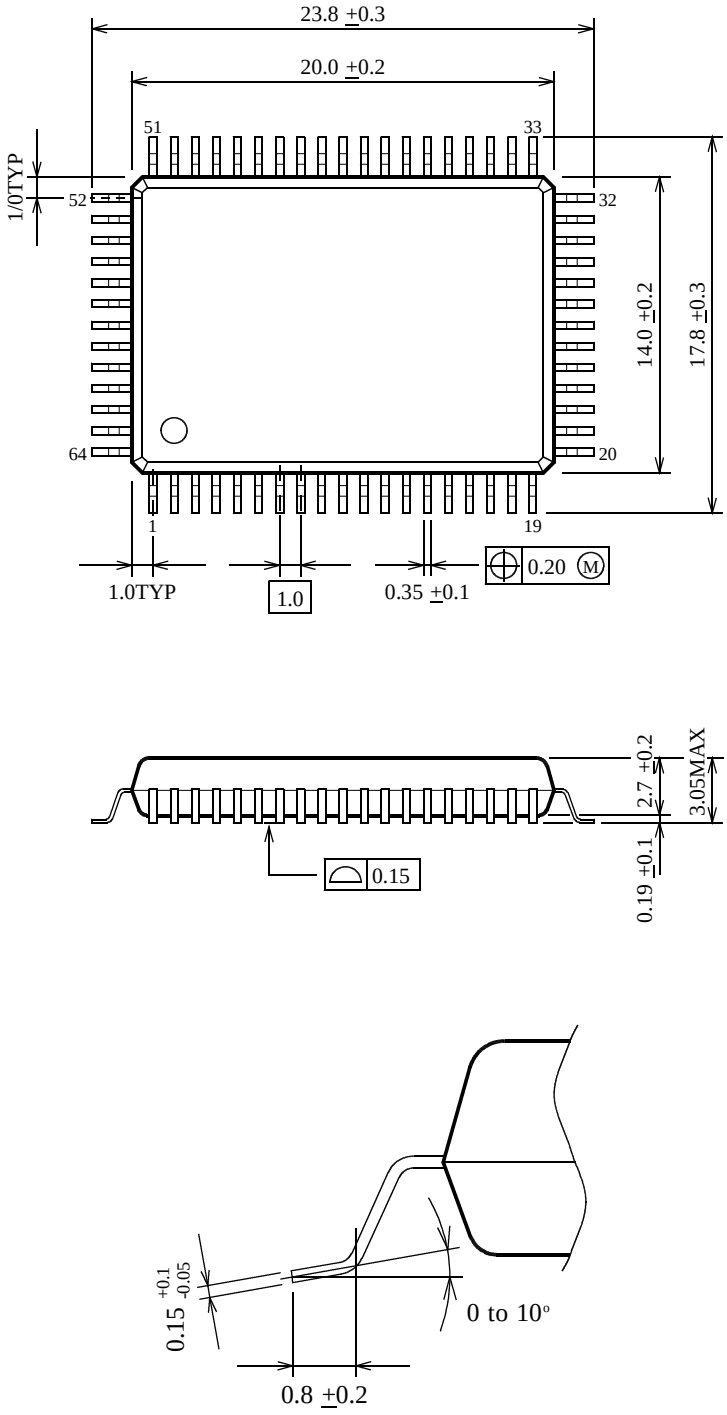


Fig. 4-6 (Outline Drawing of PPMC-104BFP)