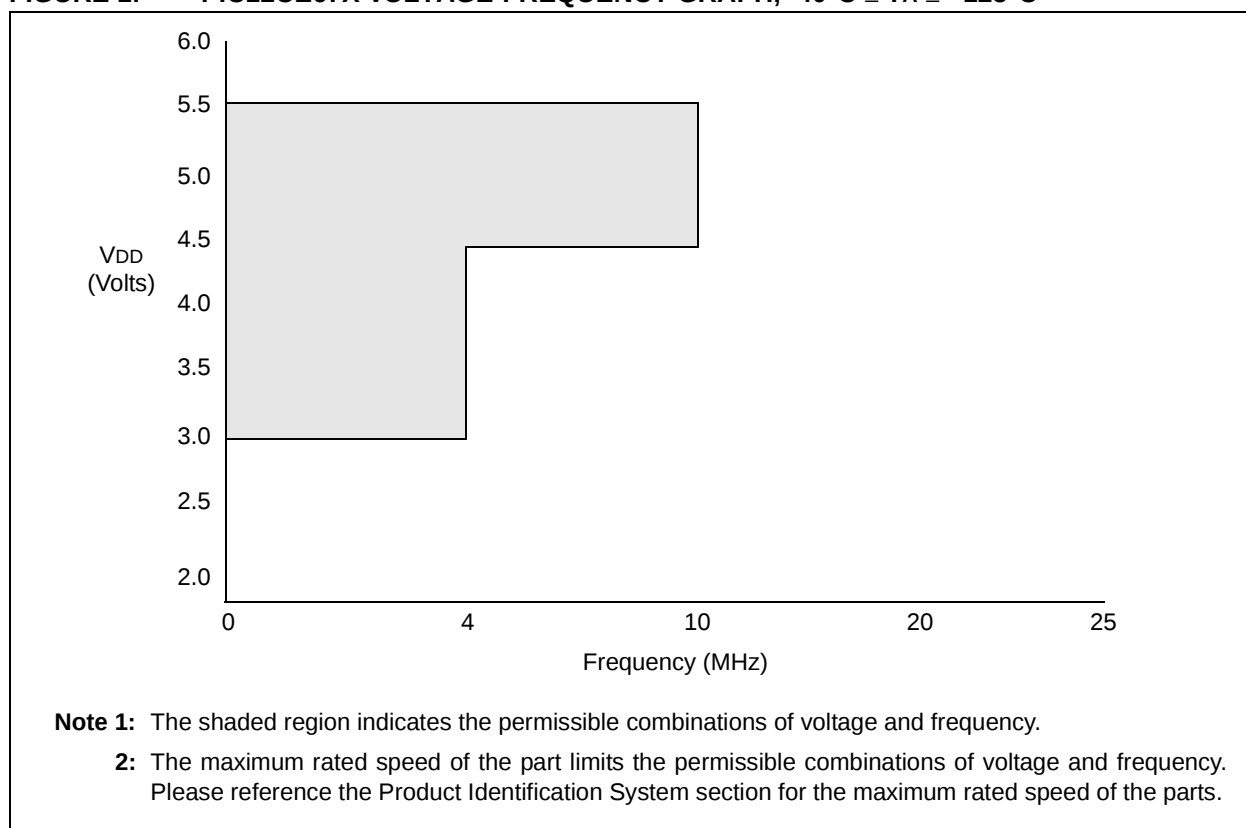


PIC12CE67X Rev. B Silicon/Data Sheet Errata

The PIC12CE67X (Rev. B) parts you have received conform functionally to the Device Data Sheet (**DS30561** and **DS40181A**), except for the anomalies described below.

FIGURE 1: PIC12CE67X VOLTAGE-FREQUENCY GRAPH, $-40^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$



PIC12CE67X

FIGURE 2: PIC12LCE67X VOLTAGE-FREQUENCY GRAPH, $-40^{\circ}\text{C} \leq T_A \leq 0^{\circ}\text{C}$

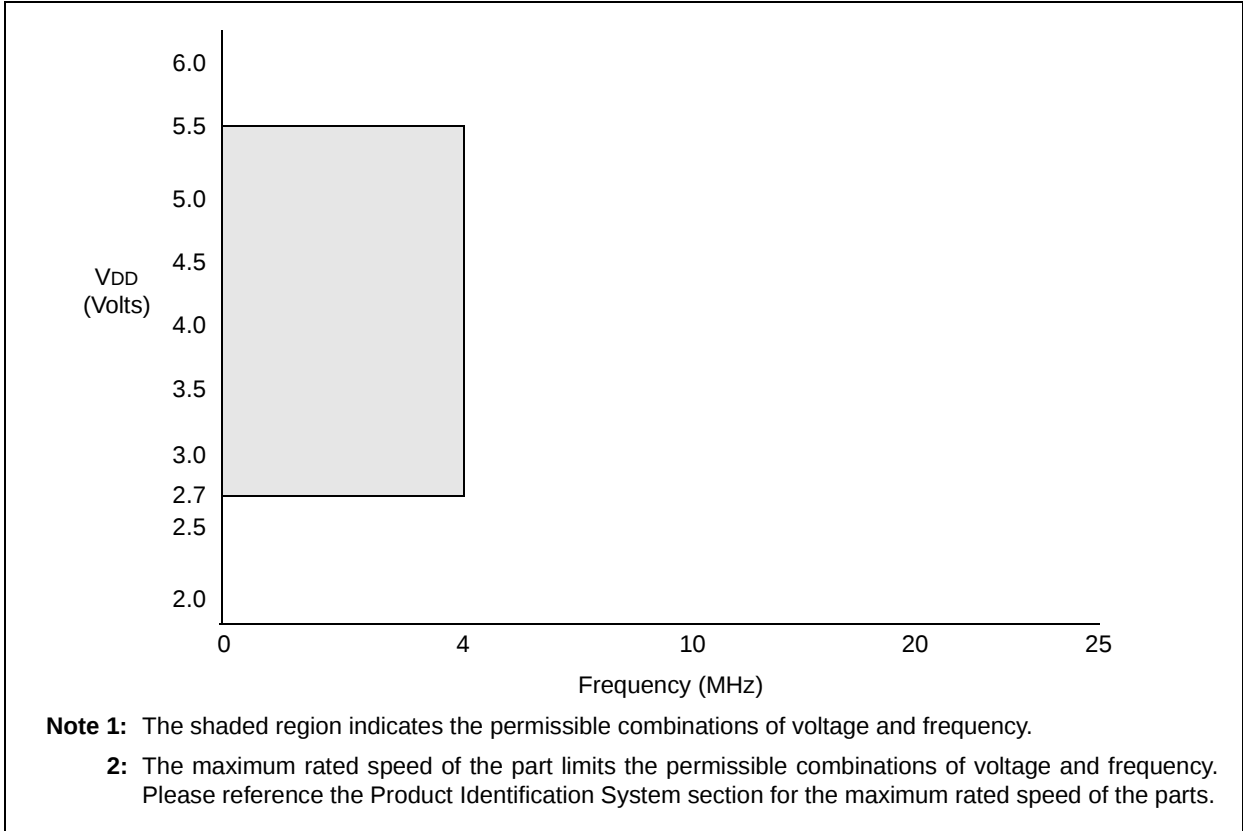


FIGURE 3: PIC12LCE67X VOLTAGE-FREQUENCY GRAPH, $0^{\circ}\text{C} \leq T_A \leq +70^{\circ}\text{C}$

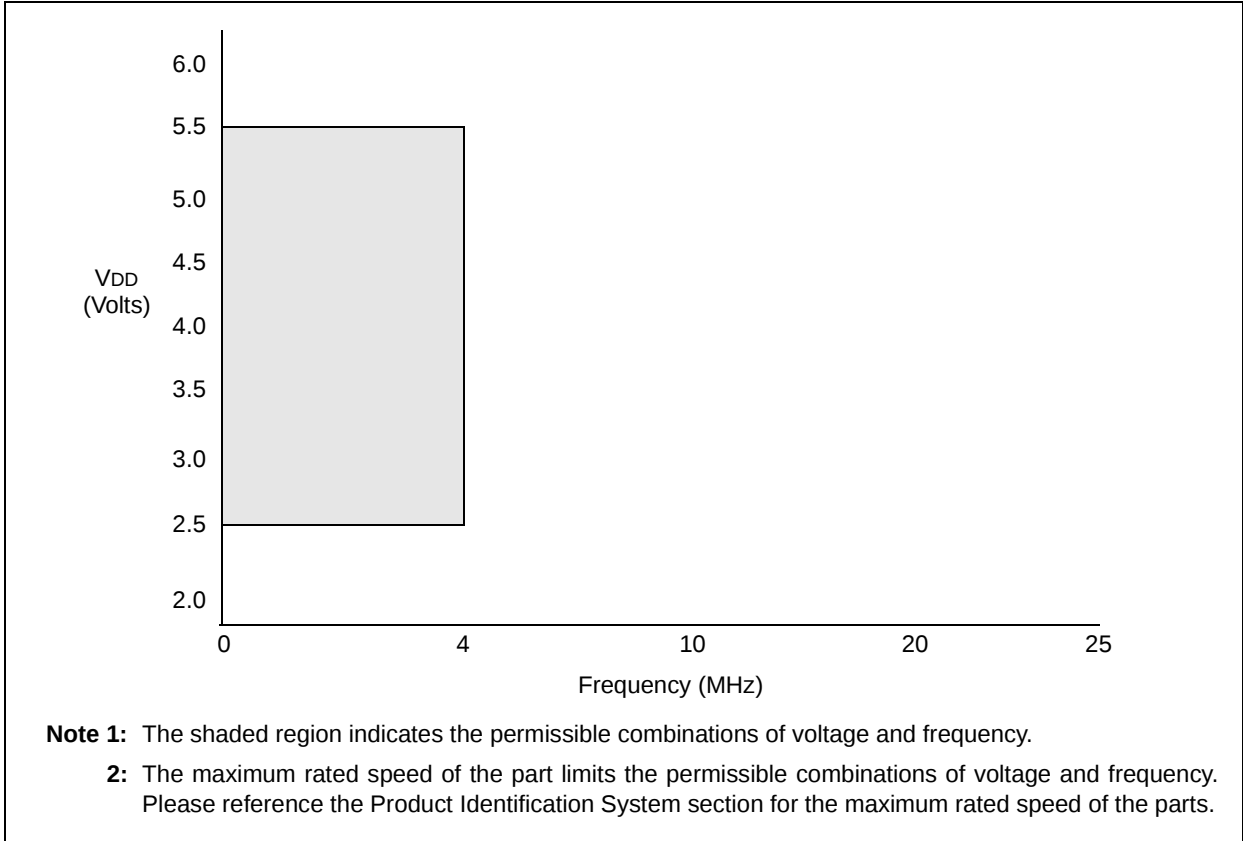
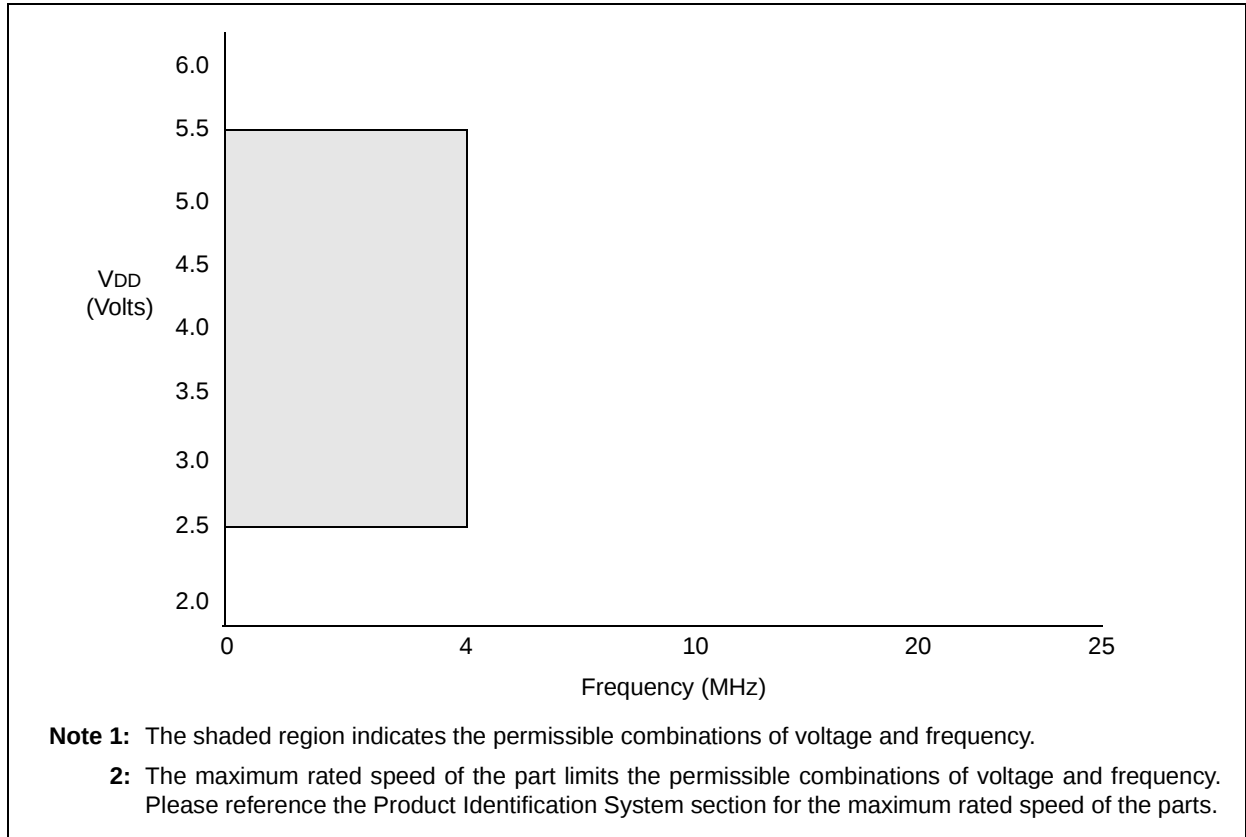


FIGURE 4: PIC12LCE67X VOLTAGE-FREQUENCY GRAPH, $+70^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$



PIC12CE67X

Clarifications/Corrections to the Data Sheet:

In the Device Data Sheet (DS30561B), the following clarifications and corrections should be noted.

1. Module: Register Summary (OSCCAL)

In Section 4.0, corrections for the Special Function Register Summary, Table 4-1, are shown.

TABLE 4-1: PIC12C67X SPECIAL FUNCTION REGISTER SUMMARY

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Value on Power-on Reset	Value on all other RESETS ⁽³⁾
Bank 1											
8Fh	OSCCAL	CAL5	CAL4	CAL3	CAL2	CAL1	CAL0	—	—	1000 00--	uuuu uu--

Legend: x = unknown, u = unchanged, q = value depends on condition, - = unimplemented read as '0'.

Shaded locations are unimplemented, read as '0'.

Note 1: These registers can be addressed from either bank.

2: The upper byte of the program counter is not directly accessible. PCLATH is a holding register for the PC<12:8> whose contents are transferred to the upper byte of the program counter.

3: Other (non Power-up) Resets include external RESET through MCLR and Watchdog Timer Reset.

4: The IRP and RP1 bits are reserved on the PIC12CE67X; always maintain these bits clear.

5: The SCL (GP7) and SDA (GP6) bits are unimplemented on the PIC12C671/672 and read as '0'.

PIC12CE67X

FIGURE 5-2: GP2 Block Diagram

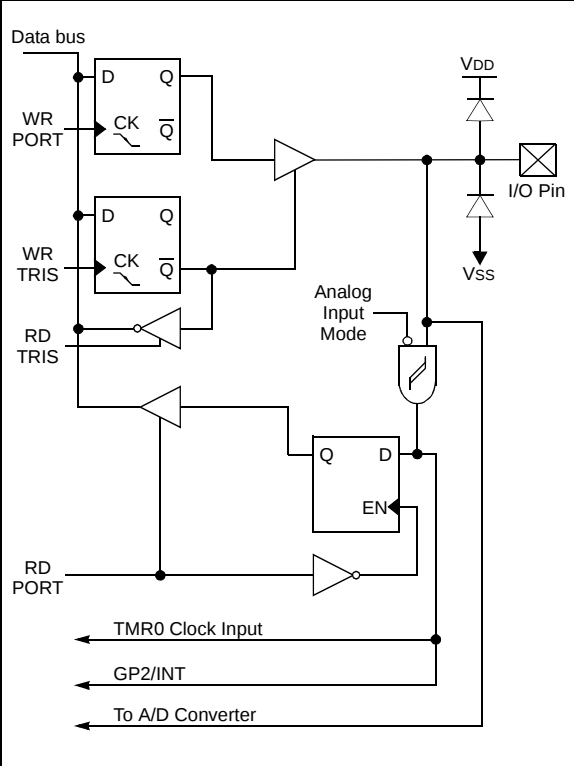


FIGURE 5-4: GP4 Block Diagram

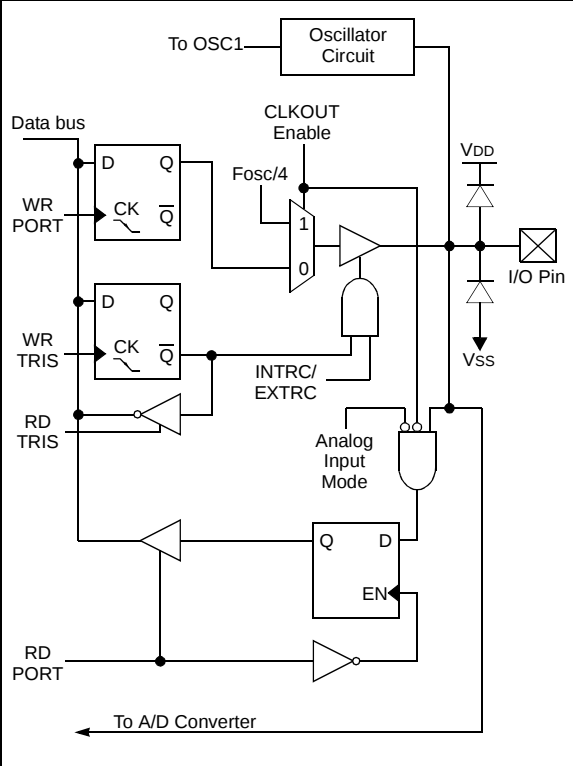


FIGURE 5-3: GP3 Block Diagram

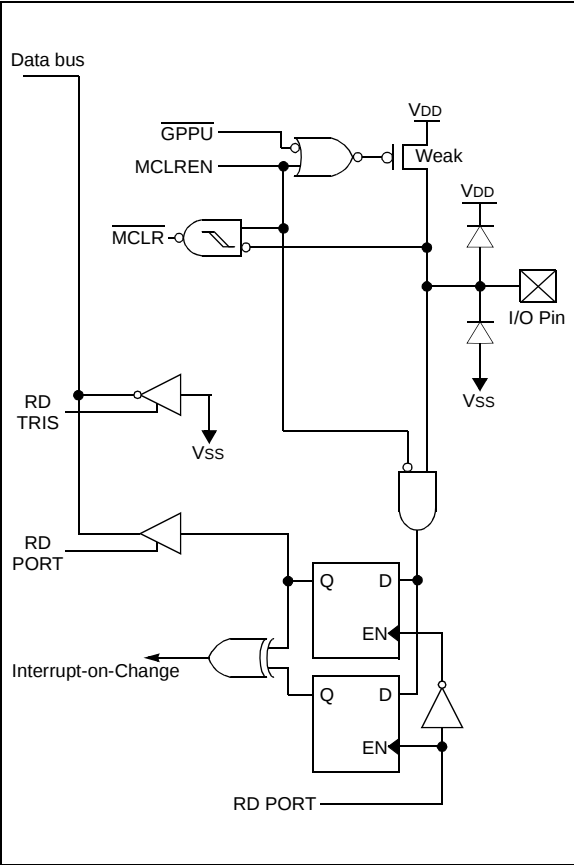
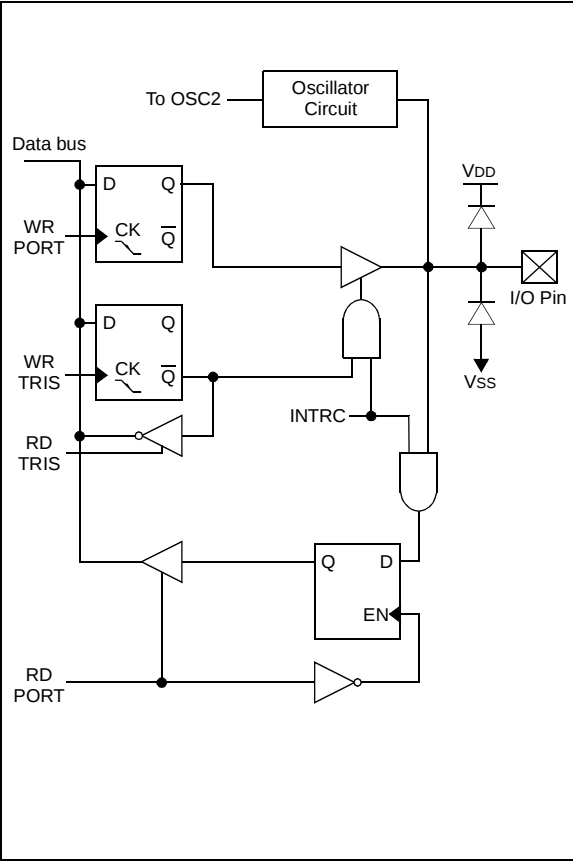


FIGURE 5-5: GP5 Block Diagram



4. Module: OSCCAL (Oscillator)

Corrections for the Internal 4 MHz RC Oscillator, Section 9.2.5, are shown.

9.2.5 INTERNAL 4 MHz RC OSCILLATOR

OSCCAL, when written to with the calibration value, will “trim” the internal oscillator to remove process variation from the oscillator frequency. Only bits<7:2> of OSCCAL are implemented, and bits<1:0> should be written as 0 for compatibility with future devices. The oscillator calibration location is not code protected.

5. Module: Initialization Condition (OSCCAL)

Corrections for Section 9.0, Initialization Conditions for all registers, Table 9-7, are shown.

TABLE 9-7: INITIALIZATION CONDITIONS FOR ALL REGISTERS

Register	Power-on Reset	MCLR Resets WDT Reset	Wake-up via WDT or Interrupt
OSCCAL	1000 00--	uuuu uu--	uuuu uu--

Legend: u = unchanged, x = unknown, - = unimplemented bit, read as '0', q = value depends on condition.

Note 1: One or more bits in INTCON and PIR1 will be affected (to cause wake-up).

2: When the wake-up is due to an interrupt and the GIE bit is set, the PC is loaded with the interrupt vector (0004h).

3: See Table 9-5 for RESET value for specific condition.

4: If wake-up was due to A/D completing then bit 6 = 1, all other interrupts generating a wake-up will cause bit 6 = u.

5: If wake-up was due to A/D completing then bit 3 = 0, all other interrupts generating a wake-up will cause bit 3 = u.

Engineering Samples for the PIC12C671/2 may or may not follow this operational clarification for the OSCCAL register.

PIC12CE67X

6. Module: DC Characteristics

Corrections for the DC Characteristics, Sections 12.3 and 12.4 are shown.

12.3 DC CHARACTERISTICS: PIC12C671/672 (Commercial, Industrial, Extended) PIC12CE673/674 (Commercial, Industrial, Extended)

Standard Operating Conditions (unless otherwise specified) Operating temperature $0^{\circ}\text{C} \leq T_A \leq +70^{\circ}\text{C}$ (commercial) $-40^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$ (industrial) $-40^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ (extended) Operating voltage V_{DD} range as described in DC spec Section 12.1 and Section 12.2.							
Param No.	Characteristic	Sym	Min	Typ†	Max	Units	Conditions
	Input Leakage Current (Notes 2, 3)	I_{IL}					
D061	GP3/ $\overline{\text{MCLR}}$ (Note 5)		8	130	250	μA	$V_{SS} \leq V_{PIN} \leq V_{DD}$
D061A	GP3/ $\overline{\text{MCLR}}$ (Note 6)				± 5	μA	$V_{SS} \leq V_{PIN} \leq V_{DD}$
D070	GPIO weak pull-up current (Note 4)	I_{PUR}	50	250	400	μA	$V_{DD} = 5\text{V}, V_{PIN} = V_{SS}$

† Data in "Typ" column is at 5V, 25°C unless otherwise stated. These parameters are for design guidance only and are not tested.

- Note 1:** In EXTRC oscillator configuration, the OSC1/CLKIN pin is a Schmitt Trigger input. It is not recommended that the PIC12CE67X be driven with external clock in RC mode.
- 2:** The leakage current on the $\overline{\text{MCLR}}$ pin is strongly dependent on the applied voltage level. The specified levels represent normal operating conditions. Higher leakage current may be measured at different input voltages.
- 3:** Negative current is defined as coming out of the pin.
- 4:** Does not include GP3. For GP3 see parameters D061 and D061A.
- 5:** This spec. applies to GP3/ $\overline{\text{MCLR}}$ configured as external $\overline{\text{MCLR}}$ and GP3/ $\overline{\text{MCLR}}$ configured as input with internal pull-up enabled.
- 6:** This spec. applies when GP3/ $\overline{\text{MCLR}}$ is configured as an input with pull-up disabled. The leakage current of the $\overline{\text{MCLR}}$ circuit is higher than the standard I/O logic.

12.4 DC CHARACTERISTICS: PIC12LC671/672 (Commercial, Industrial) PIC12LCE673/674 (Commercial, Industrial)

Standard Operating Conditions (unless otherwise specified) Operating temperature $0^{\circ}\text{C} \leq T_A \leq +70^{\circ}\text{C}$ (commercial) $-40^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$ (industrial) Operating voltage V_{DD} range as described in DC spec Section 12.1 and Section 12.2.							
Param No.	Characteristic	Sym	Min	Typ†	Max	Units	Conditions
	Input Leakage Current (Notes 2, 3)	I_{IL}					
D061	GP3/ $\overline{\text{MCLR}}$ (Note 5)		8	130	250	μA	$V_{SS} \leq V_{PIN} \leq V_{DD}$
D061A	GP3/ $\overline{\text{MCLR}}$ (Note 6)				± 5	μA	$V_{SS} \leq V_{PIN} \leq V_{DD}$
D070	GPIO weak pull-up current (Note 4)	I_{PUR}	50	250	400	μA	$V_{DD} = 5\text{V}, V_{PIN} = V_{SS}$

† Data in "Typ" column is at 5V, 25°C unless otherwise stated. These parameters are for design guidance only and are not tested.

- Note 1:** In EXTRC oscillator configuration, the OSC1/CLKIN pin is a Schmitt Trigger input. It is not recommended that the PIC12CE67X be driven with external clock in RC mode.
- 2:** The leakage current on the $\overline{\text{MCLR}}$ pin is strongly dependent on the applied voltage level. The specified levels represent normal operating conditions. Higher leakage current may be measured at different input voltages.
- 3:** Negative current is defined as coming out of the pin.
- 4:** Does not include GP3. For GP3 see parameters D061 and D061A.
- 5:** This spec. applies to GP3/ $\overline{\text{MCLR}}$ configured as external $\overline{\text{MCLR}}$ and GP3/ $\overline{\text{MCLR}}$ configured as input with internal pull-up enabled.
- 6:** This spec. applies when GP3/ $\overline{\text{MCLR}}$ is configured as an input with pull-up disabled. The leakage current of the $\overline{\text{MCLR}}$ circuit is higher than the standard I/O logic.

7. Module: GPIO Register

Corrections for the GPIO pull-up resistor ranges are shown in Table 12-6.

TABLE 12-6: GPIO PULL-UP RESISTOR RANGES

V _{DD} (Volts)	Temperature (°C)	Min	Typ	Max	Units
GP0/GP1					
2.5	–40	38K	42K	63K	Ω
	25	42K	48K	63K	Ω
	85	42K	49K	63K	Ω
	125	50K	55K	63K	Ω
5.5	–40	15K	17K	20K	Ω
	25	18K	20K	23K	Ω
	85	19K	22K	25K	Ω
	125	22K	24K	28K	Ω
GP3 ⁽¹⁾					
2.5	–40	65K	80K	850K	Ω
	25	80K	100K	1150K	Ω
	85	85K	110K	1300K	Ω
	125	100K	120K	1500K	Ω
5.5	–40	50K	60K	600K	Ω
	25	60K	65K	750K	Ω
	85	65K	80K	900K	Ω
	125	75K	90K	990K	Ω

* These parameters are characterized but not tested.

Note 1: The weak pull-up resistor and associated current for the GP3/MCLR pin is non-linear when the respective pin voltage is less than V_{DD} - 1.0V. See parameter D061 for GP3/MCLR pin current specifications.

REVISION HISTORY

Rev A Document (2/01)

Original errata document, which includes Figures 1, 2, and 3.

Rev B Document (6/00)

Under the Clarifications/Corrections, Items 1 through 7 were added.

Rev C Document (11/01)

Added Figure 1 and renumbered figures accordingly.

Under the Clarifications/Corrections, added Figures 5-1 through 5-5 added to Item 3.

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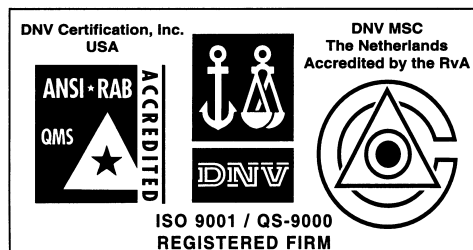
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