

HITACHI SEMICONDUCTOR TECHNICAL UPDATE

DATE	2 February 2000	No.	TN-SH7-209A/E
THEME	SH7709A and SH7729 have additional product names		
CLASSIFICATION	<input type="checkbox"/> Spec. change <input type="checkbox"/> Supplement of Documents	<input checked="" type="checkbox"/> Limitation on Use	
PRODUCT NAME	HD6417709A,HD6417729		
REFERENCE DOCUMENTS	SH7709A Hardware manual SH7729 Hardware manual	Effective Date	Eternity
		From	

SH7709A and SH7729 will have additional product names.

1. Additional product names

Following products names will be add to product line up.

HD6417729F120B,HD6417709AF120B
 HD6417729F133BX,HD6417709AF133BX

2. Summary of new spec of new product names

(a) Spec of HD6417729F120B and HD6417709AF120B

Maximum frequency of CPU is 120MHz.

(b) Spec of HD6417729F133BX and HD6417709AF133BX

Power supply voltage $V_{cc} = 2.0 \pm 0.15V$

Current dissipation of normal operation is 225mA (Typ) and 370mA (Max.).

3. DC characteristics are attached next page.

4. According to adding these product names, the V_{ccMax} of HD6417729F133B, HD6417709AF133B, HD6417729BT133B and HD6417709ABT133B are changed to 2.15V from 2.05V.

DC Characteristics

Tables 1 and 2 list DC characteristics.

Table 1 DC Characteristics
($T_a = -20$ to 75°C)

Item	Symbol	Min	Typ	Max	Unit	Measurement Conditions	
Power supply voltage	VccQ	3.0	3.3	3.6	V		
	Vcc,	1.85	2.0	2.15		F133BX	
	Vcc-PLL1, Vcc-PLL2, Vcc-RTC	1.75	1.90	2.05		F120B	
Current dissipation	Normal operation	Icc	—	225	370	mA	Vcc=2.0V, I \emptyset =133MHz
			—	190	320		Vcc=1.9V, I \emptyset =120MHz
			IccQ	—	20		40
	In sleep Mode ^{*4}	Icc/IccQ	—	25	50		*4: no external bus cycles except refresh cycles Vcc=3.3V, VccQ=1.9V B \emptyset =33MHz
	In standby Mode		—	50	150	μA	Ta = 25°C (RTC on) VccQ=3.3V, Vcc=1.9V
50				140	Ta = 25°C (RTC off) VccQ=3.3V, Vcc=1.9V		
Input high voltage	RESETP, RESETM, NMI	VIH	VccQ X 0.9	—	VccQ + 0.3	V	
	BREQ, IRQ5–IRQ0, MD5–MD0		VccQ X 0.9	—	VccQ + 0.3		
	PINT15~PINT0		VccQ–0.7	—	VccQ + 0.3		
	EXTAL, CKIO		VccQ–0.7	—	VccQ + 0.3		
	Port L		2.0	—	A _{vcc} + 0.3		
	Other input pins		2.0	—	VccQ + 0.3		

Table 2 DC Characteristics (cont.)
($T_a = -20$ to 75°C)

Item		Symbol	Min	Typ	Max	Unit	Measurement Conditions
Input voltage	lowRESET, NMI	VIL	-0.3	—	$V_{ccQ} \times 0.1$	V	
	BREQ, IRQ5–		-0.3	—	0.5		In standby mode
	IRQ0, MD5–MD0		-0.3	—	$V_{ccQ} \times 0.2$		Normal operation
	Port L		-0.3	—	$AV_{cc} \times 0.2$		
	Other input pins		-0.3	—	$V_{cc} \times 0.2$		
Input leak current	All input pins	$I_{in I}$	—	—	1.0	μA	$V_{in} = 0.5$ to $V_{cc} - 0.5$ V
Three-state leak current	I/O, all output pins (off condition)	$I_{sti I}$	—	—	1.0	μA	$V_{in} = 0.5$ to $V_{cc} - 0.5$ V
Output high voltage	All output pins	VOH	2.4	—	—	V	$V_{ccQ} = 3.0$ V, $I_{OH} = -200$ μA
			2.0	—	—		$V_{ccQ} = 3.0$ V, $I_{OH} = -2$ mA
Output voltage	lowAll output pins	VOL	—	—	0.55		$V_{ccQ} = 3.6$ V, $I_{OL} = 1.6$ mA
Pull-up resistance	Port pin	Ppull	30	60	120	$\text{K}\Omega$	
Pin capacity	All pins	C	—	—	10	pF	
Analog power supply voltage		AVcc	3.0	3.3	3.6	V	
Analog power supply current	During A/D conversion	AIcc	—	0.8	2	mA	
	During A/D and D/A conversion		—	2.4	6	mA	
	Idle		—	0.01	5.0	μA	

- Notes:
1. Regardless of whether PLL or RTC is used, connect PLLVcc and RTCVcc to Vcc, and PLLVss and RTCVss to Vss.
 2. AVcc must be under condition of $V_{cc} - 0.3\text{V} \leq AV_{cc} \leq V_{cc} + 0.3\text{V}$. If the A/D and D/A converters are not used, do not leave the AVcc and AVss pins open. Connect AVcc to Vcc, and connect AVss to Vss.
 3. Current dissipation values shown are the values at which all output pins are without load under conditions of $V_{IHmin} = V_{cc} - 0.5$ V, $V_{ILmax} = 0.5$ V.