Integrated Device Technology

Timing Solutions for Intel Atom-Based Embedded Systems

Intel® Atom CPUs are used in many embedded and industrial applications such as communications equipment, industrial control, automotive In-Vehicle Infotainment (IVI), and automation. IDT has the industry's broadest line of Atom support clocks allowing timing coverage for all applications.

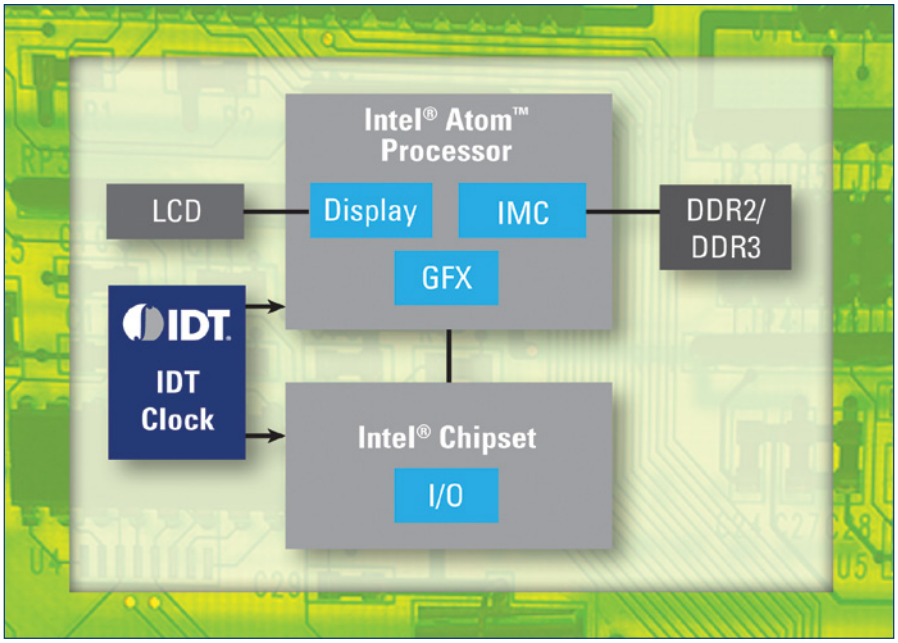
KEY BENEFITS

- Industry's widest selection of Atom support clocks – one-stop-shop for any application
- Industrial temperature grade parts available for systems that must function in demanding environments
- Automotive AEC-Q100 level devices for use in automotive In-Vehicle Infotainment
- Integrated series resistors and voltage regulators for differential outputs Minimal external component count with maximum performance
- VDD_IO rail on many devices for maximum power savings
- Available 1.5V core operation minimizes power consumption
- Wide range of I/O configurations allows 'right-sizing' the clock to the design, resulting in the smallest footprint device for the application

TARGET MARKETS & APPLICATIONS

- POS terminals
- Embedded CPU cards
- Automotive IVI
- Micro-servers
- Industrial controllers
- Communication cards
- Internet kiosks
- Digital signage
- Home energy management
- Medical instrumentation

Typical Application Diagram



Industrial Computing	**Atom 230/330 (Diamondville)** 9UMS9001 (CK540) 9UMS9610 (CK610) 9UMS9633 (CK633) 9LPRS525 (CK505)	**Atom D4xx, D5xx Series (Tunnel Creek)** 9LPRS436 (CK505 derivative) 9LPS525 (CK505)	**Atom N26xx, N28xx Series (Cedarview)** 9VRS4338 (CK-NET) 9VRS4339 (CK-NET derivative) 9LPRS525 (CK505) 9DBL411 (Optional low power PCIe fanout buffer)
	Atom N270/N280 (Diamondville) 9UMS9001 (CK540) 9UMS9610 (CK610) 9UMS9633 (CK633)	**Atom D4xx, D5xx Series (Tunnel Creek)** 9LPRS436 (CK505 derivative) 9LPS525 (CK505)	
Embedded	**Atom N270/N280 (Diamondville)** 9UMS9633 (CK633)	**Atom E6xx Series (Tunnel Creek, Stellarton)** 9LPRS436 (CK505 derivative) 9LPS525 (CK505)	**Atom N26xx, N28xx Series (Cedarview)** 9VRS4338 (CK-NET) 9LPRS436 (CK505 derivative) 9LPRS525 (CK505) 9DBL411 (Optional low-power PCIe fanout buffer)
Mobile Internet Devices	**AtomZ5xx, Z6xx Series (Silverthorn, Lincroft)** 9UMS9001 (CK540) 9UMS9610 (CK610)	**Moorsetown** **HE Smartphones** **Lindcroft SOC (45nm)** **Langwell I/O PCH (65nm)** Custom PMIC/SOC	**Medfield** Custom PMIC/SOC

Timing for Intel Atom-Based Embedded Systems

Device	9UMS9001	9UMS9610	9UMS9633	9LPRS525	9LPRS436	9VRS4338	9VRS4339
Package	56 MLF[2] (8x8mm Body, 0.5mm pin pitch)	48 MLF[1] (6x6mm Body, 0.4mm pin pitch)	48 MLF[1] (6x6mm Body, 0.4mm pin pitch) 48SSOP[2,3] (300 mil Body, 25 mil pin pitch)	56SSOP[2] (300 mil Body, 25 mil pin pitch) 56 TSSOP[2] (6.1mm Body, 0.5mm pin pitch)	48 MLF[1] (6x6mm Body, 0.4mm pin pitch) 48TSSOP[2] (6.1mm Body, 0.5mm pin pitch)	48 MLF[1] (6x6mm Body, 0.4mm pin pitch)	56 MLF[1] (7x7mm Body, 0.4mm pin pitch)
Core Voltage	3.3V	1.5V	3.3V	3.3V	3.3V	1.5V	1.5V
Separate VDD_IO rail for power savings	Yes (1.05 to 3.3 V)	Yes (1.5V)	Yes (1.5 to 3.3 V)	Yes (1.05 to 3.3 V)	No	Yes (1.05 to 1.5 V)	Yes (1.05 to 1.5 V)
Fully integrated Voltage Regulator for VDD_IO	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Integrated Series Resistors on Differential Outputs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating Temperature Range	C	C	C, I, W3	C, I	C, I	C	C
Typical Power Consumption	190mW[4]	100mW[5]	215mW[6]	430mW[4]	330mw[8]	125mw[7]	150mw[7]
Target Applications	UMPC, Embedded, Portable Internet Devices	UMPC, Portable Internet Devices	Embedded, Industrial, Automotive	Embedded, Desktop, Netbook	Embedded, µServers	Ultrabook, Netbook, Desktop, Embedded, Servers	Ultrabook, Netbook, Desktop
PCIe Phase Noise Capability	Gen1	Gen1	Gen1	Gen2	Gen2	Gen2	Gen2
I/O Mix							
	CK540	**CK610/CK633**		**CK505 56-pin**	**CK505 Derivative**	**CK-NET**	**CK-NET Derivative**
CPU pairs	2	3		2	2	2	2
SRC pairs	4	3		5	2	3	5
ITP/SRC pair	1 ITP	0		1	1	1	1
DOT96/SRC pair	1 DOT96	1 DOT96		1	1 DOT96	1	1
SATA/SRC pair	0	0		1	1 (SATA = 75 or 100 M)	1	1
LCD/SRC pair	1 LCD	1 LCD		1	0	1 LCD	1 LCD
Single-ended Outputs/SRC pair	0	0		1 muxed (with LCD/SCR pair)	12.288M, 25M	1 PCI/25M output	1 25M, 1 PCI/27M
PCI outputs	3	0		6	2	3	3
USB48 output	1	0		1	2 (1 selectable 12M/48M)	1	2
REF output	1	1		1	1	1	1
CLKREQ#	4	3		6 muxed	3	1 muxed, 1 non-muxed	2 muxed, 1 non-muxed

1. HDI PCB technology required
2. HDI PCB technlogy NOT required
3. 48 SSOP is available in AECQ-100 Level 3 Grade for Automotive Applications
4. VDD = 3.3V, VDD_IO = 1.05V
5. VDD = 1.5V, VDDREF = 3.3 V, VDD_IO = 1.5V
6. VDD = 3.3V, VDDREF = 3.3 V, VDD_IO = 1.5V
7. VDD33 = 3.3V, VDD=1.5 V, VDD_IO = -1.05V
8. VDD = 3.3V