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DATASHEET

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# Procelerant CE945GM2A

**Core™ 2 Duo Pentium M 945GM COM Express Module**

## FEATURE SUMMARY

- Core™ 2 Duo, Core Duo, and Celeron processor options

- Type 2 COM Express Pin-out

- Dual-channel DDR2, up to 4GB memory

Based on the open PICMG standard, the RadiSys Procelerant™ CE945GM2A COM Express basic size (95mm x 125mm) modules combine Intel® Core™2 Duo Pentium M and single core Celeron M performance with dual channel memory that's vital for today's embedded applications. Paired with a RadiSys Procelerant carrier board, RadiSys COM Express modules provide a ready-to-use development platform

## PICMG STANDARD

COM Express is the PICMG standard for a Computer-On-Module (COM) based on high speed serial differential signaling technologies such as PCI Express, Serial ATA, USB 2.0, LVDS, and Serial DVO while retaining legacy PCI bus support to ease migration from existing modular designs. COM Express enables OEMs to reduce time to market by reducing the time spent on processor design and enabling focus on core competencies and product differentiation. Planned feature changes, demand fluctuations and performance upgrades can be handled without product re-designs. COM Express modules can reduce service repair inventories, and simplify upgrades, contributing to the success of the product over its lifetime.

## APPLICATIONS

Core 2 Duo processing power combined with dual channel memory on a basic (95 x 125mm) size module brings unprecedented processing power to the mighty but small CE945GM computer-on-module. Dual channel memory via 2 SODIMM sockets provides up to 67% performance increase over single channel memory solutions, making the CE945GM an ideal choice for processing intensive applications such as medical and machine imaging. OEMs can build imaging systems with performance levels that span years into the future by using one or more CE945GM2As on their carrier and planning modular hardware and software upgrades in the future.

## CARRIER DESIGNS SUPPORTED BY RADISYS

OEMs can depend on RadiSys to support their design at every stage, whether designing their own carrier board or utilizing RadiSys Design Services. Design tools such as the Carrier Design Guide, Thermal Design Guide, as well as schematics and Gerber files are available for customers committed to using RadiSys Procelerant CE processor modules. Ask your RadiSys Sales Manager for more information.

# Procelerant CE945GM2A Specifications

| Feature | Function | Description |
|---|---|---|
| **Physical** | Dimensions | 95mm x 125mm – COM Express Basic Form Factor |
| | Compliance | PICMG COM Express R1.0 Basic Form Factor, Type 2 |
| **Processor** | Options | Intel Core 2 Duo L7400 LV<br>Intel Core Duo T2500<br>Intel Core Duo L2400 LV<br>Intel Core Duo U2500 ULV<br>Intel Celeron-M ULV 423<br>Intel Celeron-M 440 |
| | Clock Speed/ FSB / Cache | L7400: 1.5GHz / 667MHz FSB / 4MB<br>T2500: 2GHz / 667MHz FSB / 2MB<br>L2400: 1.66GHz / 667MHz FSB / 2MB<br>U2500: 1.2GHz / 533MHz FSB / 2MB<br>423: 1.06GHz / 533MHz FSB / 1MB<br>440: 1.86GHz/533MHz/FSB/1MB |
| | Package | BGA |
| | Power (Processor TDP) | L7400-17W / T2500-31W / L2400 -15W / U2500-9W / 423-5.5W / 440-27W |
| **Chipset** | Supplier | Intel 945GM and ICH7M Digital Home Controller Hub |
| | Features | Integrated video, PCI, IDE, PCI-Express, SATA, USB, LPC, GPIO |
| **Memory** | Type | Dual 200-pin SODIMM sockets, supports 533, and 667MHz Memory |
| | Capacity | Up to 2GB DDR2 per channel |
| **BIOS** | Type | 1MB, Phoenix Technologies |
| **Audio** | Compliance | AC'97 or Intel High Definition Audio via ICH7M Digital Home |
| **Video** | Features | Dual SDVO, LVDS 18-bit dual channel, Analog VGA, TV Out |
| | External | PCI-Express x16 Graphics Port, Multi-plexed on SDVO interface pins |
| **Networking** | Supplier/Type | Broadcom BCM5789, IEEE 802.3 10/100/1000BaseT Utilizes (1) PCI-Express x1 interface |
| **I/O** | USB | Eight USB 2.0 / 1.1 Ports |
| | SATA | Two SATA 150 Ports, Supports Raid 0 and Raid 1 |
| | IDE | One Ultra ATA 100/66/33 Ports |
| | Other | LPC, Smbus/I2C Bus, |
| **Super I/O** | BIOS Support | National Semiconductor PC8374 |

| **Expansion** | PCI Express | 5*PCI-Express x1 or 1*PCI-Express x4 plus 1* x1 and 1*PCI-Express x16 |
| | PCI | PCI 2.3 32-bit 33MHz, four logical devices |
| **Connectors** | COM Express | (2) 220 pin COM Express standard connectors |
| **Power** | Input | 12V only -or- 12V and 5V Standby |
| | Dissipation | L7400-46W / T2500-63.5W / L2400 -43.5W / U2500-36W / 423-32W / 440-58W |

### Physical Specifications

| **Environment** | Temperature | Operating | 0° – 60°C |
| | | Non-Operating | -40° – 85°C |
| | Humidity | Operating | 0%-95% RH non-condensing |
| | | Non-Operating | 0% - 90% RH non-condensing at 40C° |
| | Shock | Operating | 20g, 11ms, half sine |
| | | Non-Operating (unpackaged) | 40g, 11ms, half sine |
| | Vibration | Operating | 5-100Hz, 0.04 g2/Hz 100-350Hz 0.0002 g2/Hz 500Hz 0.00014 g2/Hz 3dB per octave slope between 350—500Hz |
| | | Non-Operating (unpackaged) | 5-100Hz, 0.04 g2/Hz 200-350Hz 0.0100 g2/Hz 500Hz 0.0007 g2/Hz 3dB per octave slope between 100-200 and 350—500Hz |
| **Regulatory** | Safety | UL60950-1, EN60950-1, IEC60950-1 |
| | EMC | EN55022, EN55024, and FCC Part 15, Subpart B, Class B |
| | ROHS | ROHS Compliant |
| **Warranty** | Standard | Two years, parts only |

## Ordering Information

Call for pricing and availability. Refer to the order codes below.

## DESCRIPTION:

**Module Order Codes:**
CE945GM2A-L74-0: 1.5GHz Core 2 Duo LV L7400
CE945GM2A-T25-0: 2GHz Core Duo T2500
CE945GM2A-L24-0 1.66GHz Core Duo LV L2400
CE945GM2A-U25-0 1.2GHz Core Duo ULV U2500
CE945GM2A-423-0 1.06GHz Celeron-M
CE945GM2A-440-0 1.86GHz Celeron-M
**Supporting Products:**
CR100-2DVI- FlexATX Carrier with Dual DVI
CR100-PCIE16 - FlexATX Carrier with PCI Express x16
CE945GM2-HSP: Heatspreader
CE945GM2-PHS: Passive heat sink
CE945GM2-AHS12: 25mm active heatsink assembly
CE945GM2-AHS20: 33mm Low Profile Active Heatsink

CE945GM2-AHSL: 26mm active heatsink assembly
CE-TIM: Thermal Interface Material
CE-DVI-VGA: DVI to VGA Cable

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