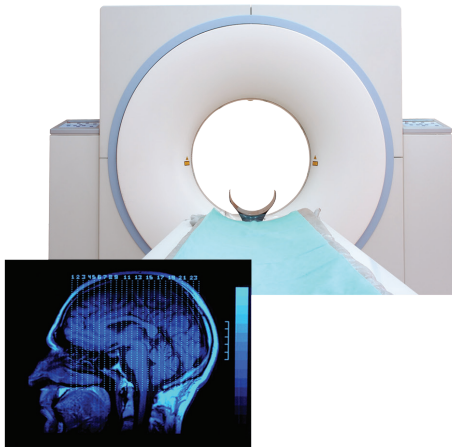


# Picture it: DSPs in medical imaging



TI has an extensive portfolio of products for a wide variety of health care applications. These products include digital signal processors (DSPs), which are well suited for the processing intensive needs of medical imaging applications. DSPs are programmable in the field or the clinic, enabling upgrades in the event of revised certifications and providing end users with a level of future-proofing.

The combination of low power and high performance makes DSPs suitable for a range of imaging applications, from handheld portable devices to real-time surgical imaging equipment. The low power consumption of DSPs minimizes battery size – and thus product size, enabling medical imaging applications in a portable form factor. The high performance processing of DSPs adds real-time capability to medical imaging modalities.

Based on TI's KeyStone multicore architecture, the TMS320C6671, TMS320C6672, TMS320C6674 and TMS320C6678 DSPs come in one, two, four or eight core versions, respectively, and are the fastest integrated fixed- and floating-point DSPs available today. The TMS320C66x DSP generation is fully backward compatible with all existing TMS320C6000™ platform of fixed and floating point DSPs.



The C6671 DSP is the first 1.25-GHz single core member of the C66x DSP generation. Customers designing with the C6671 DSP will benefit from TI's benchmark-busting multicore features including high-performance, increased number of peripherals and memory per core, and fixed-and floating-point performance on a single device. Using TI's C6671 DSP, developers can test whether multicore devices suit their needs and explore options for migrating their designs to other processors in TI's C66x DSP portfolio if more performance is needed down the road.

The C6671 has up to 40 GMACs/20 GFLOPs of processing performance @ 1.2-GHz and includes 512KB local L2, and 1MB shared L2 on-chip cache for image manipulation and processing.

By offering pin and software-compatible platforms across TI's C6671, C6672, C6674 and C6678 multicore DSPs, customers can more easily design power and cost-efficient products for high-performance medical imaging applications requiring greater performance. These devices allow you to scale up in performance from single to two, four and eight DSP core versions to meet your image processing requirements.

With up to 10-GHz of total processing power, TI's flagship C6678 DSP is well suited for complex imaging applications. The C6678 has eight DSP cores with up to 320 GMACs/160 GFLOPs of processing performance @ 1.2GHz and includes 512KB local L2 per core, and 4MB shared L2 on-chip cache for image manipulation and processing.

TI's C66x multicore DSPs offer high-bandwidth I/O including two lanes of v2 PCIe and four lanes of v2 Serial RapidIO® (SRIO) providing processor-to-processor communication at up to 5 Gbaud per lane full-duplex. The family also supports x4 Hyperlink with up to 12.5-Gbps lane rate and 2x SGMII Ethernet ports. These interfaces make multiprocessing architectures easier to implement eliminating the need for external interface bridge devices and lowering overall system cost.

TI also has a rich family of DSP + ARM System-on-Chip (SoC) processors designed to reduce development costs and time to market for portable medical imaging equipment. These SoC's feature combinations of a TMS320C674x™ DSP core, an ARM® core (Cortex™-A8), accelerators for video and/or graphics, and a host of on-chip peripherals. With these SoCs, customers can run portable operating systems on the ARM core for control and user interface while leveraging the DSP core and video accelerators for real-time image processing. TI has the right solution for your portable medical imaging device application.

For more information about TI's DSP and analog solutions for medical imaging, including specs and system block diagrams, visit [www.ti.com/medicalimaging](http://www.ti.com/medicalimaging) or contact **Kenneth Nesteroff** – medical imaging business development manager, at [knes@ti.com](mailto:knes@ti.com).

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A122010

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