

## Category 1030: Electronics

### 1031. Systems, Equipment and Components

#### Notes:

1. The control status of equipment and components described in 1031., other than those described in 1031.1.a.3. to 1031.1.a.10. or 1031.1.a.11., which are specially designed for or which have the same functional characteristics as other equipment is determined by the control status of the other equipment.
2. The control status of integrated circuits described in 1031.1.a.3. to 1031.1.a.9. or 1031.1.a.11. which are unalterably programmed or designed for a specific function for another equipment is determined by the control status of the other equipment.

#### N.B.:

When the manufacturer or applicant cannot determine the control status of the other equipment, the control status of the integrated circuits is determined in 1031.1.a.3. to 1031.1.a.9. or 1031.1.a.11.

If the integrated circuit is a silicon-based "microcomputer microcircuit" or microcontroller microcircuit described in 1031.1.a.3. having an operand (data) word length of 8 bit or less, the control status of the integrated circuit is determined in 1031.1.a.3.

#### 1. Electronic components, as follows:

##### a. General purpose integrated circuits, as follows:

#### Notes:

1. The control status of wafers (finished or unfinished), in which the function has been determined, is to be evaluated against the parameters of 1031.1.a.
2. Integrated circuits include the following types:
  - "Monolithic integrated circuits";
  - "Hybrid integrated circuits";
  - "Multichip integrated circuits";
  - "Film type integrated circuits", including silicon-on-sapphire integrated circuits;
  - "Optical integrated circuits".

1. Integrated circuits, designed or rated as radiation hardened to withstand any of the following:
  - a. A total dose of  $5 \times 10^3$  Gy (Si) or higher; **or**
  - b. A dose rate upset of  $5 \times 10^6$  Gy (Si)/s or higher;
2. "Microprocessor microcircuits", "microcomputer microcircuits", microcontroller microcircuits, storage integrated circuits manufactured from a compound semiconductor, analogue-to-digital converters, digital-to-analogue converters, electro-optical or "optical integrated circuits" designed for "signal processing", field programmable logic devices, neural network integrated circuits, custom integrated circuits for which either the function is unknown or the control status of the equipment in which the integrated circuit will be used is unknown, Fast Fourier Transform (FFT) processors, electrical erasable programmable read-only memories (EEPROMs), flash memories or static random-access memories (SRAMs), having any of the following:
  - a. Rated for operation at an ambient temperature above 398 K (+125°C);
  - b. Rated for operation at an ambient temperature below 218 K (-55°C); **or**
  - c. Rated for operation over the entire ambient temperature range from 218 K (-55°C) to 398 K (+125°C);

#### Note:

1031.1.a.2. does not apply to integrated circuits for civil automobile or railway train applications.

1. a. 3. "Microprocessor microcircuits", "microcomputer microcircuits" and microcontroller microcircuits, having any of the following characteristics:

#### Note:

1031.1.a.3. includes digital signal processors, digital array processors and digital coprocessors.

- a. A "composite theoretical performance" ("CTP") of 6,500 million theoretical operations per second (Mtops) or more and an arithmetic logic unit with an access width of 32 bits or more;
  - b. Manufactured from a compound semiconductor and operating at a clock frequency exceeding 40 MHz; **or**
  - c. More than one data or instruction bus or serial communication port for external interconnection in a parallel processor with a transfer rate exceeding 150 Mbyte/s;
4. Storage integrated circuits manufactured from a compound semiconductor;
  5. Analogue-to-digital and digital-to-analogue converter integrated circuits, as follows:
    - a. Analogue-to-digital converters having any of the following:
      1. A resolution of 8 bit or more, but less than 12 bit, with a total conversion time of less than 5 ns;
      2. A resolution of 12 bit with a total conversion time of less than 200 ns; **or**
      3. A resolution of more than 12 bit with a total conversion time of less than  $2^n$ ;
- Technical Note:**
1. A resolution of  $n$  bit corresponds to a resolution of  $2^n$  levels
  2. Total conversion time is the inverse of the sample rate.
6. Electro-optical and "optical integrated circuits" designed for "signal processing" having all of the following:
    - a. One or more than one internal "laser" diode;
    - b. One or more than one internal light detecting element; **and**
    - c. Optical waveguides;
  7. Field programmable logic devices having any of the following:
    - a. An equivalent usable gate count of more than 30,000 (2 input gates);
    - b. A typical "basic gate propagation delay time" of less than 0.1 ns; **or**
    - c. A toggle frequency exceeding 133 MHz;
- Note:1031.1.a.7. includes**
- Simple Programmable Logic Devices (SPLDs)
  - Complex Programmable Logic Devices (CPLDs)
  - Field Programmable Gate Arrays (FPGAs)
  - Field Programmable Logic Arrays (FPLAs)
  - Field Programmable Interconnects (FPICs)
- N.B.**
- Field Programmable logic devices are also known as field programmable logic arrays.
8. Neural network integrated circuits;
  9. Custom integrated circuits for which the function is unknown, or the control status of the equipment in which the integrated circuits will be used is unknown to the manufacturer, having any of the following:
    - a. More than 1000 terminals;