

# ELV Certificate of Compliance

The ELV Directive (Directive 2000/53/EC on End-of-Life Vehicles) is a directive of the European Union for discarded automotive products. This Directive was enacted in October 2000, aiming at reducing vehicle waste and its environmental influences. This Directive prohibits the use of certain substances for easier recycling. However, the ELV Directive includes exemptions that define permitted uses for such restricted substances. Please refer to the ELV Directive and gain proper information on the exemptions. The ELV Directive is subject to continuous revisions; therefore, please also confirm the latest information.

## Covered Products

The SanKen's semiconductor devices, except for NRND (not recommended for new designs) and discontinued products.

The products listed below may not be covered by this certificate. For more details, please contact our local sales representatives.

- The products ordered on or before September 30, 2011
- The products listed in the "Not Recommended for New Designs (NRND) / Discontinued Products" on our website
- Some customized products
- The products not purchased from authorized sales channels  
(Counterfeit products shall not be covered by our warranty.)

## ELV Exemptions

The ELV exemptions define specific applications permitting the fixed-term use of the restricted substances that are not substitutable due to technological and scientific reasons. Table 1 provides the exemptions applicable to our products.

Table 1. ELV Exemptions for SanKen Products (ELV Directive 2000/53/EC, Annex II)

No.	Exemption
8(e)	Lead in high melting-point solders (i.e., lead-based alloys with a lead content of $\geq 85$ wt%).
10(a)	Electrical and electronic components which contain lead in a glass or ceramic other than dielectric ceramic in capacitors (e.g., piezoelectric devices), or in a glass or ceramic matrix compound.
8g(ii)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages.

## Analysis Result

We guarantee that our covered products (except for the ELV exemptions) meet the criteria for the substance groups listed in Table 2, whose content concentration levels do not exceed the regulated limits.

Table 2. 4 Substances Restricted by the ELV Directive

No.	Group of Substances	Regulated Limit
1	Lead and its compounds	$\leq 1000$ ppm (0.1 wt%)
2	Mercury and its compounds	$\leq 1000$ ppm (0.1 wt%)
3	Cadmium and its compounds	$\leq 100$ ppm (0.01 wt%)
4	Hexavalent chromium and its compounds	$\leq 1000$ ppm (0.1 wt%)

## Important Notes

- All data, illustrations, graphs, tables and any other information included in this document (the “Information”) as to Sanken’s products listed herein (the “Sanken Products”) are current as of the date this document is issued. The Information is subject to any change without notice due to improvement of the Sanken Products, etc. Please make sure to confirm with a Sanken sales representative that the contents set forth in this document reflect the latest revisions before use.
- The Sanken Products are intended for use as components of general purpose electronic equipment or apparatus (such as home appliances, office equipment, telecommunication equipment, measuring equipment, etc.). Prior to use of the Sanken Products, please put your signature, or affix your name and seal, on the specification documents of the Sanken Products and return them to Sanken. When considering use of the Sanken Products for any applications that require higher reliability (such as transportation equipment and its control systems, traffic signal control systems or equipment, disaster/crime alarm systems, various safety devices, etc.), you must contact a Sanken sales representative to discuss the suitability of such use and put your signature, or affix your name and seal, on the specification documents of the Sanken Products and return them to Sanken, prior to the use of the Sanken Products. The Sanken Products are not intended for use in any applications that require extremely high reliability such as: aerospace equipment; nuclear power control systems; and medical equipment or systems, whose failure or malfunction may result in death or serious injury to people, i.e., medical devices in Class III or a higher class as defined by relevant laws of Japan (collectively, the “Specific Applications”). Sanken assumes no liability or responsibility whatsoever for any and all damages and losses that may be suffered by you, users or any third party, resulting from the use of the Sanken Products in the Specific Applications or in manner not in compliance with the instructions set forth herein.
- In the event of using the Sanken Products by either (i) combining other products or materials or both therewith or (ii) physically, chemically or otherwise processing or treating or both the same, you must duly consider all possible risks that may result from all such uses in advance and proceed therewith at your own responsibility.
- Although Sanken is making efforts to enhance the quality and reliability of its products, it is impossible to completely avoid the occurrence of any failure or defect or both in semiconductor products at a certain rate. You must take, at your own responsibility, preventative measures including using a sufficient safety design and confirming safety of any equipment or systems in/for which the Sanken Products are used, upon due consideration of a failure occurrence rate and derating, etc., in order not to cause any human injury or death, fire accident or social harm which may result from any failure or malfunction of the Sanken Products. Please refer to the relevant specification documents and Sanken’s official website in relation to derating.
- No anti-radioactive ray design has been adopted for the Sanken Products.
- The circuit constant, operation examples, circuit examples, pattern layout examples, design examples, recommended examples, all information and evaluation results based thereon, etc., described in this document are presented for the sole purpose of reference of use of the Sanken Products.
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