

SINGAPORE STANDARD

SS 404 : Part 5 : 2001

(IEC 60076-5 : 2000)

(ICS 29.180)

SPECIFICATION FOR

Power transformers

Part 5 : Ability to withstand short circuit

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National Foreword

This Singapore Standard was prepared by the Technical Committee on Power Transformers under the direction of the Electrical and Electronic Product Standards Committee.

This standard is identical to and has been reproduced from the second edition of International Standard IEC 60076-5 : 2000-07 published by the International Electrotechnical Commission.

Attention is also drawn to the following:

1. Where the phrase 'This part of IEC 60076' appears, it should be read as 'Singapore Standard SS 404 : Part 5'.
2. The comma has been used throughout as a decimal marker in IEC 60076-5, whereas in Singapore Standards it is a practice to use a full-point on the baseline as the decimal marker.
3. The IEC Standards referred to shall be replaced by Singapore Standards as follows:

International Standard	Corresponding Singapore Standard	
IEC 60076-1	SS 404	Power transformers
		Part 1: General
IEC 60076-8		Part 8: Application guide

NOTE

1. *Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.*
2. *Compliance with a Singapore Standard does not exempt users from legal obligations.*

INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER TRANSFORMERS –

Part 5: Ability to withstand short circuit

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60076-5 has been prepared by IEC technical committee 14: Power transformers.

This second edition cancels and replaces the first edition published in 1976 and amendment 2 (1994). This second edition constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
14/346/FDIS	14/353/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annex A is for information only.

Annex B forms an integral part of this standard.

Specification for power transformers – Part 5 : Ability to withstand short circuit

1 Scope

This part of IEC 60076 identifies the requirements for power transformers to sustain without damage the effects of overcurrents originated by external short circuits. It describes the calculation procedures used to demonstrate the thermal ability of a power transformer to withstand such overcurrents and both the special test and the calculation method used to demonstrate its ability to withstand the relevant dynamic effects. The requirements apply to transformers as defined in the scope of IEC 60076-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60076. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60076 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60076-1:1993, *Power transformers – Part 1: General*

IEC 60076-8:1997, *Power transformers – Part 8: Application guide*

IEC 60726:1982, *Dry-type power transformers*

3 Requirements with regard to ability to withstand short circuit

3.1 General

Transformers together with all equipment and accessories shall be designed and constructed to withstand without damage the thermal and dynamic effects of external short circuits under the conditions specified in 3.2.

External short circuits are not restricted to three-phase short circuits; they include line-to-line, double-earth and line-to-earth faults. The currents resulting from these conditions in the windings are designated as 'overcurrents' in this part of IEC 60076.