

# **JEDEC PUBLICATION**

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## **Reference Guide to Letter Symbols for Semiconductor Devices**

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**JEDEC SOLID STATE TECHNOLOGY ASSOCIATION**



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## REFERENCE GUIDE TO LETTER SYMBOLS FOR SEMICONDUCTOR DEVICES

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### Foreword

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This publication provides a quick reference to the letter symbols and corresponding terms that are defined in JESD77-B, *Terms, Definitions, and Letter Symbols for Discrete Semiconductor and Optoelectronic Devices*; JESD99-A, *Terms, Definitions, and Letter Symbols for Microelectronic Devices*, and JESD100-B, *Terms, Definitions, and Letter Symbols for Microcomputers, Microprocessors, and Memory Integrated Circuits*. It is intended to simplify interpretation of data sheets and specifications and to promote the uniform use of these symbols.

The symbols relate to ratings and characteristics found in data sheets and other specifications. Some abbreviations used in lieu of symbols are also included. These symbols and abbreviations include those used for all products within the scope of JEDEC. Sometimes, in different product areas, different symbols are applicable to similar concepts and, in other cases, the same symbol is applied to different concepts. The user must bear this in mind and consider context.

Annex A identifies the product associated with each referenced clause or subclause of the source standards (JESD77-B, JESD99-A, and JESD100-B). Annex B is provided as an aid to determining what symbol should be used and is organized by term. Annex C lists commonly used units of measurement. Annex D lists the metric multipliers used with the units of measurement.

The material contained in this publication was compiled under the cognizance of the JC-10 Committee on Terms, Definitions, and Symbols. The concept for this publication was approved by the JEDEC Solid State Products Engineering Council under Council Ballot JCB-92-43. The addition of Annex B was approved by the JEDEC Board of Directors under Board Ballot JCB-01-117. JEP104C replaces JEP104-B. JEP104C.01 is the first minor revision of JEP104C, June 2002. Annex E briefly shows entries that have changed.

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### Introduction

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Symbols are listed in the following order: Roman letters, Greek letters, numerals, and mathematical symbols. Subscripting and punctuation marks are ignored for the purposes of alphabetizing. Uppercase letters precede lowercase letters for symbols that are otherwise identical.

## Introduction (cont'd)

After the letter symbol (or abbreviation), the term associated with the symbol is given with a reference to the JEDEC standard in which the definition and other details may be found. See annex A to determine the products associated with the referenced subclauses.

As mentioned in the foreword, different symbols (particularly in the subscripts) are sometimes used for similar concepts for different products.

### EXAMPLE

Threshold voltages are symbolized by different sets of subscripts, depending on the product.

$V_{GS(th)}$	gate-source threshold voltage	77/4.3.2
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is found in JESD77-B, subclause 4.3.2, and applies for field-effect transistors;

$V_{IT}$	input threshold voltage	99/2.3.2
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is found in JESD99-A, subclause 2.3.2, and applies for integrated circuits; and

$V_{(TO)}$	on-state threshold voltage, dc value, no alternating component	77/6.1.2
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is found in JESD77-B, subclause 6.1.2, and applies for thyristors.

The same symbol is sometimes used for different concepts.

### EXAMPLE

$I_D$  has three very different meanings respectively for field-effect transistors (4.3.2 of JESD77-B), thyristors (6.1.2 of JESD77-B) and thyristor surge protective devices (7.2.2 of JESD77-B), and varistor surge protective devices (7.1.2 of JESD77-B).

$I_D$	drain current, dc	77/4.3.2
	or	
	off-state current, dc value, no alternating component	77/6.1.2
		77/7.2.2
	or	
	standby current	77/7.1.2

**REFERENCE GUIDE TO LETTER SYMBOLS FOR SEMICONDUCTOR DEVICES**

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$A$	amplification, voltage or current	99/2.1.2.1
$A_D$	area, detector	77/5.2.2
$A_{VC}$	common-mode voltage amplification, large-signal	99/2.4.2
$A_{vc}$	common-mode voltage amplification, small-signal	99/2.4.2
$A_{VD}$	differential voltage amplification, large-signal	99/2.4.2
$A_{vd}$	differential voltage amplification, small-signal	99/2.4.2
$A_{VS}$	single-ended voltage amplification, large-signal	99/2.4.2
$A_{vs}$	single-ended voltage amplification, small-signal	99/2.4.2
$B$	bandwidth (also BW)	99/2.4.3
$b$	susceptance	77/1.2.1
$b_{fs}$	small-signal forward transfer susceptance, common-source (also $y_{fs(imag)}$ )	77/4.3.2
$b_{is}$	small-signal input susceptance, common-source (also $y_{is(imag)}$ )	77/4.3.2
$B_n$	noise equivalent bandwidth (formerly $\Delta f$ )	77/5.2.2
$B_{OM}$	bandwidth, maximum output swing	99/2.4.3
$b_{os}$	small-signal output susceptance, common-source (also $y_{os(imag)}$ )	77/4.3.2
$b_{rs}$	small-signal reverse transfer susceptance, common-source (also $y_{rs(imag)}$ )	77/4.3.2
BV...	See $V_{(BR)}...$	
BW	bandwidth (also $B$ )	99/2.4.3

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$C$	capacitance	77/1.2.1 77/7.2.2 99/2.1.2.1
$C_c$	case capacitance	77/3.6.2
$C_{cb}$ or $C_{cb(dir)}$	interterminal capacitance, collector-base	77/4.1.2
$C_{ce}$ or $C_{ce(dir)}$	interterminal capacitance, collector-emitter	77/4.1.2
$C_{ds}$	drain-source capacitance	77/4.3.2
$C_{du}$	drain-substrate capacitance	77/4.3.2
$C_{eb}$ or $C_{eb(dir)}$	interterminal capacitance, emitter-base	77/4.1.2
CF	clamping factor	77/7.1.2
$C_F$	feedthrough capacitance	99/2.5.2.3
$C_{gs}$	gate-source capacitance	77/4.3.2
$C_{ibo}$	open-circuit input capacitance, common-base	77/4.1.2
$C_{ibs}$	short-circuit input capacitance, common-base	77/4.1.2
$C_{ieo}$	open-circuit input capacitance, common-emitter	77/4.1.2
$C_{ies}$	short-circuit input capacitance, common-emitter	77/4.1.2 77/4.4.2
$C_{io}$	input-to-output internal capacitance; transcapacitance	77/5.4.2
$C_{iss}$	short-circuit input capacitance, common-source	77/4.3.2
$C_j$	junction capacitance	77/3.6.2
CMRR	common-mode rejection ratio (also $k_{CMR}$ )	99/2.4.8
$C_O$	off-state capacitance	77/7.2.2



SYMBOL	TERM	REF.
$C_{obo}$	open-circuit output capacitance, common-base	77/4.1.2
$C_{obs}$	short-circuit output capacitance, common-base	77/4.1.2
$C_{oeo}$	open-circuit output capacitance, common-emitter	77/4.1.2
$C_{oes}$	short-circuit output capacitance, common-emitter	77/4.1.2 77/4.4.2
$C_{oss}$	short-circuit output capacitance, common-source	77/4.3.2
$C_{rbs}$	short-circuit reverse transfer capacitance, common-base	77/4.1.2
$C_{rcs}$	short-circuit reverse transfer capacitance, common-collector	77/4.1.2
$C_{re}$	common-emitter reverse transfer capacitance	77/4.4.2
$C_{res}$	short-circuit reverse transfer capacitance, common-emitter	77/4.1.2
$C_{rss}$	short-circuit reverse transfer capacitance, common-source	77/4.3.2
$C_t$	total capacitance	77/3.6.2
$C_{tc}$	depletion-layer capacitance, collector	77/4.1.2
CTE	charge-transfer efficiency (also $\eta$ )	99/2.7.3
$C_{te}$	depletion-layer capacitance, emitter	77/4.1.2
CTI	charge-transfer inefficiency (also $\epsilon$ )	99/2.7.3
CTR	(preferred symbol is $h_F$ ) current transfer ratio	77/5.4.2
$C_{t1}/C_{t2}$	capacitance ratio	77/3.6.2
$(di_T/dt)_{cr}$	critical rate of rise of on-state current	77/6.1.2
$dv(\text{com})/dt$	critical rate of rise of commutating voltage [short form of $(dv_{D(\text{com})}/dt)_{cr}$ ]	77/6.1.2
$(dv_{D(\text{com})}/dt)_{cr}$	critical rate of rise of commutating voltage	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$(dv_D/dt)_{cr}$	critical rate of rise of off-state voltage	77/6.1.2
$dv/dt$	critical rate of rise of off-state voltage [short form of $(dv_D/dt)_{cr}$ ]	77/6.1.2
$D^*$	detectivity, D-star	77/5.2.2
$D^{**}$	detectivity, normalized	77/5.2.2
$E$	energy or illuminance (illumination) or irradiance	77/1.2.1 77/5.2.2 77/5.2.2
$E_D$	linearity error, differential	99/2.5.2.4
$E_{DQ}$	turn-off energy loss	77/6.1.2
$E_e$	irradiance	77/5.2.2
$E_F$	feedthrough error	99/2.5.2.4
$E_{FS}$	full-scale error	99/2.5.2.4
$E_G$	gain error	99/2.5.2.4
$E_L$	linearity error, end-point	99/2.5.2.4
$E_{L(adj)}$	linearity error, best-straight-line	99/2.5.2.4
$E_O$	offset error	99/2.5.2.4
$E_{off}$	turn-off switching loss	77/4.4.2
$E_{on}$	turn-on switching loss	77/4.4.2
$E_p$	pedestal (error)	99/2.5.2.4
$E_{RO}$	roll-over error	99/2.5.2.4

SYMBOL	TERM	REF.
$E_{rs}$	total switching loss	77/4.4.2
$E_T$	total error	99/2.5.2.4
$E_V$	illuminance (illumination)	77/5.2.2
$E_{zs}$	zero-scale error	99/2.5.2.4
$F$	spot noise figure; spot noise factor	77/2.2 99/2.4.10
$\bar{F}$	average noise figure; average noise factor	77/2.2 99/2.4.10
$f$	frequency	77/1.2.1 99/2.1.2.1
$f_c$	conversion rate	99/2.5.2.3
$f_{co}$	cutoff frequency	77/3.6.2
$f_{hfb}$	small-signal short-circuit forward current transfer cutoff frequency, common-base	77/4.1.2
$f_{hfc}$	small-signal short-circuit forward current transfer ratio cutoff frequency, common-collector	77/4.1.2
$f_{hfe}$	small-signal short-circuit forward current transfer ratio cutoff frequency, common-emitter	77/4.1.2
$f_{max}$	maximum clock frequency or maximum frequency of oscillation	99/2.3.5 77/4.1.2
$f_{mod}$	modulation frequency	77/5.2.2
$\bar{F}_o$	overall average noise figure	77/3.2.2
$\bar{F}_{os}$	standard overall average noise figure	77/3.2.2
FS	full scale	99/2.5.2.1

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$f_{sb}$	frequency of unity forward transmission coefficient, common-base	77/4.1.2
$f_{sc}$	frequency of unity forward transmission coefficient, common-collector	77/4.1.2
$f_{sd}$	frequency of unity forward transmission coefficient, common-drain	77/4.3.2
$f_{se}$	frequency of unity forward transmission coefficient, common-emitter	77/4.1.2
$f_{sg}$	frequency of unity forward transmission coefficient, common-gate	77/4.3.2
FS(nom)	full-scale value, nominal [also FSR(nom)]	99/2.5.2.1
FSR	full-scale range, (practical) [also FSR(pr)]	99/2.5.2.1
FSR(nom)	full-scale range, nominal [also FS(nom)]	99/2.5.2.1
FSR(pr)	full-scale range, (practical) [also FSR]	99/2.5.2.1
$f_{ss}$	frequency of unity forward transmission coefficient, common-source	77/4.3.2
FS–	full-scale, negative	99/2.5.2.1
FS+	full-scale, positive	99/2.5.2.1
$f_T$	transition frequency; frequency at which small-signal forward current transfer ratio (common-emitter) extrapolates to unity	77/4.1.2
$f_1$	frequency of unity current transfer ratio	77/4.1.2
$G$	gain, power	77/1.2.1 99/2.1.2.1
$g$	conductance	77/1.2.1
GA	glitch area	99/2.5.2.3

SYMBOL	TERM	REF.
GE	glitch energy	99/2.5.2.3
$g_{fs}$	small-signal forward transfer conductance, common-source (also $y_{fs(\text{real})}$ )	77/4.3.2
$g_{is}$	small-signal input conductance, common-source (also $y_{is(\text{real})}$ )	77/4.3.2
$g_{MB}$	static transconductance, common-base	77/4.1.2
$g_{mb}$	Use preferred symbol $y_{fb}$ .	77/4.1.2
$g_{MC}$	static transconductance, common-collector	77/4.1.2
$g_{mc}$	Use preferred symbol $y_{fc}$ .	77/4.1.2
$g_{ME}$	static transconductance, common-emitter	77/4.1.2
$g_{me}$	Use preferred symbol $y_{fe}$ .	77/4.1.2
$g_{me}$	common-emitter small-signal transconductance	77/4.4.2
$g_{os}$	small-signal output conductance, common-source (also $y_{os(\text{real})}$ )	77/4.3.2
$G_P$	insertion power gain, large-signal or power gain, large-signal	99/2.4.2 99/2.4.2
$G_p$	insertion power gain, small-signal or power gain, small-signal	99/2.4.2 99/2.4.2
$G_{PB}$	large-signal insertion power gain, common-base	77/4.1.2
$G_{pb}$	small-signal insertion power gain, common-base	77/4.1.2
$G_{PC}$	large-signal insertion power gain, common-collector	77/4.1.2
$G_{pc}$	small-signal insertion power gain, common-collector	77/4.1.2
$G_{PE}$	large-signal insertion power gain, common-emitter	77/4.1.2

SYMBOL	TERM	REF.
$G_{pe}$	small-signal insertion power gain, common-emitter	77/4.1.2
$G_{pg}$	small-signal insertion power gain, common-gate	77/4.3.2
$G_{ps}$	small-signal insertion power gain, common-source	77/4.3.2
$g_{rs}$	small-signal reverse transfer conductance, common-source (also $y_{rs(\text{real})}$ )	77/4.3.2
$G_T$	transducer power gain, large-signal	99/2.4.2
$G_t$	transducer power gain, small-signal	99/2.4.2
$G_{TB}$	large-signal transducer power gain, common-base	77/4.1.2
$G_{tb}$	small-signal transducer power gain, common-base	77/4.1.2
$G_{TC}$	large-signal transducer power gain, common-collector	77/4.1.2
$G_{tc}$	small-signal transducer power gain, common-collector	77/4.1.2
$G_{TE}$	large-signal transducer power gain, common-emitter	77/4.1.2
$G_{te}$	small-signal transducer power gain, common-emitter	77/4.1.2
$G_{tg}$	small-signal transducer power gain, common-gate	77/4.3.2
$G_{ts}$	small-signal transducer power gain, common-source	77/4.3.2
$h$	matrix parameter	77/1.2.1
$h_F$	current transfer ratio	77/5.4.2
$h_{FB}$	static forward current transfer ratio, common-base	77/4.1.2
$h_{fb}$	small-signal short-circuit forward current transfer ratio, common-base	77/4.1.2
$h_{FC}$	static forward current transfer ratio, common-collector	77/4.1.2

SYMBOL	TERM	REF.
$h_{fc}$	small-signal short-circuit forward current transfer ratio, common-collector	77/4.1.2
$h_{FE}$	static forward current transfer ratio, common-emitter	77/4.1.2
$h_{fe}$	small-signal short-circuit forward current transfer ratio, common-emitter	77/4.1.2
$h_{IB}$	static input resistance, common-base	77/4.1.2
$h_{ib}$	small-signal short-circuit input impedance, common-base	77/4.1.2
$h_{IC}$	static input resistance, common-collector	77/4.1.2
$h_{ic}$	small-signal short-circuit input impedance, common-collector	77/4.1.2
$h_{IE}$	static input resistance, common-emitter	77/4.1.2
$h_{ie}$	small-signal short-circuit input impedance, common-emitter	77/4.1.2
$h_{ie(imag)}$	imaginary part of the small-signal short-circuit input impedance, common-emitter	77/4.1.2
$h_{ie(real)}$	real part of the small-signal short-circuit input impedance, common-emitter	77/4.1.2
$h_{ob}$	small-signal open-circuit output admittance, common-base	77/4.1.2
$h_{oc}$	small-signal open-circuit output admittance, common-collector	77/4.1.2
$h_{oe}$	small-signal open-circuit output admittance, common-emitter	77/4.1.2
$h_{oe(imag)}$	imaginary part of the small-signal open-circuit output admittance, common-emitter	77/4.1.2
$h_{oe(real)}$	real part of the small-signal open-circuit output admittance, common-emitter	77/4.1.2
$h_{rb}$	small-signal open-circuit reverse voltage transfer ratio, common-base	77/4.1.2

SYMBOL	TERM	REF.
$h_{rc}$	small-signal open-circuit reverse voltage transfer ratio, common-collector	77/4.1.2
$h_{re}$	small-signal open-circuit reverse voltage transfer ratio, common-emitter	77/4.1.2
$I$	luminous intensity or radiant intensity	77/5.3.2 77/5.3.2
$I, i$	current	77/1.2.1 99/2.1.2.1
$I^2t$	case nonrupture $I^2t$ value	77/6.1.2
$I^2t$	$I^2t$ value (of a surge on-state current)	77/6.1.2
$I_B$	base current, dc	77/4.1.2
$I_b$	base current, rms value of alternating component	77/4.1.2
$i_B$	base current, instantaneous total value	77/4.1.2
$I_{BEV}$	base cutoff current	77/4.1.2
$I_{(BO)}$	breakover current, dc	77/6.1.2 77/7.2.2
$i_{(BO)}$	breakover current, instantaneous total value	77/6.1.2
$I_{(BR)}$	breakdown current or reverse breakdown current, dc	77/7.2.2 77/6.1.2
$i_{(BR)}$	reverse breakdown current, instantaneous total value	77/6.1.2
$I_{B2(mod)}$	interbase modulated current	77/4.2.2
$I_C$	collector current, dc	77/4.1.2 77/4.4.2



<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_c$	collector current, rms value of alternating component	77/4.1.2
$i_C$	collector current, instantaneous total value	77/4.1.2
$I_{CBO}$	collector cutoff current, emitter open	77/4.1.2
$I_{CC(DR)}$	data retention supply current	99/2.3.3
$I_{CCH}$	supply current, high-level output	99/2.3.3
$I_{CCL}$	supply current, low-level output	99/2.3.3
$I_{CEO}$	collector cutoff current, base open	77/4.1.2
$I_{CER}$	collector cutoff current, resistance between base and emitter	77/4.1.2
$I_{CES}$	collector cutoff current, base short-circuited to emitter	77/4.1.2
$I_{CES}$	collector cutoff current, gate short-circuited to emitter	77/4.4.2
$I_{CEV}$	collector cutoff current, voltage between base and emitter	77/4.1.2
$I_{CEX}$	collector cutoff current, circuit between base and emitter	77/4.1.2
$I_{CM}$	peak collector current	77/4.4.2
$I_D$	drain current, dc or off-state current, dc value, no alternating component or standby current	77/4.3.2 77/6.1.2 77/7.2.2 77/7.1.2 77/7.2.2
$i_D$	off-state current, instantaneous total value	77/6.1.2
$I_{D(AV)}$	off-state current, mean value averaged over a full cycle	77/6.1.2
$I_{DD(DR)}$	data retention supply current	99/2.3.3
$I_{DDH}$	supply current, high-level output	99/2.3.3

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_{DDL}$	supply current, low-level output	99/2.3.3
$I_{DM}$	off-state current, maximum (peak) total value	77/6.1.2
$I_{D(off)}$	drain cutoff current	77/4.3.2
$I_{D(on)}$	on-state drain current	77/4.3.2
$I_{DQM}$	off-state recovery current	77/6.1.2
$I_{DRM}$	repetitive peak off-state current	77/6.1.2 77/7.2.2
$I_{D(RMS)}$	off-state current, total rms value	77/6.1.2
$I_{DSS}$	zero-gate-voltage drain current	77/4.3.2
$I_E$	emitter current, dc	77/4.1.2 77/4.4.2
$I_e$	emitter current, rms value of alternating component or radiant intensity	77/4.1.2 77/5.3.2
$i_E$	emitter current, instantaneous total value	77/4.1.2
$I_{EBO}$	emitter cutoff current, collector open	77/4.1.2
$I_{EB2O}$	emitter reverse current	77/4.2.2
$I_{EC(ofs)}$	emitter-collector offset current	77/4.1.2
$I_{ECS}$	emitter cutoff current, base short-circuited to collector	77/4.1.2
$I_{EEH}$	supply current, high-level output	99/2.3.3
$I_{EEL}$	supply current, low-level output	99/2.3.3
$I_{E1E2(off)}$	emitter cutoff current	77/4.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_F$	forward current, dc value, no alternating component	77/2.2 77/3.1.2 77/7.2.2
$I_f$	forward current, rms value of alternating component	77/3.1.2
$i_F$	forward current, instantaneous total value	77/3.1.2
$I_{F(AV)}$	forward current, mean value averaged over a full cycle	77/3.1.2
$I_{FG}$	forward gate current	77/6.1.2
$I_{FGB}$	on-state gate bias current	77/6.1.2
$I_{FGsus}$	sustaining gate current	77/6.1.2
$i_{FGT}$	turn-on gate current	77/6.1.2
$I_{FGTM}$	peak turn-on gate drive current	77/6.1.2
$I_{FM}$	forward current, maximum (peak) total value	77/3.1.2
$I_{FM(OV)}$	forward current, overload	77/3.1.2
$I_{FRM}$	forward current, repetitive peak	77/3.1.2
$I_{F(RMS)}$	forward current, total rms value	77/3.1.2
$I_{FS}$	forward surge current	77/7.1.2
$I_{FSM}$	forward current, surge peak	77/3.1.2
$I_{FSnom}$	full-scale (current), nominal	99/2.5.2.1
$I_{FSR}$	full-scale (current) range, (practical)	99/2.5.2.1
$I_{FSRnom}$	full-scale (current) range, nominal	99/2.5.2.1
$I_{FSRpr}$	full-scale (current) range, (practical)	99/2.5.2.1
$I_{FS-}$	full-scale (current), negative	99/2.5.2.1

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_{FS+}$	full-scale (current), positive	99/2.5.2.1
$I_G$	gate current, dc value, no alternating component	77/4.3.2 77/4.4.2 77/6.1.2
$i_G$	gate current, instantaneous total value	77/6.1.2
$I_{GAO}$	gate reverse current, cathode open	77/6.2.2
$I_{GAS}$	gate reverse current, cathode short circuited to anode	77/6.2.2
$I_{G(AV)}$	gate current, mean value averaged over a full cycle	77/6.1.2
$I_{GD}$	gate nontrigger current	77/6.1.2
$I_{GESF}$	forward gate current, collector short-circuited to emitter	77/4.4.2
$I_{GESR}$	reverse gate current, collector short-circuited to emitter	77/4.4.2
$I_{GF}$	forward gate current	77/4.3.2 77/4.4.2
$I_{GKO}$	gate reverse current, anode open	77/6.2.2
$I_{GKS}$	gate reverse current, anode short circuited to cathode	77/6.2.2
$I_{GM}$	gate current, maximum (peak) total value	77/6.1.2
$I_{GQ}$	gate turn-off current, dc value, no alternating component	77/6.1.2
$i_{GQ}$	gate turn-off current, instantaneous total value	77/6.1.2
$I_{GQM}$	gate turn-off current, maximum (peak) total value	77/6.1.2
$I_{GR}$	reverse gate current	77/4.3.2 77/4.4.2
$I_{GSS}$	reverse gate current, drain short circuited to source	77/4.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_{GSSF}$	forward gate current, drain short circuited to source	77/4.3.2
$I_{GSSR}$	reverse gate current, drain short circuited to source	77/4.3.2
$I_{GT}$	gate trigger current, dc value, no alternating component	77/6.1.2
$i_{GT}$	gate trigger current, instantaneous total value	77/6.1.2
$I_{GTM}$	gate trigger current, maximum (peak) total value	77/6.1.2
$I_H$	holding current, dc value, no alternating component or holding current	77/6.1.2 77/7.2.2
$i_H$	holding current, instantaneous total value	77/6.1.2
$I_I$	inflection-point current	77/3.3.2
$I_{IB}$	input bias current	99/2.4.6
$I_{IH}$	high-level input current	99/2.3.3
$I_{IK}$	input clamp current	99/2.2.4
$I_{IL}$	low-level input current	99/2.3.3
$I_{IO}$	dc input-to-output current; isolation current or input offset current	77/5.4.2 99/2.4.6
$I_{I(standby)}$	standby current	99/2.6.4
$I_L$	latching current, dc or limiting current or load current	77/6.1.2 77/3.5.2 99/2.6.4
$i_L$	latching current, instantaneous total value	77/6.1.2
$I_{lkg}$	leakage current	99/2.2.4

SYMBOL	TERM	REF.
$I_{L(sd)}$	shutdown current (also $I_{O(sd)}$ )	99/2.6.4
$I_m$	rated peak single-pulse transient current	77/7.2.2
$Im(h_{ie})$	Use preferred symbol $h_{ie(imag)}$ .	77/4.1.2
$Im(h_{oe})$	Use preferred symbol $h_{oe(imag)}$ .	77/4.1.2
$Im(y_{fs})$	Use preferred symbol $b_{fs}$ or $y_{fs(imag)}$ .	77/4.3.2
$Im(y_{ie})$	Use preferred symbol $y_{ie(imag)}$ .	77/4.1.2
$Im(y_{is})$	Use preferred symbol $b_{is}$ or $y_{is(imag)}$ .	77/4.3.2
$Im(y_{oe})$	Use preferred symbol $y_{oe(imag)}$ .	77/4.1.2
$Im(y_{os})$	Use preferred symbol $b_{os}$ or $y_{os(imag)}$ .	77/4.3.2
$Im(y_{rs})$	Use preferred symbol $b_{rs}$ or $y_{rs(imag)}$ .	77/4.3.2
$I_n$	detector noise current or noise current, equivalent input	77/5.2.2 77/2.2
$I_O$	average rectified output current, 50-Hz or 60-Hz sinewave input, 180° conduction angle or output current	77/3.1.2 99/2.6.4
$I_{off}$	off-state current	99/2.2.4
$I_{OH}$	high-level output current	99/2.3.3
$I_{OK}$	output clamp current	99/2.2.4
$I_{OL}$	low-level output current	99/2.3.3
$I_{OM}$	maximum output current swing	99/2.4.6

SYMBOL	TERM	REF.
$I_{OS}$	short-circuit current limit	99/2.6.4
	or	
	short-circuit output current	99/2.3.3 99/2.4.6
$I_{O(sd)}$	shutdown current (also $I_{L(sd)}$ )	99/2.6.4
$I_{(OV)}$	overload forward current (also $I_{FM(OV)}$ )	77/3.1.2
$I_{OZ}$	high-impedance-state output current	99/2.3.3
$I_P$	peak-point current	77/3.3.2
		77/4.2.2
		77/6.2.2
$I_{PP}$	peak impulse current	77/7.1.2
$I_R$	reverse current, dc value, no alternating component	77/2.2
		77/3.1.2
		77/6.1.2
$I_r$	reverse current, rms value of alternating component	77/3.1.2
$i_R$	reverse current, instantaneous total value	77/3.1.2
		77/6.1.2
$I_{R(AV)}$	reverse current, mean value averaged over a full cycle	77/3.1.2
		77/6.1.2
$I_{RC}$	reverse-conducting current, dc value, no alternating component	77/6.1.2
$i_{RC}$	reverse-conducting current, instantaneous total value	77/6.1.2
$I_{RC(AV)}$	reverse-conducting current, mean value averaged over a full cycle	77/6.1.2
$I_{RCM}$	reverse-conducting current, maximum (peak) total value	77/6.1.2
$I_{RCM(OV)}$	overload reverse-conducting current, maximum (peak) total value	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$i_{RC(OV)}$	overload reverse-conducting current, instantaneous total value	77/6.1.2
$I_{RC(RMS)}$	reverse-conducting current, total RMS value	77/6.1.2
$I_{RCSM}$	surge reverse-conducting current	77/6.1.2
$I_{RG}$	reverse gate current	77/6.1.2
$I_{RGB}$	off-state gate bias current	77/6.1.2
$I_{RGQ}$	turn-off gate current, dc value, no alternating component	77/6.1.2
$i_{RGQ}$	turn-off gate current, instantaneous total value	77/6.1.2
$I_{RGQB}$	turn-off gate bias current	77/6.1.2
$I_{RGQM}$	turn-off gate current, maximum (peak) total value	77/6.1.2
$I_{RM}$	reverse current, maximum (peak) total value	77/3.1.2 77/6.1.2
$I_{RM(REC)}$	reverse recovery current, maximum (peak) total value	77/3.1.2 77/6.1.2
$I_{RQM}$	reverse recovery current	77/6.1.2
$i_{RR}$	reverse recovery current, instantaneous total value [International Electrotechnical Commission alternative symbol for $i_{R(REC)}$ ]	77/6.1.2
$i_{R(REC)}$	reverse recovery current, instantaneous total value	77/3.1.2 77/6.1.2
$I_{RRM}$	reverse current, repetitive peak	77/3.1.2 77/6.1.2
$I_{R(RMS)}$	reverse current, total rms value	77/3.1.2 77/6.1.2



<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_{RSM}$	reverse current, nonrepetitive peak or reverse current, surge peak	77/6.1.2 77/3.1.2
$I_S$	detector signal current, dc or regulator current or source current, dc or surge peak transient current or switching current	77/5.2.2 77/3.5.2 77/4.3.2 77/7.1.2 77/7.2.2
$I_s$	detector signal current, rms value of ac component	77/5.2.2
$I_{SDS}$	zero-gate-voltage source current	77/4.3.2
$I_{SM}$	rated surge peak transient current	77/7.1.2
$I_{S(off)}$	source cutoff current	77/4.3.2
$I_T$	on-state current, dc value, no alternating component	77/6.1.2 77/7.2.2
$i_T$	on-state current, instantaneous total value	77/6.1.2
$I_{T(AV)}$	on-state current, mean value averaged over a full cycle	77/6.1.2
$I_{TM}$	on-state current, maximum (peak) total value or peak case nonrupture current	77/6.1.2 77/6.1.2
$I_{TM(OV)}$	overload on-state current, maximum (peak) total value	77/6.1.2
$i_{T(OV)}$	overload on-state current, instantaneous total value	77/6.1.2
$I_{TQRM}$	repetitive peak controllable on-state current	77/6.1.2
$I_{TQSM}$	nonrepetitive peak controllable on-state current	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$I_{TRM}$	repetitive peak on-state current	77/6.1.2
$I_{T(RMS)}$	on-state current, total rms value	77/6.1.2
$I_{TSM}$	nonrepetitive peak on-state current or surge on-state current	77/7.2.2 77/6.1.2
$I_V$	valley-point current	77/3.3.2 77/4.2.2 77/6.2.2
$I_V$	luminous intensity	77/5.3.2
$I_X$	varistor operating current	77/7.3.2
$I_Z$	regulator or reference current, dc	77/3.4.2
$i_Z$	tail current	77/6.1.2
$I_{ZK}$	regulator or reference current, dc near breakdown knee	77/3.4.2
$I_{zk}$	regulator or reference current, rms component	77/3.4.2
$I_{ZM}$	peak tail current or regulator or reference current, dc maximum rated current	77/6.1.2 77/3.4.2
$I_{ZRM}$	reverse surge current, repetitive peak	77/3.4.2
$I_{ZSM}$	reverse surge current, nonrepetitive peak	77/3.4.2
$I_{ZS-}$	zero-scale (current), negative	99/2.5.2.1
$I_{ZS+}$	zero-scale (current), positive	99/2.5.2.1
$I_{ZT}$	regulator or reference current, dc at specified test point	77/3.4.2
$I_{zt}$	regulator or reference current, rms component	77/3.4.2
$J_D$	average dark current density	99/2.7.5

SYMBOL	TERM	REF.
$K$	luminous efficacy	77/5.3.2
$k_{\text{CMR}}$	common-mode rejection ratio (also CMRR)	99/2.4.8
$k_{\text{SVR}}$	supply voltage rejection ratio	99/2.4.8
$k_{\text{SVS}}$	supply voltage sensitivity	99/2.4.8 99/2.5.2.2
$k_{\text{VIO}}$	ripple rejection	99/2.6.5
$K(\lambda)$	spectral luminous efficacy	77/5.3.2
$L$	inductance	77/1.2.1 99/2.1.2.1
	or luminance	77/5.3.2
	or radiance	77/5.3.2
$L_c$	conversion loss	77/3.2.2
$L_e$	radiance	77/5.3.2
$L_s$	series inductance	77/3.6.2
$L_v$	luminance	77/5.3.2
$M$	figure of merit	77/3.2.2
	or luminous exitance	77/5.3.2
	or radiant exitance	77/5.3.2
$M_{\text{bb}}$	total blackbody exitance	77/5.3.2
$M_e$	radiant exitance	77/5.3.2
$M_{e\lambda p}$	peak spectral radiant exitance	77/5.3.2
$M_v$	luminous exitance	77/5.3.2

SYMBOL	TERM	REF.
$M_{v\lambda p}$	peak spectral luminous exitance	77/5.3.2
$M_{\lambda p}$	peak spectral luminous exitance or peak spectral radiant exitance	77/5.3.2 77/5.3.2
$N$	responsivity, illuminance or responsivity, irradiance	77/5.2.2 77/5.2.2
$N_e$	responsivity, irradiance	77/5.2.2
NEP	Use preferred symbol $P_n$ .	77/5.2.2
NF	Use preferred symbol $F$ .	77/2.2 99/2.4.10
$\overline{NF}$	Use preferred symbol $\overline{F}$ .	77/2.2 99/2.4.10
$N_r$	output noise ratio	77/3.2.2
$N_v$	responsivity, illuminance	77/5.2.2
$n\epsilon$	transfer inefficiency product	99/2.7.3
$P, p$	power	77/1.2.1 99/2.1.2.1
$P_{add(AV)}$	mean additional power loss	77/6.1.2
$P_{(AV)}$	average power dissipation	77/7.1.2
$P_{BE}$	input power to the base, dc, common-emitter	77/4.1.2
$p_{BE}$	input power to the base, instantaneous total, common-emitter	77/4.1.2
$P_{CB}$	input power to the collector, dc, common-base	77/4.1.2
$p_{CB}$	input power to the collector, instantaneous total, common-base	77/4.1.2

SYMBOL	TERM	REF.
$P_{CE}$	input power to the collector, dc, common-emitter	77/4.1.2
$p_{CE}$	input power to the collector, instantaneous total, common-emitter	77/4.1.2
$P_D$	off-state power, dc value, no alternating component or power dissipation, dc	77/6.1.2 99/2.2.4
$P_d$	ac standby power	77/7.2.2
$p_D$	off-state power, instantaneous total value	77/6.1.2
$P_{D(AV)}$	off-state power, mean value averaged over a full cycle	77/6.1.2
$P_{DM}$	off-state power, maximum (peak) total value	77/6.1.2
$p_{DQ}$	turn-off power, instantaneous total value	77/6.1.2
$P_{DQ(AV)}$	turn-off power, mean value averaged over a full cycle	77/6.1.2
$P_{DQM}$	turn-off power, maximum (peak) total value	77/6.1.2
$P_{EB}$	input power to the emitter, dc, common-base	77/4.1.2
$p_{EB}$	input power to the emitter, instantaneous total, common-base	77/4.1.2
$P_F$	forward power dissipation, dc value, no alternating component	77/3.1.2
$p_F$	forward power dissipation, instantaneous total value	77/3.1.2
$P_{F(AV)}$	forward power dissipation, mean value averaged over a full cycle	77/3.1.2
$P_{FM}$	forward power dissipation, maximum (peak) total value	77/3.1.2
$P_G$	gate power, dc value, no alternating component	77/6.1.2
$p_G$	gate power, instantaneous total value	77/6.1.2
$P_{G(AV)}$	gate power, mean value averaged over a full cycle	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$P_{GM}$	gate power, maximum (peak) total value	77/6.1.2
$P_{IB}$	large-signal input power, common-base	77/4.1.2
$p_{ib}$	small-signal input power, common-base	77/4.1.2
$P_{IC}$	large-signal input power, common-collector	77/4.1.2
$p_{ic}$	small-signal input power, common-collector	77/4.1.2
$P_{IE}$	large-signal input power, common-emitter	77/4.1.2
$p_{ie}$	small-signal input power, common-emitter	77/4.1.2
$P_{M(AV)}$	rated average power dissipation	77/7.1.2
$P_n$	noise equivalent power or noise equivalent power spectral density	77/5.2.2 77/5.2.2
$P_{OB}$	large-signal output power, common-base	77/4.1.2
$p_{ob}$	small-signal output power, common-base	77/4.1.2
$P_{OC}$	large-signal output power, common-collector	77/4.1.2
$p_{oc}$	small-signal output power, common-collector	77/4.1.2
$P_{OE}$	large-signal output power, common-emitter	77/4.1.2
$p_{oe}$	small-signal output power, common-emitter	77/4.1.2
$P_{PP}$	repetitive peak pulse power dissipation	77/7.1.2
$P_{PPM}$	rated repetitive peak pulse power dissipation	77/7.1.2
$P_R$	reverse power dissipation, dc value, no alternating component or reverse power, dc value, no alternating component	77/3.1.2 77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$P_R$	reverse power dissipation, instantaneous total value	77/3.1.2
	or reverse power, instantaneous total value	77/6.1.2
$P_{R(AV)}$	reverse power dissipation, mean value averaged over a full cycle	77/3.1.2
	or reverse power, mean value averaged over a full cycle	77/6.1.2
$P_{RC}$	reverse-conducting power, dc value, no alternating component	77/6.1.2
$P_{RC}$	reverse-conducting power, instantaneous total value	77/6.1.2
$P_{RC(AV)}$	reverse-conducting power, mean value averaged over a full cycle	77/6.1.2
$P_{RCM}$	reverse-conducting power, maximum (peak) total value	77/6.1.2
$P_{RM}$	reverse power dissipation, maximum (peak) total value	77/3.1.2
	or reverse power, maximum (peak) total value	77/6.1.2
$P_T$	on-state power, dc value, no alternating component	77/6.1.2
	or total dc power input to all terminals	77/4.1.2 77/4.3.2
	or total power dissipation, dc value, no alternating component	77/3.1.2
$p_T$	on-state power, instantaneous total value	77/6.1.2
	or total instantaneous power to all terminals	77/4.1.2 77/4.3.2
$P_{T(AV)}$	on-state power, mean value averaged over a full cycle	77/6.1.2
	or total power dissipation, mean value averaged over a full cycle	77/3.1.2
$P_{t(AV)m}$	rated transient average power dissipation	77/7.3.2

SYMBOL	TERM	REF.
$P_{TM}$	on-state power, maximum (peak) total value or total power dissipation, maximum (peak) total value	77/6.1.2 77/3.1.2
$P_{tot(AV)}$	mean total power loss	77/6.1.2
$p_{TT}$	turn-on power, instantaneous total value	77/6.1.2
$P_{TT(AV)}$	turn-on power, mean value averaged over a full cycle	77/6.1.2
$P_{TTM}$	turn-on power, maximum (peak) total value	77/6.1.2
$Q$	figure of merit or luminous energy (also $Q_v$ ) or radiant energy (also $Q_e$ )	77/3.6.2 77/5.1.2 77/5.1.2
$Q, q$	electric charge	77/1.2.1
$Q_{dr}$	off-state recovered charge	77/6.1.2
$Q_e$	radiant energy	77/5.1.2
$Q_g$	gate charge	77/4.4.2
$Q_{g(on)}$	turn-on gate charge	77/4.4.2
$Q_{gq}$	gate turn-off charge	77/6.1.2
$Q_r$	recovered charge	77/6.1.2
$Q_{rr}$	recovered charge	77/3.1.2
$Q_{rrf}$	fall time charge	77/3.1.2
$Q_{rrr}$	rise time charge	77/3.1.2
$Q_s$	stored charge	77/3.1.2
$Q_v$	luminous energy	77/5.1.2



SYMBOL	TERM	REF.
$R$	responsivity, luminous or responsivity, radiant	77/5.2.2 77/5.2.2
$R, r$	resistance	77/1.2.1 99/2.1.2.1
$r_{\text{BB}}$	interbase resistance	77/4.2.2
$r_{\text{b}}'C_{\text{c}}$	collector-base time constant	77/4.1.2
$r_{\text{CE(sat)}}$	saturation resistance, collector-emitter	77/4.1.2
$r_{\text{DS(on)}}$	static drain-source on-state resistance	77/4.3.2
$r_{\text{ds(on)}}$	small-signal drain-source on-state resistance	77/4.3.2
$R_{\text{e}}$	responsivity, radiant	77/5.2.2
$\text{Re}(h_{\text{ie}})$	Use preferred symbol $h_{\text{ie(real)}}$ .	77/4.1.2
$\text{Re}(h_{\text{oe}})$	Use preferred symbol $h_{\text{oe(real)}}$ .	77/4.1.2
$\text{Re}(y_{\text{fs}})$	Use preferred symbol $g_{\text{fs}}$ or $y_{\text{fs(real)}}$ .	77/4.3.2
$\text{Re}(y_{\text{ie}})$	Use preferred symbol $y_{\text{ie(real)}}$ .	77/4.1.2
$\text{Re}(y_{\text{is}})$	Use preferred symbol $g_{\text{is}}$ or $y_{\text{is(real)}}$ .	77/4.3.2
$\text{Re}(y_{\text{oe}})$	Use preferred symbol $y_{\text{oe(real)}}$ .	77/4.1.2
$\text{Re}(y_{\text{os}})$	Use preferred symbol $g_{\text{os}}$ or $y_{\text{os(real)}}$ .	77/4.3.2
$\text{Re}(y_{\text{rs}})$	Use preferred symbol $g_{\text{rs}}$ or $y_{\text{rs(real)}}$ .	77/4.3.2
$r_{\text{e1e2(on)}}$	small-signal emitter-emitter on-state resistance	77/4.1.2
$r_{\text{i}}$	dynamic resistance at inflection point or input resistance	77/3.3.2 99/2.4.7

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$r_{\text{IO}}$	isolation resistance	77/5.4.2
$r_{\text{o}}$	output resistance	99/2.4.7
$r_{\text{on}}$	on-state resistance	99/2.3.4
$r_{\text{RC}}$	reverse-conducting slope resistance	77/6.1.2
$R_{\text{RSF}}$	reverse recovery softness factor	77/3.1.2
$R_{\text{S}}$	incremental surge resistance point or switching resistance	77/7.1.2 77/7.2.2
$r_{\text{s}}$	series resistance, small-signal	77/3.6.2
RSF	recovery softness factor (See preferred parameter RRSF.)	77/3.1.2
$r_{\text{T}}$	on-state slope resistance	77/6.1.2
$R_{\text{th}}$	thermal resistance	77/2.2 99/2.2.5
$R_{\text{thCA}}$	thermal resistance, case-to-ambient	77/2.2 99/2.2.5
$R_{\text{thJA}}$	thermal resistance, junction-to-ambient	77/2.2 99/2.2.5
$R_{\text{thJC}}$	thermal resistance, junction-to-case	77/2.2 99/2.2.5
$R_{\text{thJCA}}$	anode-side (partial) junction-to-case thermal resistance (of a thyristor in a disc-type housing)	77/6.1.2
$R_{\text{thJCD}}$	diode junction-to-case thermal resistance (of a reverse-conducting thyristor with an integrated reverse-conducting diode)	77/6.1.2

SYMBOL	TERM	REF.
$R_{thJCK}$	cathode-side (partial) junction-to-case thermal resistance (of a thyristor in a disc-type housing)	77/6.1.2
$R_{thJCT}$	thyristor junction-to-case thermal resistance (of a reverse-conducting thyristor with an integrated reverse-conducting diode)	77/6.1.2
$R_{thJL}$	thermal resistance, junction-to-lead	77/2.2 99/2.2.5
$R_{thJM}$	thermal resistance, junction-to-mounting surface	77/2.2 99/2.2.5
$R_v$	responsivity, luminous	77/5.2.2
$R_x$	static resistance	77/7.3.2
$R_\theta$	thermal resistance	77/2.2 99/2.2.5
$R_{\theta CA}$	thermal resistance, case-to-ambient	77/2.2 99/2.2.5
$R_{\theta JA}$	thermal resistance, junction-to-ambient	77/2.2 99/2.2.5
$R_{\theta JC}$	thermal resistance, junction-to-case	77/2.2 99/2.2.5
$R_{\theta JL}$	thermal resistance, junction-to-lead	77/2.2
$R_{\theta JM}$	thermal resistance, junction-to-mounting surface	77/2.2
$S$	sensitivity, illuminance or sensitivity, irradiance or sensitivity, luminous or sensitivity, radiant	77/5.2.2 77/5.2.2 77/5.2.2 77/5.2.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
SCSOA	short-circuit safe operating area	77/4.4.1
SCWT	short-circuit withstand time	77/4.4.2
$S_e$	sensitivity, irradiance or sensitivity, radiant	77/5.2.2 77/5.2.2
$s_{fb}$ or $s_{21b}$	forward transmission coefficient, common-base	77/4.1.2
$s_{fc}$ or $s_{21c}$	forward transmission coefficient, common-collector	77/4.1.2
$s_{fd}$ or $s_{21d}$	forward transmission coefficient, common-drain	77/4.3.2
$s_{fe}$ or $s_{21e}$	forward transmission coefficient, common-emitter	77/4.1.2
$s_{fg}$ or $s_{21g}$	forward transmission coefficient, common-gate	77/4.3.2
$s_{fs}$ or $s_{21s}$	forward transmission coefficient, common-source	77/4.3.2
$s_{ib}$ or $s_{11b}$	input reflection coefficient, common-base	77/4.1.2
$s_{ic}$ or $s_{11c}$	input reflection coefficient, common-collector	77/4.1.2
$s_{id}$ or $s_{11d}$	input reflection coefficient, common-drain	77/4.3.2
$s_{ie}$ or $s_{11e}$	input reflection coefficient, common-emitter	77/4.1.2
$s_{ig}$ or $s_{11g}$	input reflection coefficient, common-gate	77/4.3.2
$s_{is}$ or $s_{11s}$	input reflection coefficient, common-source	77/4.3.2
$s_{ob}$ or $s_{22b}$	output reflection coefficient, common-base	77/4.1.2
$s_{oc}$ or $s_{22c}$	output reflection coefficient, common-collector	77/4.1.2
$s_{od}$ or $s_{22d}$	output reflection coefficient, common-drain	77/4.3.2
$s_{oe}$ or $s_{22e}$	output reflection coefficient, common-emitter	77/4.1.2
$s_{og}$ or $s_{22g}$	output reflection coefficient, common-gate	77/4.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$S_{OM}$	slew rate	99/2.5.2.3
$S_{OMD}$	slew rate, (digital)	99/2.5.2.3
$S_{OMR}$	slew rate, reference	99/2.5.2.3
$s_{os}$ or $s_{22s}$	output reflection coefficient, common-source	77/4.3.2
<b>SR</b>	slew rate	99/2.4.3 99/2.5.2.3
$s_{rb}$ or $s_{12b}$	reverse transmission coefficient, common-base	77/4.1.2
$s_{rc}$ or $s_{12c}$	reverse transmission coefficient, common-collector	77/4.1.2
$s_{rd}$ or $s_{12d}$	reverse transmission coefficient, common-drain	77/4.3.2
<b>SR(dig)</b>	slew rate, (digital)	99/2.5.2.3
$s_{re}$ or $s_{12e}$	reverse transmission coefficient, common-emitter	77/4.1.2
$s_{rg}$ or $s_{12g}$	reverse transmission coefficient, common-gate	77/4.3.2
<b>SR(ref)</b>	slew rate, reference	99/2.5.2.3
$s_{rs}$ or $s_{12s}$	reverse transmission coefficient, common-source	77/4.3.2
$S_T$	tangential sensitivity	99/2.4.10
$S_v$	sensitivity, illuminance or sensitivity, luminous	77/5.2.2 77/5.2.2
<b>SwSOA</b>	switching safe operating area	77/4.4.1
$s_{11b}$	See $s_{ib}$ .	77/4.1.2
$s_{11c}$	See $s_{ic}$ .	77/4.1.2
$s_{11d}$	See $s_{id}$ .	77/4.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$s_{11e}$	See $s_{ie}$ .	77/4.1.2
$s_{11g}$	See $s_{ig}$ .	77/4.3.2
$s_{11s}$	See $s_{is}$ .	77/4.3.2
$s_{12b}$	See $s_{rb}$ .	77/4.1.2
$s_{12c}$	See $s_{rc}$ .	77/4.1.2
$s_{12d}$	See $s_{rd}$ .	77/4.3.2
$s_{12e}$	See $s_{re}$ .	77/4.1.2
$s_{12g}$	See $s_{rg}$ .	77/4.3.2
$s_{12s}$	See $s_{rs}$ .	77/4.3.2
$s_{21b}$	See $s_{fb}$ .	77/4.1.2
$s_{21c}$	See $s_{fc}$ .	77/4.1.2
$s_{21d}$	See $s_{fd}$ .	77/4.3.2
$s_{21e}$	See $s_{fe}$ .	77/4.1.2
$s_{21g}$	See $s_{fg}$ .	77/4.3.2
$s_{21s}$	See $s_{fs}$ .	77/4.3.2
$s_{22b}$	See $s_{ob}$ .	77/4.1.2
$s_{22c}$	See $s_{oc}$ .	77/4.1.2
$s_{22d}$	See $s_{od}$ .	77/4.3.2
$s_{22e}$	See $s_{oe}$ .	77/4.1.2
$s_{22g}$	See $s_{og}$ .	77/4.3.2
$s_{22s}$	See $s_{os}$ .	77/4.3.2

SYMBOL	TERM	REF.
$T$	temperature	77/1.2.1 99/2.1.2.1
$t$	time	77/1.2.1 99/2.1.2.1
$T_A$	ambient temperature; free-air temperature	77/2.2
$t_a$	access time or reverse recovery current rise time	100/2.3.1 77/3.1.2
$t_b$	reverse recovery current fall time	77/3.1.2
$T_C$	case temperature	77/2.2
$t_c$	conversion time or cycle time or turn-off crossover time	99/2.5.2.3 100/2.3.2 77/4.1.2 77/4.3.2 77/4.4.2
$t_{c(on)}$	turn-on crossover time	77/4.4.2
$t_d$	delay time	77/2.2 77/4.1.2 77/5.2.2 77/5.4.2 99/2.3.5 99/2.4.3 99/2.5.2.3 100/2.3.3
$t_{dd}$	delay time, (digital)	99/2.5.2.3
$t_{df}$	delay time for falling response	99/2.4.3
$t_{di}$	current delay time	77/4.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$t_{\text{dis}}$	disable time	99/2.3.5 100/2.3.4
$t_{\text{d(off)}}$	turn-off delay time	77/4.3.2
$t_{\text{d(off)i}}$	current turn-off delay time	77/4.3.2 77/4.4.2
$t_{\text{d(off)v}}$	voltage turn-off delay time	77/4.3.2 77/4.4.2
$t_{\text{d(on)}}$	turn-on delay time	77/4.3.2
$t_{\text{d(on)i}}$	current turn-on delay time	77/4.3.2 77/4.4.2
$t_{\text{d(on)v}}$	voltage turn-on delay time	77/4.3.2 77/4.4.2
$t_{\text{dr}}$	delay time, reference or delay time for rising response or off-state recovery time	99/2.5.2.3  99/2.4.3  77/6.1.2
$t_{\text{d(ramp)}}$	ramp delay, steady-state	99/2.5.2.3
$t_{\text{dv}}$	voltage delay time	77/4.1.2
$t_{\text{en}}$	enable time	99/2.3.5 100/2.3.5



SYMBOL	TERM	REF.
$t_f$	fall time	77/2.2
		77/4.1.2
		77/4.3.2
		77/5.2.2
		77/5.4.2
		99/2.4.3
		100/2.3.14
	or	
	radiant-pulse fall time	77/5.3.2
$t_{fi}$	current fall time	77/4.1.2
		77/4.3.2
		77/4.4.2
$t_{fr}$	forward recovery time	77/3.1.2
$t_{fv}$	voltage fall time	77/4.1.2
		77/4.3.2
		77/4.4.2
$t_{gd}$	gate-controlled turn-on delay time	77/6.1.2
$t_{gf}$	gate-controlled fall time	77/6.1.2
$t_{gq}$	gate-controlled turn-off time	77/6.1.2
$t_{gr}$	gate-controlled turn-on rise time	77/6.1.2
$t_{gs}$	gate-controlled storage time	77/6.1.2
$t_{gt}$	gate-controlled turn-on time	77/6.1.2
$t_H$	hold-off interval	77/6.1.2
$t_h$	hold time	99/2.3.5
		100/2.3.7
THD	total harmonic distortion	99/2.4.10

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$T_J$	junction temperature	77/2.2 99/2.2.5
	or	
	virtual-junction temperature	77/2.2 99/2.2.5
	or	
	(virtual) junction temperature, steady-state	77/3.1.2
$T_{J(AV)}$	(virtual) junction temperature, mean value averaged over a full cycle	77/3.1.2
$T_{JFRM}$	(virtual) junction temperature, repetitive peak, forward current flowing	77/3.1.2
$T_{JFSM}$	(virtual) junction temperature, surge peak, forward current flowing	77/3.1.2
$T_{JM}$	(virtual) junction temperature, maximum (peak) total value	77/3.1.2
$T_{JRM}$	(virtual) junction temperature, repetitive peak	77/3.1.2
$T_{JRRM}$	(virtual) junction temperature, repetitive peak, reverse voltage applied	77/3.1.2
$T_{JRWM}$	(virtual) junction temperature, working peak, reverse voltage applied	77/3.1.2
$T_n$	noise temperature	77/2.2
		99/2.4.10
$t_{off}$	turn-off time	77/4.1.2
		77/4.3.2
		77/5.2.2
		77/5.3.2
		77/5.4.2
$t_{off(i)}$	current turn-off time	77/4.1.2
		77/4.3.2
		77/4.4.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$t_{\text{off}(v)}$	voltage turn-off time	77/4.1.2 77/4.3.2 77/4.4.2
$t_{\text{on}}$	turn-on time	77/4.1.2 77/4.3.2 77/5.2.2 77/5.3.2 77/5.4.2
$t_{\text{on}(i)}$	current turn-on time	77/4.1.2 77/4.3.2 77/4.4.2
$t_{\text{on}(v)}$	voltage turn-on time	77/4.1.2 77/4.3.2 77/4.4.2
$t_{\text{or}}$	overload recovery time	99/2.4.3
$t_{\text{os}}$	overshoot duration	77/7.1.2 77/7.3.2
$t_{\text{p}}$	pulse duration (formerly pulse time) or propagation delay	77/2.2 100/2.3.8
$t_{\text{pd}}$	propagation (delay) time	99/2.3.5
$t_{\text{pgq}}$	gate turn-off drive-pulse duration	77/6.1.2
$t_{\text{pgq}(cr)}$	critical gate turn-off drive-pulse duration	77/6.1.2
$t_{\text{pgt}}$	gate turn-on drive-pulse duration	77/6.1.2
$t_{\text{pgt}(cr)}$	critical gate turn-on drive-pulse duration	77/6.1.2
$t_{\text{PHL}}$	propagation (delay) time, high-to-low-level output	99/2.3.5
$t_{\text{PHZ}}$	disable time from the high level	99/2.3.5

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$t_{PLH}$	propagation (delay) time, low-to-high-level output	99/2.3.5
$t_{PLZ}$	disable time from the low level	99/2.3.5
$t_{PZH}$	enable time to the high level	99/2.3.5
$t_{PZL}$	enable time to the low level	99/2.3.5
$t_q$	circuit-commutated turn-off time	77/6.1.2
$t_r$	rise time	77/2.2 77/4.1.2 77/4.3.2 77/5.2.2 77/5.4.2 77/6.2.2 99/2.4.3 100/2.3.14
	or radiant-pulse rise time	77/5.3.2
$t_{rec}$	recovery time	100/2.3.10
$t_{res}$	response time	77/7.1.2 77/7.3.2
$t_{rf}$	refresh time interval time	100/2.3.11
$t_{ri}$	current rise time	77/4.1.2 77/4.3.2 77/4.4.2
$t_{RIL}$	load-transient recovery time	99/2.6.7
$t_{RIO}$	load-transient recovery time	99/2.6.7
$t_{rip}$	ripple time	99/2.4.3
$t_{rip(f)}$	ripple time for falling response	99/2.4.3

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$t_{\text{rip(r)}}$	ripple time for rising response	99/2.4.3
$t_{\text{rr}}$	reverse recovery time	77/3.1.2 77/6.1.2
$t_{\text{rv}}$	voltage rise time	77/4.1.2 77/4.3.2 77/4.4.2
$t_{\text{RVI}}$	line-transient recovery time	99/2.6.7
$t_{\text{s}}$	settling time or storage time	99/2.5.2.3 77/4.1.2 77/5.2.2 77/5.4.2
$t_{\text{sa}}$	settling time, analog	99/2.5.2.3
$t_{\text{sc}}$	short-circuit pulse duration	77/4.4.2
$t_{\text{sd}}$	settling time, (digital)	99/2.5.2.3
$t_{\text{si}}$	current storage time	77/4.1.2
$t_{\text{sk}}$	skew (time) (general)	99/2.3.5
$t_{\text{sk(b)}}$	skew (time), bank	99/2.3.5
$t_{\text{sk(HL)}}$	skew (time), high-to-low	99/2.3.5
$t_{\text{sk(i)}}$	skew (time), input	99/2.3.5
$t_{\text{sk(inv)}}$	skew (time), inverting	99/2.3.5
$t_{\text{sk(l)}}$	skew (time), limit	99/2.3.5
$t_{\text{sk(LH)}}$	skew (time), low-to-high	99/2.3.5
$t_{\text{sk(o)}}$	skew (time), output	99/2.3.5

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$t_{sk(p)}$	skew (time), pulse	99/2.3.5
$t_{sk(pp)}$	skew (time), part-to-part	99/2.3.5
$t_{sk(pr)}$	skew (time), process	99/2.3.5
$t_{sr}$	settling time, reference	99/2.5.2.3
$t_{s(ramp)}$	settling time to steady-state ramp	99/2.5.2.3
TSS	tangential signal sensitivity	77/3.2.2
$T_{stg}$	storage temperature	77/2.2
$t_{su}$	setup time	99/2.3.5 100/2.3.13
$t_{sv}$	voltage storage time	77/4.1.2
$t_t$	transition time	99/2.3.5 100/2.3.14
$t_{THL}$	transition time, high-to-low-level output	99/2.4.5
$t_{THZ}$	disable transition time from the high level	99/2.3.5
$t_{ti}$	current tail time	77/4.1.2 77/4.3.2
$t_{TLH}$	transition time, low-to-high-level output	99/2.3.5
$t_{TLZ}$	disable transition time from the low level	99/2.3.5
$t_{tot}$	total response time	99/2.4.3
$t_{tot(f)}$	total response time for falling response	99/2.4.3
$t_{tot(r)}$	total response time for rising response	99/2.4.3
$t_{TZH}$	disable transition time to the high level	99/2.3.5

SYMBOL	TERM	REF.
$t_{TZL}$	disable transition time to the low level	99/2.3.5
$t_v$	valid time	100/2.3.15
$T_{VJ}$	virtual-junction temperature (also $T_J$ )	77/2.2 99/2.2.5
$t_w$	average pulse duration (formerly pulse average time) or pulse duration (width)	77/2.2 99/2.3.5 100/2.3.9
$t_{xo}$	turn-off crossover time (Reserve symbol; preferred primary symbol is $t_c$ .)	77/4.1.2 77/4.3.2
$t_{xo(off)}$	turn-off crossover time	77/4.4.2
$t_{xo(on)}$	turn-on crossover time	77/4.4.2
$t_z$	current tail time or tail time	77/4.4.2 77/6.1.2
$T_0$	reference noise temperature	77/2.2 99/2.4.10
$V, v$	voltage	77/1.2.1 99/2.1.2.1
$V_{BB}$	base supply voltage, dc	77/4.1.2
$V_{BC}$	base-collector voltage, dc	77/4.1.2
$v_{bc}$	base-collector voltage, instantaneous value of alternating component	77/4.1.2
$V_{BE}$	base-emitter voltage, dc	77/4.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$v_{be}$	base-emitter voltage, instantaneous value of alternating component	77/4.1.2
$V_{BE(sat)}$	saturation voltage, base-emitter	77/4.1.2
$V_{(BO)}$	breakover voltage, dc value, no alternating component	77/6.1.2 77/7.2.2
$v_{(BO)}$	breakover voltage, instantaneous total value	77/6.1.2
$V_{(BR)}$	breakdown voltage, dc value, no alternating component	77/3.1.2 77/7.1.2 77/7.2.2
	or reverse breakdown voltage, dc value, no alternating component	77/6.1.2
$v_{(BR)}$	breakdown voltage, instantaneous total value	77/3.1.2
	or reverse breakdown voltage, instantaneous total value	77/6.1.2
$V_{(BR)CBO}$	breakdown voltage, collector-base, emitter open	77/4.1.2
$V_{(BR)CEO}$	breakdown voltage, collector-emitter, base open	77/4.1.2
$V_{(BR)CER}$	breakdown voltage, collector-emitter, resistance between base and emitter	77/4.1.2
$V_{(BR)CES}$	breakdown voltage, collector-emitter, base short-circuited to emitter	77/4.1.2
	or breakdown voltage, collector-emitter, gate short-circuited to emitter	77/4.4.2
$V_{(BR)CESR}$	collector-emitter breakdown voltage, gate short-circuited to emitter, reverse condition	77/4.4.2
$V_{(BR)CEV}$	breakdown voltage, collector-emitter, voltage between base and emitter	77/4.1.2



<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{(BR)CEX}$	breakdown voltage, collector-emitter, circuit between base and emitter	77/4.1.2
$V_{(BR)DSR}$	breakdown voltage, drain-source, resistance between gate and source	77/4.3.2
$V_{(BR)DSS}$	breakdown voltage, drain-source, gate short-circuited to source	77/4.3.2
$V_{(BR)DSV}$	breakdown voltage, drain-source, voltage between gate and source	77/4.3.2
$V_{(BR)DSX}$	breakdown voltage, drain-source, circuit between gate and source	77/4.3.2
$V_{(BR)EBO}$	breakdown voltage, emitter-base, collector open	77/4.1.2
$V_{(BR)ECO}$	breakdown voltage, emitter-collector, base open	77/4.1.2
$V_{(BR)E1E2}$	breakdown voltage, emitter-emitter	77/4.1.2
$V_{(BR)GSS}$	breakdown voltage, gate-source	77/4.3.2
$V_{(BR)GSSF}$	forward breakdown voltage, gate-source	77/4.3.2
$V_{(BR)GSSR}$	reverse breakdown voltage, gate-source	77/4.3.2
$V_{B2B1}$	interbase voltage	77/4.2.2
$V_C$	clamping voltage	77/7.1.2
$V_c$	clamping voltage	77/7.3.2
$V_{CB}$	collector-base voltage, dc	77/4.1.2
$v_{cb}$	collector-base voltage, instantaneous value of alternating component	77/4.1.2
$V_{CB(fl)}$	open-circuit voltage (floating potential), collector-base	77/4.1.2
$V_{CBO}$	collector-base voltage, emitter open	77/4.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{CC}$	collector supply voltage, dc	77/4.1.2
$V_{CC(DR)}$	data retention supply voltage	99/2.3.2
$V_{CE}$	collector-emitter voltage, dc	77/4.1.2 77/4.4.2
$v_{ce}$	collector-emitter voltage, instantaneous value of alternating component	77/4.1.2
$V_{CE(fl)}$	open-circuit voltage (floating potential), collector-emitter	77/4.1.2
$V_{CEO}$	collector-emitter voltage, base open	77/4.1.2
$V_{CE(ofs)}$	collector-emitter offset voltage	77/4.1.2
$V_{CE(on)}$	collector-emitter on-state voltage	77/4.4.2
$V_{CEO(sus)}$	sustaining voltage, collector-emitter, base open	77/4.1.2
$V_{CER}$	collector-emitter voltage, resistance between base and emitter	77/4.1.2
$V_{CER(sus)}$	sustaining voltage, collector-emitter, resistance between base and emitter	77/4.1.2
$V_{CES}$	collector-emitter voltage, base short-circuited to emitter	77/4.1.2
$V_{CE(sat)}$	saturation voltage, collector-emitter	77/4.1.2 77/4.4.2
$V_{CES(sus)}$	sustaining voltage, collector-emitter, base short-circuited to emitter	77/4.1.2
$V_{CEV}$	collector-emitter voltage, voltage between base and emitter	77/4.1.2
$V_{CEV(sus)}$	sustaining voltage, collector-emitter, voltage between base and emitter	77/4.1.2
$V_{CEX}$	collector-emitter voltage, circuit between base and emitter	77/4.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{\text{CEX(sus)}}$	sustaining voltage, collector-emitter, circuit between base and emitter	77/4.1.2
$V_{\text{CF}}$	clamping voltage	77/7.1.2
$V_{\text{CG}}$	collector-gate voltage, dc	77/4.4.2
$V_{\text{C}}/V_{\text{pm}}$	voltage clamping ratio	77/7.3.2
$V_{\text{C}}/V_{\text{WM}}$	voltage clamping ratio	77/7.1.2
$V_{\text{D}}$	off-state voltage, dc value, no alternating component	77/6.1.2 77/7.2.2
$v_{\text{D}}$	off-state voltage, instantaneous total value	77/6.1.2
$V_{\text{D(AV)}}$	off-state voltage, mean value averaged over a full cycle	77/6.1.2
$V_{\text{DD}}$	drain supply voltage, dc	77/4.3.2
$V_{\text{DD(DR)}}$	data retention supply voltage	99/2.3.2
$V_{\text{DG}}$	drain-gate voltage, dc	77/4.3.2
$V_{\text{DM}}$	off-state voltage, maximum (peak) total value	77/6.1.2
$V_{\text{DQM}}$	turn-off peak off-state voltage	77/6.1.2
$V_{\text{DRM}}$	repetitive peak off-state voltage	77/6.1.2 77/7.2.2
$V_{\text{D(RMS)}}$	off-state voltage, total rms value	77/6.1.2
$V_{\text{DS}}$	drain-source voltage, dc	77/4.3.2
$V_{\text{DSM}}$	nonrepetitive peak off-state voltage; peak transient off-state voltage	77/6.1.2
$V_{\text{DS(on)}}$	drain-source on-state voltage	77/4.3.2
$V_{\text{DU}}$	drain-substrate voltage, dc	77/4.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{DWM}$	peak working off-state voltage	77/6.1.2
$V_{EB}$	emitter-base voltage, dc	77/4.1.2
$v_{eb}$	emitter-base voltage, instantaneous value of alternating component	77/4.1.2
$V_{EB(fl)}$	open-circuit voltage (floating potential), emitter-base	77/4.1.2
$V_{EBO}$	emitter-base voltage, collector open	77/4.1.2
$V_{EB1(sat)}$	emitter saturation voltage	77/4.2.2
$V_{EC}$	emitter-collector voltage, dc	77/4.1.2
$v_{ec}$	emitter-collector voltage, instantaneous value of alternating component	77/4.1.2
$V_{EC(fl)}$	open-circuit voltage (floating potential), emitter-collector	77/4.1.2
$V_{EC(ofs)}$	emitter-collector offset voltage	77/4.1.2
$V_{EE}$	emitter supply voltage, dc	77/4.1.2
$ V_{E1E2(ofs)} $	magnitude of the emitter-emitter offset voltage	77/4.1.2
$V_F$	anode-cathode on-state voltage or forward voltage, dc value, no alternating component	77/6.2.2 77/2.2 77/3.1.2 77/7.2.2
$V_f$	forward voltage, rms value, no alternating component	77/3.1.2
$v_F$	forward voltage, instantaneous total value	77/3.1.2
$V_{F(AV)}$	forward voltage, mean value averaged over a full cycle	77/3.1.2
$V_{FG}$	forward gate voltage	77/6.1.2
$V_{FGB}$	on-state gate bias voltage	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{\text{FGT}}$	turn-on gate voltage, dc value, no alternating component	77/6.1.2
$V_{\text{FGTM}}$	turn-on gate current, maximum (peak) total value	77/6.1.2
$V_{\text{FM}}$	forward voltage, maximum (peak) total value	77/3.1.2
$V_{\text{F(RMS)}}$	forward voltage, total rms value	77/3.1.2
$V_{\text{FSnom}}$	full-scale (voltage), nominal	99/2.5.2.1
$V_{\text{FSR}}$	full-scale (voltage) range, (practical)	99/2.5.2.1
$V_{\text{FSRnom}}$	full-scale (voltage) range, nominal	99/2.5.2.1
$V_{\text{FSRpr}}$	full-scale (voltage) range, (practical)	99/2.5.2.1
$V_{\text{FS-}}$	full-scale (voltage), negative	99/2.5.2.1
$V_{\text{FS+}}$	full-scale (voltage), positive	99/2.5.2.1
$V_{\text{G}}$	gate voltage, dc value, no alternating component	77/6.1.2
$v_{\text{G}}$	gate voltage, instantaneous total value	77/6.1.2
$V_{\text{G(AV)}}$	gate voltage, mean value averaged over a full cycle	77/6.1.2
$V_{\text{GD}}$	gate nontrigger voltage	77/6.1.2
$V_{\text{GDM}}$	peak off-state gate voltage	77/7.2.2
$V_{\text{GE}}$	gate-emitter voltage, dc	77/4.4.2
$V_{\text{GEF}}$	forward gate-emitter voltage	77/4.4.2
$V_{\text{GER}}$	reverse gate-emitter voltage	77/4.4.2
$V_{\text{GE(th)}}$	gate-emitter threshold voltage	77/4.4.2
$V_{\text{GG}}$	gate supply voltage, dc	77/4.3.2
$V_{\text{GM}}$	gate voltage, maximum (peak) total value	77/6.1.2

SYMBOL	TERM	REF.
$V_{GQ}$	gate turn-off voltage, dc value, no alternating component	77/6.1.2
$v_{GQ}$	gate turn-off voltage, instantaneous total value	77/6.1.2
$V_{GQM}$	gate turn-off voltage, maximum (peak) total value	77/6.1.2
$V_{GS}$	gate-source voltage, dc	77/4.3.2
$V_{GSF}$	forward gate-source voltage	77/4.3.2
$V_{GS(off)}$	gate-source cutoff voltage	77/4.3.2
$V_{GSR}$	reverse gate-source voltage	77/4.3.2
$V_{GS(th)}$	gate-source threshold voltage	77/4.3.2
$V_{GT}$	gate trigger voltage, dc value, no alternating component	77/6.1.2
$v_{GT}$	gate trigger voltage, instantaneous total value	77/6.1.2
$V_{GTM}$	gate trigger voltage, maximum (peak) total value	77/6.1.2
$V_{GU}$	gate-substrate voltage, dc	77/4.3.2
$V_{hys}$	hysteresis voltage	99/2.3.2
$V_I$	inflection-point voltage or input voltage	77/3.3.2 99/2.6.3
$V_{IC}$	common-mode input voltage	99/2.4.4
$V_{ICR}$	common-mode input voltage range	99/2.4.4
$V_{ID}$	differential input voltage	99/2.4.4
$V_{IHA}$	high-level input voltage, "A" limit (also $V_{IHmax}$ )	99/2.3.2
$V_{IHB}$	high-level input voltage, "B" limit (also $V_{IHmin}$ )	99/2.3.2
$V_{IHmax}$	maximum high-level input voltage (also $V_{IHA}$ )	99/2.3.2

SYMBOL	TERM	REF.
$V_{IHmin}$	minimum high-level input voltage (also $V_{IHB}$ )	99/2.3.2
$V_{IK}$	input clamp voltage	99/2.2.4
$V_{ILA}$	low-level input voltage, "A" limit (also $V_{ILmax}$ )	99/2.3.2
$V_{ILB}$	low-level input voltage, "B" limit (also $V_{ILmin}$ )	99/2.3.2
$V_{ILmax}$	maximum low-level input voltage (also $V_{ILA}$ )	99/2.3.2
$V_{ILmin}$	minimum low-level input voltage (also $V_{ILB}$ )	99/2.3.2
$V_{IO}$	dc input-to-output voltage; isolation voltage or input offset voltage	77/5.4.2 99/2.4.4
$V_{IP}$	input protective voltage	99/2.2.4
$V_{IS}$	single-ended input voltage	99/2.4.4
$V_{ISR}$	single-ended input voltage range	99/2.4.4
$V_{IT}$	input threshold voltage	99/2.3.2
$V_{IT-}$	negative-going input threshold voltage	99/2.3.2
$V_{IT+}$	positive-going input threshold voltage	99/2.3.2
$V_I - V_O$	input-output voltage differential	99/2.6.3
$V_K$	knee voltage	77/3.5.2
$V_L$	limiting voltage	77/3.5.2
$V_{m(ac)}$	rated rms voltage	77/7.3.2
$V_{m(dc)}$	rated dc voltage	77/7.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_n$	detector noise voltage or noise voltage, equivalent input or output noise voltage	77/5.2.2  77/2.2  99/2.6.5
$V_{N(ac)}$	peak nominal voltage	77/7.3.2
$V_{N(dc)}$	nominal voltage	77/7.3.2
$V_{N(PP)}$	peak-to-peak noise voltage	99/2.6.5
$V_O$	output voltage or quiescent output voltage	99/2.6.3  99/2.4.5
$V_{OB1}$	base-1 peak voltage	77/4.2.2
$V_{OC}$	common-mode output voltage	99/2.4.5
$V_{OD}$	differential output voltage	99/2.4.5
$V_{OH}$	high-level output voltage	99/2.3.2
$V_{OK}$	output clamp voltage	99/2.2.4
$V_{OL}$	low-level output voltage	99/2.3.2
$V_{OM}$	maximum output voltage swing or peak pulse output voltage	99/2.4.5  77/6.2.2
$V_{OO}$	output offset voltage	99/2.4.5
$V_{O(PP)}$	maximum peak-to-peak output voltage swing	99/2.4.5
$V_{OS}$	single-ended output voltage	99/2.4.5
$V_{os}$	voltage overshoot	77/7.1.2
$V_{os}$	voltage overshoot	77/7.3.2



<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_P$	peak-point voltage	77/3.3.2 77/4.2.2 77/6.2.2
$V_{pm}$	rated recurrent peak voltage	77/7.3.2
$V_{PP}$	projected peak-point voltage	77/3.3.2
$V_P - V_S$	offset voltage	77/6.2.2
$V_{Q(SP)}$	turn-off (off-state) voltage spike	77/6.1.2
$V_R$	reverse voltage, dc value, no alternating component	77/2.2 77/3.1.2 77/6.1.2 77/7.2.2
$V_r$	reverse voltage, rms value of alternating component	77/3.1.2
$v_R$	reverse voltage, instantaneous total value	77/3.1.2 77/6.1.2
$V_{R(AV)}$	reverse voltage, mean value averaged over a full cycle	77/3.1.2 77/6.1.2
$V_{RC(TO)}$	reverse-conducting threshold voltage	77/6.1.2
$V_{ref}$	reference voltage	99/2.6.3
$V_{RG}$	reverse gate voltage	77/6.1.2
$V_{RGB}$	off-state gate bias voltage	77/6.1.2
$V_{RGQ}$	turn-off gate voltage, dc value, no alternating component	77/6.1.2
$v_{RGQ}$	turn-off gate voltage, instantaneous total value	77/6.1.2
$V_{RGQB}$	turn-off gate bias voltage	77/6.1.2
$V_{RGQM}$	peak turn-off gate voltage	77/6.1.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$V_{RM}$	reverse voltage, maximum (peak) total value	77/3.1.2 77/6.1.2
$V_{RRM}$	repetitive peak reverse voltage	77/3.1.2 77/6.1.2 77/7.2.2
$V_{R(RMS)}$	reverse voltage, total rms value	77/3.1.2 77/6.1.2
$V_{RSM}$	nonrepetitive peak reverse voltage or nonrepetitive peak reverse voltage; peak transient reverse voltage	77/3.1.2 77/6.1.2
$V_{RT}$	reach-through voltage	77/4.1.2
$V_{RWM}$	peak working reverse voltage or crest working reverse voltage; peak working reverse voltage	77/3.1.2 77/6.1.2
$V_S$	detector signal voltage, dc or regulator voltage or switching voltage or test supply voltage	77/5.2.2 77/3.5.2 77/7.2.2 77/6.2.2
$V_s$	detector signal voltage, rms value of ac component	77/5.2.2
$V_{SS}$	source supply voltage, dc	77/4.3.2
$V_{SU}$	source-substrate voltage, dc	77/4.3.2
VSWR	voltage-standing-wave ratio	77/3.2.2
$V_T$	on-state voltage, dc value, no alternating component	77/6.1.2 77/7.2.2

SYMBOL	TERM	REF.
$v_T$	on-state voltage, instantaneous total value	77/6.1.2
$V_{T(AV)}$	on-state voltage, mean value averaged over a full cycle	77/6.1.2
$V_{TM}$	on-state voltage, maximum (peak) total value	77/6.1.2
$V_{(TO)}$	on-state threshold voltage [International Electrotechnical Commission alternative symbol for $V_{T(TO)}$ ] or threshold voltage, dc value, no alternating component	77/6.1.2 77/3.1.2
$v_{(TO)}$	threshold voltage, instantaneous total value	77/3.1.2
$V_{T(RMS)}$	on-state voltage, total rms value	77/6.1.2
$V_{T(TO)}$	on-state threshold voltage, dc value, no alternating component	77/6.1.2
$v_{T(TO)}$	on-state threshold voltage, instantaneous total value	77/6.1.2
$V_V$	valley-point voltage	77/3.3.2 77/4.2.2 77/6.2.2
$V_{WM}$	working peak voltage	77/7.1.2
$V_{WM(RMS)}$	working rms voltage	77/7.1.2
$V_x$	varistor voltage	77/7.3.2
$V_Z$	regulator voltage, dc; reference voltage, dc	77/3.4.2
$V_{ZM}$	regulator or reference voltage, dc at maximum rated current	77/3.4.2
$V_{ZS-}$	zero scale (voltage), negative	99/2.5.2.1
$V_{ZS+}$	zero scale (voltage), positive	99/2.5.2.1
$V(\lambda)$	spectral luminous efficiency	77/5.3.2

SYMBOL	TERM	REF.
$w$	luminous density or radiant density	77/5.3.2 77/5.3.2
$w_e$	radiant density	77/5.3.2
$W_{tm}$	rated single-pulse transient energy	77/7.3.2
$w_v$	luminous density	77/5.3.2
$Y, y$	admittance	77/1.2.1
$y_{fb}$	small-signal short-circuit forward transfer admittance, common-base	77/4.1.2
$y_{fc}$	small-signal short-circuit forward transfer admittance, common-collector	77/4.1.2
$y_{fe}$	small-signal short-circuit forward transfer admittance, common-emitter	77/4.1.2
$y_{fs}$	small-signal short-circuit forward transfer admittance, common-source	77/4.3.2
$y_{fs(imag)}$	small-signal forward transfer susceptance, common-source (also $b_{fs}$ )	77/4.3.2
$y_{fs(real)}$	small-signal forward transfer conductance, common-source (also $g_{fs}$ )	77/4.3.2
$y_{ib}$	small-signal short-circuit input admittance, common-base	77/4.1.2
$y_{ic}$	small-signal short-circuit input admittance, common-collector	77/4.1.2
$y_{ie}$	small-signal short-circuit input admittance, common-emitter	77/4.1.2
$y_{ie(imag)}$	imaginary part of the small-signal short-circuit input admittance, common-emitter	77/4.1.2
$y_{ie(real)}$	real part of the small-signal short-circuit input admittance, common-emitter	77/4.1.2

SYMBOL	TERM	REF.
$y_{is}$	small-signal short-circuit input admittance, common-source	77/4.3.2
$y_{is(imag)}$	small-signal input susceptance, common-source (also $b_{is}$ )	77/4.3.2
$y_{is(real)}$	small-signal input conductance, common-source (also $g_{is}$ )	77/4.3.2
$y_{ob}$	small-signal short-circuit output admittance, common-base	77/4.1.2
$y_{oc}$	small-signal short-circuit output admittance, common-collector	77/4.1.2
$y_{oe}$	small-signal short-circuit output admittance, common-emitter	77/4.1.2
$y_{oe(imag)}$	imaginary part of the small-signal short-circuit output admittance, common-emitter	77/4.1.2
$y_{oe(real)}$	real part of the small-signal short-circuit output admittance, common-emitter	77/4.1.2
$y_{os}$	small-signal short-circuit output admittance, common-source	77/4.3.2
$y_{os(imag)}$	small-signal output susceptance, common-source (also $b_{os}$ )	77/4.3.2
$y_{os(real)}$	small-signal output conductance, common-source (also $g_{os}$ )	77/4.3.2
$y_{rb}$	small-signal short-circuit reverse transfer admittance, common-base	77/4.1.2
$y_{rc}$	small-signal short-circuit reverse transfer admittance, common-collector	77/4.1.2
$y_{re}$	small-signal short-circuit reverse transfer admittance, common-emitter	77/4.1.2
$y_{rs}$	small-signal short-circuit reverse transfer admittance, common-source	77/4.3.2
$y_{rs(imag)}$	small-signal reverse transfer susceptance, common-source (also $b_{rs}$ )	77/4.3.2
$y_{rs(real)}$	small-signal reverse transfer conductance, common-source (also $g_{rs}$ )	77/4.3.2

<b>SYMBOL</b>	<b>TERM</b>	<b>REF.</b>
$Z, z$	impedance	77/1.2.1 99/2.1.2.1
$z_{ic}$	common-mode input impedance	99/2.4.7
$z_{id}$	differential input impedance	99/2.4.7
$z_{if}$	intermediate-frequency impedance	77/3.2.2
$z_{is}$	single-ended input impedance	99/2.4.7
$z_k$	knee impedance	77/3.5.2
$z_m$	modulator-frequency load impedance	77/3.2.2
$z_o$	output impedance	99/2.6.6
$z_{od}$	differential output impedance	99/2.4.7
$z_{os}$	single-ended output impedance	99/2.4.7
$z_{rf}$	radio-frequency impedance	77/3.2.2
$ZS$	zero scale	99/2.5.2.1
$z_s$	regulator impedance	77/3.5.2
$ZS-$	zero scale, negative	99/2.5.2.1
$ZS+$	zero scale, positive	99/2.5.2.1
$Z_{th}$	(transient) thermal impedance	77/2.2
$Z_{thJA}$	(transient) thermal impedance, junction-to-ambient	77/2.2
$Z_{thJC}$	(transient) thermal impedance, junction-to-case	77/2.2
$Z_{thJL}$	(transient) thermal impedance, junction-to-lead	77/2.2
$Z_{thJM}$	(transient) thermal impedance, junction-to-mounting surface	77/2.2

SYMBOL	TERM	REF.
$z_v$	video impedance	77/3.2.2
$Z_x$	dynamic impedance	77/7.3.2
$z_z$	regulator or reference impedance, small-signal at $I_{ZT}$	77/3.4.2
$z_{zk}$	regulator or reference impedance, small-signal, at $I_{ZK}$	77/3.4.2
$Z_\theta$	(transient) thermal impedance	77/2.2
$Z_{\theta JA}$	(transient) thermal impedance, junction-to-ambient	77/2.2
$Z_{\theta JC}$	(transient) thermal impedance, junction-to-case	77/2.2
$Z_{\theta JL}$	(transient) thermal impedance, junction-to-lead	77/2.2
$Z_{\theta JM}$	(transient) thermal impedance, junction-to-mounting surface	77/2.2
$\alpha_C$	temperature coefficient of capacitance	77/3.6.2
$\alpha_{IB}$	temperature coefficient of input bias current	99/2.4.9
$\alpha_{IO}$	temperature coefficient of input offset current	99/2.4.9
$\alpha_{IS}$	temperature coefficient of regulator current	77/3.5.2
$\alpha_{V(BR)}$	temperature coefficient of breakdown voltage	77/7.1.2 77/7.3.2
$\alpha_{VIO}$	temperature coefficient of input offset voltage	99/2.4.9
$\alpha_{VO}$	temperature coefficient of output voltage	99/2.6.2
$\alpha_{VZ}$	temperature coefficient of regulator voltage	77/3.4.2
$\Delta E_{(t)}$	instability, long-term	99/2.5.2.4
$\Delta E_{(\Delta t)}$	instability, long-term	99/2.5.2.4
$\Delta f$	(see $B_n$ ) noise equivalent bandwidth	77/5.2.2

SYMBOL	TERM	REF.
$\Delta I_{\text{FSS}}$	asymmetry, full-scale (current)	99/2.5.2.2
$\Delta I_{\text{O(op)}}$	compliance, current	99/2.5.2.2
$\Delta I_{\text{S}}$	regulator-current variation	77/3.5.2
$ \Delta V_{\text{E1E2(ofs)}}  \Delta I_{\text{B}}$	magnitude of the change in offset voltage with base current	77/4.1.2
$ \Delta V_{\text{E1E2(ofs)}}  \Delta T_{\text{A}}$	magnitude of the change in offset voltage with temperature	77/4.1.2
$\Delta V_{\text{FSS}}$	asymmetry, full-scale (voltage)	99/2.5.2.2
$\Delta V_{\text{O(op)}}$	compliance, voltage	99/2.5.2.2
$\Delta V_{\text{O}(\Delta \text{IL})}$	load regulation	99/2.6.2
$\Delta V_{\text{O}(\Delta \text{IO})}$	load regulation	99/2.6.2
$\Delta V_{\text{O}(\Delta \text{t})}$	output voltage drift	99/2.6.2
$\Delta V_{\text{O}(\Delta \text{VI})}$	line regulation	99/2.6.2
$\Delta V_{\text{Z(temp)}}$	reference-voltage variation with temperature	77/3.4.2
$\Delta \lambda$	spectral bandwidth	77/5.3.2
$\delta$	charge-transfer loss	99/2.7.3
$\varepsilon$	charge-transfer inefficiency (also CTI) or emissivity	99/2.7.3 77/5.3.2
$\eta$	charge-transfer efficiency (also CTE) or efficiency or intrinsic standoff ratio	99/2.7.3 77/3.6.2 77/4.2.2
$\theta$	Obsolete symbol; use $R_{\theta}$ or $R_{\text{th}}$ for thermal resistance or $Z_{\theta}$ or $Z_{\text{th}}$ for transient thermal impedance.	



SYMBOL	TERM	REF.
$\theta_{HI}$	half-intensity beam angle	77/5.3.2
$\lambda_p$	peak-emission wavelength	77/5.3.2
$\tau$	time constant	77/5.1.2
$\Phi$	luminous flux or radiant flux	77/5.1.2 77/5.1.2
$\Phi_e$	radiant flux	77/5.1.2
$\Phi_v$	luminous flux	77/5.1.2
$\phi_m$	phase margin	99/2.4.3

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**Annex A (informative) Subjects referenced**

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**JEDEC Standard No. 77-B Discrete Semiconductors and Optoelectronic Devices**

77/1	Letter symbols and abbreviations
1.1	Definitions of letter symbols and abbreviations
1.2	Criteria and conventions for letter symbols and abbreviations
77/2	General
2.1	General terms and definitions
2.2	General letter symbols, terms, and definitions
77/3	Diodes and rectifiers
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3.2	Microwave diodes
3.3	Tunnel diodes and backward diodes
3.4	Voltage-regulator and voltage-reference diodes
3.5	Current-regulator diodes
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77/4	Transistors
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77/5	Optoelectronic devices
5.1	Optoelectronic devices, general
5.2	Photosensitive devices
5.3	Photoemitters
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77/6	Thyristors and programmable unijunction transistors
6.1	Thyristors
6.2	Programmable unijunction transistors
77/7	Transient voltage suppressors; surge protective devices
7.1	Avalanche-junction transient voltage suppressors
7.2	Thyristor surge protective devices
7.3	Varistors; varistor surge protective devices

**Annex A (informative) Subjects referenced (cont'd)****JEDEC Standard No. 99-A Microelectronic Devices**

99/2.1	Letter symbols and abbreviations
2.1.1	Definitions of letter symbols and abbreviations
2.1.2	Criteria and conventions for letter symbols and abbreviations
99/2.2	Terms applicable to all integrated circuits
99/2.3	Digital integrated circuits
99/2.4	Linear (analog) integrated circuits
99/2.5	Interface integrated circuits
2.5.2	Analog-to-digital converters and digital-to-analog converters
99/2.6	Voltage regulator integrated circuits
99/2.7	Charge-transfer devices

**JEDEC Standard No. 100-B Microcomputers and Memory Integrated Circuits**

100/2	Time interval terms, definitions, and letter symbols
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**Annex B (informative) Term-to-symbol list**


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Whereas the main body of this publication, pages 1 through 59, is organized by symbol or abbreviation, this annex is provided as an aid to determining what symbol should be used and is organized by term. It generally does not show the context within which a symbol is valid, and several common primary symbols (particularly  $I$ ,  $i$ ;  $P$ ,  $p$ ;  $T$ ,  $t$ ; and  $V$ ,  $v$ ) are shown without the subscripts and/or other additions that normally accompany them. Therefore, after locating a symbol here, the user should refer to the main body for additional forms of the symbol and other information.

<b>Term</b>	<b>Symbol or abbreviation</b>
admittance	$Y, y$
amplification	$A$
area, detector	$A_D$
bandwidth	$B, BW$
capacitance	$C$
charge, electric	$Q, q$
charge-transfer efficiency	$\eta$ , CTE
charge-transfer inefficiency	$\varepsilon$ , CTI
charge-transfer loss	$\delta$
clamping factor	CF
collector-base time constant	$r_b'C_c$
common-mode rejection ratio	$k_{CMR}$ , CMRR
conductance	$g$
conversion loss	$L_c$
conversion rate	$f_c$
critical rate of rise of commutating voltage	$dv(\text{com})/dt$ , $(dv_{D(\text{com})}/dt)_{cr}$
critical rate of rise of off-state voltage	$dv/dt$ , $(dv_D/dt)_{cr}$
critical rate of rise of on-state current	$(di_T/dt)_{cr}$
current	$I, i$
current transfer ratio	$h_F$
dark current density, average	$J_D$
delay, propagation	$t$
detectivity	$D^*$
detector area	$A_D$
duration, pulse	$t$
efficiency	$\eta$
emissivity	$\varepsilon$
energy	$E$
error	$E$
exitance, luminous	$M_v, M$

**Annex B (informative) Term-to-symbol list (cont'd)**

<b>Term</b>	<b>Symbol or abbreviation</b>
exitance, radiant	$M_e, M$
figure of merit (of a microwave diode)	$M$
figure of merit (of a varactor diode)	$Q$
flux, luminous	$\Phi_v, \Phi$
flux, radiant	$\Phi_e, \Phi$
forward transmission coefficient	$s_f, s_{21}$
frequency	$f$
full-scale	FS
gain, power	$G$
glitch area	GA
glitch energy	GE
half-intensity beam angle	$\theta_{HI}$
illuminance	$E_v, E$
illuminance responsivity	$N_v, N$
illuminance sensitivity	$S_v, S$
illumination	$E_v, E$
impedance	$Z, z$
inductance	$L$
input impedance, small-signal short-circuit	$h_i$
input reflection coefficient	$s_i, s_{11}$
input resistance, static	$h_I$
intensity, luminous	$I_v, I$
intensity, radiant	$I_e, I$
intrinsic standoff ratio	$\eta$
irradiance	$E_e, E$
irradiance responsivity	$N_e, N$
irradiance sensitivity	$S_e, S$
loss, power	$P$
loss, switching	$E$
luminance	$L_v, L$
luminous density	$w_v, w$
luminous efficacy	$K$
luminous energy	$Q_v, Q$
luminous exitance	$M_v, M$
luminous flux	$\Phi_v, \Phi$
luminous intensity	$I_v, I$
luminous responsivity	$R_v, R$
luminous sensitivity	$S_v, S$

**Annex B (informative) Term-to-symbol list (cont'd)**

<b>Term</b>	<b>Symbol or abbreviation</b>
noise factor	$F$
noise figure	$F$
output admittance, small-signal short-circuit	$h_o$
output noise ratio	$N_r$
output reflection coefficient	$s_o, s_{22}$
overshoot duration	$t_{os}$
pedestal (error)	$E_p$
phase margin	$\phi_m$
power	$P$
propagation (delay) (time)	$t$
pulse duration	$t$
radiance	$L_e, L$
radiant energy	$Q_e, Q$
radiant exitance	$M_e, M$
radiant flux	$\Phi_e, \Phi$
radiant intensity	$I_e, I$
radiant responsivity	$R_e, R$
radiant sensitivity	$S_e, S$
radiant density	$w_e, w$
resistance	$R, r$
responsivity, illuminance	$N_v, N$
responsivity, irradiance	$N_e, N$
responsivity, luminous	$R_v, R$
responsivity, radiant	$R_e, R$
reverse recovery softness factor	RRSF
reverse transmission coefficient	$s_r, s_{12}$
reverse voltage transfer ratio, small-signal open-circuit	$h_r$
sensitivity, illuminance	$S_v, S$
sensitivity, irradiance	$S_e, S$
sensitivity, luminous	$S_v, S$
sensitivity, radiant	$S_e, S$
short-circuit safe operating area	SCSOA
short-circuit withstand time	SCWT
skew (time)	$t_{sk}$
slew rate	$S_{OM}, SR$
supply voltage rejection ratio	$k_{SVR}$
supply voltage sensitivity	$k_{SVS}$

**Annex B (informative) Term-to-symbol list (cont'd)**

<b>Term</b>	<b>Symbol or abbreviation</b>
susceptance	$b$
switching loss	$E$
switching safe operating area	SwSOA
tangential sensitivity	$S_T$
tangential signal sensitivity	TSS
temperature	$T$
temperature coefficient	$\alpha$
thermal resistance	$R_{th}, R_{\theta}$
time	$t$
time constant	$\tau$
total harmonic distortion	THD
transconductance	$g$
transfer inefficiency product	$n\epsilon$
voltage	$V, v$
voltage-standing-wave ratio	VSWR
wavelength	$\lambda$
zero scale	ZS

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**Annex C (informative) Units of measurement**


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Symbol	Unit§	Note
A	ampere†	
Å	angstrom	$1 \text{ Å} = 10^{-10} \text{ m} = 10^{-4} \text{ μm} = 0.1 \text{ nm}$
C	coulomb†	
cd	candela†	$1 \text{ cd} = 1 \text{ lm/sr}$
cd/ft <sup>2</sup>	candela per square foot	$1 \text{ cd/ft}^2 = 10.76391 \text{ cd/m}^2$
cd/m <sup>2</sup>	candela per square meter†	
dB	decibel	Not used with other metric multipliers
F	farad†	
fc	footcandle	$1 \text{ fc} = 1 \text{ lm/ft}^2 = 10.76391 \text{ lx}$
fL	footlambert	$1 \text{ fL} = (1/\pi) \text{ cd/ft}^2 = 3.426259 \text{ cd/m}^2$
ft	foot	$1 \text{ ft} = 0.3048 \text{ m (exactly)}$
H	henry†	
Hz	hertz†	
in	inch	$1 \text{ in} = 2.54 \text{ cm (exactly)}$
J	joule†	
K	kelvin†	Formerly °K, degree Kelvin
L	lambert	$1 \text{ L} = 3183.099 \text{ cd/m}^2$
lm	lumen†	
lx	lux†	$1 \text{ lx} = 1 \text{ lm/m}^2$
m	meter†	
mho	mho	$1 \text{ mho} = 1 \text{ S}$
mil	mil	$1 \text{ mil} = 10^{-3} \text{ in} = 0.0254 \text{ mm (exactly)}$
nt	nit	$1 \text{ nt} = 1 \text{ cd/m}^2$
ph	phot	$1 \text{ ph} = 1 \text{ lm/cm}^2$
S	siemens†	
s	second†	
sb	stilb	$1 \text{ sb} = 1 \text{ cd/cm}^2$
st	steradian†	
V	volt†	
W	watt†	
μ	micron	The equivalent, micrometer (μm), is preferred
Ω	ohm†	
°C	degree Celsius†	Formerly degree centigrade
°F	degree Fahrenheit	

† International System (SI) units.

§ See ANSI/IEEE/ASTM SI 10, *Standard for Use of the International System of Units (SI): The Modern Metric System*.



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**Annex D (informative) Metric multipliers**


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Many of the symbols in annex C can be combined with the metric multipliers that follow.

**Sorted by symbol**

<b>Symbol</b>	<b>Prefix</b>	<b>Multiple</b>
a	atto	$10^{-18}$
c	centi	$10^{-2}$
d	deci	$10^{-1}$
da	deka	10
f	femto	$10^{-15}$
G	giga	$10^9$
h	hecto	$10^2$
k	kilo	$10^3$
M	mega	$10^6$
m	milli	$10^{-3}$
n	nano	$10^{-9}$
p	pico	$10^{-12}$
T	tera	$10^{12}$
μ	micro	$10^{-6}$

**Sorted by multiple**

<b>Multiple</b>	<b>Symbol</b>	<b>Prefix</b>
$10^{-18}$	a	atto
$10^{-15}$	f	femto
$10^{-12}$	p	pico
$10^{-9}$	n	nano
$10^{-6}$	μ	micro
$10^{-3}$	m	milli
$10^{-2}$	c	centi
$10^{-1}$	d	deci
10	da	deka
$10^2$	h	hecto
$10^3$	k	kilo
$10^6$	M	mega
$10^9$	G	giga
$10^{12}$	T	tera

See ANSI/IEEE/ASTM SI 10, *Standard for Use of the International System of Units (SI): The Modern Metric System*.

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**Annex E (informative) Differences between JEP104C.01 and JEP104C**

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This table briefly describes most of the changes made to entries that appear in this publication, JEP104C.01, compared to its predecessor, JEP104C (June 2002). If the change to a concept involves any words added or deleted, it is included. Punctuation changes may not be included.

<b>Page</b>	<b>Description of change</b>
Page 66	Corrected minor editorial items as follows: Spelling: ‘arnpere’ to ‘ampere’ Spelling: ‘stub’ to ‘stilb’ Correction: ‘steradian t’ to ‘steradian†’



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