世界運算放大器

IC特性手册

OP. AMP. IC DATA AND COMPARISION TABLES

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内部交流

G15/12世界运算放大器IC特性手册

（英3——5/40）

Contents

NOTES ON USE

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Location of a comparison type:
The basic type is to be found in section 2, which is arranged in alpha-numerical sequence. The required comparison type is located in the appropriate column or, as indicated in the column, in the corresponding group in section 5. If no comparison type can be found in the same line in this group another type with a different free-air temperature range or a different casing can be selected according to its desired application.

Selecting an OP or KOP according to pin assignment:
As manufacturers have exhausted practically all pin assignment options it has not been possible to spare users the trouble of glancing through section 3 (pin assignments). This section contains brief descriptions and the appropriate types, to which the user may refer in section 2 (arranged alphabetically) in order to select a type with the suitable specification for the problem in hand.

Selecting an OP or KOP according to the characteristics:
In this case also it is advisable to narrow down the choice of OPs by referring to the brief descriptions in section 3 (Breitband-OP for high unity gain, LP-OP for low-power, OTA for gain-adjust, etc.). Further details on those types which can be taken in consideration can be checked in section 2, which is arranged alphabetically.

使 用 说 明

1．怎样查找代换型号

在本书第二部分性能数据及代换型号表里，所有基本型号按字母数字顺序排列。在该表的代换型号一栏中，或者直接给出代换型号，或者指出应到第五部分那一个组别去找。在第五部分各型号按性能分成组列表，在表中同一横行中所列出的各型号均可互相替换。如果同一行中没有其他型号，就只好根据性能和使用条件另选一种使用温度范围或封装管出脚不同的型号了。

2．按照管出脚排列选择运算放大器或比较器

由于同一种管脚排列有多种用途不同的型号，因此查找时必须将第三部分（管出脚排列）全部查过。在本部分里给出用途简述及相应的型号，可参照本书第二部分找出合适的一种。

3．按照性能选择运算放大器或比较器

先根据第三部分的用途简述初步选出一些型号，再从第二部分查出其详细特性以决定最合适的一种。

ABBREVIATIONS

ABBREVIATIONS OF MANUFACTURERS

ABBREVIATIONS

B. . .	case outline drawing nr. . . .
Boos	booster output
ch	chip
CMRR	common mode rejection ratio
D_{CL}	pin for clamping diode
E	non-inverting input
$\bar{E}$	inverting input
E+	symmetrical input, positive
E_	symmetrical input, negative
E_{KF}	input for frequency compensation
E_V	input for gain-adjust
f_P	full power bandwidth
f_T	unity gain bandwidth
FET	field effect transistor
g	forward conductance
GND	ground
HIREL	high reliability
h–Ω	high-impedance
I_{ABC}	gain-adjust current
I_{ER}	input bias current
I_{E0}	input offset current
I_Q	output current
I_R	input for bias current adjustment
IC	integrated circuit
K_F	frequency compensation
K_{FE}	input frequency compensation
K_{FQ}	output frequency compensation
KOP	comparator
LP	low-power
n–Ω	low-impedance
NC	no internal connection
OP	operational amplifier
OS	overshoot

OTA	transconductance operational amplifier
P . . .	pin assignment drawing nr. . . .
P_D	bias power dissipation
P_{tot}	total power dissipation
P_Q	output power
PSRR	positive supply voltage rejection ratio
Q	asymmetrical output
Q_+	symmetrical output, positive
Q_-	symmetrical output, negative
Q_{KF}	output for frequency compensation
R_E	intput resistance
R_L	load resistance
R_Q	output resistance
SR	slew-rate
Stabi	voltage-regulator
strobe	release input
t_E	recovery time
t_K	short circuit time
T_U	free air temperature range
U_{DE}	differential input voltage
U_{DS}	differential supply voltage
U_E	input voltage
U_{E0}	input offset voltage
U_S	supply voltage
U_{S+}	positive supply voltage
U_{S-}	negative supply voltage
U_Q	output voltage
V_I	differential current amplification
V_U	full power response
ZA	internal connection
Z_E	input impedance
Z_Q	output impedance
α_E	average temperature-coefficient of offset voltage
α_I	average temperature-coefficient of offset current
0-SpA	balance

ABBREVIATIONS OF MANUFACTURERS

AEG	AEG / Telefunken
AMD	Advanced Mikro Devices
AND	Analog Devices
FCH	Fairchild
HFO	Halbleiterwerk Frankfurt / Oder
ISI	Intersil
ITT	ITT
MIC	Microsystems
MOT	Motorola
NSC	National Semiconductors Corporation
RAY	Raytheon
RCA	RCA
RIZ	Riz / Jugoslawien
SES	Sescosem
SGS	Ates / SGS
SIE	Siemens
SIG	Signetics
SIL	Silicon General
SOL	Solitron
SPR	Sprague
TDY	Teledyne
TES	Tesla / UdSSR
TIX	Texas Instruments
TRA	Transitron
VAL	Valvo

SECTION 1

OPs AND KOPs – COMMON RELATIONSHIPS

一般关系（运算放大器和比较器）

1

OPs AND KOPs – COMMON RELATIONSHIPS

1. Dependence of the output on the differential input voltage:

a) **OPs**

After overloading U_Q remains in the saturation range until U_{DE} falls to a minimum of 0,12 mV and then returns to within the nominal voltage range after the recovery time t_E has elapsed.

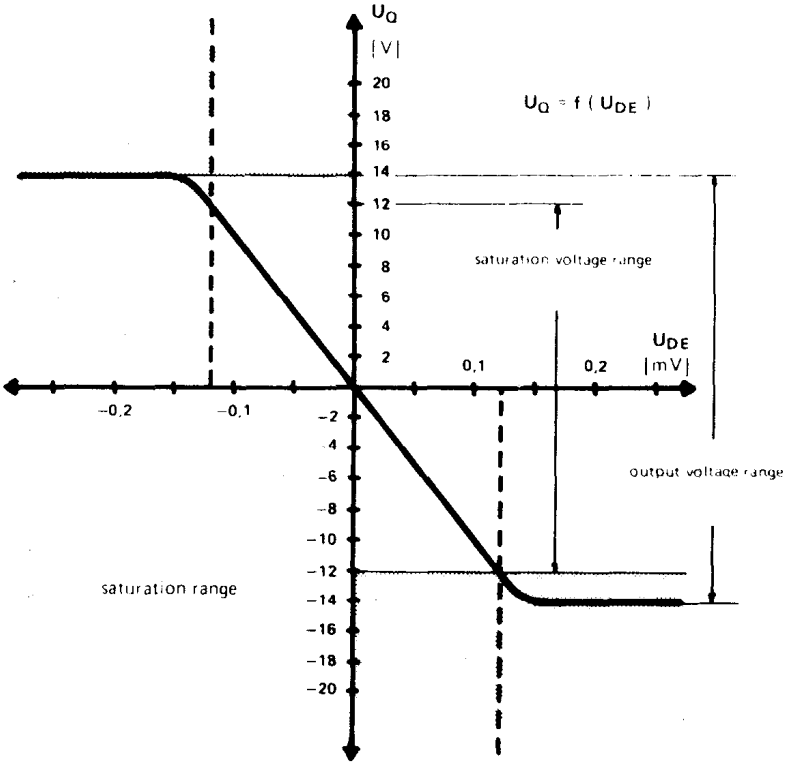

Fig. 1a: Relationship between input / output voltage for OP (inverting) at 100 dB voltage gain.

b) **KOPs**

In the case of the KOP the output voltage reacts quicker to changes in the input voltage. It is not — as in the case of the OP — proportional to the input voltage but tilts when an externally adjustable threshold value is reached. By means of an external connection with a clamping diode (at terminal D_{CL}) the output voltage is prevented from entering the saturation range which eliminates recovery time t_E.

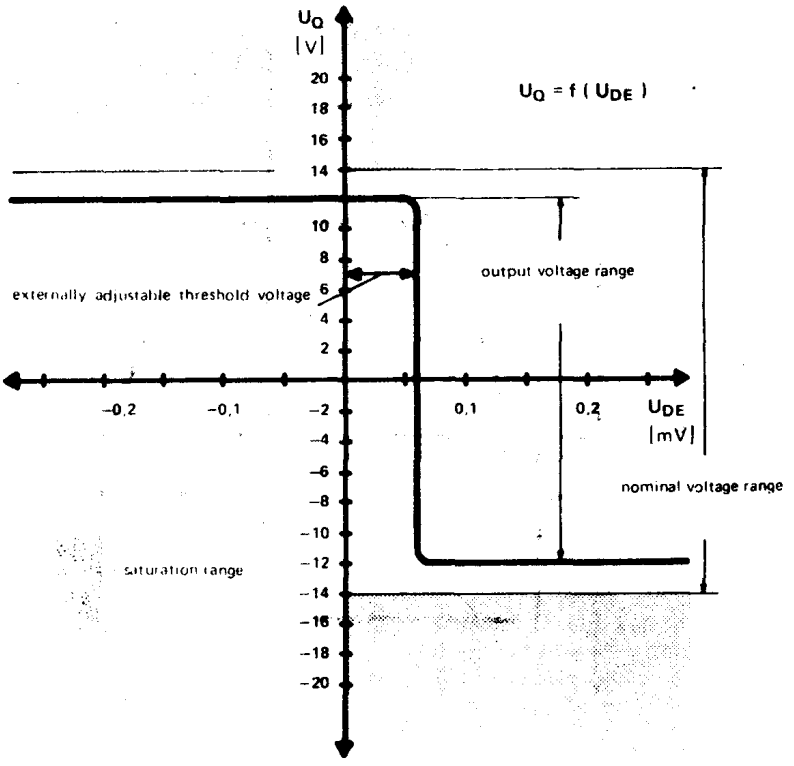

Fig. 1b: Relationship between input / output voltage for KOP with external connection via clamping diode.

2. Dependence of output voltage on time:

$$SR = U_{Qmax} \cdot 2\pi f_P$$

The slew-rate indicates the rise speed of the output signal when the differential input signal changes in rectangular form. If not given, it is calculated from the above relationship.

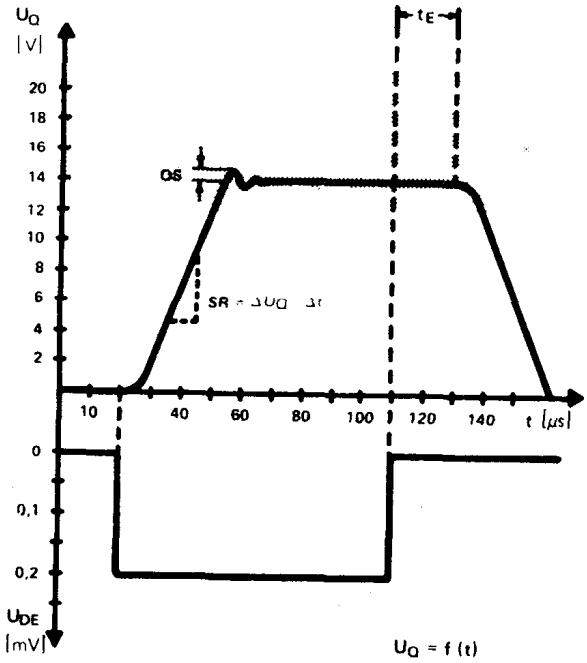

Fig. 2: Output voltage as a function of time (full output voltage at unity gain, OS = 10% and SR = 0,5 V/µs)