AN1393(AN6914), AN1393S(AN6914S),AN6913

Dual Comparators

■ Outline

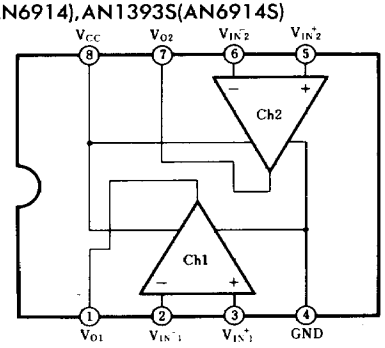
The AN1393(AN6914), the AN1393S(AN6914S),, and the AN6913 are dual (voltage) comparators with wide range of operating supply voltages.

■ Features

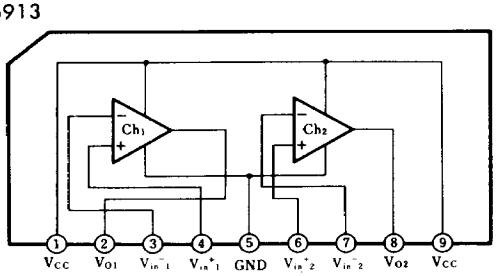
- Wide range of operating voltages
  Single supply : 2~36V
  Dual supply : ±1~±18V
- Low circuit current : 0.6mA typ.
- Wide range of common-mode input voltages :
  $0V \sim V_{CC} - 1.5V$ (single supply)
- Open collector output

■ Block Diagrams

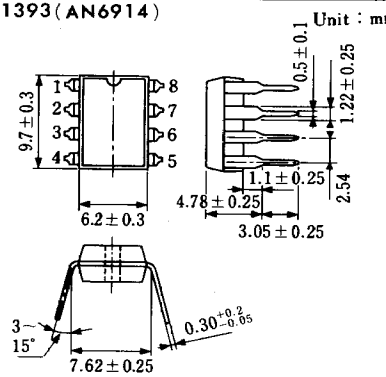
AN1393(AN6914),AN1393S(AN6914S)



AN6913

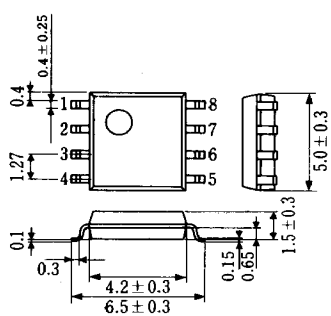


AN1393(AN6914) Unit : mm



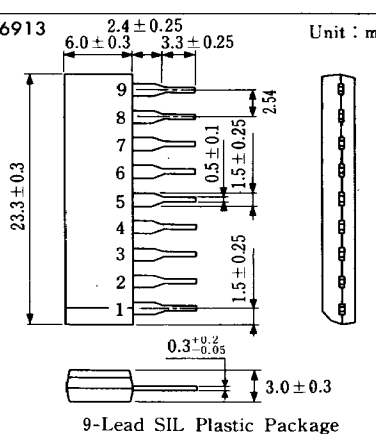
8-Lead DIL Plastic Package

AN1393S (AN6914S) Unit : mm



8-Lead PANAFLAT Package(SO-8D)

AN6913 Unit : mm



9-Lead SIL Plastic Package

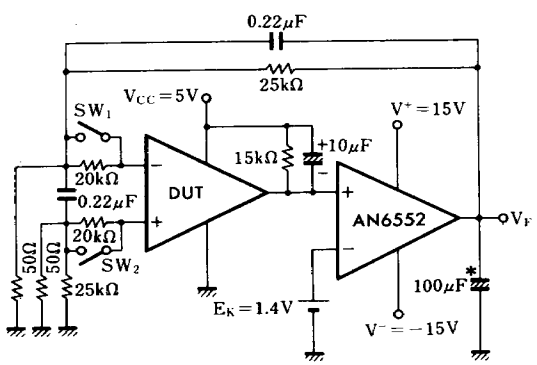
■ Absolute Maximum Ratings (Ta=25℃)

Item		Symbol	Rating	Unit
Voltage	Supply Voltage	V_{CC}	36	V
	Common-Mode Input Voltage	V_{ICM}	−0.3～+36	V
	Differential Input Voltage	V_{ID}	36	V
	Output Applied Voltage	V_1, V_7	24	V
Power Dissipation	AN1393 (AN6914S), AN6913	P_D	500	mW
	AN1393S (AN6914S)		360	
Operating Ambient Temperature		T_{opr}	−30～+85	℃
Storage Temperature	AN1393 (AN6914), AN6913	T_{stg}	−55～+150	℃
	AN1393S (AN6914S)		−55～+125	

■ Electrical Characteristics (V_{CC}=5V, Ta=25±2℃)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Input Offset Voltage	$V_{I(offset)}$	1			1	5	mV
Input Offset Current	I_{IO}	1				50	nA
Input Bias Current	I_{Bias}	1				250	nA
Voltage Gain	G_V	1	R_L=15kΩ		200		V/mV
Common-Mode Input Voltage Range	V_{CM}	2		0		V_{CC}−1.5	V
Supply Current	I_{CC}	3	R_L=∞		0.6	1.5	mA
Response Time	t_r	4	R_L=5.1kΩ, V_{RL}=5V		1.3		μs
Output Sink Current	I_{SINK}	5	V_{REF}=0V, V_{IN}=1V, V_O≦1.5V	10			mA
Low Level Output Voltage	V_{OL}	6	V_{REF}=0V, V_{IN}=1V, I_{SINK}=3mA		0.2	0.4	V
Output Terminal Leakage Current	$I_{O(Leak)}$	7	V_{IN}=0V, V_{REF}=1V, V_O=5V		0.1		nA

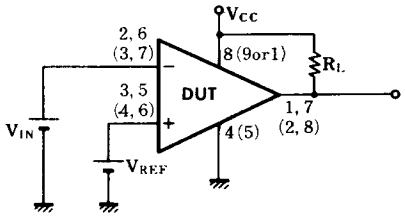
Test Circuit 1 ($V_{I(offset)}$, I_{IO}, I_{Bias}, G_V)



* Bipolar should be used (NP).

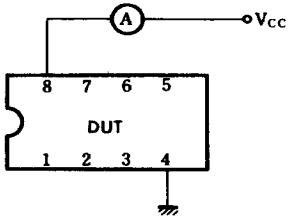
Item	Measurement Conditions
Input Offset Voltage	V_{F1} is measured with both the SW_1, SW_2 set to ON. Can be given by $V_{I(offset)}=\frac{V_{F1}}{500}$(V)
Input Offset Current	V_{F2} is measured with both the SW_1 and SW_2 set to OFF. Can be given by $I_{IO}=\frac{\lvert V_{F2}-V_{F1}\rvert}{10^7}$(A)
Input Bias Current	V_{F3} is measured with the SW_1 set to ON and the SW_2 set to OFF. V_{F4} is measured with the SW_1 set to OFF and the SW_2 set to ON. Can be given by. $I_{Bias}=\frac{\lvert V_{F4}-V_{F3}\rvert}{2\times10^7}$(A)
Voltage Gain	V_{F5} is measured with the SW_1 and SW_2 set to ON, and E_K=3.4V. Can be given by. $G_V=\frac{1000}{\lvert V_{F1}-V_{F5}\rvert}$(A)

Test Circuit 2 (V_{CM})

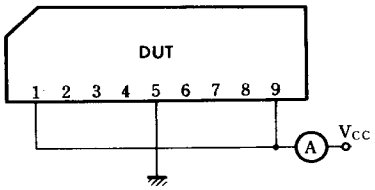


Test Circuit 3 (I_{CC})

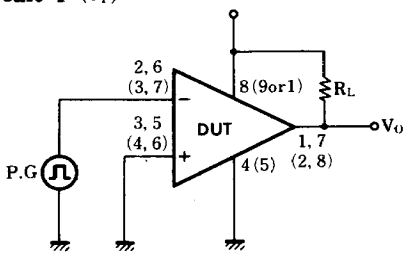
● AN1393(AN6914), AN1393S(AN6914S)

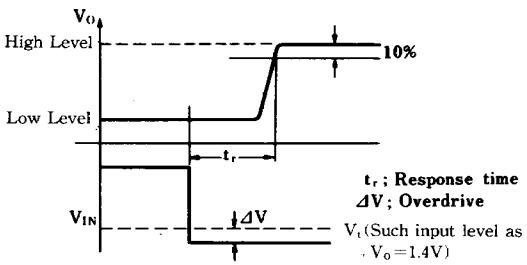


● AN6913

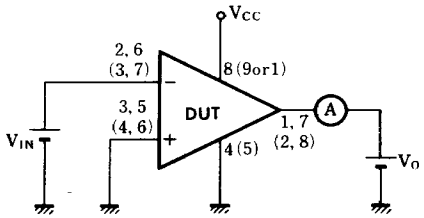


Test Circuit 4 (t_r)

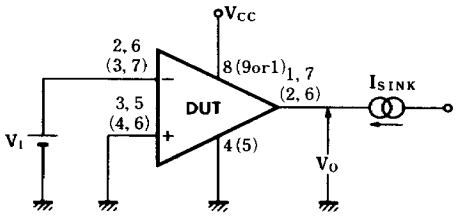




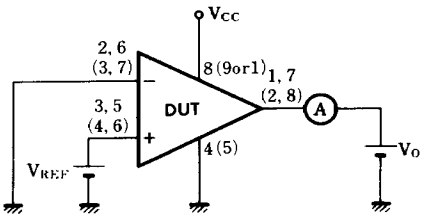
Test Circuit 5 (I_{SINK})



Test Circuit 6 (V_{OL})

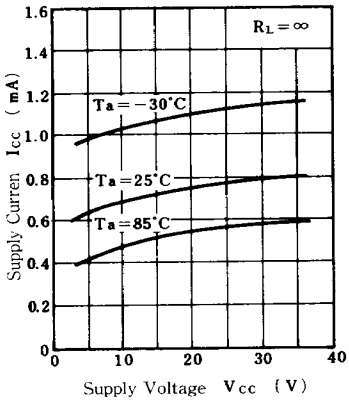


Test Circuit 7 ($I_{O(Leak)}$)

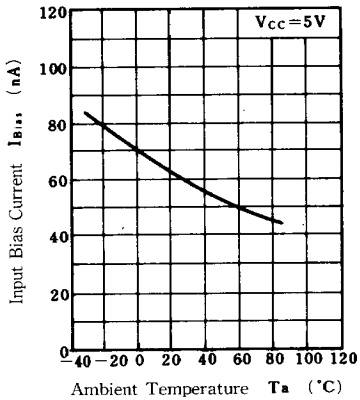


( )Shows the Pin No. of the AN6913.

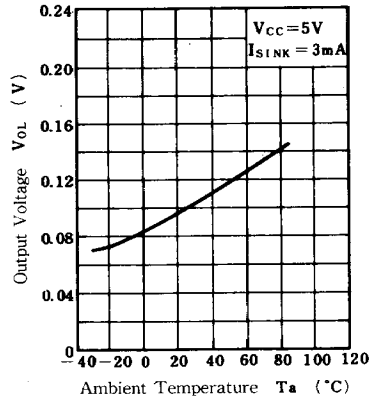
$I_{CC} - V_{CC}$



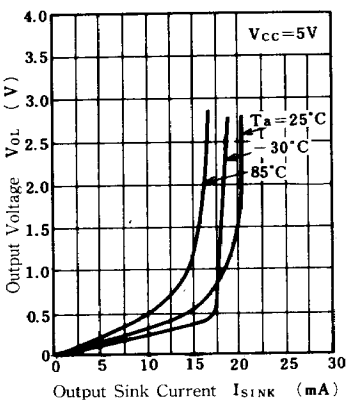
$I_{Bias} - Ta$



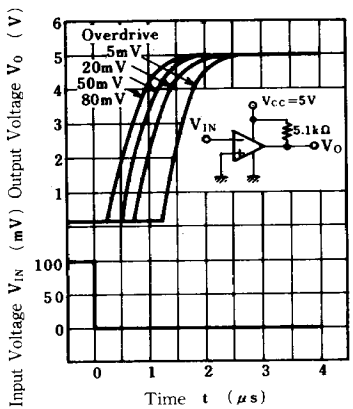
$V_{OL} - Ta$



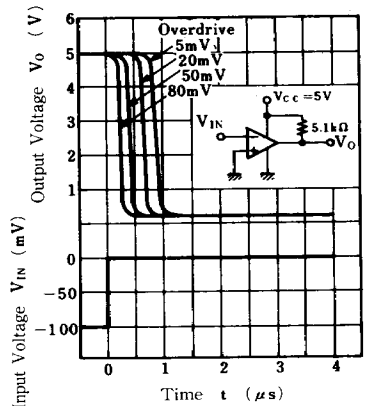
$V_{OL} - I_{SINK}$



Transfer Characteristics (1)



Transfer Characteristics (2)



■ Pin

● AN1393 (AN6914), AN1393S (AN6914S)

Pin No.	Pin Name	Pin No.	Pin Name
1	Ch.1 Output	5	Ch.2 Non Invert Input
2	Ch.1 Invert Input	6	Ch.2 Invert Input
3	Ch.1 Non Invert Input	7	Ch.2 Output
4	GND	8	V_{CC}

● AN6913

Pin No.	Pin Name	Pin No.	Pin Name
1	V_{CC}	6	Ch.2 Invert Input
2	Ch.1 Output	7	Ch.2 Non Invert Input
3	Ch.1 Non Invert Input	8	Ch.2 Output
4	Ch.1 Non Inverting Input	9	V_{CC}
5	GND	—	