



Analog Switches

AH2114/AH2114C

AH2114 / AH2114C DPST analog switch general description

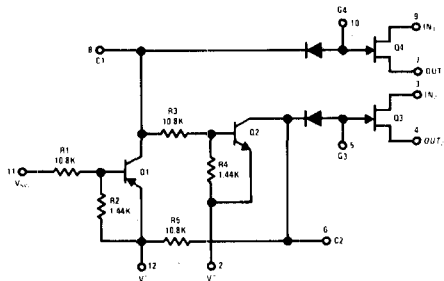
The AH2114 is a DPST analog switch circuit comprised of two junction FET switches and their associated driver. The AH2114 is designed to fulfill a wide variety of high level analog switching applications including multiplexers, A to D Converters, integrators, and choppers. Design features include:

- Low ON resistance, typically 75Ω
- High OFF resistance, typically $10^{11}\Omega$
- Large output voltage swing, typically $\pm 10V$

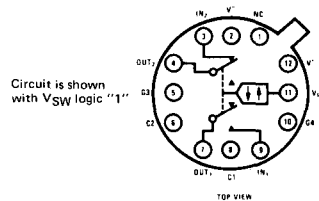
- Powered from standard op-amp supply voltages of $\pm 15V$
- Input signals in excess of 1 MHz
- Turn-ON and turn-OFF times typically $1\ \mu s$

The AH2114 is guaranteed over the temperature range $-55^\circ C$ to $+125^\circ C$ whereas the AH2114C is guaranteed over the temperature range $0^\circ C$ to $+85^\circ C$.

schematic and connection diagrams



Metal Can Package



Order Number AH2114G or AH2114CG
See Package 6A

ac test circuit and waveforms

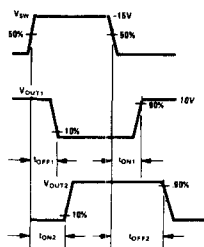
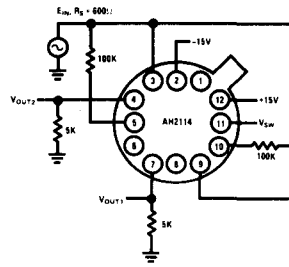
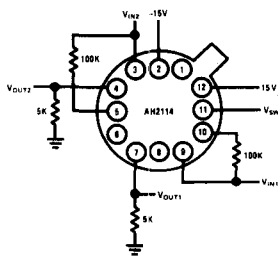


FIGURE 1.

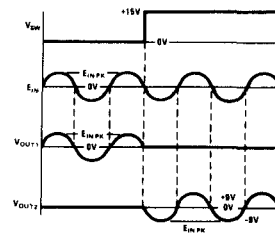


FIGURE 2.



absolute maximum ratings

| | |
|--------------------------------------|-----------------|
| Vplus Supply Voltage | +25V |
| Vminus Supply Voltage | -25V |
| Vplus- Vminus Differential Voltage | 40V |
| Logic Input Voltage | 25V |
| Power Dissipation (Note 3) | 1.36W |
| Operating Temperature Range | |
| AH2114 | -55°C to +125°C |
| AH2114C | 0°C to +85°C |
| Storage Temperature Range | -65°C to +125°C |
| Lead Temperature (Soldering, 10 sec) | 300°C |

electrical characteristics (Notes 1 and 2)

| PARAMETER | CONDITIONS | AH2114 | | | AH2114C | | | UNITS |
|--|--|-----------|------------|------|-----------|------------|------|----------------------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Static Drain-Source "On" Resistance | $I_D = 1.0 \text{ mA}, V_{GS} = 0V, T_A = 25^\circ\text{C}$ $I_D = 1.0 \text{ mA}, V_{GS} = 0V$ | | 75 | 100 | | 75 | 125 | Ω Ω |
| Drain-Gate Leakage Current | $V_{DS} = 20V, V_{GS} = -7V, T_A = 25^\circ\text{C}$ | | 0.2 | 1.0 | | 0.2 | 5.0 | nA nA |
| FET Gate-Source Breakdown Voltage | $I_G = 1.0 \mu\text{A}$ $V_{DS} = 0V$ | 35 | | | 35 | | | V |
| Drain-Gate Capacitance | $V_{DG} = 20V, I_S = 0$ $f = 1.0 \text{ MHz}, T_A = 25^\circ\text{C}$ | | 4.0 | 5.0 | | 4.0 | 5.0 | pF |
| Source-Gate Capacitance | $V_{DG} = 20V, I_D = 0$ $f = 1.0 \text{ MHz}, T_A = 25^\circ\text{C}$ | | 4.0 | 5.0 | | 4.0 | 5.0 | pF |
| Input 1 Turn-ON Time | $V_{IN1} = 10V, T_A = 25^\circ\text{C}$ (See Figure 1) | | 35 | 60 | | 35 | 60 | ns |
| Input 2 Turn-ON Time | $V_{IN2} = 10V, T_A = 25^\circ\text{C}$ (See Figure 1) | | 1.2 | 1.5 | | 1.2 | 1.2 | μs |
| Input 1 Turn-OFF Time | $V_{IN1} = 10V, T_A = 25^\circ\text{C}$ (See Figure 1) | | 0.6 | 0.75 | | 0.6 | 0.75 | μs |
| Input 2 Turn-OFF Time | $V_{IN2} = 10V, T_A = 25^\circ\text{C}$ (See Figure 1) | | 50 | 80 | | 50 | 80 | ns |
| DC Voltage Range | $T_A = 25^\circ\text{C}$ (See Figure 2) | ± 9.0 | ± 10.0 | | ± 9.0 | ± 10.0 | | V |
| AC Voltage Range | $T_A = 25^\circ\text{C}$ (See Figure 2) | ± 9.0 | ± 10.0 | | ± 9.0 | ± 10.0 | | V |

Note 1: Unless otherwise specified these specifications apply for pin 12 connected to +15V, pin 2 connected to -15V, -55°C to 125°C for the AH2114, and 0°C to 85°C for the AH2114C.

Note 2: All typical values are for $T_A = 25^\circ\text{C}$.

Note 3: Derate linearly at 100°C/W above 25°C.