Appendix: Analog Switch Array Measurements

MT8806/08/09/12/14/15/16 ANALOG SWITCH ARRAY FAMILY:

TEST CIRCUITS FOR KEY PARAMETER MEASUREMENTS

A.1 Off-State Leakage Current ($I_{OFF}$) Measurement

A.2 $R_{ON}/\Delta R_{ON}$ vs. $V_{DC}$ Measurements

A.3 Frequency Response ($F_{3dB}$) Measurement

A.4 Feedthrough (FDT) Measurement

A.5 Crosstalk ($X_{talk}$) Measurement

A.6 Control Input Crosstalk ($CX_{talk}$) Measurement

A.7 Control Memory Timing Measurements
Appendix: Analog Switch Array Measurements

Figure A.1 - Off-State Leakage Current ($I_{OFF}$) Measurement*

![Diagram](image)

Figure A.2 - $R_{ON}$/Δ$R_{ON}$ Measurement *

![Diagram](image)

Figure A.3 - Frequency Response ($F_{3dB}$) Measurement †

![Diagram](image)

Figure A.4 - Feedthrough (FDT) Measurement †

![Diagram](image)

Notes:
* Test Conditions for MT8809 and MT8812 are respectively: $V_{DD}=12V$, $V_{SS}=0V$ and $V_{DD}=14V$, $V_{SS}=0V$.
† Test Conditions for MT8809 and MT8812 are respectively: $V_{DD}=5V$, $V_{DC}=0V$, $V_{SS}=-7V$ and $V_{DD}=7V$, $V_{DC}=0V$, $V_{SS}=-7V$. All Xi and Yj analog I/O pins can be interchanged for all measurements.
Appendix: Analog Switch Array Measurements

Figure A.5 - Crosstalk (Xtalk) Measurement †

Figure A.6 - Control Input Crosstalk to Switch (CXtalk) †

Figure A.7 - Control Memory Timing Measurements †

Notes:
† Test Conditions for MT8809 and MT8812 are respectively: VDD=5V, VSS=0V, VEE=-7V and VDD=7V, VDC=0V, VSS=-7V.
All Xi and Yj analog I/O pins can be interchanged for all measurements.
MT8806/08/09/12/14/15/16 ANALOG SWITCH ARRAY FAMILY:

TYPICAL GRAPHS FOR SELECTED PARAMETERS

G.1 On-state Resistance ($R_{ON}$) vs. Temperature @ $V_{DD}$=5V, 10V, 12V

G.2 On-state Resistance ($R_{ON}$) vs. DC Offset ($V_{DC}$) @ $V_{DD}$=5V, 10V, 12V @ 25°C

G.3 On-state Resistance ($R_{ON}$) vs. DC Offset ($V_{DC}$) @ $V_{DD}$=12V @ -40°C, 25°C, 85°C

G.4 $\Delta R_{ON}$ vs. Temperature @ $V_{DD}$=5V, 10V, 12V

G.5 Total Harmonic Distortion (THD) vs. Frequency

G.6 Total Harmonic Distortion (THD) vs. I/P Signal Amplitude (Vpeak)

G.7 Crosstalk ($X_{talk}$) vs. Frequency

G.8 Feedthrough (FDT) vs. Frequency

G.9 Off-State Leakage Current ($I_{OFF}$) vs. Switch Voltage
Appendix: Analog Switch Array Measurements

G.1 - On-State Resistance ($R_{ON}$) vs. Temperature

G.2 - On-State Resistance ($R_{ON}$) vs. DC Offset ($V_{DC}$) @ 25°C

G.3 - On-State Resistance ($R_{ON}$) vs. DC Offset ($V_{DC}$) @ $V_{DD} = 12V$
### Appendix: Analog Switch Array Measurements

#### G.4 - $\Delta R_{ON}$ vs. Temperature

![Graph showing $R_{ON}$ vs. Temperature with three curves for $V_{DD}=5V$, $10V$, and $12V$.](image)

- $V_{DD}=5V$
- $V_{DD}=10V$
- $V_{DD}=12V$

#### G.5 - Distortion (THD) vs. Frequency

![Graph showing THD (%) vs. Frequency with three curves for $V_{DD}=5V$, $10V$, and $12V$.](image)

#### G.6 - Distortion (THD) vs. I/P Signal Amplitude ($V_p$)

![Graph showing THD (%) vs. $V_p$](image)
Appendix: Analog Switch Array Measurements

**G.7 - Crosstalk ($X_{\text{talk}}$) vs. Frequency**

**G.8 - Feedthrough (FDT) vs. Frequency**

**G.9 - Off-State Leakage Current ($I_{\text{OFF}}$) vs. Switch Voltage**
Analog Switch Array Applications

The analog switch array is shown in Figure A.8 as a switching matrix for a typical key system. The system shown below allows connection of outside Central Office telephone lines to inside extension telephones.

Figure A.8 - Typical Key System Application