

The schematic illustrates the complete system architecture for the TAS6424-Q1 audio amplifier. It includes the following components and connections:

- Power Management:** A 1V8_SW input provides power to the U35 regulator, which outputs 1.8V to the VCCA pin. The VCCB pin is connected to GND. The 3V3_SW input provides power to the VAMP_FLT pin.
- Control Signals:** I2C addresses 0xD4 and 0xD5 are used for communication. SCL and SDA pins are connected to the I2C bus. STANDBY and MUTE signals are also present.
- Audio Input Stage:** The I2S interface (I2S_BCLK_SQ2AMP_ADG, I2S_WS_SQ2AMP_ADG, I2S_DATA_SQ2AMP_I1, I2S_DATA_SQ2AMP_O1) is connected to the IC. The output of the SQ2AMP is connected to the Q53-A ACX114VUQ-7R op-amp.
- Output Stage:** The output of the op-amp is connected to the Q53-B ACX114VUQ-7R op-amp, which drives the 20W SPK output line through a 3kΩ resistor (R95).
- Protection Circuitry:** Fault detection is implemented using Q17-A and Q18-A ACX114VUQ-7R op-amps, which monitor the output signal and provide FAULT_AMP2VOC and WARN_AMP2VOC signals.
- Power Supply Decoupling:** Various capacitors (C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100) are used for decoupling and filtering throughout the circuit.

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