

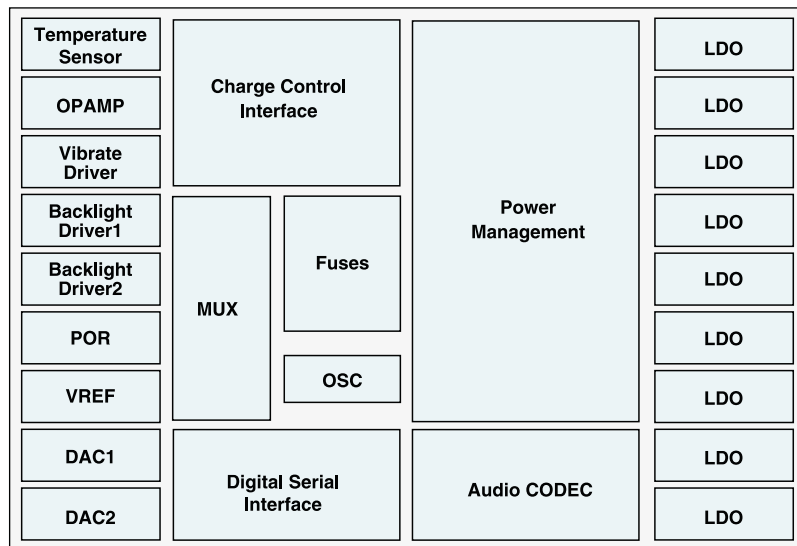
credence Diamond™



The power management solution for cellular telephones has expanded in the last years to full SoC integration. Unlike baseband ICs in the phone, analog cores dominate power management. CODECs for headphones, speakers and microphones are used as the audio interface. Banks of regulators are used for powering the battery, LCD, keyboard, SIM card, vibrator, baseband and RF ASIC core supply voltages. ADCs are used to monitor temperature and other reference voltages/currents within assembled phones. Logic interfaces are present to help control power delivery and monitoring.

Test Challenges

- * LDO bank (line/load regulation, I_{max}, I_{short}, V_{out}, PSRR)
- * LED backlight drivers
- * SM bus/SPI bus interface
- * Speaker/microphone CODEC (THD, SNR)
- * POR (V_{bat}, V_{bat2})
- * Temperature sensor (V_t)
- * DAC test (INL, DNL)
- * Fuse trimming for V_{ref}, bandgap and V_{core}



The Solution

The cellular power management device requires a test solution that blends principles of standard linear test methodologies with dynamic audio and digital logic testing. The Diamond was designed to solve this blend of integrated test methodologies. The Diamond VIS16 instrument provides accurate voltage and current source and measure capability. With parallel four-quadrant VI channels it is well aligned with the necessary regulator tests. The AWG and DIG provide quad differential audio source and capture capabilities focused on obtaining the dynamic results for the CODEC and ADC and DACs in the device. Register control and communication are handled via the Diamond's 96-channel, 100 MHz DPIN96 digital pin resource which will enable the user to test the SM/SPI bus interfaces and provide SCAN test capabilities for the large logic core.



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