Switching ON:
The ON/OFF circuit operates almost like a thyristor. When the ON/OFF key is pressed, a current flows from +VRAM via R1502, R1503 V1502a, V1504, V1505, V1506 and R1507 to -VBAT. Transistor V1501 will become conductive. The POWER ON line goes high (+VRAM), and FET V2542 conducts as its Vgs becomes 8V (+VRAM -VBATT). Now the ScopeMeter supply has been turned on. The microprocessor will set the ON/OFF line low. The Vbe of V1503 increases by the current drawn via V1501, R1504, R1505, V1502b and R1506. V1503 becomes conductive, and keeps V1501 conductive (thyristor function "on").

Note: *If the μP does not set the ON-OFF line low, the supply will not stay on when the ON/OFF key is released. To keep the supply on, independent of the μP, solder pad J1501 must be closed. This can be helpful at troubleshooting.*

Switching OFF:
When the ON/OFF key is pressed during power-on, the ON-RESET line goes low. The microprocessor receives a reset signal UPRESETN via V1513, D1215, and the M-ASIC (in: RESETN, out: uPRESETN). It will make the ON/OFF line high, and as a result V1503 and V1501 become non-conductive. The POWER ON line is now open (high impedance) and FET V2542 becomes non-conductive.

RESET circuit
The RESET circuit consists of V1510, V1512, V1513, D1215 and related components. When the ScopeMeter power is switched on, the +5V supply voltage starts to rise. This causes the zener diode V1511 to conduct. After some time transistor V1510 also starts to conduct.
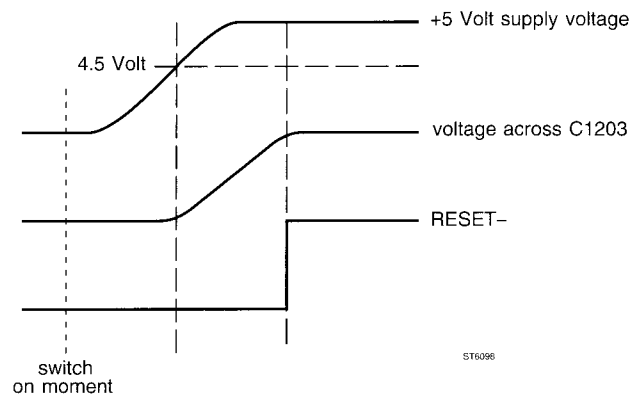R1514 and C1510 form a time delay.

Figure 3.2   RESET signal timing

The RESET signal now is buffered by D1215 and connected with the RESET inputs of the M-ASIC (BOOT CIRCUIT) and the D-ASIC circuitry. The RESETN signal controls the EAN output of the M -ASIC.
After a reset, the voltage on the EA (External ACCESS) input of the microprocessor (pin 14) is "high" (EAN signal). The Microprocessor starts up using the internal Mask ROM software. First the Flash ROMs are checked to see if they contain valid software. If this is true, the EAN line is set "low". Now the microprocessor invokes a software reset. Because of the "low" voltage on the EA input of the microprocessor, the microprocessor will "start up" again, using the external Flash ROM software. At the software reset, the microprocessor also enables the LCD by means of the signal LCDPWR.