

dataMate INTRODUCES NEW *SLICK* TERMINATOR

"Signal Line Increased Current Kicker"

BACKGROUND

A condition exists in SCSI bus communications which can cause corruption of data. This condition occurs at the rising edge of the REQUEST line and is referred to as a "notch". The notch is typically accompanied by a reflection caused by stub drive cabling. The combined effect of the notch and stub reflection causes the rising edge to reverse direction and double back before reaching the deassertion level of 2.0 volts. If this reversing crosses the 1.5 volt level it may "double trigger" and be interpreted as a valid REQUEST signal causing erroneous data to be transferred.

The voltage level of the notch is controlled by cable impedance and the current present in the signal line when it is released by the controller driver. The SCSI specification defines cable impedance and terminator resistance to be 132 ohms. Twisted pair, or "round cable", impedances are seldom found to be greater than 90 ohms and may be as low as 45 ohms. The maximum current allowed in a signal line is limited by the ability of the controller driver to assert a signal line below 0.5 volts at 48 MA. These drivers have a good deal of margin and have the capability to sink much more current. A problem occurs (metal migration) in sinking excess current for prolonged periods of time. This condition exists if a REQUEST signal is asserted and the system fails to respond with the associated ACKNOWLEDGE signal. The system will "hang" until the error is cleared. If an unattended system hangs over a holiday weekend it could go uncorrected for several days.

COMPARISON OF TERMINATORS

220/330 TERMINATOR:

When used with good quality cable the 220/330 terminator will produce acceptable signals on the SCSI bus. Noise present on the term power line is attenuated by 40% at the signal line. Variations in term power are proportionally transferred to the signal lines. When used with low impedance cable the terminator may produce a notch in the 1.5 volt "double triggering" area.

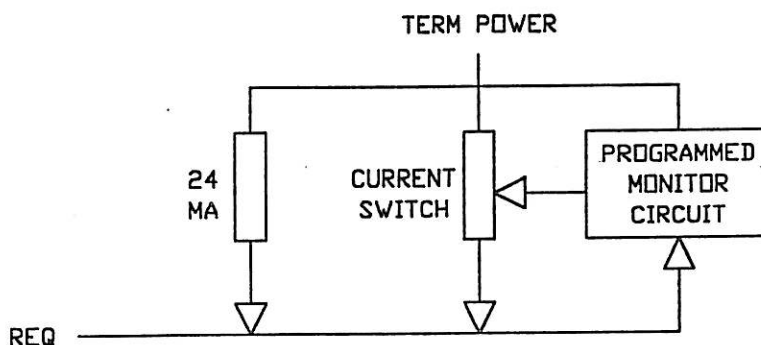
REGULATED TERMINATOR:

The regulated 110 ohm terminator is an improvement over the 220/330 terminator. It allows the system to operate at a constant 48 MA. level regardless of term power variations. Noise present on the term power line is prevented from getting to the signal line. When used with low impedance cable the terminator may produce a notch in the 1.5 volt area.

SLICK:

dataMate has developed *SLICK*, a new terminator which takes full advantage of the fact that controller drivers are capable of sinking short pulses of high current. *SLICK* provides the additional driver current required to raise the notch well above the "double triggering" area. A monitoring circuit within the terminator measures the length of time that a signal line is asserted, if held for longer than the time programmed in the terminator, the additional current will be canceled. The driver current will then be limited to a maximum of 48 MA.

SLICK CIRCUIT DESCRIPTION



SLICK BLOCK DIAGRAM

SLICK provides additional current in a highly controlled manner to raise the notch and its associated stub reflection well above the critical "double triggering" area. Realizing this additional current should not be provided to a signal line asserted for relatively long periods of time, the dataMate **SLICK** terminator was designed to monitor the leading edge of the signal and measures the length of time it is asserted. If it is asserted for more than 40 MS. the monitor circuit cancels the additional current. The current provided to the controller driver is then limited to a maximum of 48 MA.

The REQ signal line is connected to the term power line through a terminator which provides 24MA to the controller driver when asserted.

Additional current is provided through the current switch to the signal line. The amount of additional current is controlled by circuit element values and may be set to customer specifications based upon cable impedance requirements.

The current switch is under the control of the monitor circuit which is enabled by the falling edge of the REQ signal. If the REQ signal is asserted for more than a programmed amount of time, the current switch is disabled. Each time the REQ signal is deasserted the monitor circuit timing cycle is reset. Monitor timeout is controlled by circuit element values and may be set to customer specifications.

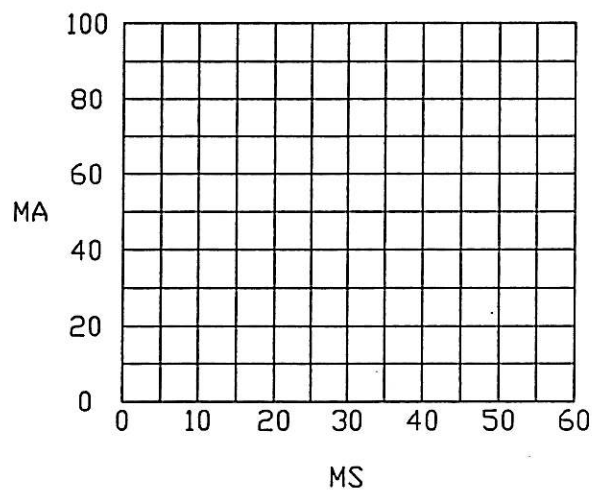
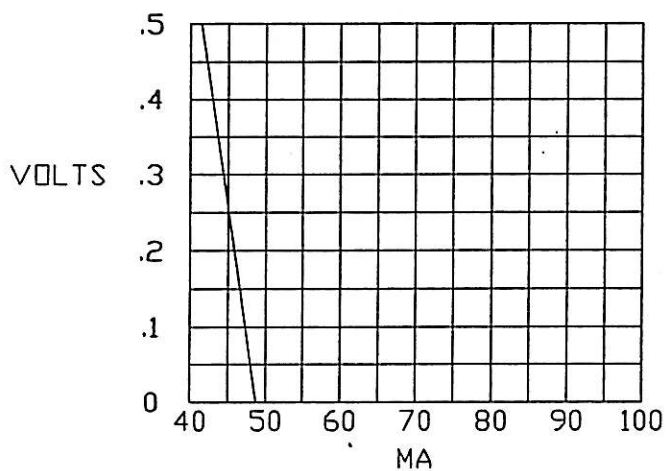
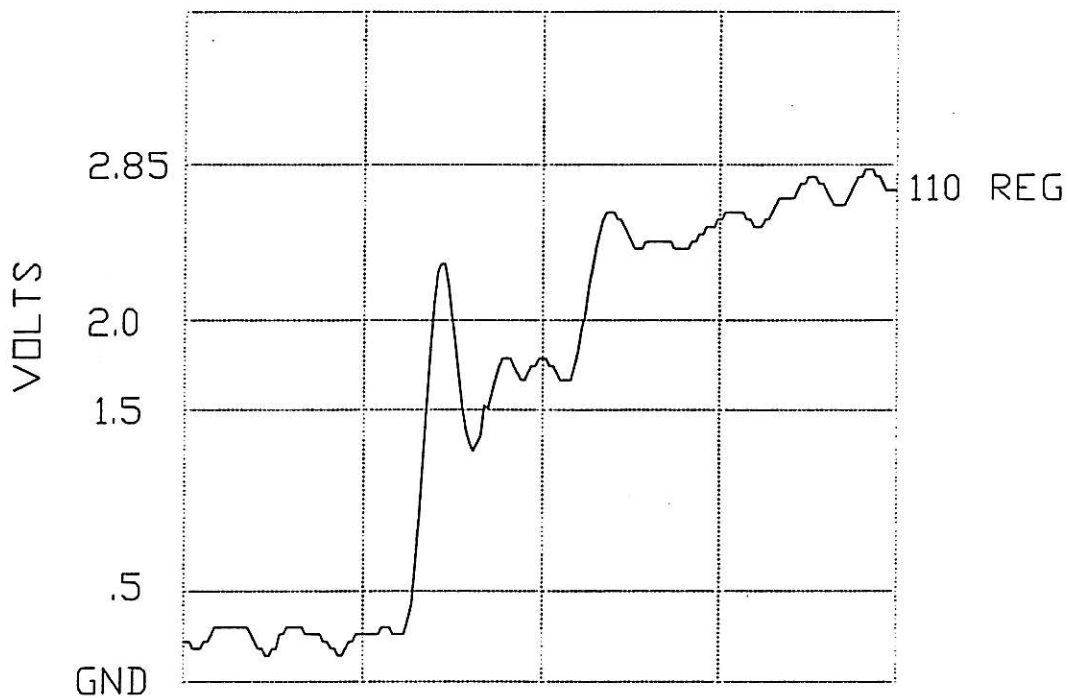
SLICK is a family of products that can be incorporated with any dataMate style of terminator. It can be provided in the conventional 220/330 form or can also be externally applied to systems which have fixed, internal 220/330 terminators. In systems which require the benefits of regulation and term power filtering, **SLICK** is offered in these configurations as well. The amount of additional current provided and the recommended 40 MS. monitor cutoff time can be set to customer specifications.

SCSI TERMINATION CIRCUIT COMPARISONS

REQUEST (REQ) SIGNAL AT STUB DRIVE

110 REG _____

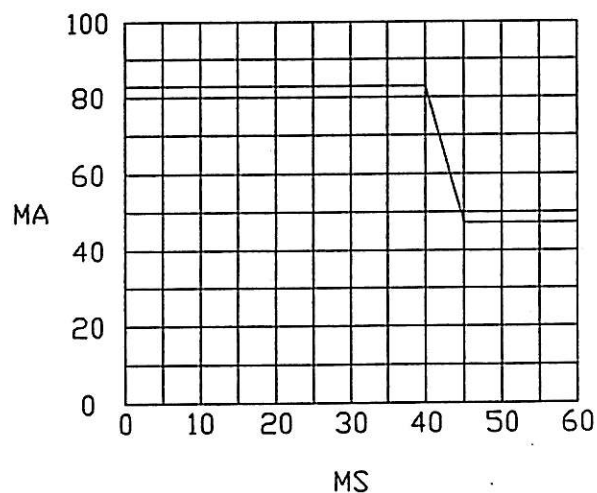
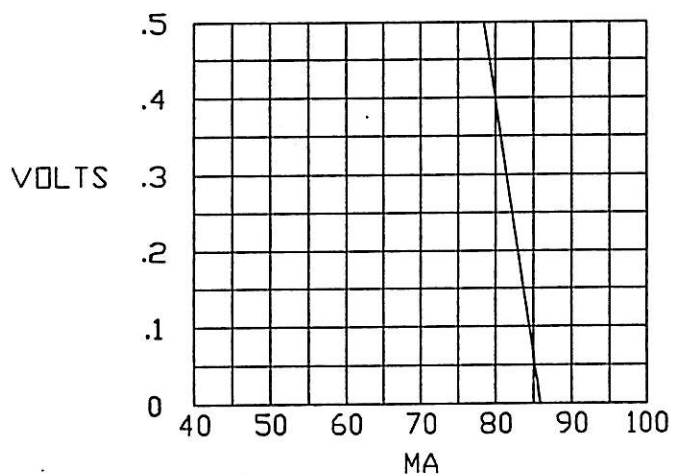
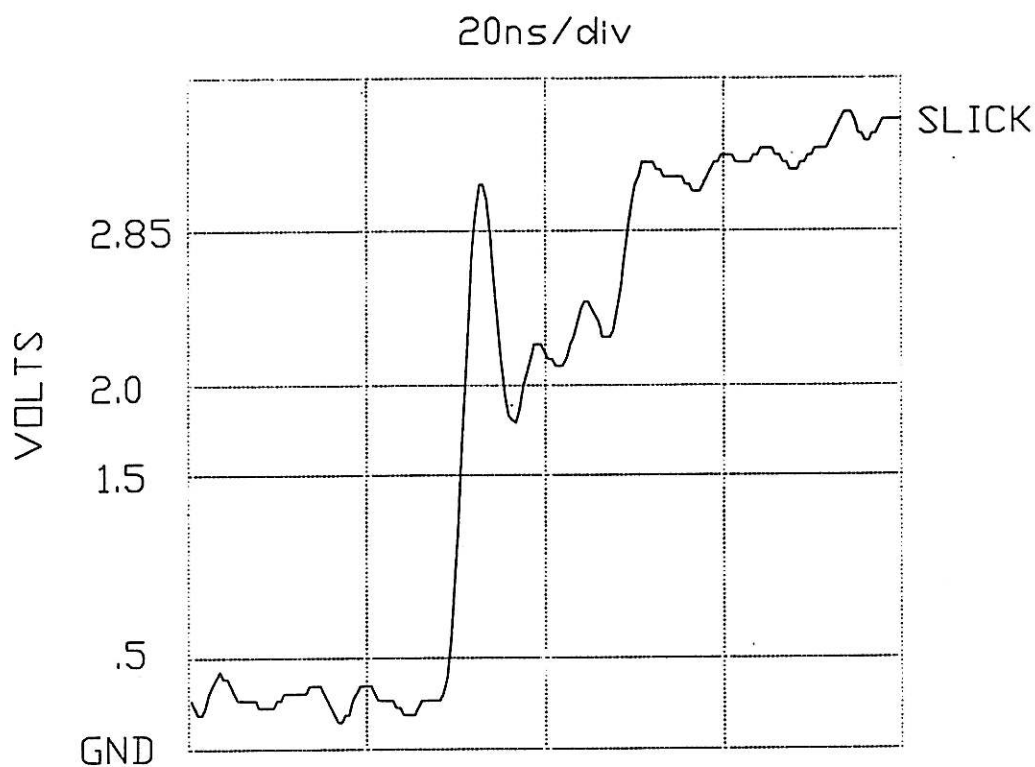
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SCSI TERMINATION CIRCUIT COMPARISONS

REQUEST (REQ) SIGNAL AT STUB DRIVE

SLICK _____



SCSI TERMINATION CIRCUIT COMPARISONS

REQUEST (REQ) SIGNAL AT STUB DRIVE

220/330 _____

