

**Mercury Driver Waveforms Application Note**

**Rev A04: 05/14/2009**



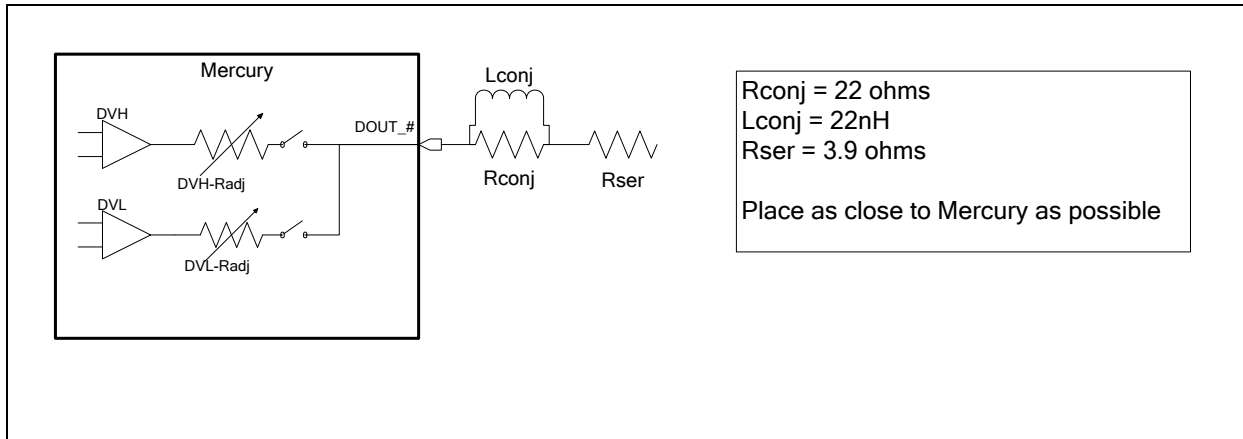
## 1 Mercury Driver Waveforms Application Note

This document describes how to improve the Mercury output waveforms using external passive components. Refer to Figure 1.

The Series Conjugate Termination ( $L_{conj}$  |  $R_{conj}$ ) is used to compensate for the capacitance seen by the Driver. The Conjugate Termination is recommended for most applications.

The Series Resistance ( $R_{ser}$ ) may be required in certain applications to achieve consistent  $50\Omega$  output impedance across common mode voltage.

**Figure 1: Mercury DOUT Connection Block Diagram**

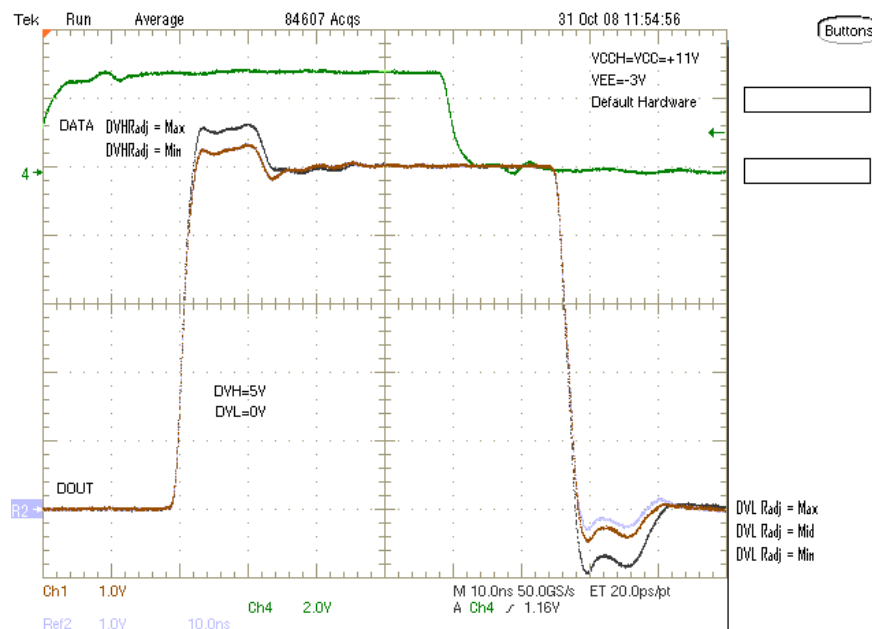


### 1.1 Driver Waveforms vs Conjugate Termination and Rser

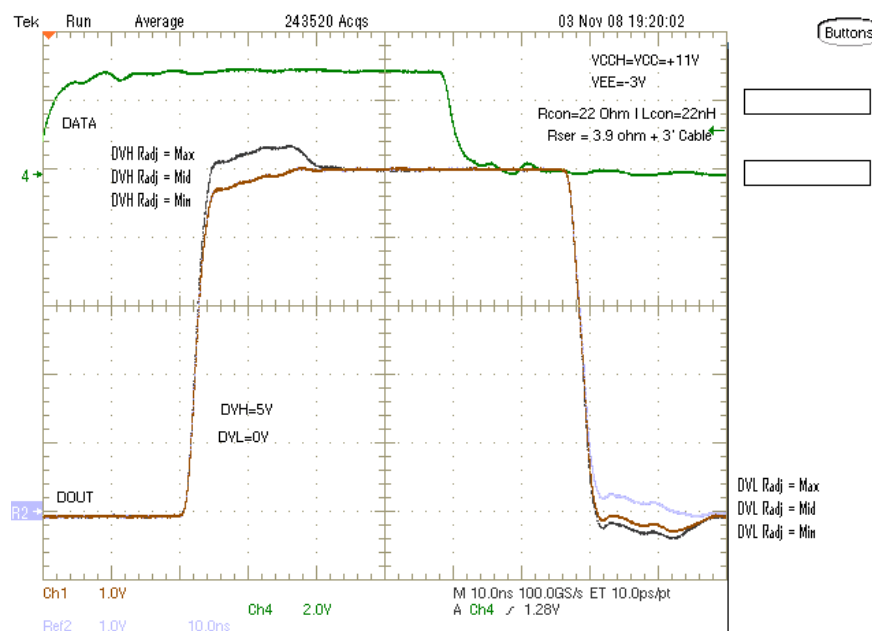
Figure 2 shows a +5V waveform without the Conjugate Termination and Rser. Notice that the Driver waveform has overshoot regardless of Radj code.

Figure 3 shows a +5V waveform with the Conjugate Termination and Rser. The Radj can now be adjusted to provide minimal overshoot.

**Figure 2: Driver Waveforms without Conjugate Termination**



**Figure 3: Driver Waveforms with Conjugate Termination**

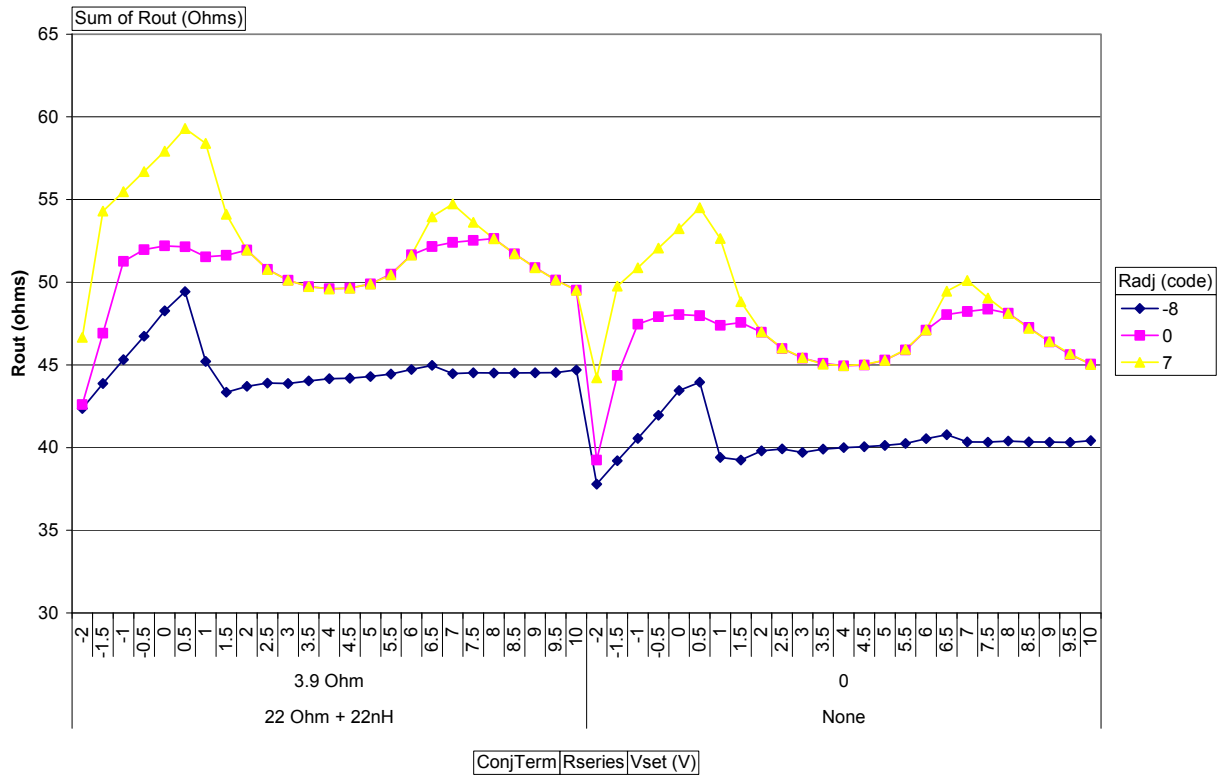


### 1.2 Driver Rout vs Rser

Figure 4 shows the Driver output impedance with and without the Rconj and Rser when VCCH and VCC are set to +11V. Without the Rser, the output impedance only gets up to 45Ω (even at Radj=Max) for many DVH voltages.

Figure 4: Driver Rout vs Rser

Vsv|11|Vcc|11|Vee|-3|Vdd|3.3|Rext|1000|Board#|44|Channel|0|Level|DVH



**2 Document Revision History**

Revision	Date	Description
A01	5/15/09	Initial Draft