HARDWARE RING TRIP FUNCTION

INTRODUCTION

In the telephone subscriber line card design, how fast the ringing signal can be stopped at the moment of off-hook is very critical, because in off-hook state, high voltage ringing signals could damage telephone sets. IDT821068 can be programmed to associate a SLIC output pin to a SLIC input pin. When an off-hook signal is captured by the SLIC input pin, the associated SLIC output pin will change its status immediately even the corresponding register has not yet been set by the MCU. This associated SLIC output pin can be used to control a relay to turn off the ringing signal, and this is called Hardware Ring Trip*.

CONFIGURE REGISTERS

The Global Command 15 is used to enable the hardware ring trip circuit, select the SLIC input pin to capture the off-hook signal and choose the associated SLIC output pin to stop the ringing signal.

SLIC Ring Trip Setting (Global Command 15)

	b7	b6	b5	b4	b3	b2	b1	b0
Command	$\overline{R}$/W	0	1	0	1	1	1	0
I/O data	OPI	Reserved	IPI	IS	RTE	OS[2]	OS[1]	OS[0]

OPI: Output Polarity Indicator

This bit should be set according to the ringing control method. If a level change from high to low on the associated SLIC output pin activates the ringing, this bit should be set to "0" (default). If a level change from low to high activates the ringing, this bit should be set to "1".

IPI: Input Polarity Indicator

This bit should be set according to the arrangement of the active level of the selected SLIC input pin. If a low level on the selected SLIC input pin represents the capture of an off-hook signal, this bit should be set to "0" (default). If a high level on the selected SLIC input pin represents the capture of an off-hook signal, this bit should be set to "1".

IS: Input Select

This bit determines which SLIC input pin will be used to capture the off-hook signal. If SI1 is selected, this bit should be set to "0" (default). If SI2 is selected, this bit should be set to "1".

RTE: Ring Trip Enable

Setting this bit to "1" will enable the hardware ring trip function. The default status of this bit is "0", which means the hardware ring trip function is disabled.

OS[2:0]: Output Selection

These three bits select one of the SLIC output pins to control the ringing relay, as shown in the following table.

If SB1 pin or SB2 pin is selected to control the ringing relay, the Global Command 13 or Global Command 14 must be used first to set the SB1 or SB2 as output pins. These two commands globally affect all eight channels.

OS[2]	OS[1]	OS[0]	Selected Output Pin
0	1	1	SB1
1	0	0	SB2
1	0	1	SO1
1	1	0	SO2
1	1	1	SO3
Others			Reserved

*This description is also applicable for IDT821054/821064 CODEC's.
Please refer to their Data Sheets for the corresponding registers.

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PROGRAMMING CONSIDERATIONS

The Local Command 9 is used to change the status of the SLIC output pins.

Local Command 9

	b7	b6	b5	b4	b3	b2	b1	b0
Command	$\overline{R}$/W	0	0	0	1	0	1	0
I/O data	Reserved	SO3	SO2	SO1	SI1	SI2	SB1	SB2

When the Global Command 15 is used to enable the hardware ring trip function, the associated SLIC output pin will change its status as soon as the selected SLIC input pin captures an off-hook signal. At this moment, the internal register will not be changed automatically to reflect the real status of the associated SLIC output pin. So, Local Command 9 should be used to change the internal register to make it coincident with the real status of the associated SLIC output pin.

If SB1 or SB2 is selected as the associated SLIC output pin, Global Command 11 or Global Command 12 should be used to change the internal register to reflect the real status of the associated SLIC output pin. Because Local Command 9 can not be used as a write command to change the status of SB1 or SB2.