To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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Renesas Electronics Corporation

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RENESAS TECHNICAL UPDATE

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Product Category	Application specific IC		Document No.	TN-ASP-A016A/E	Rev.	1.0
Title	M66291 Control Read Transfer Limitations		Information Category	Technical Notification		
Applicable Product	USB ASSP M66291GP,M66291HP	Lot No.	Reference Document	M66291GP/HP Datasheet Rev.1.01		
		ALL				

1.Phenomenon
  At the time of control read transfer status stage,when M66291 responds to
  EPn(not EP0) IN-Token ,data of EP0_FIFO buffer may be cleared automatically
  and M66291 may be unable response to EP0 IN-Token .

2.Occurring Conditions
    This limitation does not apply to systems that no USB transfer to EPn (not EP0)
    IN-direction at the time of control read transfer status stage.
    When the following two processings are performed at the same time in M66291 inside
    at the time of control read transfer status stage, this phenomenon occurs.

    (1)End processing of the data written to EP0_FIFO buffer.
        This processing is performed when one of the following processings is performed.
        (a).Writing data of SDLN quantity to EP0_FIFO buffer.(In the case of CTRR=1)
        (b).Writing data of EP0_MXPS quantity to EP0_FIFO buffer.(In the case of CTRR=0)
        (c).Writing IVAL=1 to EP0_FIFO.
    (2)End processing of the USB transfer to IN-direction EPn(not EP0).
        This processing is performed when one of the following processings is performed.
        (a)When transfer type of EPn is Bulk transfer or Interrupt transfer.
            ACK reception from the Host PC after IN-token response.
        (b)When transfer type of EPn is Isochronous transfer.
            The completion of USB transfer to Host PC.

3.Solutions
  The phenomenon can be worked around with the following methods.
  Please perform the method of (1),At the time of control read transfer
  status stage,when M66291 responds to Isochronous IN-Token

  (1)If the data written to EP0_FIFO buffer is cleared, write it again.
      Please process in order of (a),(b), and (c) of the following.
      (a).Write response data to EP0_FIFO buffer and wait for 150ns after that.
          Please Don't set PID of EP0_FIFO in this time(Don't set to "BUF").
      (b).After (a),please check IVAL of EP0_FIFO. In the case of IVAL=0, Please write
          response data to EP0_FIFO buffer again.
      (c).After check (b)(IVAL=1),set PID of EP0_FIFO to "BUF".
  (2)USB transfer of IN-direction EPn does not perform at the time of control read transfer.
      Please process in order of (a),(b), and (c) of the following.
      (a).Set PID of EPn IN-direction to "NAK" at the time of control read transfer data stage
          transition interruption and wait for 60us.
      (b).After (a),Write response data to EP0_FIFO buffer.
      (c).Set PID of EPn IN-direction to "BUF" at the time of control read transfer status stage.
      *This processing is unnecessary at the time of PID="STALL."

4.Term and definitions
    EP0:Endpoint0
    SDLN:Control read continuous transmit data length(H'36:bit8-0)
    EP0_MXPS:Maximum Packet Size(H72A:bit6-0)
    CTRR:Control Read Transfer Continuous Transmit Mode(H'28:bit15)
    IVAL:IN Buffer Set/OUT Buffer Status(H'32:bit13)
    EP0_PID:Response PID(H'32:bit15-14)
    EPi_PID:Response PID(H'62,66,6A,6E,72,76:bit15-14)