# USB Power Delivery ENGINEERING CHANGE NOTICE

## Title: USB PD R3.0 V2.0 ECR Peak Current PD2 and PD3

## Applied to: USB Power Delivery Specification Revision 3.0 Version 2.0

| **Brief description of the functional changes proposed:** |
| --- |
| There is not any functional change proposed. This is a clarification to the original intent for the power the New Sink can draw during the Implicit Contract following a PR_Swap. |

| **Benefits as a result of the proposed changes:** |
| --- |
| This clarifies the amount of power the New Sink may draw before establishing an Explicit Contract. |

| **An assessment of the impact to the existing revision and systems that currently conform to the USB specification:** |
| --- |
| No impact. |

| **An analysis of the hardware implications:** |
| --- |
| None |

| **An analysis of the software implications:** |
| --- |
| None |

| **An analysis of the compliance testing implications:** |
| --- |
| Tests may need to be updated to allow the proper amount of current following a PR_Swap. |

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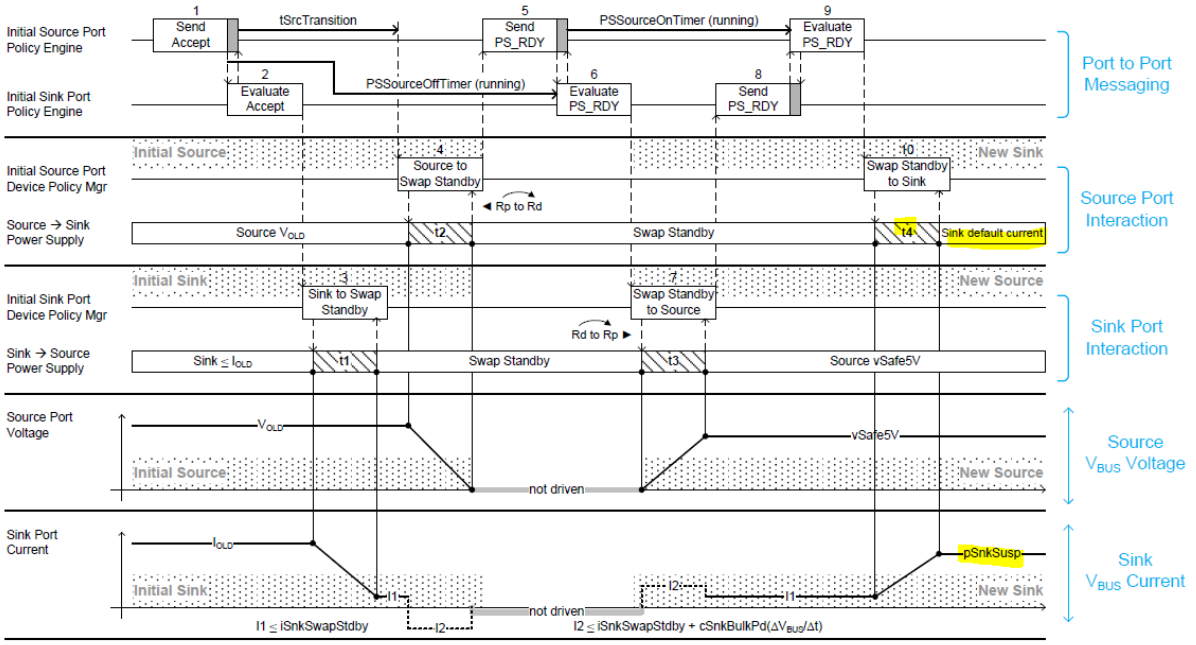
## Actual Change Requested

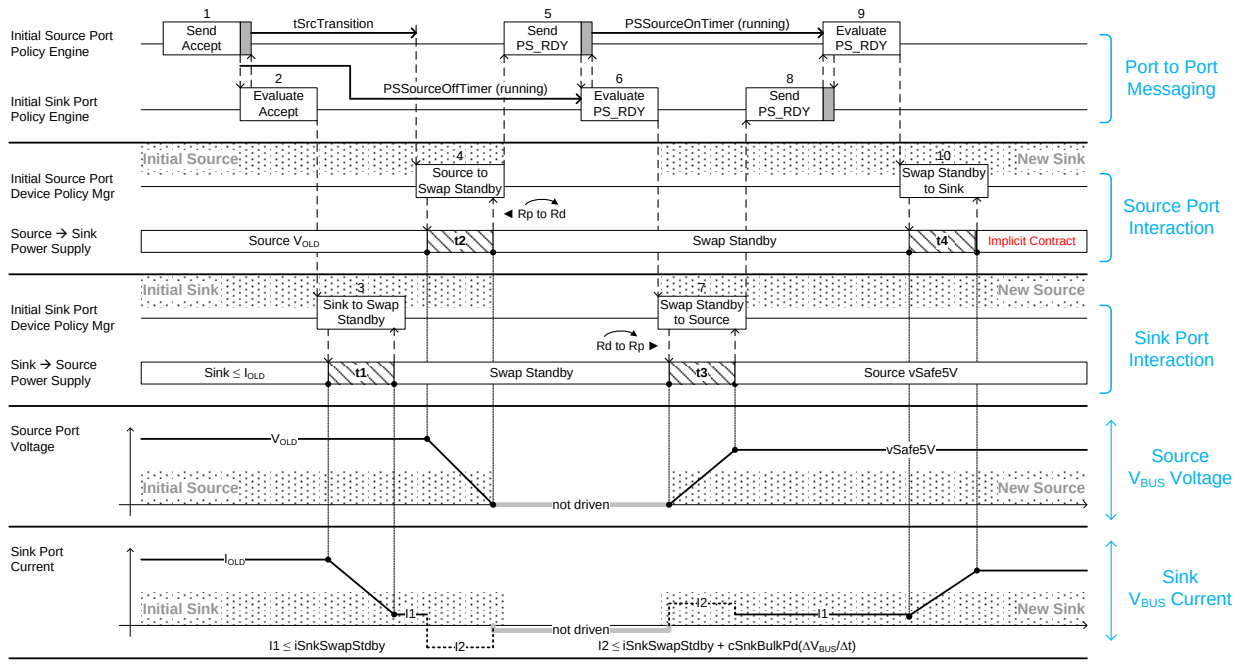
### (a). Section 7.3.9, Figure 7-28, page 283

### Existing Figure:

Figure 7-28 Transition Diagram for a Sink Requested Power Role Swap




### New Figure:



## (b). Section 7.3.9, Table 7-9, page 285

### From Text:

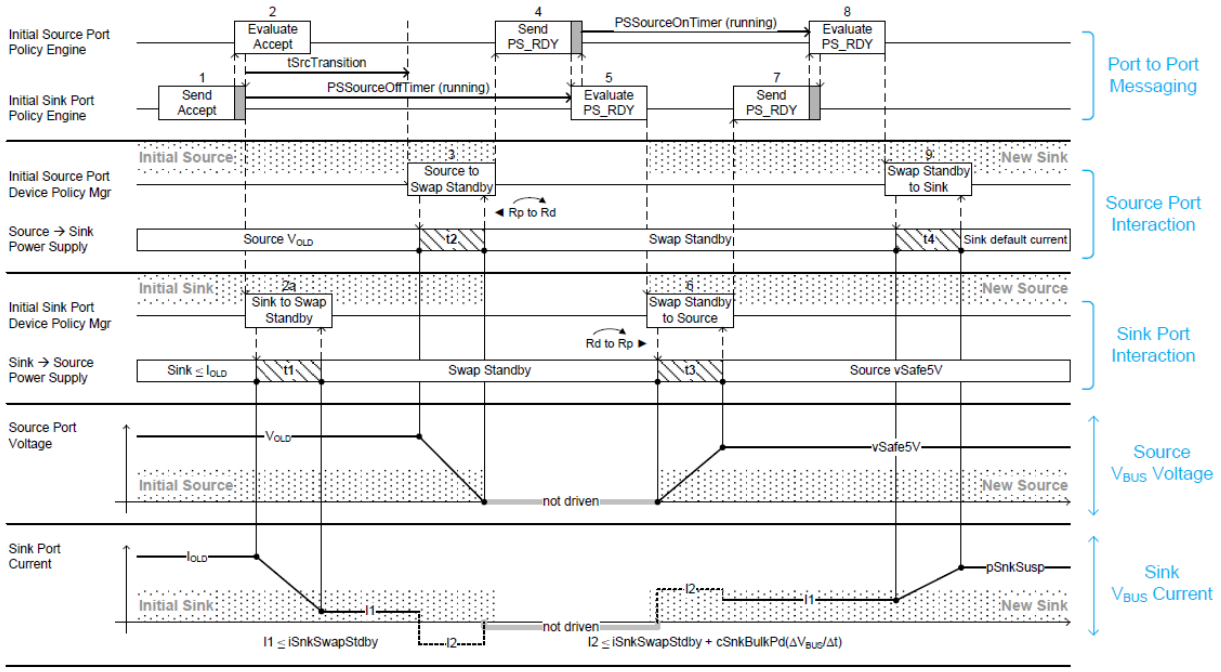
| Step | Initial Source Port → New Sink Port | Initial Sink Port → New Source Port |
|---|---|---|
| 10 | The power supply as the new Sink transitions from Swap Standby to drawing ***pSnkSusp*** within ***tNewSnk*** (t4). The power supply informs the Device Policy Manager that it is operating as the new Sink. At this point subsequent negotiations between the new Source and the new Sink ***May*** proceed as normal. The Sink ***Shall Not*** violate the transient load behavior defined in Section 7.2.6 while transitioning to and operating at the new power level. The time duration (t4) depends on the magnitude of the load change. | |

### To Text:

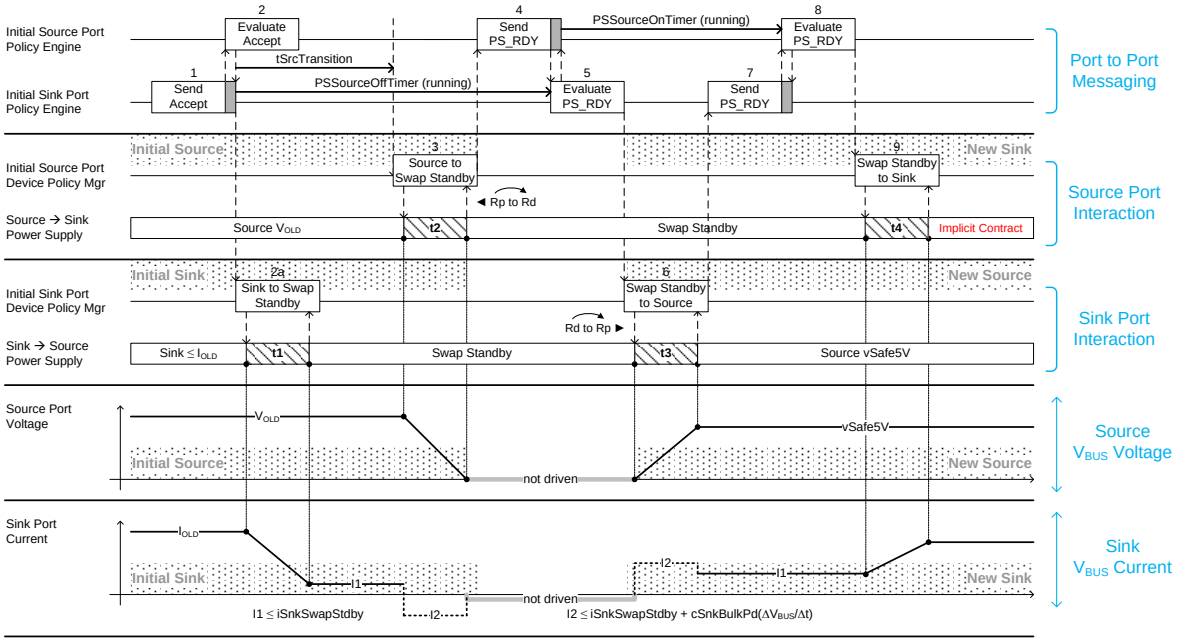
| Step | Initial Source Port → New Sink Port | Initial Sink Port → New Source Port |
|---|---|---|
| 10 | The power supply as the new Sink transitions from Swap Standby to drawing the current allowed by the Implicit Contract ~~***pSnkSusp*** within ***tNewSnk*** (t4)~~. The power supply informs the Device Policy Manager that it is operating as the new Sink. At this point subsequent negotiations between the new Source and the new Sink ***May*** proceed as normal. The Sink ***Shall Not*** violate the transient load behavior defined in Section 7.2.6 while transitioning to and operating at the new power level. The time duration (t4) depends on the magnitude of the load change (see iLoadStepRate). | |

## (c). Section 7.3.10, Figure 7-29, page 286

### From Text:




## To Text:




## (d). Section 7.3.10, Table 7-10, page 288

## From Text:

| Step | Initial Source Port → New Sink Port | Initial Sink Port → New Source Port |
|---|---|---|

| | | |
|---|---|---|
| 9 | The power supply as the new Sink transitions from Swap Standby to drawing ***pSnkSusp*** within ***tNewSnk*** (t4). The power supply informs the Device Policy Manager that it is operating as the new Sink. At this point subsequent negotiations between the new Source and the new Sink ***May*** proceed as normal. The new Sink ***Shall Not*** violate the transient load behavior defined in Section 7.2.6 while transitioning to and operating at the new power level. The time duration (t4) depends on the magnitude of the load change. | |

## To Text:

| Step | Initial Source Port → New Sink Port | Initial Sink Port → New Source Port |
|---|---|---|
| 9 | The power supply as the new Sink transitions from Swap Standby to drawing the power allowed by the Implicit Contract ~~***pSnkSusp*** within ***tNewSnk*** (t4)~~. The power supply informs the Device Policy Manager that it is operating as the new Sink. At this point subsequent negotiations between the new Source and the new Sink ***May*** proceed as normal. The new Sink ***Shall Not*** violate the transient load behavior defined in Section 7.2.6 while transitioning to and operating at the new power level. The time duration (t4) depends on the magnitude of the load change (see iLoadStepRate). | |

## (e). Section 5.7, page 78

## From Text:

In addition, the PHY Layer ***Shall*** control the Rp resistor value to avoid collisions between Source and Sink transmissions. The Source ***Shall*** set an Rp value corresponding to a current of 3A to indicate to the Sink that it ***May*** initiate an AMS. The Source ***Shall*** set an Rp value corresponding to a current of 1.5A this ***Shall*** indicate to the Sink that it ***Shall Not*** initiate an AMS and ***Shall*** only respond to Messages as part of an AMS. See ***[USB Type-C 2.0]*** (USB Type-C®) for details of the corresponding Rp values.

## To Text:

In addition, during an Explicit Contract the PHY Layer ***Shall*** control the Rp resistor value to avoid collisions between Source and Sink transmissions. The Source ***Shall*** set an Rp value corresponding to a current of 3A to indicate to the Sink that it ***May*** initiate an AMS. The Source ***Shall*** set an Rp value corresponding to a current of 1.5A this ***Shall*** indicate to the Sink that it ***Shall Not*** initiate an AMS and ***Shall*** only respond to Messages as part of an AMS. See ***[USB Type-C 2.0]*** (USB Type-C®) for details of the corresponding Rp values. During the Implicit Contract that precedes an Explicit Contract (including Power Role Swap and Fast Role Swap) the Rp resistor value is used to specify Type-C current, and not collision avoidance.

## Below for reference only, not part of the ECR.

| | |
|---|---|
| Explicit Contract | An agreement reached between a Port Pair as a result of the Power Delivery negotiation process. An Explicit Contract is established (or continued) when a Source sends an ***Accept*** Message in response to a ***Request*** Message sent by a Sink followed by a ***PS_RDY*** Message indicating that the power supply is ready; this corresponds to the ***PE_SRC_Ready*** state for a Source Policy Engine and the ***PE_SNK_Ready*** state for a Sink Policy Engine. The Explicit Contract can be altered through the re-negotiation process. All Port pairs are required to make an Explicit Contract. |

| | |
|---|---|
| Implicit Contract | An agreement on power levels between a Port Pair which occurs, not as a result of the Power Delivery negotiation process, but as a result of a Power Role Swap or Fast Role Swap. Implicit Contracts are transitory since the Port pair is required to immediately negotiate an Explicit Contract after the Power Role Swap. An Implicit Contract ***Shall*** be limited to USB Type-C Current (see ***[USB Type-C 2.0]***). |