

LDR6025 USB Type-C PD Controller

REV1.5

Document History

REV1.0	New data sheet.	2016-10-28
REV1.1	Added SOP14 package information	2016-12-08
REV1.2	Added USB-C receptacle application	2016-12-14
REV1.3	Added SSOP16 package information and Removed QFN32 package information	2017-03-09
REV1.4	Revise Electrical Characteristics	2018-09-10
REV1.5	Revise Features	2019-03-26

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1. General Description

LDR6025 is a single port USB Type-C controller with Display port Alternate mode supported, especially design for USB PD Docking Stations with video output. LDR6025 provides a complete USB Type-C and USB-Power Delivery port control solution for dongles, Hubs and docking stations.

The GPIO pins are available for customer special application usage.

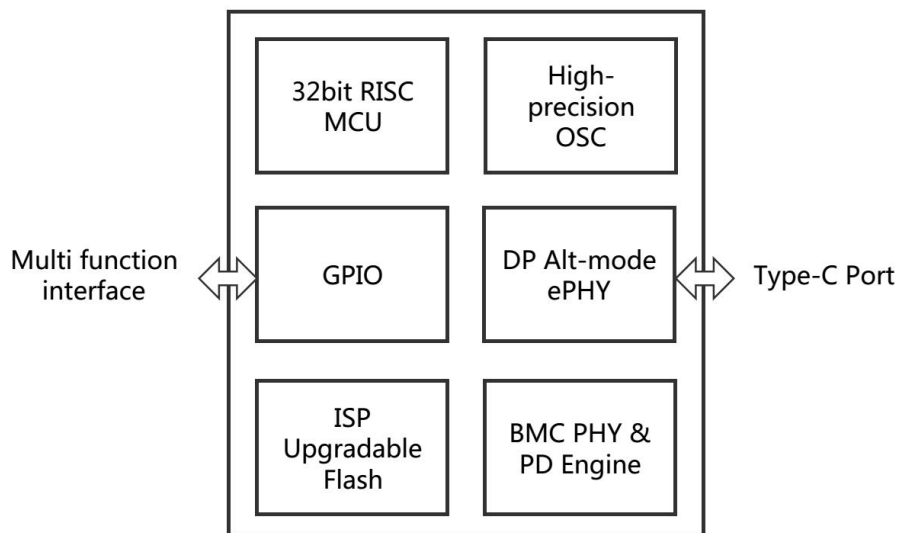


Figure 1. LDR6025 Block Diagram

1.1 Features

- ◇ USB PD 3.0 compatible
- ◇ USB PD 2.0 support
- ◇ Support DP Alt mode
- ◇ SSOP16/SOP14 available for various applications

1.2 Applications

- ◇ Type-C PD Dongles
- ◇ Type-C Hubs
- ◇ Type-C TV, monitor, and video adapters

1.3 Pin-outs

1.3.1 LDR6025SS Pin-out Diagram

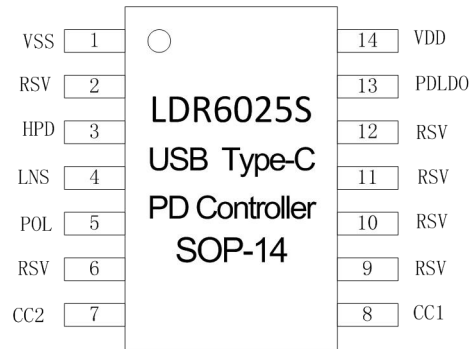


Figure 1. LDR6025S Pin-out

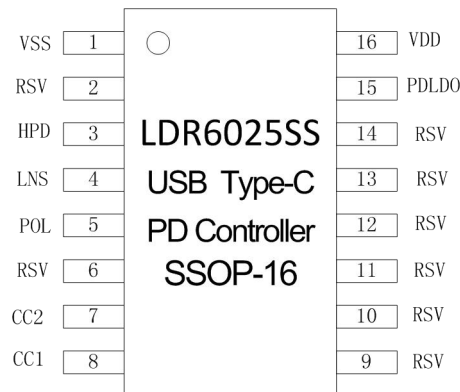


Figure 2. LDR6025SS Pin-out

1.3.2 LDR6025S Pin-out Description

Pin No.	Name	Type	Description
1	VSS	G	Ground
3	HPD	I	DP Hot Plug Detect
4	LNS	I	4 lane select, default 2 lane
5	POL	0	Polarity flip
7	CC2	I	CC channel 1
8	CC1	I	CC channel 2
13	PDLDO	0	USB PD Voltage Reference
14	VDD	P	Power Input Vcc=5V/3.3V

Others	RSV	-	Reserved
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15	PDLDO	O	USB PD Voltage Reference
16	VDD	P	Power Input Vcc=5V/3.3V
Others	RSV	-	Reserved

Type: P-Power; G-Ground; I-Input; O-Output; IO-Input/Output.

2. Electrical Characteristics

2.1 Maximum Ratings

Parameter	Description	Min/Max	Unit
VCC	Power supply	-0.3/6.0	V
V _I	Voltage input	-0.3/VDD+0.3	V
V _O	Voltage output	-0.3/VDD	V
T _{stg}	Storage temperature	-55/+150	°C



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USB Type-C PD Controller

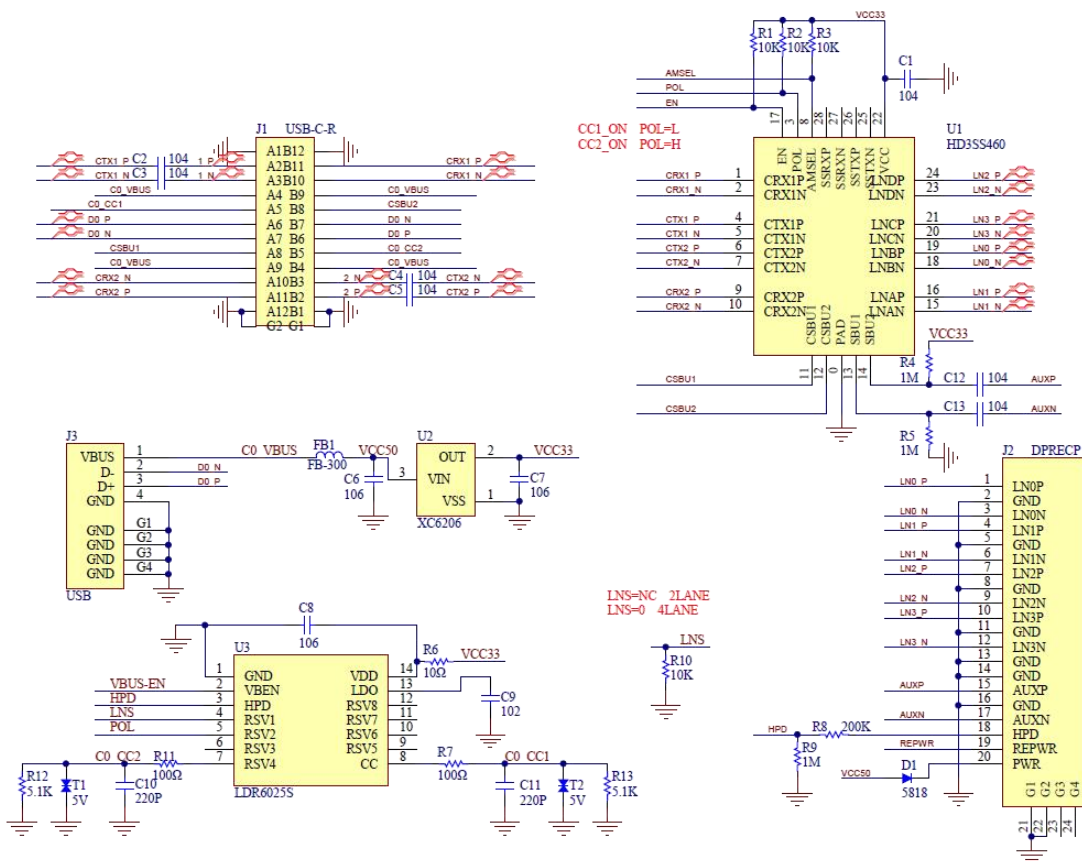
2.2 Operating Ranges

Parameter	Description	Min/Max	Unit
VCC	Power supply	3.0/5.5	V
Ta	Storage temperature	-40/+85	°C

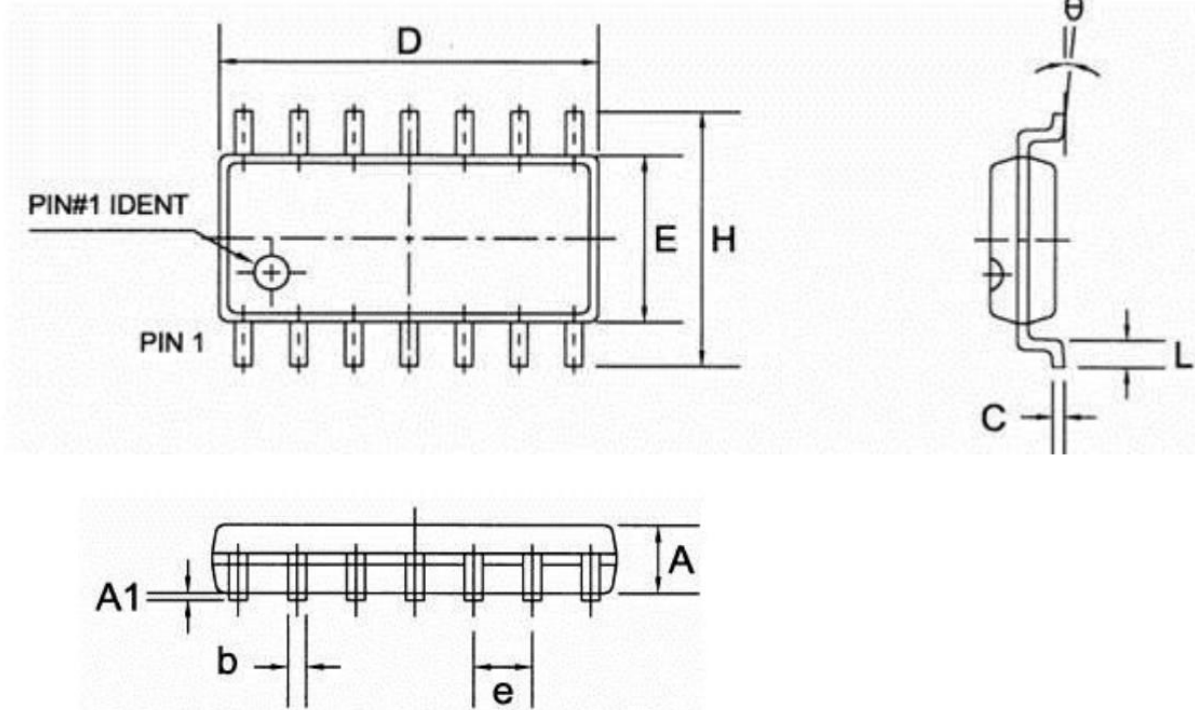
3.Application Solution

NOTE: Information in the following applications sections is not part of the LDR component specification, and LDR does not warrant its accuracy or completeness. LDR's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

3.1 Type-C to 4lane DP

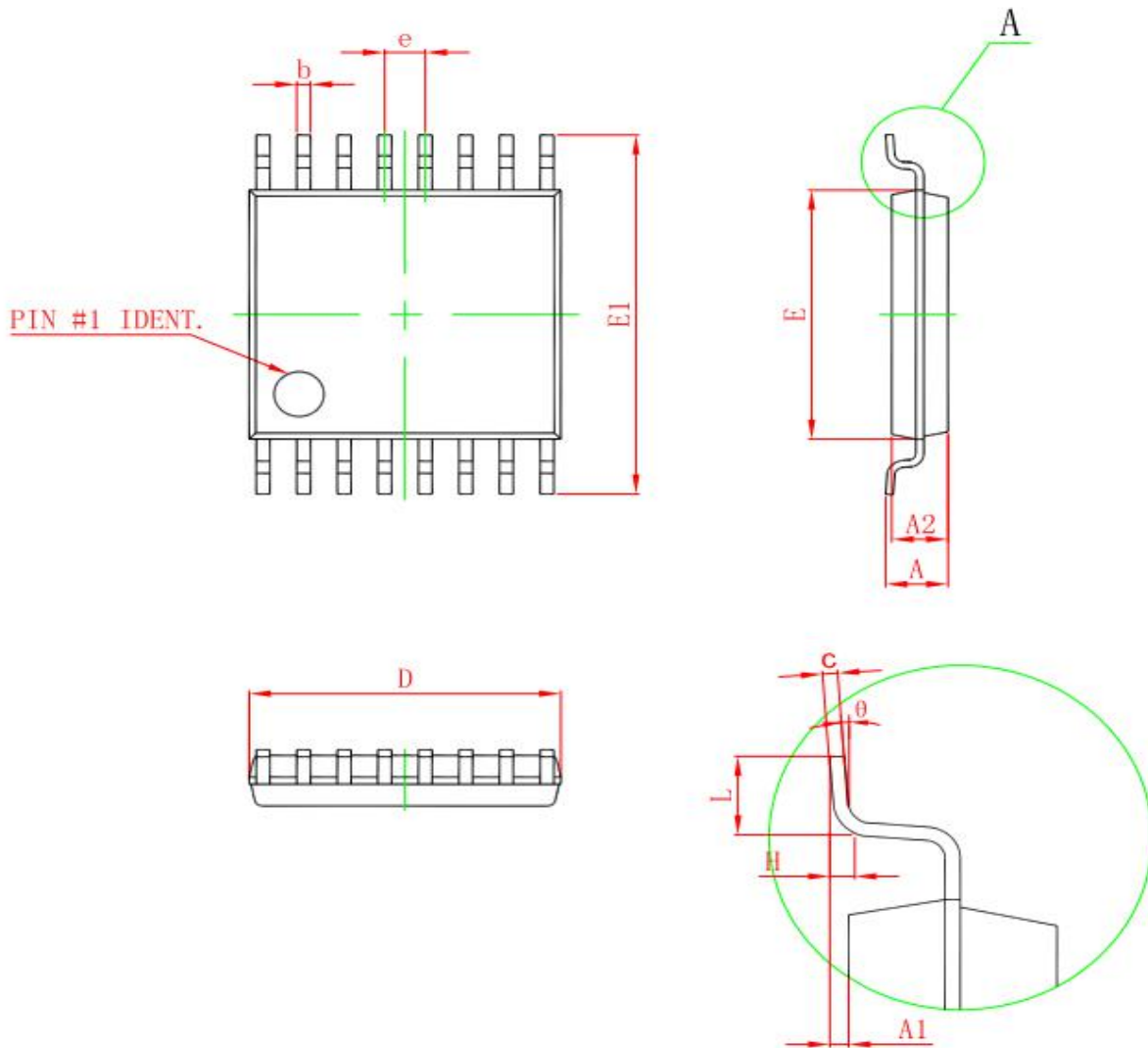


4.Package Dimension



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.30	1.50	1.70	0.051	0.059	0.067
A1	0.08	0.16	0.24	0.003	0.006	0.009
b	—	0.40	—	—	0.016	—
C	—	0.25	—	—	0.010	—
D	8.25	8.55	8.85	0.325	0.337	0.348
E	3.75	3.95	4.15	0.148	0.156	0.163
e	—	1.27	—	—	0.050	—
H	5.70	6.00	6.30	0.224	0.236	0.248
L	0.45	0.65	0.85	0.018	0.026	0.033
θ	0°	—	8°	0°	—	8°

LDR6025S SOP14



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	4.900	5.100	0.193	0.201
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.100		0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25 (TYP)		0.01 (TYP)	
θ	1°	7°	1°	7°

LDR6025SS SSOP16