

## ROHM's Online Tool

# ROHM LDO Finder User's Guide

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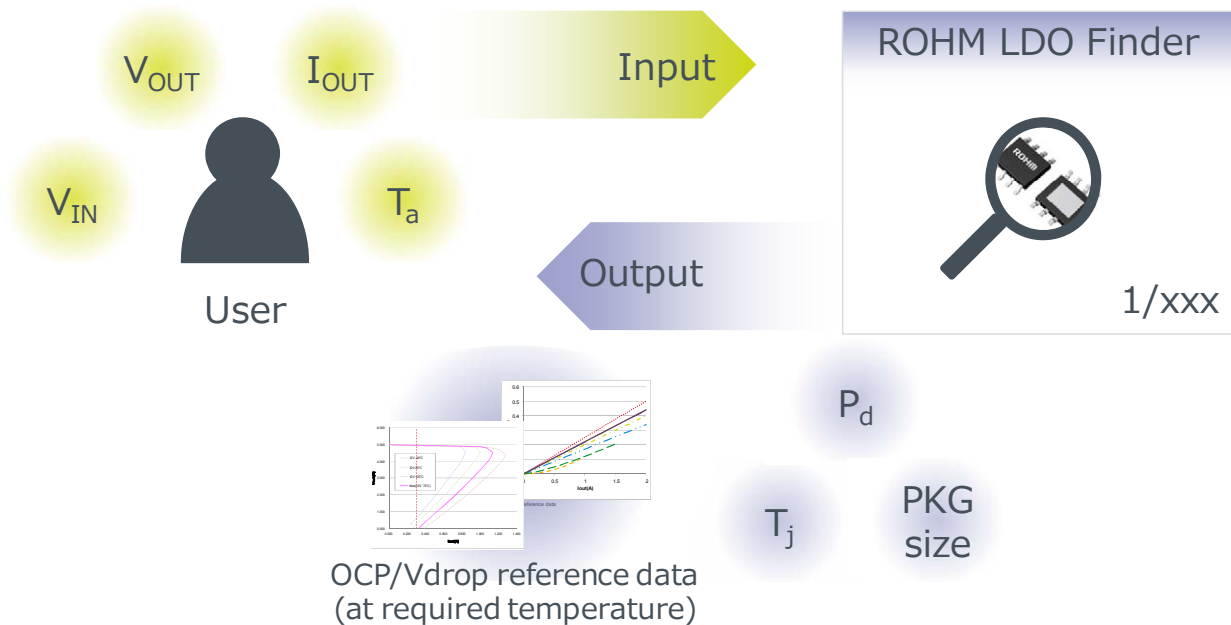
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## 1. What is ROHM LDO Finder?

### 1.1 Outline

ROHM LDO Finder is an online tool that allow circuit designers searching for an IC of Linear regulator to easily find a suitable Linear regulator.

ROHM LDO Finder can compare " $I_{OUT}$  vs.  $V_{OUT}$ " graph (means OCP) and minimum dropout voltage (means  $V_{drop}$ ) to up to six products simultaneously. In addition, it implements simple calculation to display Junction temperature( $T_j$ ) and Power dissipation( $P_d$ ) on the required conditions.



### 1.2 Default Language

The default language of ROHM LDO Finder is English. Only the MyROHM user registration and user authentication screens can be displayed in other languages (i.e. Japanese).

### 1.3 Applicable Products

- Single-Output LDO Regulators
- Standard Voltage Regulators
- ROHM LDO Finder will continue adding new products and series

### 1.4 Notes

- The results provided by ROHM LDO Finder are based on experimental results using ROHM evaluation boards and cannot be guaranteed. In addition, the results by ROHM LDO Finder offers reference results, not guaranteed results.
- ROHM LDO Finder specifications are subject to change without notice.

### 1.5 Questions/Comments

For inquiries and/or comments, please contact us at: <https://www.rohm.com/web/global/contactus>

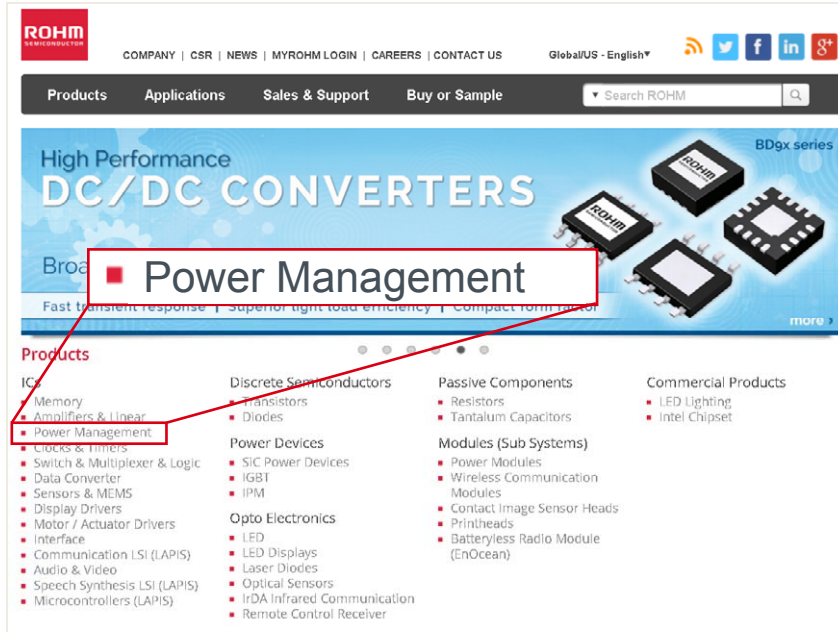
## 2. Access Method

ROHM LDO Finder can be accessed using as follow:

- From ROHM's homepage (<http://www.rohm.com>) (2.1)

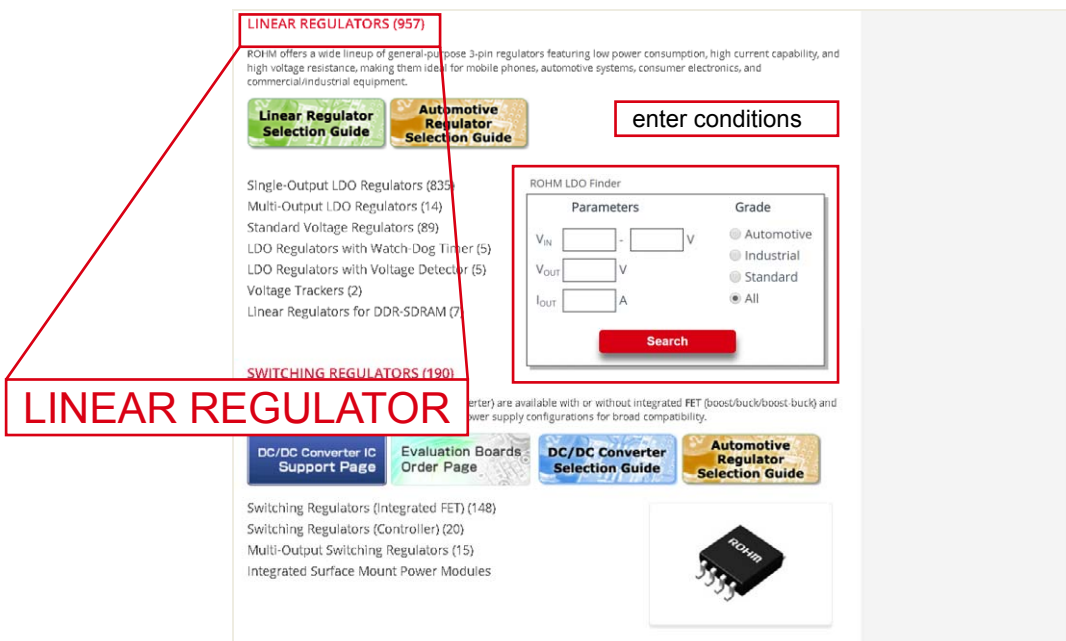
### 2.1 From ROHM's homepage (<http://www.rohm.com>)

- Homepage



- ROHM LDO Finder's "Entrance"

(<http://www.rohm.com/web/global/groups/-/group/groupname/Power%20Management>)



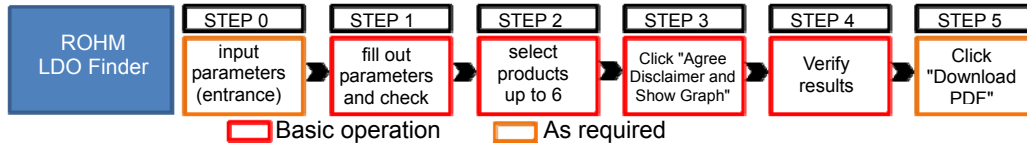
### 3. Usage Instructions

#### 3.1 Enter the user conditions at "Entrance"

Start ROHM LDO Finder as described on page 3.

#### 3.2 Setting parameters (parametric search)

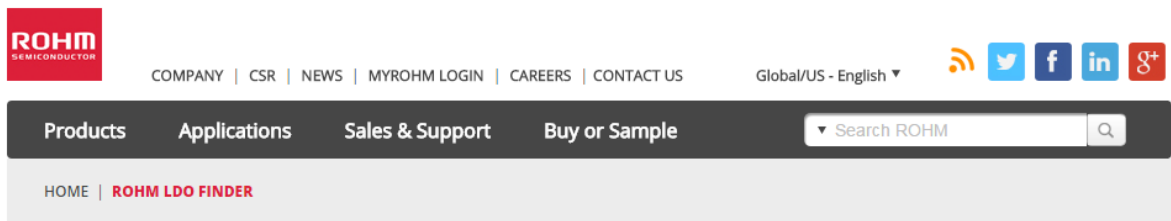
The basic design flow is as follow (with some possible omissions of intervening steps)



#### STEP 1

##### 3.2.1 Select Channel, Grade and Functions

Check the boxes you required. After having checked it, parametric search works.



#### ROHM LDO Finder

ROHM offers a wide lineup of general-purpose 3-pin regulators featuring low power consumption, high current capability, and high voltage resistance, making them ideal for mobile phones, automotive systems, consumer electronics, and commercial/industrial equipment. This tool is LDO easy finder. You can compare OCP and Vdrop graph up to 6 products simultaneously.

[User Manual](#)

[Disclaimer](#)

Please read this disclaimer carefully before clicking the "Agree Disclaimer & Show Graph" button below. By clicking "Agree Disclaimer & Show Graph", you are agreeing to be bound by the terms and conditions of this disclaimer.

**Parameters**

	Min	Typ	Max	
V <sub>IN</sub>	4.0		5.5	V
V <sub>OUT</sub>	3.3			V
I <sub>OUT</sub>	0.2			A
T <sub>a</sub>	40			°C

**Reset**

**Channel**

- 1ch
- 2ch
- 3ch

**Grade**

- Automotive
- Industrial
- Standard

**Functions**

- C<sub>OUT</sub> for MLCC (Low ESR C<sub>OUT</sub>)
- C<sub>OUT</sub> Discharge
- Over Current Protect (OCP)
- Power Good
- Over Voltage Protect (OVP)
- Soft Start
- Enable/ShutDown/Control
- VoltageDetector
- Thermal Shut Down (TSD)
- Watch Dog Timer

Graph      Display      Axis

Iout vs. Vout  
  Minimum Vdrop  
  Separated  
  Merged  
 H:  V:

Disclaimer

Items										
Product	Vin (Min.) [V]	Vin (Max.) [V]	Iout (Max.) [A]	Circuit Current [mA]	Ψjt(4Lay) [°C/W]	Tj [°C]	Pd [W]	Operating Temperature (Max.) [°C]	Θja [°C/W] (see datasheet)	Packaging
<input type="button" value="Clear check"/>	▲ ▼	▲ ▼	▲ ▼	▲ ▼	▲ ▼	▲ ▼	▲ ▼	▲ ▼	▲ ▼	
<input type="checkbox"/> BA00DD0WT	3	25	2	0.9	-	-	-	125	62.5	TO:
<input type="checkbox"/> BD00IA5MEFJ-M	2.3	5.5	0.5	0.3	-	-	-	105	59.2	HTS
<input type="checkbox"/> BD00IC0MEFJ-M	2.3	5.5	1	0.3	-	-	-	105	59.2	HTS
<input type="checkbox"/> BD00IC0WHFV	2.4	5.5	1	0.25	-	-	-	85	73.5	HV:
<input type="checkbox"/> BD33IA5MEFJ-M	2.3	5.5	0.5	0.3	-	-	-	105	59.2	HTS
<input type="checkbox"/> BD33IA5WEFJ	2.3	5.5	0.5	0.3	-	-	-	85	59.2	HTS
<input type="checkbox"/> BD33IC0MEFJ-M	2.4	5.5	1	0.25	-	-	-	105	59.2	HTS

### 3.2.2 Enter more detail required conditions

Enter the following parameters,

- $V_{IN}$  : narrowing by recommended operating input voltage range ("Typ" is used after the "Agree Disclaimer & Show Graph")
- $V_{OUT}$  : narrowing by required output voltage
- $I_{OUT}$  : narrowing by recommended maximum output current range
- $T_a$  : narrowing by recommended operating temperature (This is used on calculation of junction temperature ( $T_j$ ) and maximum power dissipation ( $P_d(max)$ ) based on  $\theta_{ja}$ )

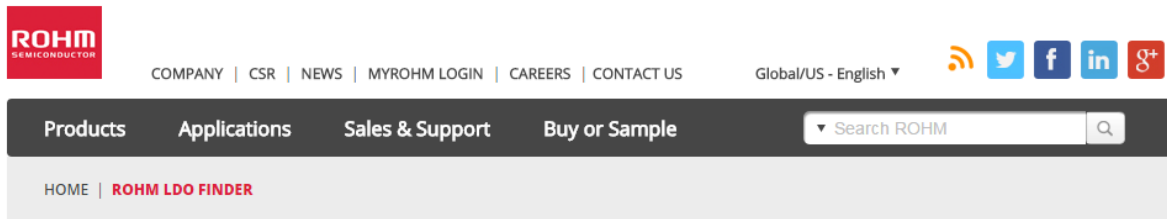
After entering the above parameters, parametric search works.

## STEP 2

### 3.2.3 Select products (up to 6 products)

After narrowing products by input parameters and select functions, please check the box of products you'd like to compare to characteristic.

You can select up to 6 products. After selecting it, a button "Agree Disclaimer & Show Graph", will be enabled. When you'd like to clear all checked box at products, click "Clear check" button. In addition, the check boxes grayed out is disabled to check. You cannot select it.



#### ROHM LDO Finder

ROHM offers a wide lineup of general-purpose 3-pin regulators featuring low power consumption, high current capability, and high voltage resistance, making them ideal for mobile phones, automotive systems, consumer electronics, and commercial/industrial equipment. This tool is LDO easy finder. You can compare OCP and Vdrop graph up to 6 products simultaneously.

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Product	Vin (Min.) [V]	Vin (Max.) [V]	Iout (Max.) [A]	Circuit Current [mA]	$T_j$ [°C]	$P_d$ [W]	Operating Temperature (Max.) [°C]	$\theta_{ja}$ [°C/W] (see datasheet)	P.
<input checked="" type="checkbox"/> BA0DD0WT	3	25	2	0.9	-	-	125	62.5	TO:
<input checked="" type="checkbox"/> BD00IA5MEFJ-M	2.3	5.5	0.5	0.3	-	-	105	59.2	HT:
<input checked="" type="checkbox"/> BD00IC0MEFJ-M	2.3	5.5	1	0.3	-	-	105	59.2	HT:
<input checked="" type="checkbox"/> BD00IC0WHFV	2.4	5.5	1	0.25	-	-	85	73.5	HV:
<input checked="" type="checkbox"/> BD33IA5MEFJ-M	2.3	5.5	0.5	0.3	-	-	105	59.2	HT:
<input checked="" type="checkbox"/> BD33IASWFEJ	2.3	5.5	0.5	0.3	-	-	85	59.2	HT:
<input type="checkbox"/> BD33IC0MEFJ-M	2.4	5.5	1	0.25	-	-	105	59.2	HT:

**STEP 3**

**3.2.4 Click "Agree Disclaimer & Show Graph" button (after reading Disclaimer carefully)**

You can click "Agree Disclaimer & Show Graph" button after selecting products' check box.

After clicking "Agree Disclaimer & Show Graph" button, ROHM LDO Finder shows OCP &  $V_{drop}$  graph at required conditions. You can compare to those graph you selected before.

**Caution : Read disclaimer carefully before clicking the "Agree Disclaimer & Show Graph" button.**

**ROHM LDO Finder**

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User Manual

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Parameters			Channel	Grade	Functions		
	Min	Typ	Max				
$V_{IN}$	4.0	5	5.5	<input checked="" type="checkbox"/> 1ch	<input type="checkbox"/> Automotive	<input type="checkbox"/> $C_{OUT}$ for MLCC (Low ESR $C_{OUT}$ )	<input type="checkbox"/> $C_{OUT}$ Discharge
$V_{OUT}$	3.3	V		<input type="checkbox"/> 2ch	<input type="checkbox"/> Industrial	<input type="checkbox"/> Over Current Protect (OCP)	<input type="checkbox"/> Power Good
$I_{OUT}$	0.2	A		<input type="checkbox"/> 3ch	<input type="checkbox"/> Standard	<input type="checkbox"/> Over Voltage Protect (OVP)	<input type="checkbox"/> Soft Start
$T_a$	40	$^{\circ}C$			<input type="checkbox"/> Enable/ShutDown/Control	<input type="checkbox"/> Thermal Shut Down (TSD)	<input type="checkbox"/> VoltageDetector
							<input type="checkbox"/> Watch Dog Timer

**Reset**

**BD00IA5MEFJ-M**

Reference Data

**BU33UA3WNVX**

Reference Data

**Agree Disclaimer & Show Graph**

Disclaimer

Graph

Iout vs. Vout

Minimum Vdrop

Display

Separated

Merged

Axis

H  V

**Download PDF**

<input checked="" type="checkbox"/>	BU33UA3WNVX	1.7	5.5	0.3	0.05	-	100.77	0.48	85	178.6	SSI
<input checked="" type="checkbox"/>	BD00IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BA00DDOWT	3	25	2	0.9	-	61.56	1.76	125	62.5	TO
<input type="checkbox"/>	BD00ICOMEFJ-M	2.3	5.5	1	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BD00ICOWHFV	2.4	5.5	1	0.25	-	65.09	1.50	85	73.5	HT
<input type="checkbox"/>	BD33IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT

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**3.2.5 Reset setting conditions**

When you'd like to reset all conditions (parameters, checked box, shown graphs), please click the "Reset" button.

**STEP 4**

**3.3 Check the results**

Here, it is described that how to use some functions and buttons. You can check the following results using buttons.

- I<sub>OUT</sub> vs. V<sub>OUT</sub> characteristics (OCP)
- Minimum dropout voltage (V<sub>drop</sub>)
- Junction temperature and maximum power dissipation (based on θ<sub>ja</sub>)

**3.3.1 Radio button in "Graph"**

After clicking the "Agree Disclaimer and Show Graph", ROHM LDO Finder displays OCP graph at first. When you'd like to check the minimum dropout voltage, you can switch displayed graph to "minimum Vdrop" by clicking radio button in "Graph".

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User Manual

Disclaimer

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The screenshot shows the ROHM LDO Finder interface. At the top, there are input fields for parameters: V<sub>IN</sub> (Min: 4.0, Typ: 5, Max: 5.5), V<sub>OUT</sub> (3.3), I<sub>OUT</sub> (0.2), and Ta (40). Below these are checkboxes for Channel (1ch, 2ch, 3ch), Grade (Automotive, Industrial, Standard), and various protection functions like OCP, OVP, TSD, etc. The main area displays two graphs: one for BD00IA5MEFJ-M and one for BU33UA3WNVX, both showing Vdrop (V) vs. Iout (A) for temperatures 40°C, 105°C, 25°C, and -40°C. Below the graphs is a control panel with a 'Graph' section containing radio buttons for 'Iout vs. Vout' and 'Minimum Vdrop'. The 'Minimum Vdrop' radio button is highlighted with a red box. Other controls include 'Display' (Separated, Merged), 'Axis' (H: 0.7, V: 0.35), and a 'Download PDF' button.

Clear check												
<input checked="" type="checkbox"/>	BU33UA3WNVX		1.7	5.5	0.3	0.05	-	100.77	0.48	85	178.6	SS
<input checked="" type="checkbox"/>	BD00IA5MEFJ-M		2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BA00DD0WT		3	25	2	0.9	-	61.56	1.76	125	62.5	TO
<input type="checkbox"/>	BD00IC0MEFJ-M		2.3	5.5	1	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BD00IC0WHFV		2.4	5.5	1	0.25	-	65.09	1.50	85	73.5	HT
<input type="checkbox"/>	BD33IA5MEFJ-M		2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT



### 3.3.2 Radio button in "Display"

After clicking button of the "Agree Disclaimer and Show Graph", you can switch 2 ways for checking graph.

1) Separated

This shows 4 graph lines in each graph block. It differs temperature at each lines and has 4 type as follow.

- pink - at user input temperature
- light red - at recommended highest operating temperature range
- light green - at typical temperature (25°C mainly)
- light blue - at recommended lowest operating temperature range

2) Merged

This shows only user input temperature. And if you selected at least 2 products, it will be shown merged graph on the same graph area.

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The screenshot shows the ROHM LDO Finder interface. It includes a 'Parameters' section with input fields for  $V_{IN}$  (Min: 4.0, Typ: 5, Max: 5.5),  $V_{OUT}$  (3.3),  $I_{OUT}$  (0.2), and  $T_a$  (40). There are 'Channel' (1ch, 2ch, 3ch), 'Grade' (Automotive, Industrial, Standard), and 'Functions' (C<sub>OUT</sub> for MLCC, OCP, OVP, etc.) options. A 'Graph' section shows a plot of  $V_{out}$  (V) vs  $I_{out}$  (A) for two models: BD00IA5MEFJ-M (solid line) and BU33UA3WNVX (dotted line). Below the graph, the 'Display' section has radio buttons for 'Separated' and 'Merged', with 'Merged' selected. There are also 'Axis' settings for H (1.5) and V (3.8).

<input checked="" type="checkbox"/>	BU33UA3WNVX	1.7	5.5	0.3	0.05	-	100.77	0.48	85	178.6	SS
<input checked="" type="checkbox"/>	BD00IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BA00DD0WT	3	25	2	0.9	-	61.56	1.76	125	62.5	TO
<input type="checkbox"/>	BD00IC0MEFJ-M	2.3	5.5	1	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BD00IC0WHFV	2.4	5.5	1	0.25	-	65.09	1.50	85	73.5	
<input type="checkbox"/>	BD33IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	
<input type="checkbox"/>	BD33IA5WEFJ	2.3	5.5	0.5	0.3	-	60.23	1.86	85	59.2	



### 3.3.3 Input box in "Axis"

This input box can change axis for all graphs. Here, the "H" changes horizontal axis maximum range, and the "V" changes vertical axis maximum range.

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User Manual

Disclaimer

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Parameters	Channel	Grade	Functions																												
<table style="width: 100%;"> <tr> <td style="text-align: right;">Min</td> <td style="width: 40px; text-align: center;">4.0</td> <td style="text-align: right;">Typ</td> <td style="width: 40px; text-align: center;">5</td> <td style="text-align: right;">Max</td> <td style="width: 40px; text-align: center;">5.5</td> <td style="text-align: right;">V</td> </tr> <tr> <td style="text-align: right;">V<sub>IN</sub></td> <td></td> <td style="text-align: right;">V<sub>OUT</sub></td> <td></td> <td style="text-align: right;">I<sub>OUT</sub></td> <td></td> <td style="text-align: right;">T<sub>a</sub></td> </tr> <tr> <td></td> <td style="text-align: center;">3.3</td> <td></td> <td style="text-align: center;">V</td> <td></td> <td style="text-align: center;">0.2</td> <td style="text-align: center;">A</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">°C</td> <td></td> <td style="text-align: center;">40</td> <td></td> </tr> </table>	Min	4.0	Typ	5	Max	5.5	V	V <sub>IN</sub>		V <sub>OUT</sub>		I <sub>OUT</sub>		T <sub>a</sub>		3.3		V		0.2	A				°C		40		<input checked="" type="checkbox"/> 1ch <input type="checkbox"/> 2ch <input type="checkbox"/> 3ch	<input type="checkbox"/> Automotive <input type="checkbox"/> Industrial <input type="checkbox"/> Standard	<input type="checkbox"/> C <sub>OUT</sub> for MLCC (Low ESR C <sub>OUT</sub> ) <input type="checkbox"/> Over Current Protect (OCP) <input type="checkbox"/> Over Voltage Protect (OVP) <input type="checkbox"/> Enable/ShutDown/Control <input type="checkbox"/> Thermal Shut Down (TSD)
Min	4.0	Typ	5	Max	5.5	V																									
V <sub>IN</sub>		V <sub>OUT</sub>		I <sub>OUT</sub>		T <sub>a</sub>																									
	3.3		V		0.2	A																									
			°C		40																										
<b>Reset</b>			<input type="checkbox"/> C <sub>OUT</sub> Discharge <input type="checkbox"/> Power Good <input type="checkbox"/> Soft Start <input type="checkbox"/> VoltageDetector <input type="checkbox"/> Watch Dog Timer																												

Reference Data

Agree Disclaimer & Show Graph

Graph

 Iout vs. Vout
  Minimum Vdrop
  Separated
  Merged

Axis

H  V

Download PDF

Clear check											
<input checked="" type="checkbox"/>	BU33UA3WNVX	1.7	5.5	0.3	0.05	-	100.77	0.48	85	178.6	SSI
<input checked="" type="checkbox"/>	BD00IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BA00DD0WT	3	25	2	0.9	-	61.56	1.76	125	62.5	TO
<input type="checkbox"/>	BD00IC0MEFJ-M	2.3	5.5	1	0.3	-	60.23	1.86	105	59.2	HT
<input type="checkbox"/>	BD00IC0WHFV	2.4	5.5	1	0.25	-	65.09	1.50	85	73.5	
<input type="checkbox"/>	BD33IA5MEFJ-M	2.3	5.5	0.5	0.3	-	60.23	1.86	105	59.2	
<input type="checkbox"/>	BD33IA5WEFJ	2.3	5.5	0.5	0.3	-	60.23	1.86	85	59.2	

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### 3.3.4 Calculation of junction temperature (Tj) and maximum power dissipation (Pd(max)) (based on θja)

After clicking button of the "Agree Disclaimer and Show Graph", column of Tj [°C] and Pd(max)[W], that is in the parametric search area, is calculated based on θja.

Here shows a result about data in case of existing θja on the parametric search.

These results are calculated by following expression.

$$Tj = Ta + \theta_{ja} * P \quad ( P = (V_{IN} - V_{OUT}) * I_{OUT} + (V_{IN} * I_{IN}) )$$

$$Pd(max) = Pd(max)_{@25^{\circ}C} - (Ta - 25) / \theta_{ja} \quad ( Ta > 25^{\circ}C )$$

If the column ΨJT has a value, you can calculate nearer actual junction temperature.

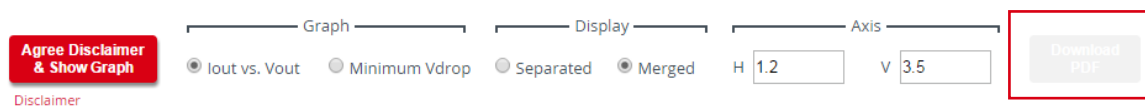
Please refer to following URL:

[http://rohmfs.rohm.com/en/products/databook/applnote/ic/power/switching\\_regulator/thermal\\_resistance\\_appli-e.pdf](http://rohmfs.rohm.com/en/products/databook/applnote/ic/power/switching_regulator/thermal_resistance_appli-e.pdf)

Caution: In ROHM LDO Finder, a shown θja is using one of value in the datasheet. In case you need other θja, please refer datasheet of respective products.

### 3.3.5 Download PDF (screenshot)

After optimizing the graph setting (refer to 3.3.1 - 3.3.3), you can download 4 graphs' (Graph 2 patterns x Display 2 patterns) screenshot by clicking the button "Download".



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## Disclaimer

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  2. This technical information attempt to support users who develop products and/or components incorporating ROHM's products, but any information contained in technical information, including, but not limited to, reference circuit, simulation result and bill of materials is solely for the purpose of reference, not for the purpose of exemplification or recommendation.  
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- | JAPAN     | USA       | EU         | CHINA     |
|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
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