



# TEST DATA OF MGS3243R3

Regulated DC Power Supply  
March 30, 2016

Approved by :

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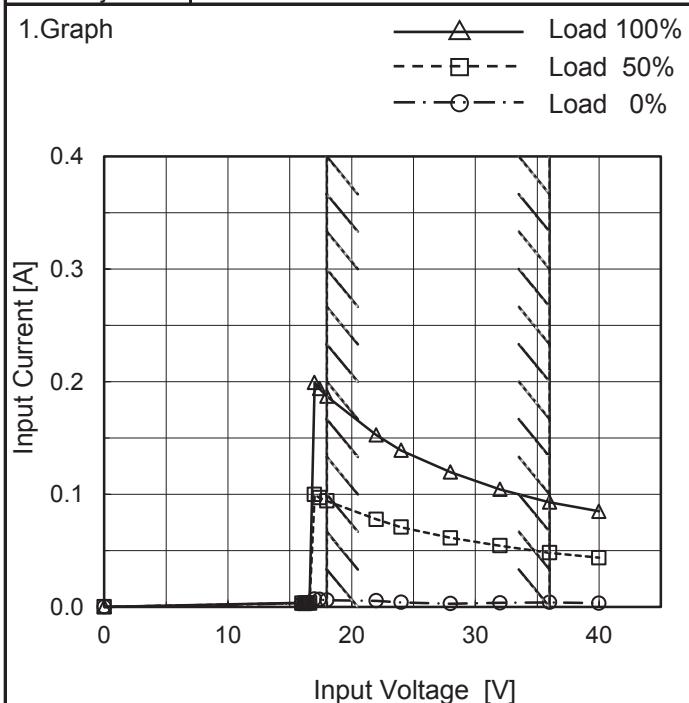
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(Final Page 19)

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Model	MGS3243R3
Item	Input Current (by Input Voltage)
Object	_____



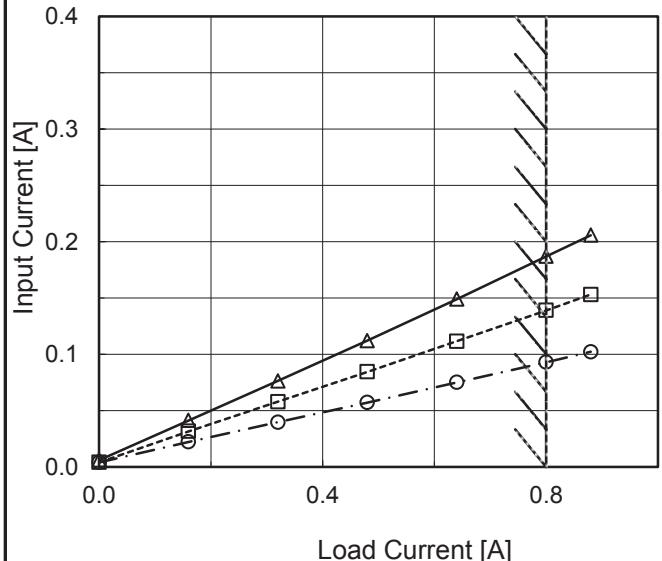
Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.003	0.004
16.2	0.004	0.003	0.003
16.4	0.003	0.004	0.004
16.6	0.003	0.003	0.004
17.0	0.007	0.100	0.199
17.4	0.007	0.097	0.194
18.0	0.006	0.094	0.187
22.0	0.005	0.078	0.153
24.0	0.004	0.071	0.139
28.0	0.003	0.061	0.120
32.0	0.004	0.054	0.104
36.0	0.004	0.048	0.093
40.0	0.003	0.044	0.085
--	-	-	-
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--	-	-	-

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Model	MGS3243R3																																																					
Item	Input Current (by Load Current)	Temperature	25°C																																																			
Object		Testing Circuitry	Figure A																																																			
1.Graph	<p style="text-align: center;">—△— Input Volt. 18V            - - -□--- Input Volt. 24V            - - ○ --- Input Volt. 36V</p>  <p>The graph plots Input Current [A] on the y-axis (0.0 to 0.4) against Load Current [A] on the x-axis (0.0 to 1.0). Three curves are shown for different input voltages: 18V (solid line with triangles), 24V (dashed line with squares), and 36V (dash-dot line with circles). All curves start at (0,0) and increase monotonically. A slanted line is drawn across the graph, starting from approximately (0.1, 0.02) and ending at (0.9, 0.22), representing the rated load current range.</p>	2.Values																																																				
			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.006</td><td>0.004</td><td>0.004</td></tr> <tr><td>0.16</td><td>0.041</td><td>0.032</td><td>0.022</td></tr> <tr><td>0.32</td><td>0.076</td><td>0.058</td><td>0.040</td></tr> <tr><td>0.48</td><td>0.112</td><td>0.084</td><td>0.057</td></tr> <tr><td>0.64</td><td>0.149</td><td>0.112</td><td>0.075</td></tr> <tr><td>0.80</td><td>0.187</td><td>0.139</td><td>0.093</td></tr> <tr><td>0.88</td><td>0.206</td><td>0.153</td><td>0.102</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Load Current [A]	Input Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	0.006	0.004	0.004	0.16	0.041	0.032	0.022	0.32	0.076	0.058	0.040	0.48	0.112	0.084	0.057	0.64	0.149	0.112	0.075	0.80	0.187	0.139	0.093	0.88	0.206	0.153	0.102	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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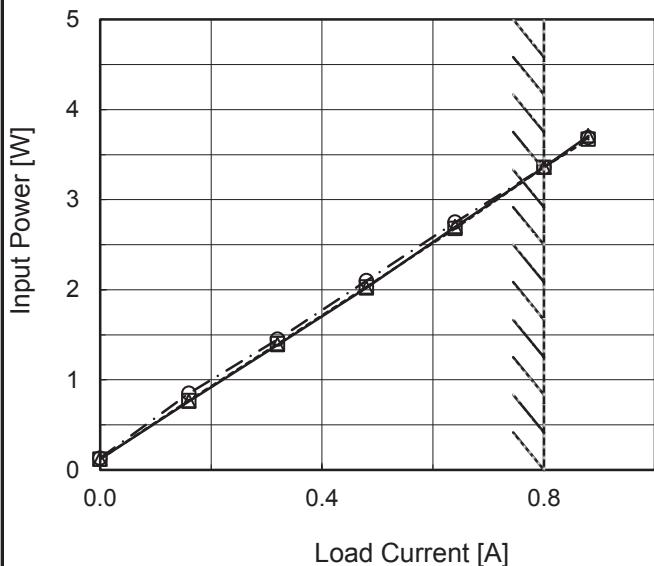
Model MGS3243R3

Item Input Power (by Load Current)

Object \_\_\_\_\_

1.Graph

—△— Input Volt. 18V  
 - -□--- Input Volt. 24V  
 - -○--- Input Volt. 36V



Note: Slanted line shows the range of the rated load current.

 Temperature 25°C  
 Testing Circuitry Figure A

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.12	0.12	0.13
0.16	0.76	0.77	0.85
0.32	1.39	1.40	1.45
0.48	2.02	2.03	2.10
0.64	2.70	2.68	2.75
0.80	3.36	3.36	3.36
0.88	3.71	3.67	3.69
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGS3243R3																																	
Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
Object																																		
1.Graph																																		
<p>The graph plots Efficiency [%] on the y-axis (50 to 90) against Input Voltage [V] on the x-axis (10 to 40). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a slight decrease in efficiency as input voltage increases. Two vertical slanted lines are drawn across the graph, one on the left between approximately 17V and 20V, and another on the right between approximately 30V and 35V.</p>																																		
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<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>77.9</td> <td>78.5</td> </tr> <tr> <td>18</td> <td>77.8</td> <td>78.7</td> </tr> <tr> <td>20</td> <td>77.5</td> <td>79.2</td> </tr> <tr> <td>24</td> <td>77.3</td> <td>79.3</td> </tr> <tr> <td>30</td> <td>76.7</td> <td>79.3</td> </tr> <tr> <td>36</td> <td>76.2</td> <td>79.1</td> </tr> <tr> <td>40</td> <td>75.6</td> <td>78.4</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	17	77.9	78.5	18	77.8	78.7	20	77.5	79.2	24	77.3	79.3	30	76.7	79.3	36	76.2	79.1	40	75.6	78.4	--	-	-	--	-	-
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<p>Note: Slanted line shows the range of the rated input voltage.</p>																																		

**COSEL**

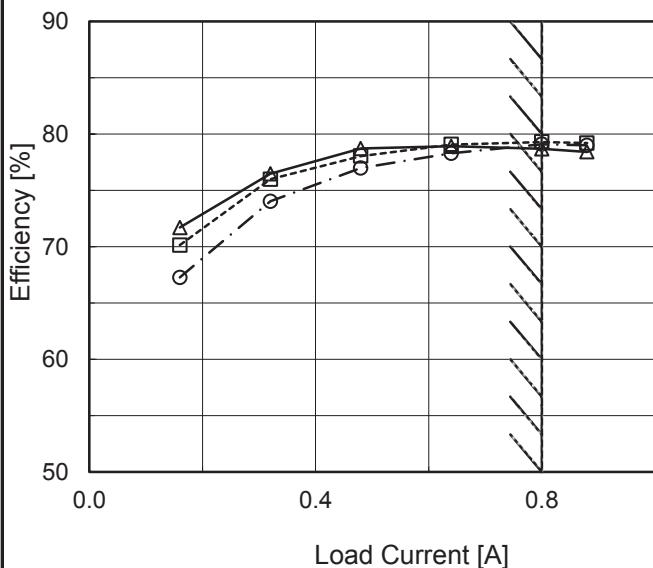
Model MGS3243R3

Item Efficiency (by Load Current)

Object \_\_\_\_\_

1.Graph

—△— Input Volt. 18V  
 - - □ - - Input Volt. 24V  
 - - ○ - - Input Volt. 36V



Note: Slanted line shows the range of the rated load current.

 Temperature 25°C  
 Testing Circuitry Figure A

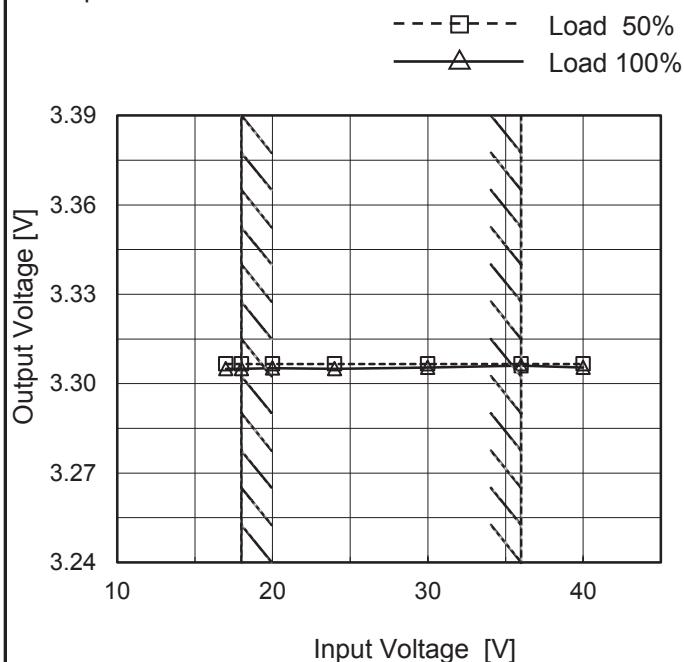
2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-	-	-
0.16	71.7	70.1	67.3
0.32	76.5	76.0	74.0
0.48	78.7	78.1	77.0
0.64	78.9	79.1	78.3
0.80	78.7	79.3	79.1
0.88	78.4	79.2	79.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGS3243R3	Temperature	25°C
Item	Line Regulation	Testing Circuitry	Figure A
Object	+3.3V0.8A		

## 1.Graph



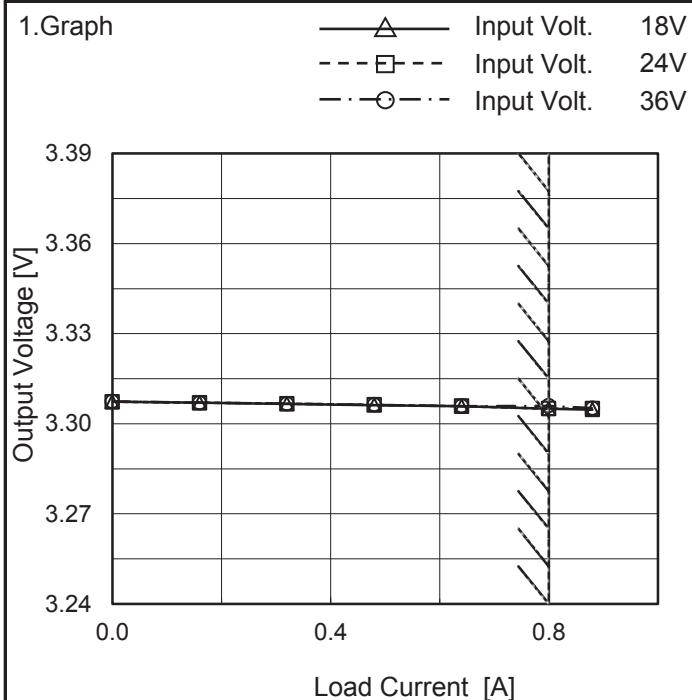
## 2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	3.307	3.305
18	3.307	3.305
20	3.307	3.305
24	3.307	3.305
30	3.307	3.305
36	3.307	3.306
40	3.307	3.305
--	-	-
--	-	-

Note: Slanted line shows the range of the rated input voltage.

**COSEL**

Model	MGS3243R3
Item	Load Regulation
Object	+3.3V0.8A



Note: Slanted line shows the range of the rated load current.

Temperature 25°C  
Testing Circuitry Figure A

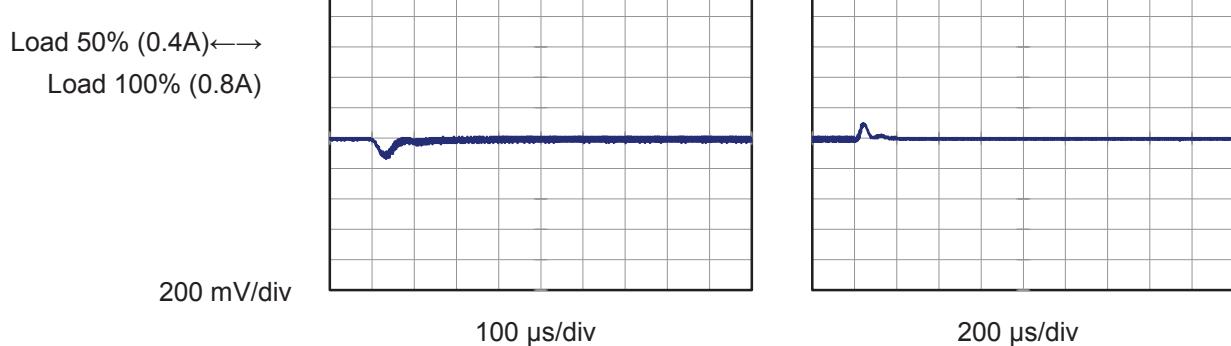
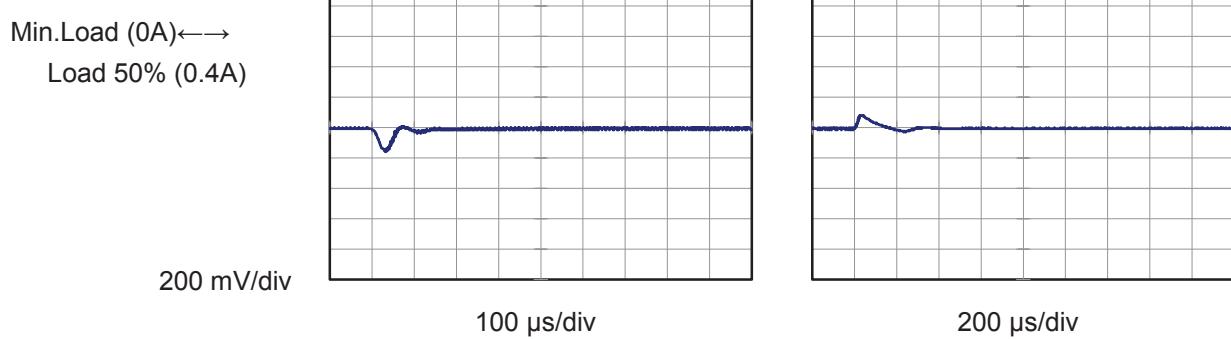
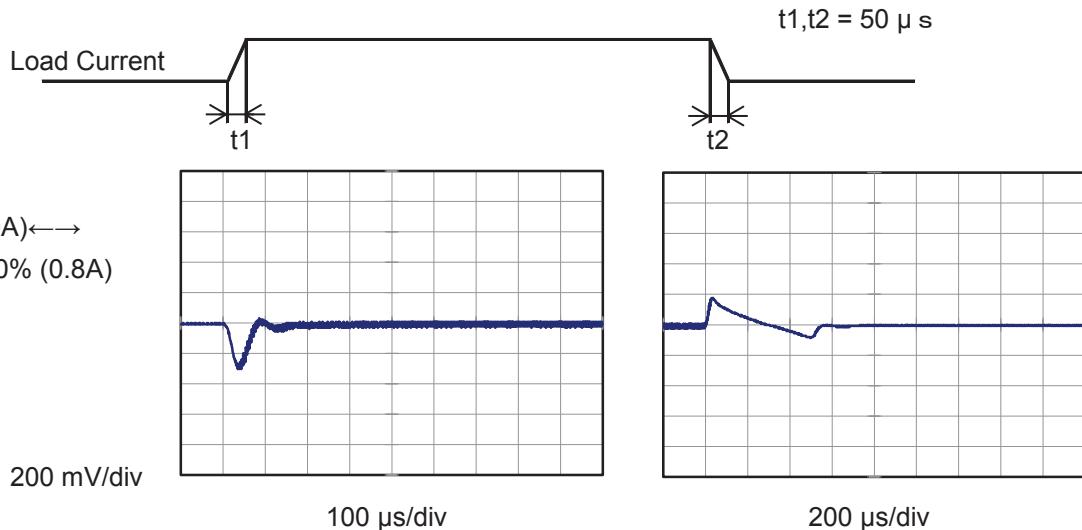
## 2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	3.307	3.307	3.307
0.16	3.307	3.307	3.307
0.32	3.307	3.307	3.307
0.48	3.306	3.306	3.306
0.64	3.306	3.306	3.306
0.80	3.305	3.305	3.306
0.88	3.305	3.305	3.305
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGS3243R3	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V0.8A		

Input Volt. 24 V  
 Cycle 1000 ms



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Model	MGS3243R3																																							
Item	Ripple Voltage (by Load Current)	Temperature      25°C Testing Circuitry      Figure B																																						
Object	+3.3V0.8A																																							
1. Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 400 mV, and the X-axis ranges from 0 to 0.8 A. Two curves are plotted: one for Input Volt. 18V (solid line with open triangle markers) and one for Input Volt. 36V (dashed line with open circle markers). Both curves show an increase in ripple voltage as load current increases. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (Input Volt. 18V)</th> <th>Ripple Voltage [mV] (Input Volt. 36V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>10</td></tr> <tr><td>0.16</td><td>15</td><td>15</td></tr> <tr><td>0.32</td><td>25</td><td>20</td></tr> <tr><td>0.48</td><td>35</td><td>30</td></tr> <tr><td>0.64</td><td>50</td><td>40</td></tr> <tr><td>0.80</td><td>80</td><td>50</td></tr> <tr><td>0.88</td><td>85</td><td>60</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV] (Input Volt. 18V)	Ripple Voltage [mV] (Input Volt. 36V)	0.00	5	10	0.16	15	15	0.32	25	20	0.48	35	30	0.64	50	40	0.80	80	50	0.88	85	60	--	-	-	--	-	-	--	-	-	--	-	-		
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<p>Measured by 100 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																								

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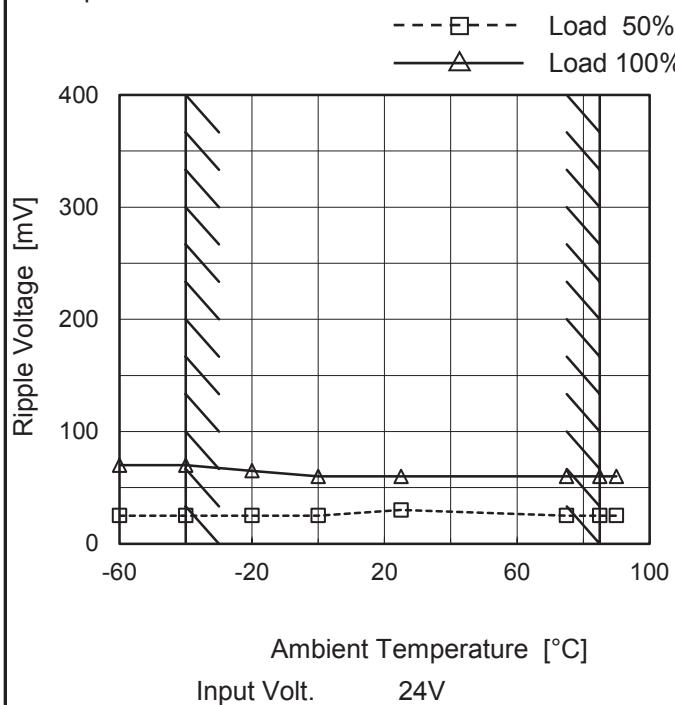
Model	MGS3243R3																																							
Item	Ripple-Noise	Temperature      25°C Testing Circuitry      Figure B																																						
Object	+3.3V0.8A																																							
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<p>Measured by 100 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>Ripple Noise[mVp-p]</p> <p>Fig.Complex Ripple Noise Wave Form</p>																																								

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Model	MGS3243R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V0.8A

Testing Circuitry Figure B

## 1. Graph



## 2. Values

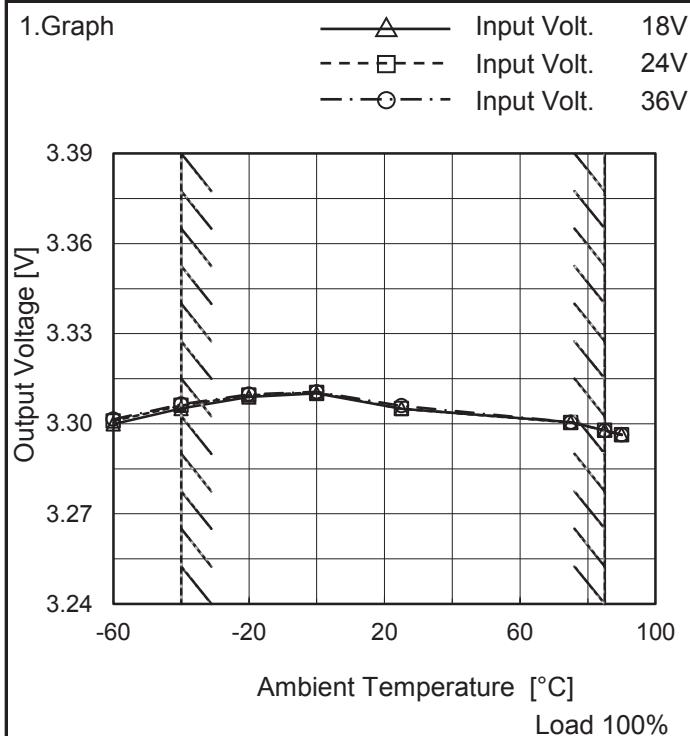
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	25	70
-40	25	70
-20	25	65
0	25	60
25	30	60
75	25	60
85	25	60
90	25	60
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

Note: Slanted line shows the range of the rated ambient temperature.

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Model	MGS3243R3
Item	Ambient Temperature Drift
Object	+3.3V0.8A



Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	3.300	3.301	3.302
-40	3.305	3.306	3.307
-20	3.309	3.310	3.310
0	3.310	3.310	3.311
25	3.305	3.305	3.306
75	3.301	3.300	3.301
85	3.298	3.298	3.298
90	3.296	3.296	3.296
--	-	-	-
--	-	-	-
--	-	-	-

Note: Slanted line shows the range of the rated ambient temperature.



Model	MGS3243R3	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+3.3V0.8A	

### 1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -40 - 85°C

Input Voltage : 18 - 36V

Load Current : 0 - 0.8A

\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

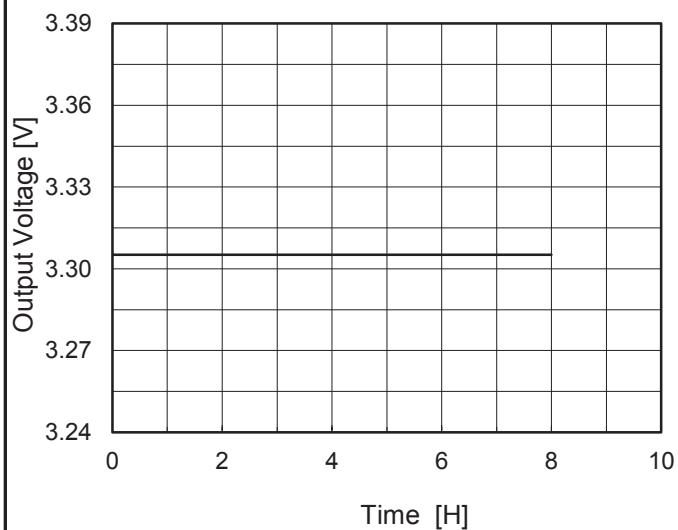
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	0	18	0	3.312	$\pm 7$	$\pm 0.2$
Minimum Voltage	85	36	0.8	3.298		

**COSEL**

Model	MGS3243R3
Item	Time Lapse Drift
Object	+3.3V0.8A

## 1.Graph



Input Volt.      24V  
Load            100%

Temperature      25°C  
Testing Circuitry      Figure A

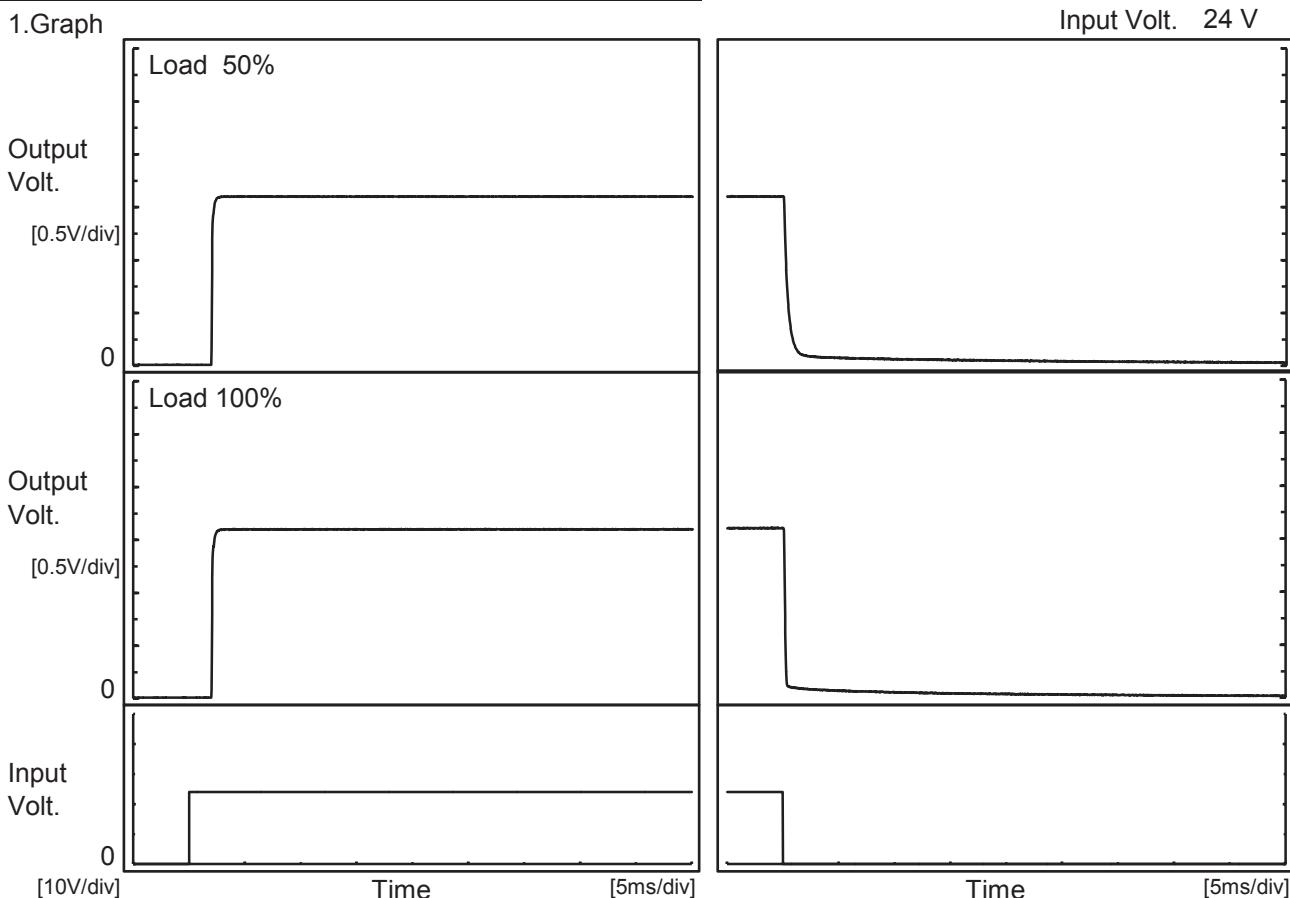
## 2.Values

Time since start [H]	Output Voltage [V]
0.0	3.306
0.5	3.305
1.0	3.305
2.0	3.305
3.0	3.305
4.0	3.305
5.0	3.305
6.0	3.305
7.0	3.305
8.0	3.305

**COSEL**

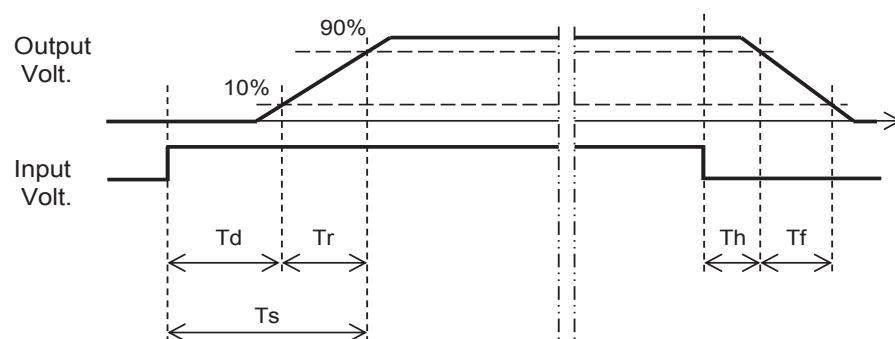
Model	MGS3243R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V0.8A		

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		2.0	0.2	2.2	0.1	1.0	
100 %		2.0	0.2	2.2	0.1	0.2	

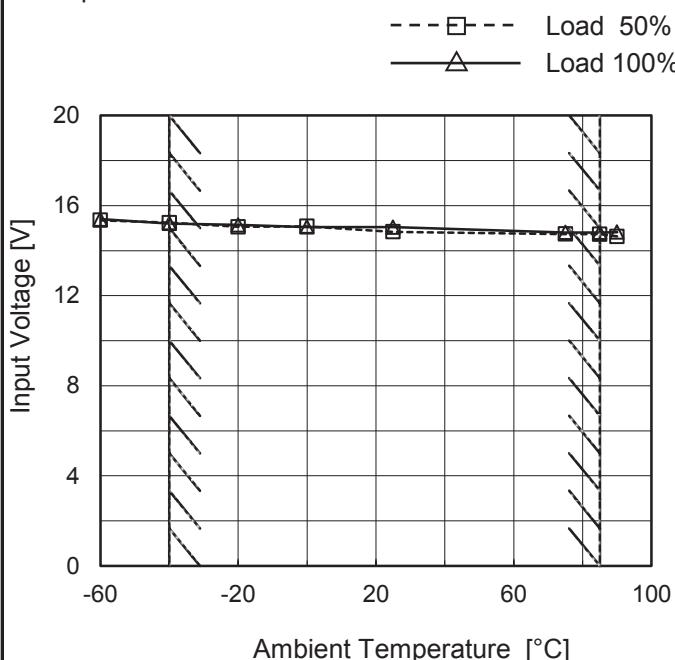


**COSEL**

Model	MGS3243R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V0.8A

## Testing Circuitry Figure A

## 1.Graph



## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.4	15.4
-40	15.3	15.3
-20	15.1	15.2
0	15.1	15.1
25	14.9	15.1
75	14.8	14.9
85	14.8	14.9
90	14.7	14.9
--	-	-
--	-	-
--	-	-

Note: Slanted line shows the range of the rated ambient temperature.

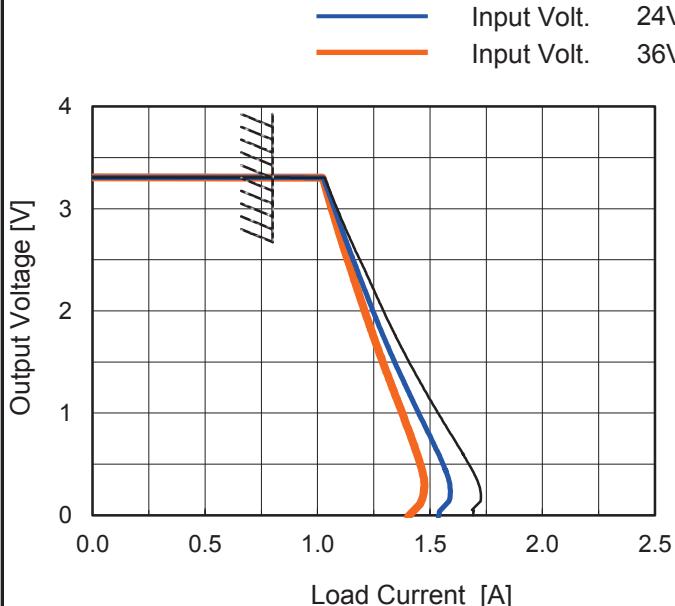
# COSEL

Model MGS3243R3

Item Overcurrent Protection

Object +3.3V0.8A

1.Graph



Note: Slanted line shows the range of the rated load current.

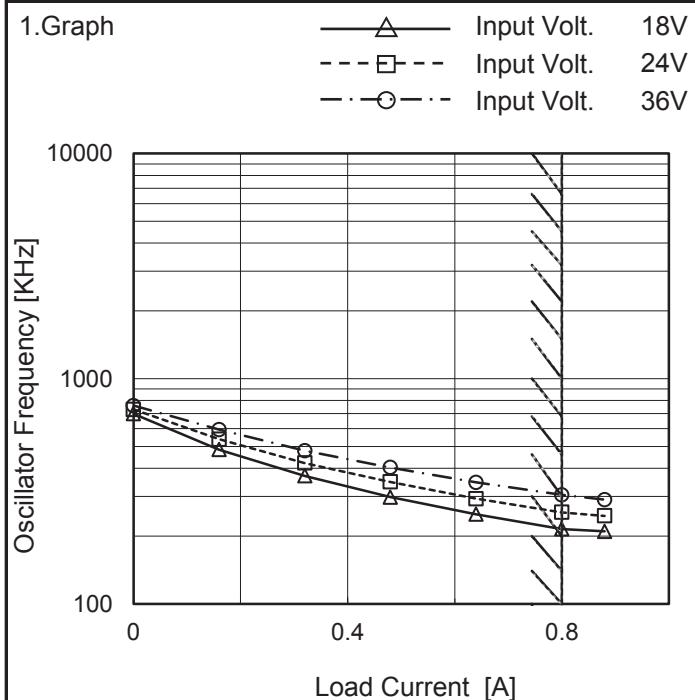
Temperature 25°C  
Testing Circuitry Figure A

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
3.30	0.82	0.82	0.82
3.14	1.06	1.05	1.04
2.97	1.09	1.08	1.07
2.64	1.16	1.13	1.11
2.31	1.23	1.19	1.16
1.98	1.30	1.25	1.21
1.65	1.37	1.31	1.26
1.32	1.45	1.38	1.32
0.99	1.54	1.45	1.38
0.66	1.63	1.52	1.43
0.33	1.71	1.58	1.47
0.00	1.69	1.54	1.40

**COSEL**

Model	MGS3243R3
Item	Switching frequency (by Load Current)
Object	+3.3V0.8A


 Temperature 25°C  
 Testing Circuitry Figure A

## 2.Values

Load Current [A]	Frequency [kHz]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	699	730	760
0.16	484	539	594
0.32	370	422	479
0.48	298	348	403
0.64	250	293	346
0.80	215	255	305
0.88	210	246	290
--	-	-	-
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Note: Slanted line shows the range of the rated load current.

-When load current is low, MG operates intermittently, so switching frequency would not become constant.

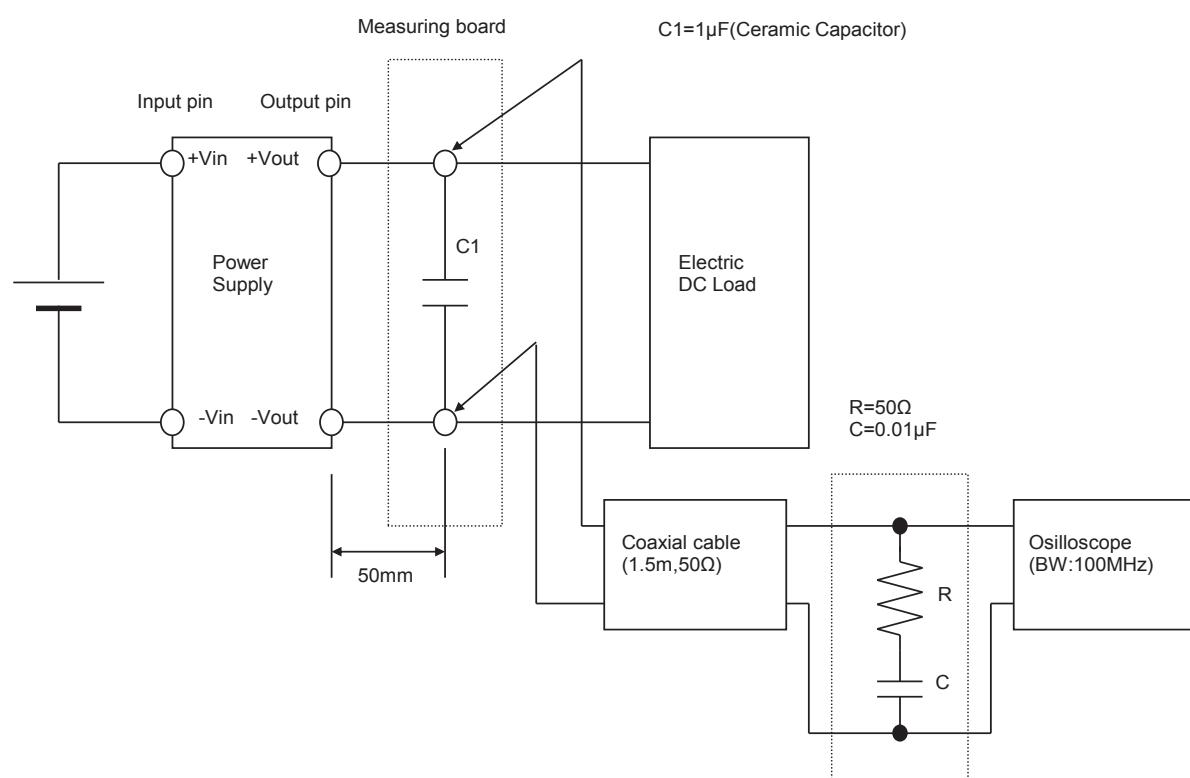
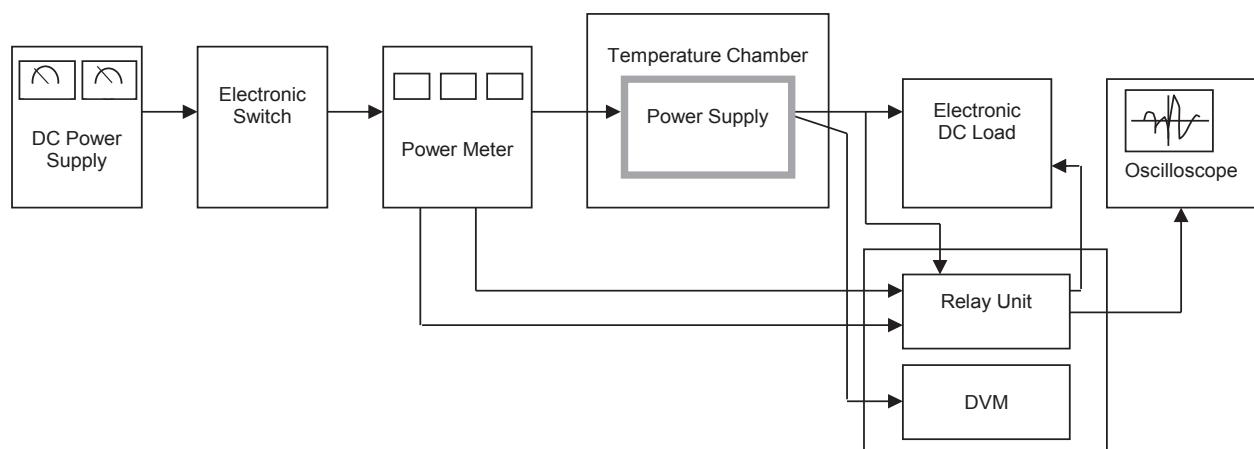


Figure B (Ripple and Ripple noise Characteristic)