

Linear Regulator IC Series

# Table of resistance for output voltage setting on linear regulator ICs

No.15020EBY09

On representative linear regulator ICs, the desired output voltage can be obtained using the setting of external resistance. These application notes provide tables for each series so that it is easy to set the resistance value for the output voltage setting from various internal reference voltages  $V_{REF}$ .

- Applicable linear regulator configurations

The tables of resistance values provided in these application notes apply to linear regulator ICs designed with the configuration shown in Figure 1.

The output voltage  $V_O$  is divided between the feedback resistors  $R_1$  and  $R_2$  and input to the non-inverting side of the error amplifier. The error amplifier compares the input voltage and the reference voltage  $V_{REF}$  and outputs an error signal to the output transistor so that the output voltage  $V_O$  shifts to the predetermined voltage value. This figure shows the simplest possible configuration. On actual ICs, there are driver circuits and protective circuits between the error amplifier and the output transistor.

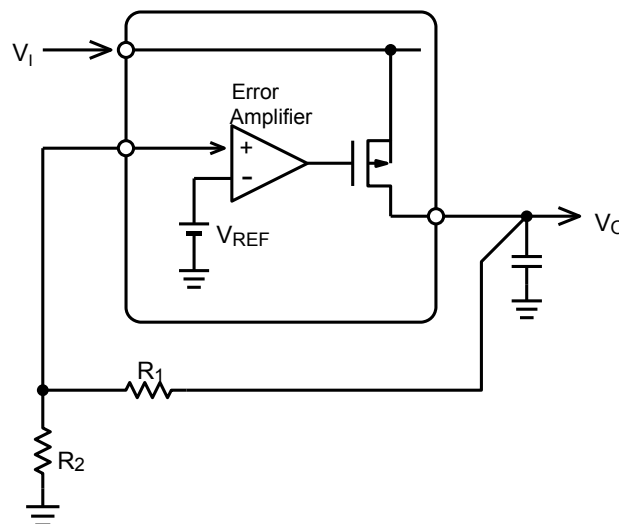


Figure 1. Representative configuration of linear regulator circuits

- Calculation of output voltage  $V_O$

The output voltage  $V_O$  can be set using the external resistors  $R_1$  and  $R_2$  on Figure 1. The output voltage  $V_O$  is expressed with the following formula.

$$V_O = \frac{R_1 + R_2}{R_2} \times V_{REF} \text{ (V)} \quad (1)$$

$V_{REF}$ : Reference voltage (V) inside IC

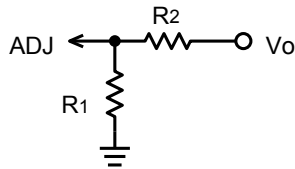
Also, the resistance ratio of  $R_1$  and  $R_2$  is expressed with the following formula.

$$\frac{R_1}{R_2} = \frac{V_O}{V_{REF}} - 1 \quad (2)$$

- The tables of resistance values for each linear regulator series are shown from the next page. The position of  $R_1$  and  $R_2$ , the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

Table 1 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=0.75 V

Series name	Recommended value for R <sub>1</sub>	Range of output voltage settings
BD00D0AW	5kΩ~10kΩ	3.0V~15V
BD00FC0W	5kΩ~10kΩ	1.0V~15V
BD00C0AW	5kΩ~10kΩ	1.0V~15V



$$V_O = \frac{R_1 + R_2}{R_1} \times V_{REF} (V)$$

• High precision setting

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1	7.5	1.5+1	1.000	0
1.05	7.5	3	1.050	0
1.1	7.5	2+1.5	1.100	0
1.15	7.5	2+2	1.150	0
1.2	7.5	3+1.5	1.200	0
1.25	7.5	3+2	1.250	0
1.3	7.5	3.3+2.2	1.300	0
1.5	7.5	7.5	1.500	0
1.8	7.5	7.5+3	1.800	0
1.85	7.5	11	1.850	0
1.9	7.5	10+1.5	1.900	0
2	7.5	8.2+4.3	2.000	0
2.05	7.5	13	2.050	0
2.1	10	18	2.100	0
2.2	7.5	13+1.5	2.200	0
2.3	9.1	12+6.8	2.299	- 0.02
2.5	7.5	10+7.5	2.500	0
2.55	7.5	18	2.550	0
2.6	7.5	11+7.5	2.600	0
2.7	7.5	12+7.5	2.700	0
2.75	7.5	20	2.750	0
2.8	7.5	13+7.5	2.800	0
2.85	7.5	11+10	2.850	0
2.9	7.5	20+1.5	2.900	0
2.95	7.5	22	2.950	0
3	10	30	3.000	0
3.1	7.5	16+7.5	3.100	0
3.2	6.8	22+0.22	3.201	+ 0.02
3.3	7.5	18+7.5	3.300	0
3.4	6.2	18+3.9	3.399	- 0.02
3.5	7.5	20+7.5	3.500	0
3.7	7.5	22+7.5	3.700	0
5	9.1	51+0.56	4.999	- 0.01
5.4	10	62	5.400	0
6	7.5	51+1.5	6.000	0
6.3	10	47+27	6.300	0
7	8.2	68+0.33	7.000	- 0.
8	9.1	68+20	8.003	+ 0.03
9	10	110	9.000	0
10	7.5	91+1.5	10.000	0
12	10	150	12.000	0
15	10	180+10	15.000	0

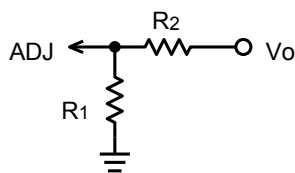
• Setting with minimum number of components

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1	10	3.3	0.998	- 0.25
1.05	7.5	3	1.050	0
1.1	10	4.7	1.103	+ 0.23
1.15	6.2	3.3	1.149	- 0.07
1.2	5.6	3.3	1.192	- 0.67
1.25	7.5	5.1	1.260	+ 0.8
1.3	7.5	5.6	1.310	+ 0.77
1.5	7.5	7.5	1.500	0
1.8	9.1	13	1.821	+ 1.19
1.85	7.5	11	1.850	0
1.9	10	15	1.875	- 1.32
2	9.1	15	1.986	- 0.69
2.05	7.5	13	2.050	0
2.1	10	18	2.100	0
2.2	6.2	12	2.202	+ 0.07
2.3	6.2	13	2.323	+ 0.98
2.5	5.6	13	2.491	- 0.36
2.55	7.5	18	2.550	0
2.6	8.2	20	2.579	- 0.8
2.7	6.2	16	2.685	- 0.54
2.75	7.5	20	2.750	0
2.8	10	27	2.775	- 0.89
2.85	5.6	16	2.893	+ 1.5
2.9	5.6	16	2.893	- 0.25
2.95	7.5	22	2.950	0
3	10	30	3.000	0
3.1	5.1	16	3.103	+ 0.09
3.2	8.2	27	3.220	+ 0.61
3.3	10	33	3.225	- 2.27
3.4	6.8	24	3.397	- 0.09
3.5	8.2	30	3.494	- 0.17
3.7	5.6	22	3.696	- 0.1
5	9.1	51	4.953	- 0.93
5.4	10	62	5.400	0
6	5.6	39	5.973	- 0.45
6.3	7.5	56	6.350	+ 0.79
7	8.2	68	6.970	- 0.44
8	7.5	75	8.250	+ 3.13
9	10	110	9.000	0
10	8.2	100	9.896	- 1.04
12	10	150	12.000	0
15	6.8	130	15.088	+ 0.59

• The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

Table 2 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=0.75 V

Series name	Recommended value for R <sub>1</sub>	Range of output voltage settings
BD00KA5W	30kΩ	1.0V~15V



$$V_O = \frac{R_1 + R_2}{R_1} \times V_{REF} (V)$$

• High precision setting

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1	30	10	1.000	0
1.05	30	12	1.050	0
1.1	30	12+2	1.100	0
1.15	30	16	1.150	0
1.2	30	18	1.200	0
1.25	30	20	1.250	0
1.3	30	22	1.300	0
1.5	30	30	1.500	0
1.8	30	27+15	1.800	0
1.85	30	22+22	1.850	0
1.9	30	24+22	1.900	0
2	30	30+20	2.000	0
2.05	30	30+22	2.050	0
2.1	30	30+24	2.100	0
2.2	30	43+15	2.200	0
2.3	30	62	2.300	0
2.5	30	43+27	2.500	0
2.55	30	36+36	2.550	0
2.6	30	47+27	2.600	0
2.7	30	39+39	2.700	0
2.75	30	47+33	2.750	0
2.8	30	82	2.800	0
2.85	30	51+33	2.850	0
2.9	30	43+43	2.900	0
2.95	30	68+20	2.950	0
3	30	47+43	3.000	0
3.1	30	47+47	3.100	0
3.2	30	51+47	3.200	0
3.3	30	51+51	3.300	0
3.4	30	82+24	3.400	0
3.5	30	110	3.500	0
3.7	30	62+56	3.700	0
5	30	150+20	5.000	0
5.4	30	150+36	5.400	0
6	30	180+30	6.000	0
6.3	30	160+62	6.300	0
7	30	220+30	7.000	0
8	30	180+110	8.000	0
9	30	330	9.000	0
10	30	220+150	10.000	0
12	30	270+180	12.000	0
15	30	470+100	15.000	0

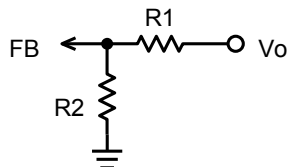
• Setting with minimum number of components

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1	30	10	1.000	0
1.05	30	12	1.050	0
1.1	33	15	1.091	- 0.83
1.15	30	16	1.150	0
1.2	30	18	1.200	0
1.25	30	20	1.250	0
1.3	30	22	1.300	0
1.5	30	30	1.500	0
1.8	33	47	1.818	+ 1.01
1.85	27	39	1.833	- 0.9
1.9	33	51	1.909	+ 0.48
2	33	56	2.023	+ 1.14
2.05	27	47	2.056	+ 0.27
2.1	27	47	2.056	- 2.12
2.2	27	51	2.167	- 1.52
2.3	30	62	2.300	0
2.5	27	62	2.472	- 1.11
2.55	33	82	2.614	+ 2.5
2.6	33	82	2.614	+ 0.52
2.7	27	68	2.639	- 2.26
2.75	30	82	2.800	+ 1.82
2.8	30	82	2.800	0
2.85	27	75	2.833	- 0.58
2.9	27	75	2.833	- 2.3
2.95	33	100	3.023	+ 2.47
3	33	100	3.023	+ 0.76
3.1	27	82	3.028	- 2.33
3.2	30	100	3.250	+ 1.56
3.3	27	91	3.278	- 0.67
3.4	33	120	3.477	+ 2.27
3.5	30	110	3.500	0
3.7	33	130	3.705	+ 0.12
5	27	150	4.917	- 1.67
5.4	33	200	5.295	- 1.94
6	33	240	6.205	+ 3.41
6.3	27	200	6.306	+ 0.09
7	33	270	6.886	- 1.62
8	30	300	8.250	+ 3.13
9	30	330	9.000	0
10	27	330	9.917	- 0.83
12	33	510	12.341	+ 2.84
15	27	510	14.917	- 0.56

• The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

Table 3 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=0.8 V

Series name	Recommended value for R <sub>1</sub> +R <sub>2</sub>	Range of output voltage settings
BD00GC0W	1kΩ~90kΩ	1.5V~13V
BD00GA5W	1kΩ~90kΩ	1.5V~13V
BD00GA3W	1kΩ~90kΩ	1.5V~13V
BD00HC5W	1kΩ~90kΩ	1.5V~7.0V
BD00HC0W	1kΩ~90kΩ	0.8V~7.0V
BD00HA5W	1kΩ~90kΩ	1.5V~7.0V
BD00HA3W	1kΩ~90kΩ	1.5V~7.0V
BD00IC0W	1kΩ~90kΩ	0.8V~4.5V
BD00IA5W	1kΩ~90kΩ	0.8V~4.5V



$$V_o = \frac{R_1 + R_2}{R_2} \times V_{REF} (V)$$

High precision setting

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
0.8	0	-	0.800	-
0.9	1.5	12	0.900	0
1	3	12	1.000	0
1.05	7.5	24	1.050	0
1.1	7.5	20	1.100	0
1.15	5.1+0.15	12	1.150	0
1.2	7.5	15	1.200	0
1.25	4.7+4.3	16	1.250	0
1.3	7.5	12	1.300	0
1.5	6.2+4.3	12	1.500	0
1.8	15	12	1.800	0
1.85	15+0.75	12	1.850	0
1.9	22	16	1.900	0
2	15	10	2.000	0
2.05	18+0.75	12	2.050	0
2.1	9.1	5.6	2.100	0
2.2	10+7.5	10	2.200	0
2.3	30	16	2.300	0
2.5	51	24	2.500	0
2.55	20+15	16	2.550	0
2.6	27	12	2.600	0
2.7	22+16	16	2.700	0
2.75	39	16	2.750	0
2.8	30	12	2.800	0
2.85	30+0.75	12	2.850	0
2.9	9.1+5.6	5.6	2.900	0
2.95	43	16	2.950	0
3	33	12	3.000	0
3.1	30+16	16	3.100	0
3.2	30	10	3.200	0
3.3	10+7.5	5.6	3.300	0
3.4	39	12	3.400	0
3.5	33+0.75	10	3.500	0
3.7	36+7.5	12	3.700	0
5	33+2.7	6.8	5.000	0
5.4	47+0.15	8.2	5.400	0
6	36+4.3	6.2	6.000	0
6.3	51+0.56	7.5	6.300	- 0.
7	36+0.43	4.7	7.001	+ 0.01
8	39+3.3	4.7	8.000	0
9	51+1.3	5.1	9.004	+ 0.04
10	62+2.4	5.6	10.000	0
12	51+3.6	3.9	12.000	0
13	51+3.9	3.6	13.000	0

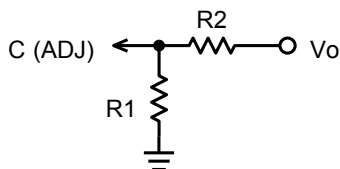
Setting with minimum number of components

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
0.8	0	-	0.800	-
0.9	1.5	12	0.900	0
1	3	12	1.000	0
1.05	7.5	24	1.050	0
1.1	7.5	20	1.100	0
1.15	3.6	8.2	1.151	+ 0.106
1.2	7.5	15	1.200	0
1.25	6.2	11	1.251	+ 0.073
1.3	7.5	12	1.300	0
1.5	13	15	1.493	- 0.444
1.8	15	12	1.800	0
1.85	12	9.1	1.855	+ 0.267
1.9	22	16	1.900	0
2	15	10	2.000	0
2.05	4.7	3	2.053	+ 0.163
2.1	9.1	5.6	2.100	0
2.2	8.2	4.3	2.326	+ 5.708
2.3	30	16	2.300	0
2.5	51	24	2.500	0
2.55	18	8.2	2.556	+ 0.239
2.6	27	12	2.600	0
2.7	43	18	2.711	+ 0.412
2.75	39	16	2.750	0
2.8	30	12	2.800	0
2.85	10	3.9	2.851	+ 0.045
2.9	24	9.1	2.910	+ 0.341
2.95	43	16	2.950	0
3	33	12	3.000	0
3.1	43	15	3.093	- 0.215
3.2	30	10	3.200	0
3.3	7.5	2.4	3.300	0
3.4	39	12	3.400	0
3.5	9.1	2.7	3.496	- 0.106
3.7	33	9.1	3.701	+ 0.03
5	43	8.2	4.995	- 0.098
5.4	27	4.7	5.396	- 0.079
6	13	2	6.000	0
6.3	11	1.6	6.300	0
7	30	3.9	6.954	- 0.659
8	27	3	8.000	0
9	47	4.7	8.800	- 2.222
10	15	1.3	10.031	+ 0.308
12	51	3.6	12.133	+ 1.111
13	20	1.3	13.108	+ 0.828

The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

- Table 4 Resistance values  $R_1$ ,  $R_2$  when  $V_{REF}=1.225\text{ V}$

Series name	Recommended value for $R_1$	Range of output voltage settings
BA00CC0W	2k $\Omega$ ~15k $\Omega$	3.0V~15V
BA3662	2k $\Omega$ ~15k $\Omega$	3.0V~15V



$$V_O = \frac{R_1 + R_2}{R_1} \times V_{REF} (V)$$

- High precision setting

VO (V)	R1 (k $\Omega$ )	R2 (k $\Omega$ )	VO' (V)	Error (%)
3	10	13+1.5	3.001	+ 0.04
3.1	6.2	9.1+0.39	3.100	+ 0.
3.2	8.2	13+0.22	3.200	- 0.
3.3	6.2	7.5+3	3.300	- 0.01
3.4	6.2	11	3.398	- 0.05
3.5	9.1	13+3.9	3.500	0
3.7	10	20+0.2	3.700	- 0.01
5	11	30+3.9	5.000	+ 0.
5.4	3.6	12+0.27	5.400	+ 0.
6	10	39	6.003	+ 0.04
6.3	9.1	33+4.7	6.300	0
7	9.1	39+3.9	7.000	0
8	10	51+4.3	7.999	- 0.01
9	6.8	43+0.16	9.000	+ 0.
10	4.3	24+6.8	9.999	- 0.01
12	3.9	30+4.3	11.999	- 0.01
15	2.4	27	15.006	+ 0.04

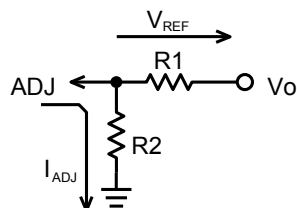
- Setting with minimum number of components

VO (V)	R1 (k $\Omega$ )	R2 (k $\Omega$ )	VO' (V)	Error (%)
3	4.7	6.8	2.997	- 0.09
3.1	13	20	3.110	+ 0.31
3.2	6.2	10	3.201	+ 0.03
3.3	13	22	3.298	- 0.06
3.4	6.2	11	3.398	- 0.05
3.5	3	5.6	3.512	+ 0.33
3.7	10	20	3.675	- 0.68
5	3.9	12	4.994	- 0.12
5.4	2.2	7.5	5.401	+ 0.02
6	10	39	6.003	+ 0.04
6.3	2.2	9.1	6.292	- 0.13
7	5.1	24	6.990	- 0.15
8	3.6	20	8.031	+ 0.38
9	6.8	43	8.971	- 0.32
10	5.1	36	9.872	- 1.28
12	2.7	24	12.114	+ 0.95
15	2.4	27	15.006	+ 0.04

- The position of  $R_1$  and  $R_2$ , the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

- Table 5 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=1.25 V

Series name	Recommended value for R <sub>1</sub>	Range of output voltage settings
BA1117	120Ω	1.25V~8.6V



$$V_o = \frac{R_1 + R_2}{R_1} \times V_{REF} + (I_{ADJ} \times R_2)$$

- High precision setting

VO (V)	R1 (Ω)	R2 (Ω)	VO' (V)	Error (%)
1.25	-	0	1.250	0
1.3	120	3+1.8	1.300	+ 0.02
1.5	110	18+3.9	1.500	+ 0.01
1.8	120	51+1.5	1.800	+ 0.
1.85	130	62	1.850	- 0.01
1.9	120	62	1.900	- 0.02
2	120	68+3.6	2.000	+ 0.01
2.05	110	43+27	2.050	- 0.02
2.1	150	100+1.3	2.100	+ 0.01
2.2	110	82+1.2	2.200	+ 0.02
2.3	110	82+10	2.301	+ 0.04
2.5	150	110+39	2.501	+ 0.02
2.55	120	62+62	2.549	- 0.04
2.6	110	110+8.2	2.600	+ 0.01
2.7	110	100+27	2.701	+ 0.03
2.75	110	130+1.3	2.750	- 0.
2.8	120	130+18	2.801	+ 0.02
2.85	120	150+2.7	2.850	- 0.01
2.9	120	150+7.5	2.900	+ 0.
2.95	120	160+2.2	2.949	- 0.02
3	120	120+47	3.000	- 0.01
3.1	110	150+12	3.101	+ 0.02
3.2	120	180+6.2	3.201	+ 0.02
3.3	130	150+62	3.301	+ 0.04
3.4	130	220+2.2	3.400	- 0.
3.5	110	150+47	3.500	+ 0.01
3.7	150	270+22	3.701	+ 0.02
5	160	470+6.2	4.999	- 0.02
5.4	120	390+6.2	5.401	+ 0.02
6	150	510+56	6.001	+ 0.01
6.3	120	470+12	6.300	- 0.
7	120	510+39	7.002	+ 0.02
8	130	680+18	8.003	+ 0.04

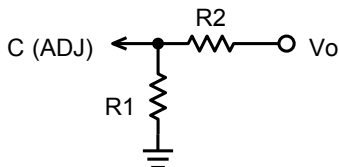
- Setting with minimum number of components

VO (V)	R1 (Ω)	R2 (Ω)	VO' (V)	Error (%)
1.25	-	0	1.250	0
1.3	130	5.1	1.299	- 0.05
1.5	110	22	1.501	+ 0.09
1.8	130	56	1.792	- 0.45
1.85	130	62	1.850	- 0.01
1.9	120	62	1.900	- 0.02
2	130	75	1.976	- 1.22
2.05	130	82	2.043	- 0.32
2.1	110	75	2.107	+ 0.32
2.2	120	91	2.203	+ 0.15
2.3	120	100	2.298	- 0.1
2.5	110	110	2.507	+ 0.26
2.55	130	130	2.508	- 1.65
2.6	120	130	2.612	+ 0.46
2.7	130	150	2.701	+ 0.05
2.75	110	130	2.735	- 0.54
2.8	130	160	2.798	- 0.07
2.85	120	150	2.822	- 1.
2.9	100	130	2.883	- 0.59
2.95	110	150	2.964	+ 0.46
3	130	180	2.992	- 0.28
3.1	150	220	3.097	- 0.11
3.2	130	200	3.185	- 0.47
3.3	110	180	3.306	+ 0.19
3.4	130	220	3.379	- 0.63
3.5	150	270	3.516	+ 0.46
3.7	100	200	3.762	+ 1.68
5	100	300	5.018	+ 0.36
5.4	100	330	5.395	- 0.1
6	150	560	5.950	- 0.83
6.3	130	510	6.184	- 1.83
7	150	680	6.957	- 0.61
8	150	820	8.133	+ 1.66

- The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

Table 6 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=1.25 V

Series name	Recommended value for R <sub>1</sub>	Range of output voltage settings
BA00JC5W	30kΩ~150kΩ	1.5V~12V
BA00BC0W	30kΩ~150kΩ	1.5V~12V



$$V_O = \frac{R_1 + R_2}{R_1} \times V_{REF} (V)$$

High precision setting

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1.5	75	15	1.500	0
1.8	75	33	1.800	0
1.85	75	36	1.850	0
1.9	75	39	1.900	0
2	30	18	2.000	0
2.05	75	24+24	2.050	0
2.1	75	51	2.100	0
2.2	75	33+24	2.200	0
2.3	75	39+24	2.300	0
2.5	75	30	2.500	0
2.55	75	39+39	2.550	0
2.6	75	51+30	2.600	0
2.7	75	75+12	2.700	0
2.75	30	36	2.750	0
2.8	75	75+18	2.800	0
2.85	30	36+2.4	2.850	0
2.9	75	75+24	2.900	0
2.95	75	51+51	2.950	0
3	75	75+30	3.000	0
3.1	75	75+36	3.100	0
3.2	100	100+56	3.200	0
3.3	30	47+2.2	3.300	0
3.4	75	82+47	3.400	0
3.5	100	180	3.500	0
3.7	75	100+47	3.700	0
5	100	300	5.000	0
5.4	100	330+2	5.400	0
6	30	75+39	6.000	0
6.3	30	120+1.2	6.300	0
7	30	120+18	7.000	0
8	30	100+62	8.000	0
9	100	620	9.000	0
10	130	910	10.000	0
12	30	240+18	12.000	0

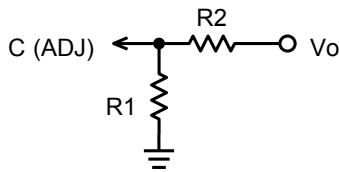
Setting with minimum number of components

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1.5	75	15	1.500	0
1.8	75	33	1.800	0
1.85	75	36	1.850	0
1.9	75	39	1.900	0
2	30	18	2.000	0
2.05	47	30	2.048	- 0.1
2.1	75	51	2.100	0
2.2	62	47	2.198	- 0.11
2.3	56	47	2.299	- 0.04
2.5	75	75	2.500	0
2.55	75	75	2.500	- 1.96
2.6	36	39	2.604	+ 0.16
2.7	130	150	2.692	- 0.28
2.75	30	36	2.750	0
2.8	130	160	2.788	- 0.41
2.85	30	39	2.875	+ 0.88
2.9	91	120	2.898	- 0.06
2.95	110	150	2.955	+ 0.15
3	36	51	3.021	+ 0.69
3.1	51	75	3.088	- 0.38
3.2	36	56	3.194	- 0.17
3.3	110	180	3.295	- 0.14
3.4	36	62	3.403	+ 0.08
3.5	100	180	3.500	0
3.7	51	100	3.701	+ 0.03
5	100	300	5.000	0
5.4	30	100	5.417	+ 0.31
6	24	91	5.990	- 0.17
6.3	82	330	6.280	- 0.31
7	39	180	7.019	+ 0.27
8	56	300	7.946	- 0.67
9	100	620	9.000	0
10	130	910	10.000	0
12	39	330	11.827	- 1.44

The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.

Table 7 Resistance values R<sub>1</sub>, R<sub>2</sub> when V<sub>REF</sub>=1.27 V

Series name	Recommended value for R <sub>1</sub>	Range of output voltage settings
BA00DD0W	2kΩ~15kΩ	1.5V~16V



$$V_o = \frac{R_1 + R_2}{R_1} \times V_{REF} (V)$$

• High precision setting

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1.5	10	1.3+0.51	1.500	- 0.01
1.8	7.5	2.7+0.43	1.800	+ 0.
1.85	3	0.75+0.62	1.850	- 0.
1.9	7.5	3.6+0.12	1.900	- 0.
2	9.1	5.1+0.13	2.000	- 0.
2.05	4.3	2.4+0.24	2.050	- 0.01
2.1	5.6	3.3+0.36	2.100	+ 0.
2.2	6.8	4.3+0.68	2.200	+ 0.
2.3	6.2	4.7+0.33	2.300	+ 0.01
2.5	5.1	4.7+0.24	2.500	+ 0.01
2.55	3.9	3.6+0.33	2.550	- 0.01
2.6	9.1	9.1+0.43	2.600	+ 0.
2.7	6.2	6.8+0.18	2.700	- 0.01
2.75	11	12+0.82	2.750	+ 0.
2.8	4.7	5.1+0.56	2.799	- 0.02
2.85	8.2	5.1+5.1	2.850	- 0.01
2.9	9.1	11+0.68	2.900	+ 0.
2.95	6.2	8.2	2.950	- 0.01
3	5.6	7.5+0.13	3.000	+ 0.01
3.1	9.1	13+0.11	3.100	- 0.01
3.2	7.5	7.5+3.9	3.200	+ 0.01
3.3	8.2	13+0.11	3.300	+ 0.01
3.4	8.2	13+0.75	3.400	- 0.01
3.5	4.3	6.8+0.75	3.500	- 0.
3.7	15	24+4.7	3.700	- 0.
5	4.7	9.1+4.7	4.999	- 0.02
5.4	7.5	24+0.39	5.400	+ 0.
6	5.1	18+1	6.001	+ 0.02
6.3	5.6	22+0.18	6.300	+ 0.
7	6.8	30+0.68	7.000	- 0.
8	7.5	39+0.75	8.001	+ 0.01
9	6.8	39+2.4	9.002	+ 0.02
10	7.5	51+0.56	10.001	+ 0.01
12	4.3	36+0.33	12.000	+ 0.
15	4.3	39+7.5	15.004	+ 0.02
16	6.2	68+3.9	15.998	- 0.01

• Setting with minimum number of components

VO (V)	R1 (kΩ)	R2 (kΩ)	VO' (V)	Error (%)
1.5	10	1.8	1.499	- 0.09
1.8	3.6	1.5	1.799	- 0.05
1.85	2.4	1.1	1.852	+ 0.11
1.9	3.6	1.8	1.905	+ 0.26
2	4.7	2.7	2.000	- 0.02
2.05	9.1	5.6	2.052	+ 0.08
2.1	2	1.3	2.096	- 0.21
2.2	3	2.2	2.201	+ 0.06
2.3	2.7	2.2	2.305	+ 0.21
2.5	7.5	7.5	2.540	+ 1.6
2.55	7.5	7.5	2.540	- 0.39
2.6	15	16	2.625	+ 0.95
2.7	2.4	2.7	2.699	- 0.05
2.75	3.3	3.9	2.771	+ 0.76
2.8	3.9	4.7	2.801	+ 0.02
2.85	2.4	3	2.858	+ 0.26
2.9	3	3.9	2.921	+ 0.72
2.95	6.2	8.2	2.950	- 0.01
3	2.2	3	3.002	+ 0.06
3.1	4.3	6.2	3.101	+ 0.04
3.2	13	20	3.224	+ 0.75
3.3	7.5	12	3.302	+ 0.06
3.4	12	20	3.387	- 0.39
3.5	9.1	16	3.503	+ 0.08
3.7	6.8	13	3.698	- 0.06
5	5.1	15	5.005	+ 0.11
5.4	12	39	5.398	- 0.05
6	2.2	8.2	6.004	+ 0.06
6.3	9.1	36	6.294	- 0.09
7	15	68	7.027	+ 0.39
8	6.8	36	7.994	- 0.08
9	15	91	8.975	- 0.28
10	6.8	47	10.048	+ 0.48
12	3.9	33	12.016	+ 0.13
15	3.6	39	15.028	+ 0.19
16	13	150	15.924	- 0.48

• The position of R<sub>1</sub> and R<sub>2</sub>, the possible range of resistance settings and the range of output voltage settings differ between the different series. Please check these on the Datasheet for each IC.



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