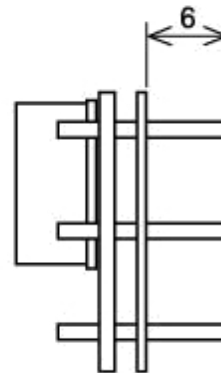
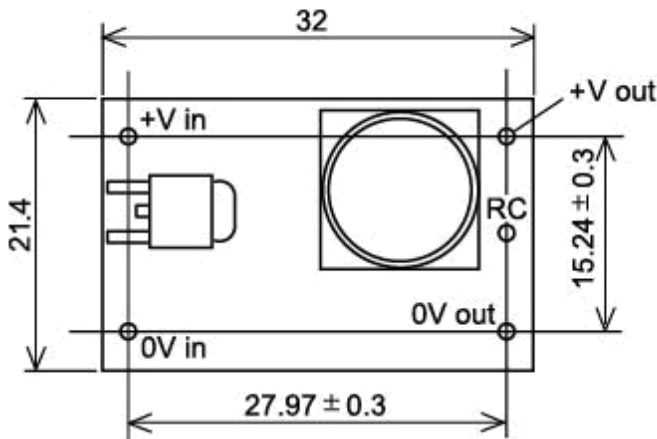


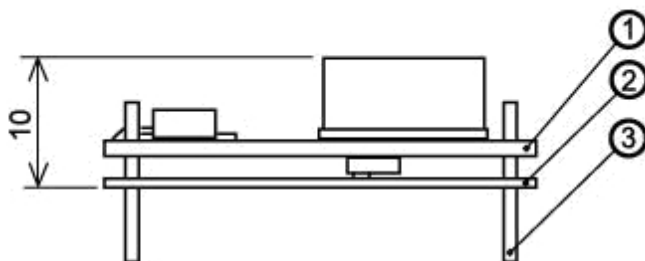
OC1XX-SCXXXX-U1A

4.6~28.8 WATT
NON-ISOLATED
DC-DC CONVERTER

RoHS



Turn on by inputting voltage (4.5 to 56V) between "RC" pin and "0V" pin. Put a 5k ohm resistor between "+ in" pin and "RC" pin when remote on/off is not used



① Double-sided PCB FR4t=1.0

② t=0.5 Insulator UL94V0

③ 1.0DIA PIN Material :BsB 2700 1/2H

Solder Plating

*Tolerance ±0.5





At rated input and output, 25[°C] ambient unless noted.

SPECIFICATION		MODEL	OC1-24SC48U1A	
INPUT SPECIFICATION				
Rated Input Voltage	[V] DC		DC 48	
Rated Input Current	[mA] Max.		700	
Allowable Input Voltage Range	[V]		DC40.8 ~ 56	
Inrush Current	※1		Not Specified (Reference : 33[A], 7[μs], DC48[V] in)	
Stand-by Input Current	[mA] Typ.		14	
Input Current when Remote Control is off.	[μA] Typ.		5	
Input Leakage Ripple Voltade	[mVp-p] Typ.		1000	
Efficiency	[%] Typ.		95.0	
OUTPUT SPECIFICATION				
Maximum Output Power	[W]		4.6 ~ 28.8	
Rated Output Voltage	[V]		24	
Rated Output Current	[mA]		1200	
Output Voltage Accuracy	[V]		23.28~24.72	
Ripple and Noise	[mVp-p] Max.	※2	200	
Voltage Regulation	a. Line Regulation	[mV] Max.	※3	120
	b. Load Regulation	[mV] Max.	※4	120
	c. Temperature Effect	[mV] Max.	-20~71[°C]	655
	d. Drift	[mV] Max.	※5	135
	e. Dynamic Line Regulation	[mV] Max.	※6	±1500
	f. Dynamic Load Regulation	[mV] Max.	※7	±200
	g. Recovery Time	[ms] Max.	※6	5
Start-up Time	[ms] Max.	※7	5	
Hold-up Time			Not Specified (= 0[S])	
OPTIONAL FUNCTIONS				
Over Current Protection			Auto recover, Hiccup	
Over Voltage Protection	[A] Min.		1.30	
	[V] Min.		Zener diode limiting 26.4	
Operation Indicator			None	
Remote Control (RC)	※8		Available	
Remote Sensing (RS)			None	
Power Fail (PF)			None	
Output Voltage Trimming			None	
Input Fuse			Built-in (2[A])	
Serial Operation			Not available	
Parallel Operation			Not available (1+1 redundant with using OR-ing diode is acceptable.)	
GENERAL SPECIFICATIONS				
Operating Temperature	[°C]		Refer to the De-Rating Condition. -20 ~ +71	
Storage Temperature	[°C]		-20 ~ +85 Except thermal shock	
Operating Humidity	[%] RH		20 ~ 90 Without condensation	
Storage Humidity	[%] RH		20 ~ 90 Without condensation	
Withstanding Voltage			Non Isolated	
Insulation Resistance			Non Isolated	
Vibration	※9		5 - 10[Hz] / XYZ axis 10[mm], 10 - 550[Hz] / 24.5[m/s ²] XYZ axis (non-operating)	
Shock	※9		294[m/s ²] / XYZ axis.	
Cooling Method			Convection Cooling	
APPLIED STANDARDS				
Safety Standards			North America : UL60950-1 2nd ed. 2011-12-19 Approved : CAN/CSA-C22.2 No. 60950-1-07 2nd ed. 2011-12 Approved	
DIMENSION AND WEIGHT				
Appearance			On-Board Type	
Dimension	[mm] (HxWxD)		10 x 32 x 21.4	
Weight	[g] Max.		8	
REFERENCE				
M T B F	[h]	※10	587, 986, 27	

※1 Reference : At cold start.

※2 Measured by Measured by a Bayonet type probe. Bandwidth DC-100[MHz].

※3 40.8 to 56[V] DC input voltage.

※4 At 48[V] DC , 0 to 100[%] load.

※5 Up to 8[h] after 1[h].

※6 At rated load , input voltage is changed between 40.8[V] DC and 56[V] DC.

※7 At 48[V] DC , load is changed between 25[%] and 75[%]

※8 ON : Apply DC2.8V-Input Voltage between PIN "RC" and "OV" (Inflowing current will be 5-500[μA]Typ. when 5-56V applied)

OFF: When PIN "RC" and "OV" is open

Short the PIN "RC" and "+Input Voltage" when not using the RC function

※9 The hole size of the mother board have to be 1.3[φ], Solder resist window 3.4[φ]

(In Thickness 1.6[mm] CEM-3 mother board).

Mother board have to be Non-resonated.

※10 Standard for recommended reliability estimation of components' count method of JEITA's switching power supply. According to JEITA RCR-9102B(MIL-HDBK-217F-NOTICE 2).





At rated input and output, 25[°C] ambient unless noted.

SPECIFICATION		MODEL	OC1-3.3SC1224U1A	OC1-05SC1224U1A	OC1-06SC1224U1A
INPUT SPECIFICATION					
Rated Input Voltage	[V] DC		12	24	12
Rated Input Current	[mA] Max.		500	300	800
Allowable Input Voltage Range	[V]		DC10.2 ~ 32		
Inrush Current		※1	Not Specified (Reference : 8[A], 10[μs], DC12[V] in / 13[A], 8[μs], DC24[V] in)		
Stand-by Input Current	[mA] Typ.		10	11	10
Input Current when Remote Control is off.	[μA] Typ.		1	2	1
Input Leakage Ripple Voltade	[mVp-p] Typ.		500	500	700
Efficiency	[%] Typ.		84.0	81.0	89.0
OUTPUT SPECIFICATION					
Maximum Output Power	[W]		4.6 ~ 28.8		
Rated Output Voltage	[V]		3.3	5	6
Rated Output Current	[mA]		1400	1400	1400
Output Voltage Accuracy	[V]		3.20~3.40	4.85~5.15	5.82~6.18
Ripple and Noise	[mVp-p] Max.	※2	200	200	200
Voltage Regulation	a. Line Regulation	[mV] Max. ※3	18	25	30
	b. Load Regulation	[mV] Max. ※4	18	25	30
	c. Temperature Effect	[mV] Max. -20~71[°C]	91	137	164
	d. Drift	[mV] Max. ※5	30	40	45
	e. Dynamic Line Regulation	[mV] Max. ※6	±500	±1000	±1000
	f. Dynamic Load Regulation	[mV] Max. ※7	±200	±200	±200
	g. Recovery Time	[ms] Max. ※7		5	
Start-up Time	[ms] Max.		5		
Hold-up Time			Not Specified (= 0[S])		
OPTIONAL FUNCTIONS					
Over Current Protection	[A] Min.		1.50	1.50	1.50
Over Voltage Protection	[V] Min.		3.63	5.75	6.90
Operation Indicator			None		
Remote Control (RC)		※8	Available		
Remote Sensing (RS)			None		
Power Fail (PF)			None		
Output Voltage Trimming			None		
Input Fuse			Built-in (2[A])		
Serial Operation			Not available		
Parallel Operation			Not available (1+1 redundant with using OR-ing diode is acceptable.)		
GENERAL SPECIFICATIONS					
Operating Temperature	[°C]		Refer to the De-Rating Condition. -20 ~ +71		
Storage Temperature	[°C]		-20 ~ +85 Except thermal shock		
Operating Humidity	[%] RH		20 ~ 90 Without condensation		
Storage Humidity	[%] RH		20 ~ 90 Without condensation		
Withstanding Voltage			Non Isolated		
Insulation Resistance			Non Isolated		
Vibration		※9	5 - 10[Hz] / XYZ axis 10[mm], 10 - 55 0[Hz] / 24.5[m/s ²]		
Shock		※9	294[m/s ²] / XYZ axis.		
Cooling Method			Convection Cooling		
APPLIED STANDARDS					
Safety Standards			North America : UL60950-1 2nd ed. 2011-12-19	Approved	
DIMENSION AND WEIGHT					
Appearance			On-Board Type		
Dimension	[mm] (HxWxD)		10 x 32 x 21.4		
Weight	[g] Max.		8		
REFERENCE					
M T B F	[h]	※10	564,882.39	564,882.39	564,882.39

- ※1 Reference : At cold start.
- ※2 Measured by Measured by a Bayonet type probe. Bandwidth DC-100[MHz].
- ※3 40.8 to 56[V] DC input voltage.
- ※4 At 48[V] DC , 0 to 100[%] load.
- ※5 Up to 8[h] after 1[h].
- ※6 At rated load , input voltage is changed between 40.8[V] DC and 56[V] DC.
- ※7 At 48[V] DC , load is changed between 25[%] and 75[%]
- ※8 ON : Apply DC2.8V-Input Voltage between PIN "RC" and "OV" (Inflowing current
OFF: When PIN "RC" and "OV" is open
Short the PIN "RC" and "+Input Voltage" when not using the RC function
- ※9 The hole size of the mother board have to be 1.3[φ], Solder resist window
(In Thickness 1.6[mm] CEM-3 mother board).
Mother board have to be Non-resonated.
- ※10 Standard for recommended reliability estimation of components' count method
of JEITA's switching power supply. According to JEITA RCR-9102B (MIL-HDBK-





At rated input and output, 25[°C] ambient unless noted.

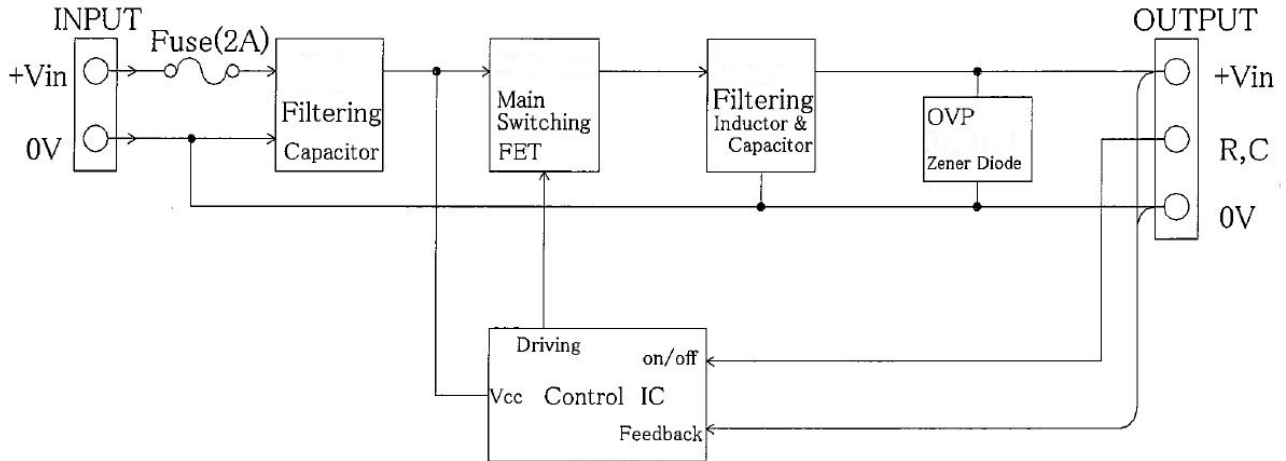
MODEL		OC1-		OC1-		OC1-		OC1-		OC1-		OC1-		
		3.3SC2448U1A		05SC2448U1A		06SC2448U1A		09SC2448U1A		12SC2448U1A		15SC2448U1A		
SPECIFICATION														
INPUT SPECIFICATION														
Rated Input Voltage	[V] DC	24	48	24	48	24	48	24	48	24	48	24	48	
Rated Input Current	[mA] Max.	300	150	400	200	450	250	650	350	800	400	850	450	
Allowable Input Voltage Range	[V]	DC20.4 ~ 56												
Inrush Current	※1	Not Specified (Reference : 16[A], 8[μs], DC24[V] in / 33[A], 7[μs], DC48[V] in)												
Stand-by Input Current	[mA] Typ.	11	13	11	13	11	13	11	13	12	13	12	13	
Input Current when Remote Control is off.	[μA] Typ.	2	5	2	5	2	5	2	5	2	5	2	5	
Input Leakage Ripple Voltage	[mVp-p] Typ.	500	500	700	700	700	700	700	700	800	800	900	900	
Efficiency	[%] Typ.	79.0	74.0	85.0	82.0	87.0	83.0	90.0	87.0	93.0	90.0	95.0	92.0	
OUTPUT SPECIFICATION														
Maximum Output Power	[W]	4.6 ~ 28.8												
Rated Output Voltage	[V]	3.3		5		6		9		12		15		
Rated Output Current	[mA]	1400		1400		1400		1400		1300		1200		
Output Voltage Accuracy	[V]	3.20~3.40		4.85~5.15		5.82~6.18		8.73~9.27		11.64~12.36		14.55~15.45		
Ripple and Noise	[mVp-p] Max.	※2 200		200		200		200		200		200		
Voltage Regulation	a. Line Regulation	[mV] Max.	※3 18		25		30		45		60		75	
	b. Load Regulation	[mV] Max.	※4 18		25		30		45		60		75	
	c. Temperature Effect	[mV] Max.	-20~71[°C] 90		137		164		246		328		410	
	d. Drift	[mV] Max.	※5 30		40		45		60		75		90	
	e. Dynamic Line Regulation	[mV] Max.	※6 ±500		±1000		±1000		±1500		±1500		±1500	
	f. Dynamic Load Regulation	[mV] Max.	※7 ±200		±200		±200		±200		±200		±200	
	g. Recovery Time	[ms] Max.	※6		※7		5		5		5		5	
Start-up Time	[ms] Max.	5		5		5		5		5		5		
Hold-up Time		Not Specified (= 0[S])												
OPTIONAL FUNCTIONS														
Over Current Protection	[A] Min.	1.50		1.50		1.50		1.50		1.40		1.30		
Over Voltage Protection	[V] Min.	3.63		5.75		6.90		10.35		13.80		17.25		
Operation Indicator		None												
Remote Control (RC)	※8	Available												
Remote Sensing (RS)		None												
Power Fail (PF)		None												
Output Voltage Trimming		None												
Input Fuse		Built-in (2[A])												
Serial Operation		Not available												
Parallel Operation		Not available (1+1 redundant with using OR-ing diode is acceptable.)												
GENERAL SPECIFICATIONS														
Operating Temperature	[°C]	Refer to the De-Rating Condition. -20 ~ +71												
Storage Temperature	[°C]	-20 ~ +85 Except thermal shock												
Operating Humidity	[%] RH	20 ~ 90 Without condensation												
Storage Humidity	[%] RH	20 ~ 90 Without condensation												
Withstanding Voltage		Non Isolated												
Insulation Resistance		Non Isolated												
Vibration	※9	5 - 10[Hz] / XYZ axis 10[mm], 10 - 550[Hz] / 24.5[m/s ²] XYZ axis (non-operating)												
Shock	※9	294[m/s ²] / XYZ axis.												
Cooling Method		Convection Cooling												
APPLIED STANDARDS														
Safety Standards		North America : UL60950-1 2nd ed. 2011-12-19										Approved		
												: CAN/CSA-C22.2 No. 60950-1-07 2nd ed. 2011-12 Approved		
DIMENSION AND WEIGHT														
Appearance		On-Board Type												
Dimension	[mm] (HxWxD)	10 x 32 x 21.4												
Weight	[g] Max.	8												
REFERENCE														
M T B F	[h]	※10 564, 882, 39		564, 882, 39		564, 882, 39		564, 882, 39		570, 125, 43		570, 125, 43		

- ※1 Reference : At cold start.
- ※2 Measured by Measured by a Bayonet type probe. Bandwidth DC-
- ※3 40.8 to 56[V] DC input voltage.
- ※4 At 48[V] DC , 0 to 100[%] load.
- ※5 Up to 8[h] after 1[h].
- ※6 At rated load , input voltage is changed between 40.8[V] DC and
- ※7 At 48[V] DC , load is changed between 25[%] and 75[%]
- ※8 ON : Apply DC2, 8V-Input Voltage between PIN "RC" and "OV"
OFF: When PIN "RC" and "OV" is open
Short the PIN "RC" and "+Input Voltage" when not using the RC function
- ※9 The hole size of the mother board have to be 1.3[φ], Solder
(In Thickness 1.6[mm] CEM-3 mother board).
Mother board have to be Non-resonated.
- ※10 Standard for recommended reliability estimation of components' count method of JEITA's switching power supply. According to

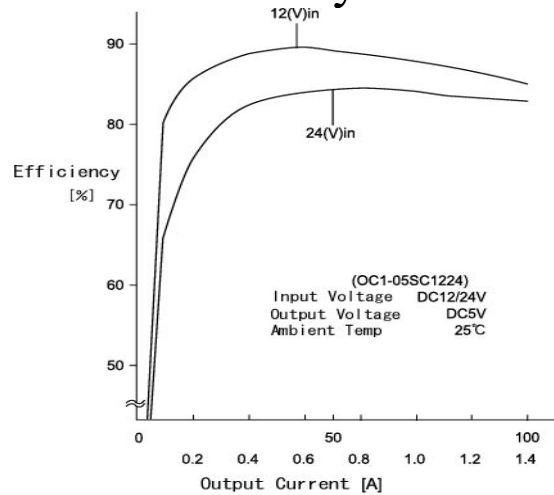




Block Diagram



Efficiency Curve





SPEC SHEET

Subject	Part number	Old IC	New IC (U1A)
Rated Input current	OC1-3. 3SC1224u1	550/250 [mA]	500/300 [mA]Max.
	OC1-05SC1224u1	800/350 [mA]	800/400 [mA]Max.
	OC1-06SC1224u1	950/450 [mA]	900/450 [mA]Max.
	OC1-3. 3SC2448u1	300/150 [mA]	300/150 [mA]Max.
	OC1-05SC2448u1	450/200 [mA]	400/200 [mA]Max.
	OC1-06SC2448u1	500/250 [mA]	450/250 [mA]Max.
	OC1-09SC2448u1	700/350 [mA]	650/350 [mA]Max.
	OC1-12SC2448u1	850/400 [mA]	800/400 [mA]Max.
	OC1-15SC2448u1	950/450 [mA]	850/450 [mA]Max.
	OC1-24SC48u1	750 [mA]	700 [mA]Max.
No load Rated Input current	OC1-3. 3SC1224u1	4/5 [mA]Typ.	10/11 [mA]Typ.
	OC1-05SC1224u1	5/3 [mA]Typ.	10/11 [mA]Typ.
	OC1-06SC1224u1	5/3 [mA]Typ.	10/11 [mA]Typ.
	OC1-3. 3SC2448u1	4/5 [mA]Typ.	11/13 [mA]Typ.
	OC1-05SC2448u1	2/2 [mA]Typ.	11/13 [mA]Typ.
	OC1-06SC2448u1	2/2 [mA]Typ.	11/13 [mA]Typ.
	OC1-09SC2448u1	3/2 [mA]Typ.	11/13 [mA]Typ.
	OC1-12SC2448u1	4/4 [mA]Typ.	12/13 [mA]Typ.
	OC1-15SC2448u1	6/4 [mA]Typ.	12/13 [mA]Typ.
	OC1-24SC48u1	4 [mA]Typ.	14 [mA]Typ.
Input current when RC is OFF	OC1-3. 3SC1224u1	0. 2/0. 56 [mA]Typ.	1/2 [μ A]Typ.
	OC1-05SC1224u1	0. 24/0. 6 [mA]Typ.	1/2 [μ A]Typ.
	OC1-06SC1224u1	0. 24/1. 15 [mA]Typ.	1/2 [μ A]Typ.
	OC1-3. 3SC2448u1	0. 39/0. 9 [mA]Typ.	2/5 [μ A]Typ.
	OC1-05SC2448u1	0. 42/0. 93 [mA]Typ.	2/5 [μ A]Typ.
	OC1-06SC2448u1	0. 42/0. 92 [mA]Typ.	2/5 [μ A]Typ.
	OC1-09SC2448u1	0. 37/0. 9 [mA]Typ.	2/5 [μ A]Typ.
	OC1-12SC2448u1	0. 34/1. 47 [mA]Typ.	2/5 [μ A]Typ.
	OC1-15SC2448u1	0. 27/1. 50 [mA]Typ.	2/5 [μ A]Typ.
	OC1-24SC48u1	0. 56 [mA]Typ.	5 [μ A]Typ.
Input current leakage ripple voltage	OC1-3. 3SC1224u1	1000/1000[mVp-p]Typ.	500/500[mVp-p]Typ.
	OC1-05SC1224u1	1000/1000[mVp-p]Typ.	700/700[mVp-p]Typ.
	OC1-06SC1224u1	1000/1000[mVp-p]Typ.	700/700[mVp-p]Typ.
	OC1-3. 3SC2448u1	700/1000[mVp-p]Typ.	500/500[mVp-p]Typ.
	OC1-05SC2448u1	1000/1300[mVp-p]Typ.	700/700[mVp-p]Typ.
	OC1-06SC2448u1	1200/1800[mVp-p]Typ.	700/700[mVp-p]Typ.
	OC1-09SC2448u1	1500/2000[mVp-p]Typ.	700/700[mVp-p]Typ.
	OC1-12SC2448u1	1500/2000[mVp-p]Typ.	800/800[mVp-p]Typ.
	OC1-15SC2448u1	1500/2500[mVp-p]Typ.	900/900[mVp-p]Typ.
	OC1-24SC48u1	3000 [mVp-p]Typ.	1000 [mVp-p]Typ.





Efficiency	OC1-3.3SC1224u1	78/75 [%]Typ.	84/81 [%]Typ.
	OC1-05SC1224u1	84/82 [%]Typ.	89/87 [%]Typ.
	OC1-06SC1224u1	86/84 [%]Typ.	90/88 [%]Typ.
	OC1-3.3SC2448u1	74/69 [%]Typ.	79/74 [%]Typ.
	OC1-05SC2448u1	81/78 [%]Typ.	85/82 [%]Typ.
	OC1-06SC2448u1	84/80 [%]Typ.	87/83 [%]Typ.
	OC1-09SC2448u1	88/85 [%]Typ.	90/87 [%]Typ.
	OC1-12SC2448u1	91/88 [%]Typ.	93/90 [%]Typ.
	OC1-15SC2448u1	93/90 [%]Typ.	95/92 [%]Typ.
	OC1-24SC48u1	93 [%]Typ.	95 [%]Typ.
Dynamic Load Voltage	OC1-3.3SC1224u1	±500[mV]Max.	±500[mV]Max.
	OC1-05SC1224u1	±600[mV]Max.	±1000[mV]Max.
	OC1-06SC1224u1	±600[mV]Max.	±1000[mV]Max.
	OC1-3.3SC2448u1	±500[mV]Max.	±500[mV]Max.
	OC1-05SC2448u1	±600[mV]Max.	±1000[mV]Max.
	OC1-06SC2448u1	±600[mV]Max.	±1000[mV]Max.
	OC1-09SC2448u1	±600[mV]Max.	±1500[mV]Max.
	OC1-12SC2448u1	±1000[mV]Max.	±1500[mV]Max.
	OC1-15SC2448u1	±1000[mV]Max.	±1500[mV]Max.
	OC1-24SC48u1	±400[mV]Max.	±1500[mV]Max.
Remote Control (Add voltage ON)	All model	ON when 4.5-56V	ON when 2.8-56V
Remote Control Current	All model	150~1800 [μ A]	5~500 [μ A]
Block Diagram	All model		See attached

