

OBQ-SC/WC

3W

DC/DC converter
Single / multi output



In response to market demand for “DISTRIBUTED POWER”, ETA has developed a new DC/DC converter for PCB mounting. The open board design of this series results to a lighter weight, lower cost and smaller size. Wide input range of four tunes, maximum to minimum.



Features

Wide input voltage range (4.5-72Vdc)
High efficiency & reliability
Adjustable output (ext. resistor)
Switching frequency: 170kHz (fix)
MTBF: 1.5 million hours
Warranty: 3 years

Mechanical features

Dimension (WxLxH): 20x32x10.5mm
Weight: 6g
Open frame type

Possibly applications

Office equipment
Telecommunications
Industrial electronics&machines
Automation
Robotics
House equipment

Control features

Over current protection: Fold back curr. limiting, aut. rec.



Specifications<DC/DC>	Model													
	OBQ**SC / WC0512 3WATTS/ SINGLE / 2 OUTPUTS		OBQ-05SC0512		OBQ-12SC0512		OBQ-15SC0512		OBQ-24SC0512		OBQ-22WC0512		OBQ-23WC0512	
Input Characteristic														
Input Voltage DC[V]	5		12		5		12		5		12		5	
Input Range DC[V]	4.5-16													
Inrush Current [A]	not specified													
Input Range														
at no load [mA](typical)	41	44	51	54	51	53	57	59	66	64	64	64	64	
at full load [mA](typical)	676	297	789	342	779	337	800	346	843	356	800	342	342	
Line Back Noise [mVp-p](typical)	200	100	100	80	200	100	200	100	200	100	200	100	100	
Efficiency [%] (typical) *1	74	70	76	73	77	74	78	75	74	73	75	73	73	
Output Characteristic														
Output Voltage [V]	5		12		15		24		+12	-12	+15	-15		
Output Current [A]	0.5		0.25		0.2		0.13		0.013-0.13		0.010-0.10			
Voltage Tolerance +/-[mV](maximum) *2	100		240		300		480		240	240	300	300		
Ripple and Noise [mVp-p](maximum) *3	100													
Regulation														
a.Static Line Regulation [mV](maximum)	25		60		75		120		60	60	75	75		
b.Dynamic Line Regulation [mV](maximum) *4	250		200		200		200		200	20	200	200		
c.Static Load Regulation [mV](maximum) *5	25		60		75		120		±1000	±1000	±1000	±1000		
[mV](maximum) *6	-	-	-	-	-	-	-	-	±480	±480	±600	±600		
[mV](maximum) *7	-	-	-	-	-	-	-	-	±60	±60	±75	±75		
d.Temperature Coefficient *8	0.03%/°C(maximum)													
e.Drift[mV](maximum) *9	40		75		90		135		75	75	90	90		
f.Dynamic Load Regulation +/-[mV](typical) *10	150		360		450		720		360	360	450	450		
f.Recovery Time *4, *10	20mS(typical)													
Rise up time	10mS(maximum) at 25°C and rated input/output													
Hold up time	not specified													
Functions														
Over current Protection *10	Fold back / Current Limiting with automatic recovery at discontinuous short circuit conditions													
Over voltage Protection	not available													
Remote Sense	not available													
Trimming of output voltage [mV] *11	+250	+250	+250	+350	+650									
[mV] *12	-250	-900	-1600	-4000										
Input Fuse	Installed													
Environmental														
Operating Temperature (derating)	-20 to +71°C													
Operating Humidity	3.5%/°C (50°C to 71°C) (out of warranty ≥71°C)													
Storage Temperature	20-90%RH(non-condensing)													
Storage Humidity	-20 to +85°C													
Withstanding Voltage	20-90%RH(non-condensing)													
Isolation Resistance	Primary-Secondary AC500V for 1minute													
Capacitance(input-output) [pF](typical)	Primary-Frame Ground 50MΩ(minimum) by DC500V insulation tester													
Vibration	2200													
Shock	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s ² ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)													
Cooling	294m/s ²													
Weight (typical)	Convection													
	open board type: 6g													

Conditions:

- *1 At 25°C and rated input/output
- *2 OBQ**WC0512 satisfies the above-mentioned specifications at the same load conditions on both outputs
- *3 Measured by a bayonet probe at the output connector at 0 to 100Mhz bandwidth
- *4 When input voltage changed from 4.5V to 16V rapidly at rated output
- *5 When output current changed from 0mA to rated current keeping the current of other output below minimum rated current at rated input
- *6 When output current changed from minimum rated current to rated current keeping the current of other output above minimum rated current at rated input
- *7 When output current of both outputs changed from 0mA to rated current identically at rated input
- *8 At-20 to +71°C
- *9 For 7hour period after 1hour warm-up at 25°C and rated input/output
- *10 When output current changed rapidly between 25% and 75% of rated current at rated input
- *11 To increase output voltage, put a resistor between pin "0" and trimming pin
- *12 To reduce output voltage, put a resistor between pin "+" and trimming pin



Specifications<DC/DC>	Model												
	OBQ**SC / WC1224 3WATTS/ SINGLE / 2 OUTPUTS		OBQ-05SC1224		OBQ-12SC1224		OBQ-15SC1224		OBQ-24SC1224		OBQ-22WC1224		OBQ-23WC1224
Input Characteristic													
Input Voltage DC[V]	12	24	12	24	12	24	12	24	12	24	12	24	
Input Range DC[V]	8-32												
Inrush Current [A]	not specified						9A/DC12V, 18A/DC24V 10µs						
Input Range													
at no load [mA](typical)	22	24	28	29	28	29	30	360	35	31	32	29	
at full load [mA](typical)	267	144	312	168	304	164	317	171	329	173	308	164	
Line Back Noise [mVp-p](typical)	300	150	300	150	300	150	300	150	1000	500	1000	500	
Efficiency [%] (typical) *1	78	72	80	74	82	76	82	76	79	75	81	76	
Output Characteristic													
Output Voltage [V]	5		12		15		24		+12	-12	+15	-15	
Output Current [A]	0.5		0.25		0.2		0.13		0.013-0.13		0.010-0.10		
Voltage Tolerance +/-[mV](maximum) *2	100		240		300		480		240	240	300	300	
Ripple and Noise [mVp-p](maximum) *3	100												
Regulation													
a.Static Line Regulation [mV](maximum)	25		60		75		120		60	60	75	75	
b.Dynamic Line Regulation [mV](maximum) *4	200		200		200		200		300	300	300	300	
c.Static Load Regulation [mV](maximum) *5	25		60		75		120		±1000	±1000	±1200	±1200	
[mV](maximum) *6	-	-	-	-	-	-	-	-	±480	±480	±600	±600	
[mV](maximum) *7	-	-	-	-	-	-	-	-	±60	±60	±75	±75	
d.Temperature Coefficient *8	0.03%/°C(maximum)												
e.Drift[mV](maximum) *9	40		75		90		135		75	75	90	90	
f.Dynamic Load Regulation +/-[mV](typical) *10	150		360		250		500		300	300	300	300	
g.Recovery Time *4, *10	20mS(typical)												
Rise up time	10mS(maximum) at 25°C and rated input/output												
Hold up time	not specified												
Functions													
Over current Protection *10	Fold back / Current Limiting with automatic recovery at discontinuous short circuit conditions												
Over voltage Protection	not available												
Remote Sense	not available												
Trimming of output voltage [mV] *11	+250	+250	+250	+350	+350	+350	+650						
[mV] *12	-250	-250	-900	-1600	-1600	-1600	-4000						
Input Fuse	Installed												
Environmental													
Operating Temperature (derating) *13	-20 to +71°C 3.5%/°C (50°C to 71°C) (out of warranty ≥71°C)												
Operating Humidity	20-90%RH(non-condensing)												
Storage Temperature	-20 to +85°C												
Storage Humidity	20-90%RH(non-condensing)												
Withstanding Voltage	Primary-Secondary AC500V for 1minute												
Isolation Resistance	Primary-Frame Ground 50MΩ(minimum) by DC500V insulation tester												
Capacitance(input-output) [pF](typical)	2200												
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s ² ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)												
Shock	294m/s ²												
Cooling	Convection												
Weight (typical)	open board type: 6g												

Conditions:

- *1 At 25°C and rated input/output
- *2 OBQ**WC1224 satisfies the above-mentioned specifications at the same load conditions on both outputs
- *3 Measured by a bayonet probe at the output connector at a 0 to 100Mhz bandwidth
- *4 When input voltage changed from 4.5V to 16V rapidly at rated output
- *5 When output current changed from 0mA to rated current keeping the current of other output below minimum rated current at rated input
- *6 When output current changed from minimum rated current to rated current keeping the current of other output above minimum rated current at rated input
- *7 When output current of both outputs changed from 0mA to rated current identically at rated input
- *8 At -20 to +71°C
- *9 For 7hour period after 1hour warm-up at 25°C and rated input/output
- *10 When output current changed rapidly between 25% and 75% of rated current at rated input
- *11 To increase output voltage, put a resistor between pin "0" and trimming pin
- *12 To reduce output voltage, put a resistor between pin "+" and trimming pin
- *13 Operating temperature of OBQ**WC1224 should be ≤ 71-2*(Ein-24) at input voltage from 24V to 32V (Ein=Input Voltage)



Specifications<DC/DC>	Model													
	OBQ**SC / WC2448 3WATTS/ SINGLE / 2 OUTPUTS		OBQ-05SC2448		OBQ-12SC2448		OBQ-15SC2448		OBQ-24SC2448		OBQ-22WC2448		OBQ-23WC2448	
Input Characteristic														
Input Voltage DC[V]	24	48	24	48	24	48	24	48	24	48	24	48	24	48
Input Range DC[V]	18-72													
Inrush Current [A]	not specified													
Input Range														
at no load [mA](typical)	10	11	15	15	15	15	15	15	15	14	14	14	14	14
at full load [mA](typical)	136	72	154	82	152	81	158	84.4	160	86	152	75	75	75
Line Back Noise [mVp-p](typical)	100	80	100	80	100	80	100	80	200	100	200	100	100	100
Efficiency [%] (typical) *1	76	82	81	76	82	77	82	77	81	76	82	76	76	76
Output Characteristic														
Output Voltage [V]	5		12		15		24		+12	-12	+15	-15		
Output Current [A]	0.5		0.25		0.20		0.13		0.013-0.13		0.010-0.10			
Voltage Tolerance +/-[mV](maximum) *2	100		240		300		480		240	240	300	300		
Ripple and Noise [mVp-p](maximum) *3	100													
Regulation														
a.Static Line Regulation [mV](maximum)	25		60		75		120		60	60	75	75		
b.Dynamic Line Regulation [mV](maximum) *4	250		200		200		200		300	300	300	300		
c.Static Load Regulation [mV](maximum) *5	25		60		75		120		±1000	±1000	±1200	±1200		
[mV](maximum) *6	-	-	-	-	-	-	-	-	±480	±480	±600	±600		
[mV](maximum) *7	-	-	-	-	-	-	-	-	±60	±60	±75	±75		
d.Temperature Coefficient *8	0.03%/°C(maximum)													
e.Drift[mV](maximum) *9	40		75		90		135		75	75	90	90		
f.Dynamic Load Regulation +/-[mV](typical) *10	250		250		250		500		300	300	400	400		
g.Recovery Time *4, *10	20mS(typical)													
Rise up time	10mS(maximum) at 25°C and rated input/output													
Hold up time	not specified													
Functions														
Over current Protection *10	Fold back / Current Limiting with automatic recovery at discontinuous short circuit conditions													
Over voltage Protection	not available													
Remote Sense	not available													
Trimming of output voltage [mV] *11	+250	+250	+250	+350	+650									
[mV] *12	-250	-900	-1600	-4000										
Input Fuse	Installed													
Environmental														
Operating Temperature (derating) *13	-20 to +71°C 3.5%/°C (50°C to 71°C) (out of warranty ≥71°C)													
Operating Humidity	20-90%RH(non-condensing)													
Storage Temperature	-20 to +85°C													
Storage Humidity	20-90%RH(non-condensing)													
Withstanding Voltage	Primary-Secondary AC500V for 1minute													
Isolation Resistance	Primary-Frame Ground 50MΩ(minimum) by DC500V insulation tester													
Capacitance(input-output) [pF](typical)	2200													
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s ² ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)													
Shock	294m/s ²													
Cooling	Convection													
Weight (typical)	open board type: 6g													

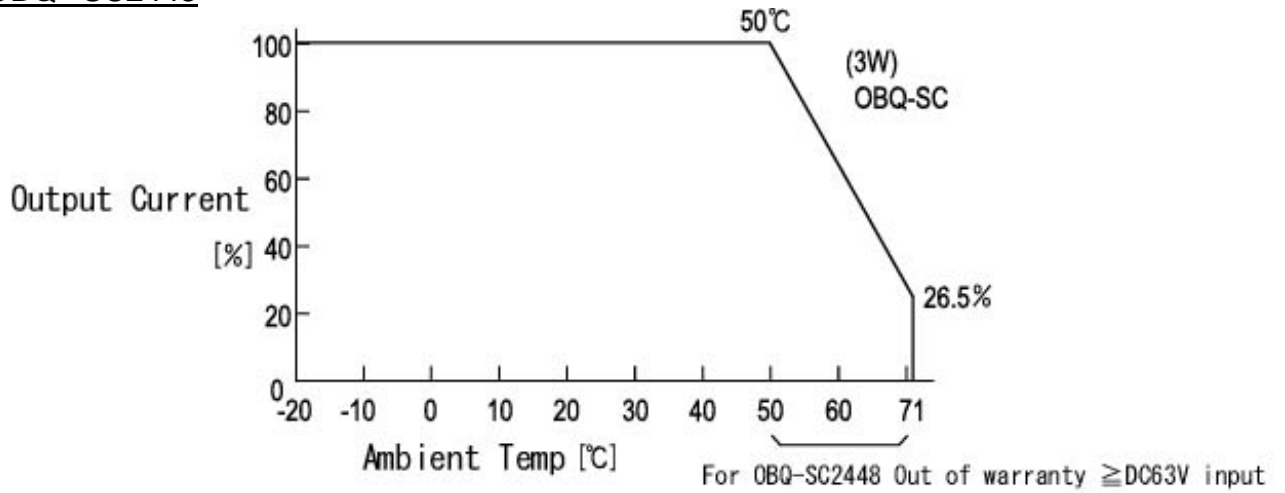
Conditions:

- *1 At 25°C and rated input/output
- *2 OBQ**WC2448 satisfies the above-mentioned specifications at the same load conditions on both outputs
- *3 Measured by a bayonet probe at the output connector at a 0 to 100Mhz bandwidth
- *4 When input voltage changed from 18V to 72V rapidly at rated output
- *5 When output current changed from 0mA to rated current keeping the current of other output below minimum rated current at rated input
- *6 When output current changed from minimum rated current to rated current keeping the current of other output above minimum rated current at rated input
- *7 When output current of both outputs changed from 0mA to rated current identically at rated input
- *8 At -20 to +71°C
- *9 For 7hour period after 1hour warm-up at 25°C and rated input/output
- *10 When output current changed rapidly between 25% and 75% of rated current at rated input
- *11 To increase output voltage, put a resistor between pin "0" and trimming pin
- *12 To reduce output voltage, put a resistor between pin "+" and trimming pin
- *13 Out of warranty ≥ 50°C at input voltage from 63V to 72V

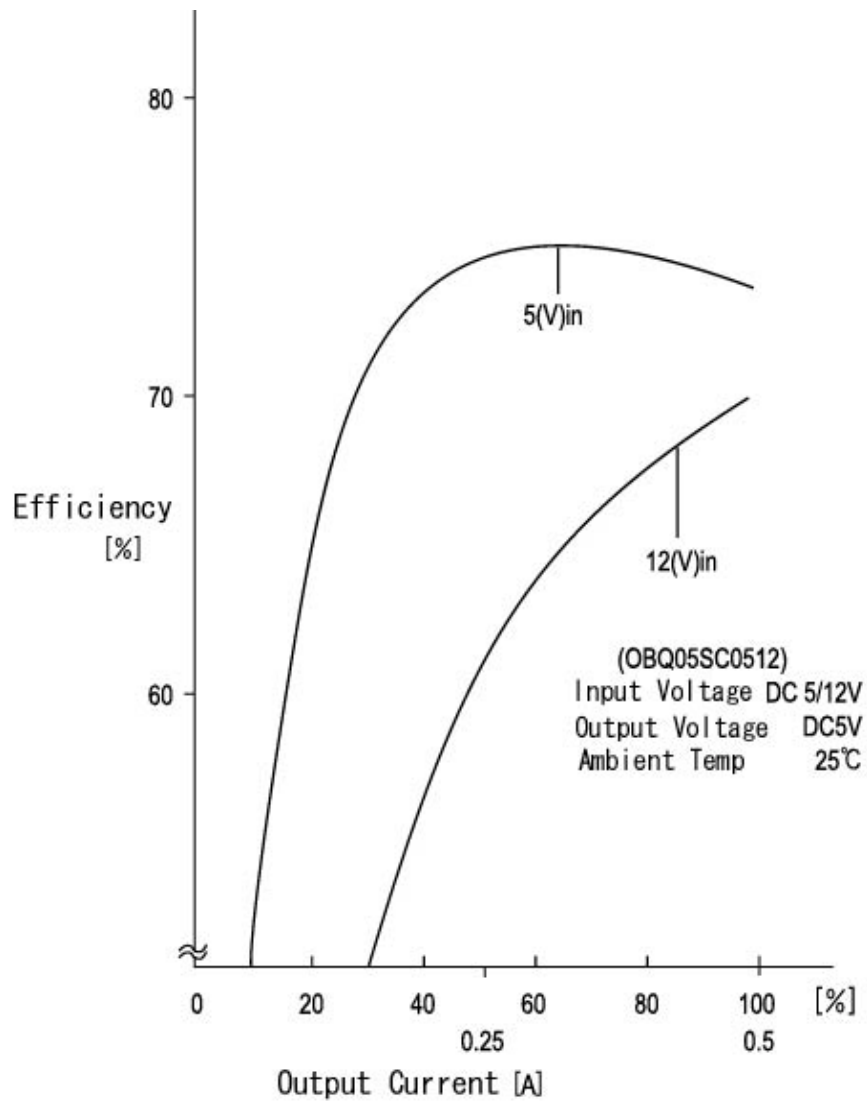




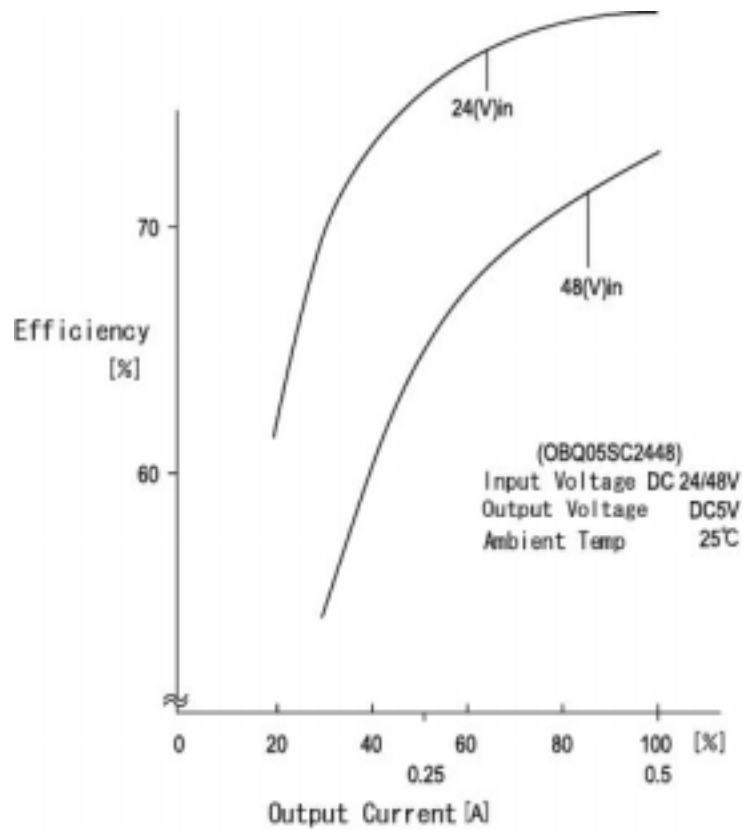
Derating: OBQ**SC2448



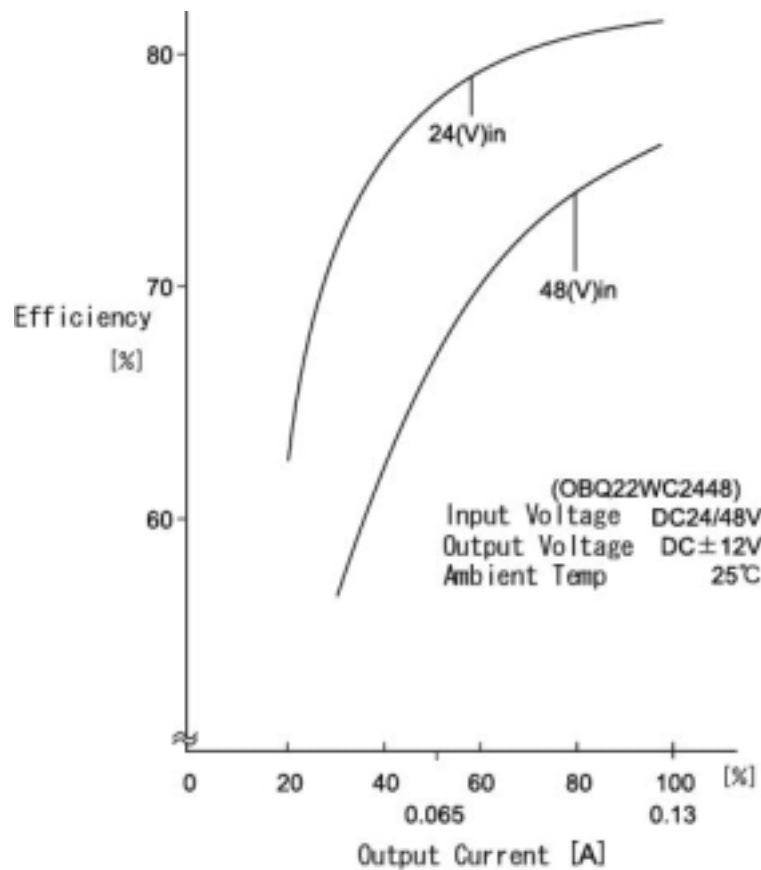
Efficiency: OBQ**SC0512



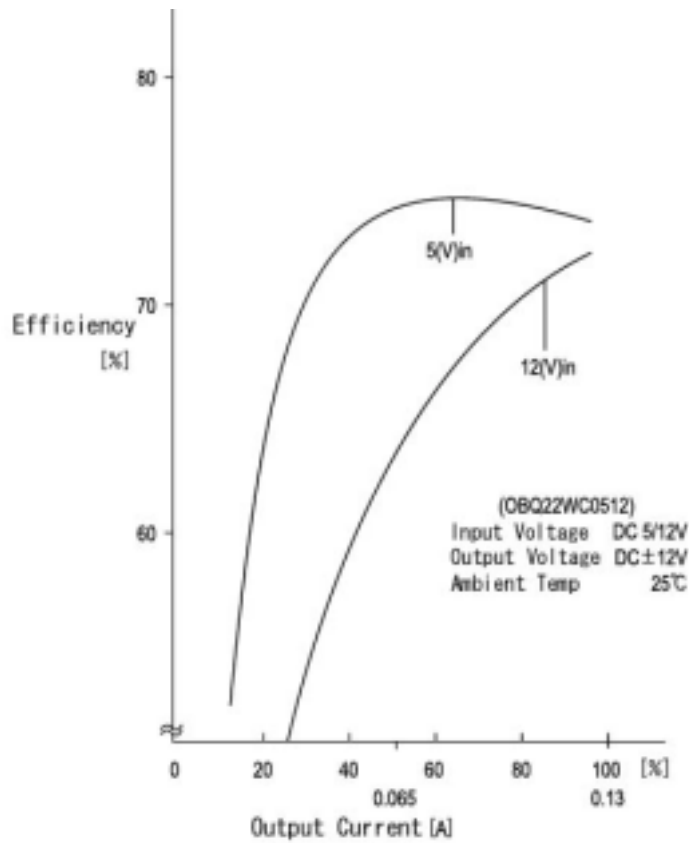
Efficiency: OBQ**SC2448



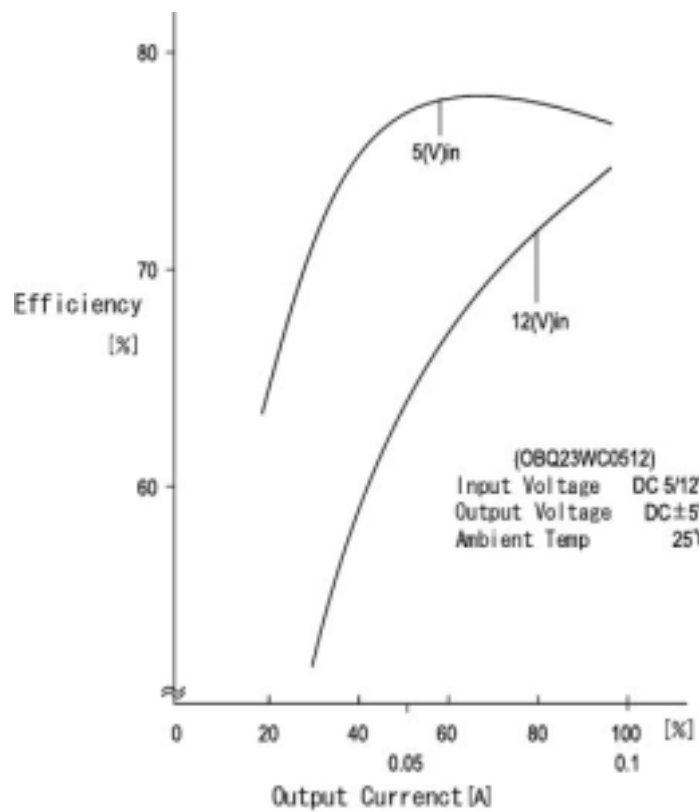
Efficiency: OBQ**WC2448



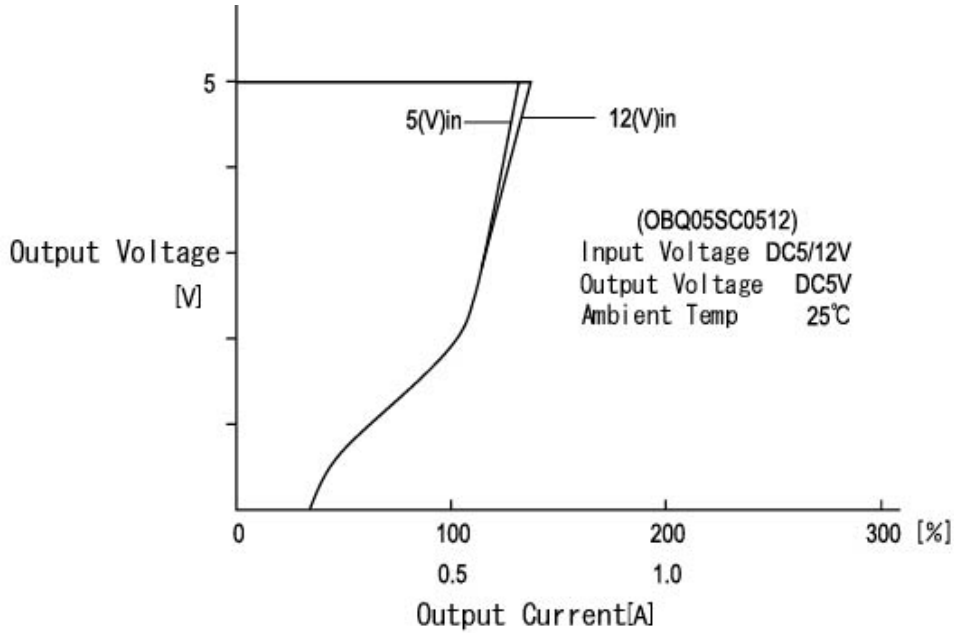
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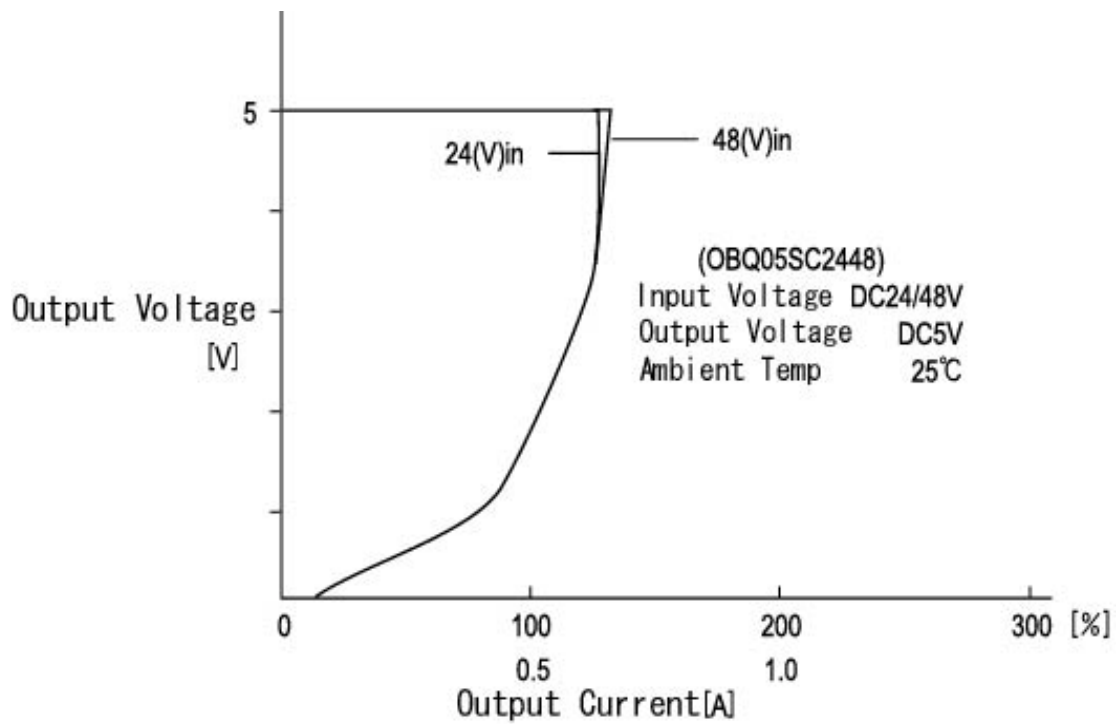
Efficiency: OBQ**23WC0512



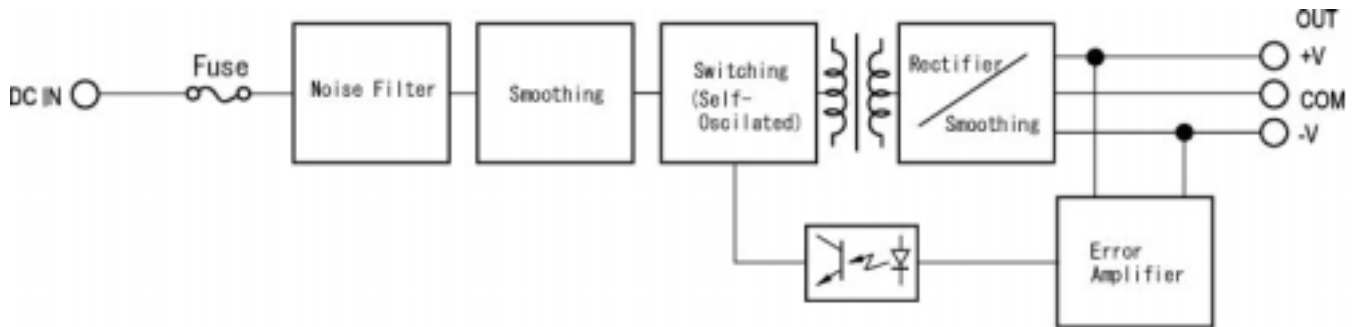
OCP: OBQ**SC0512



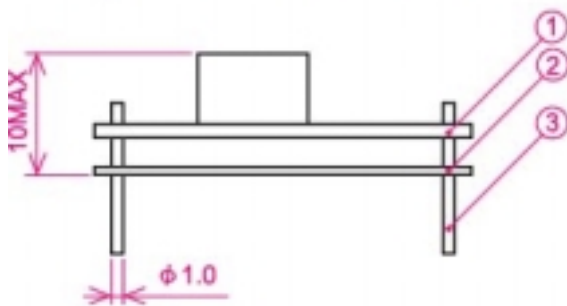
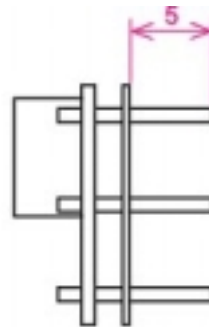
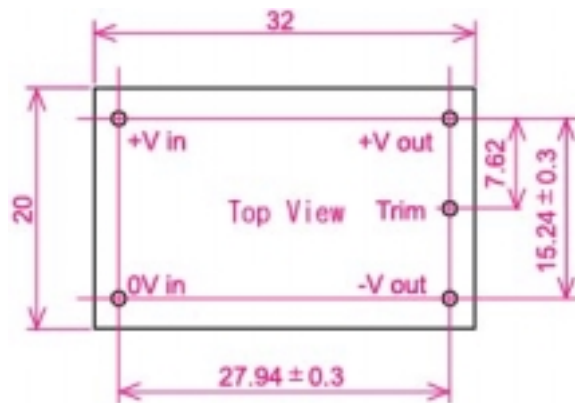
OCP: OBQ**SC2448



Block diagram: OBQ**WC



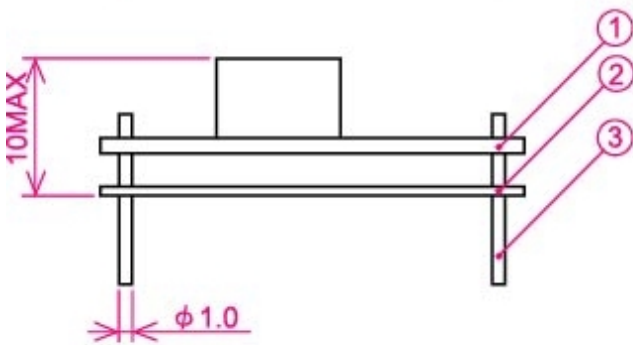
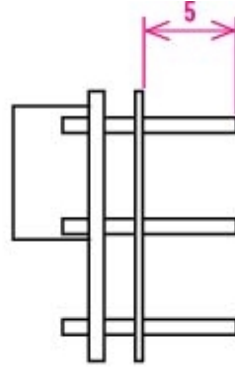
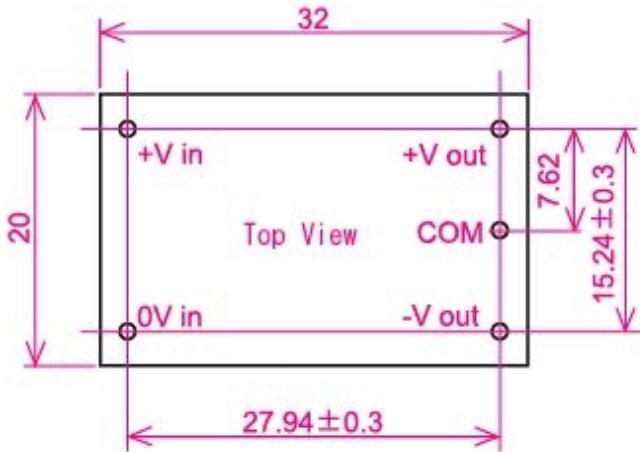
Dimension: OBQ**SC



- ① Double-sided PCB FR4t=1.0
- ② t=0.5 Insulator V0
- ③ 1.0DIA PIN Material:BsB 2700 1/2H
Copper Plating 1~3μm
Solder Plating 3~6μm

* Tolerance ±0.5

Dimension: OBQ**WC



- ① Double-sided PCB FR4t=1.0
- ② t=0.5 Insulator V0
- ③ 1.0DIA PIN Material:BsB 2700 1/2H
Copper Plating 1~3μm
Solder Plating 3~6μm

* Tolerance ±0.5