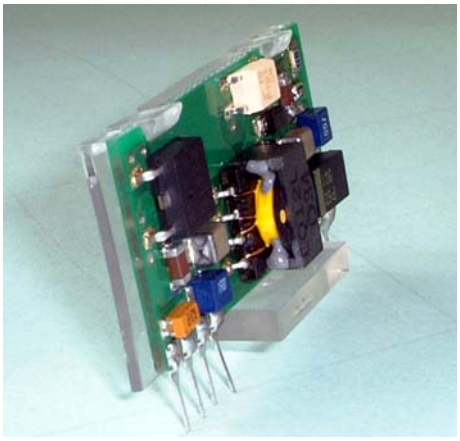
ETA-POWER EUROPE LTD.

OTQ-SC/WC 3W

DC/DC Converter
Single / Multi-Output

Isolated, high quality, highly reliable DC-DC converters for *distributed power* applications with direct soldering (**lead free**) onto PCB according to **ROHS** directives. Vertically and horizontally positioned pins makes it easy for SMD production. Power ranges from 1.5 - 10W, available with wide input 4:1. This family can cover a range of 4,5-72Vdc. Due to vertical placing, the OTQ-series, especially, is an excellent space saver with an output range of 5- 24Vdc in both single and multi-output. Applications include: LED, LCD, and TfT displays, info-panels, portable devices, IT & Telecom and gaming machines.
This model has most of the same technical features as ETA's OBQ-series.



Features
Wide input voltage range (4 - 72Vdc)
Operating temperature: -20 to +80°C
High efficiency & reliability
Switching frequency: 170kHz (fix)
Warranty: 3 years

Mechanical features
Dimensions (WxLxH): 9x36x19,5mm
Weight: 5g
Open frame type

Possible applications
Office equipment
Telecommunications
Industrial electronics & machines
Automation
Robotics
Household appliances & equipment

Control features
Over current protection: Fold back current limiting, auto recovery.

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Specifications<DC/DC>	Model					
	Single Output				Dual Output	
OTQ**SC / WC05 3WATTS/ SINGLE / 2 OUTPUTS	OTQ-05SC05	OTQ-12SC05	OTQ-15SC05	OTQ-24SC05	OTQ-22WC05	OTQ-23WC05
Input Characteristics						
Input Voltage DC[V]	5	5	5	5	5	5
Input Range DC[V] *10	4 - 8					
Inrush Current	no regulation					
Input Current						
at no load [mA](typical)	45	65	60	64	64	63
at full load [mA](typical)	684	843	800	821	854	810
Line Back Noise [mVp-p](typical)	600	600	600	600	600	600
Efficiency [%] (typical) *1	73	74	75	76	73	74
Output Characteristics						
Output Voltage [V]	5	12	15	24	+12 -12	+15 -15
Output Current [A]	0.5	0.26	0.20	0.13	0.13	0.10
Voltage Tolerance +/-[mV](maximum) *2	150	360	450	720	360	450
Ripple and Noise [mVp-p](maximum) *3	100					
Regulation						
a.Static Line Regulation [mV](maximum)	25	60	75	120	60	75
b.Dynamic Line Regulation [mV](maximum) *4	200	480	600	960	600	750
c.Static Load Regulation [mV](maximum) *5	150	360	450	720	60	75
Cross-regulation [mV](maximum) *6	- -	- -	- -	- -	1200	1500
d.Temperature Coefficient *7	0.03%/°C(maximum)					
e.Drift [mV](maximum) *8	40	75	90	135	75	90
f.Dynamic Load Regulation +/-[mV](typical) *9	200	480	600	960	600	750
g.Recovery Time *4, *9	20mS(maximum)					
Rise up time	10mS(maximum) at rated input/output					
Hold up time	no regulation					
Functions						
Over current protection	Foldback/Current Limiting with automatic recovery at discontinuous short circuit conditions					
Over voltage protection	not available					
Remote sense	not available					
Trimming of output voltage [mV]	not available					
Input Fuse	Installed (2A)					
Environmental						
Operating Temperature *10	-20 to +80°C					
(derating)	50mW/°C from 70°C (out of warranty on and above 80°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 at 5mA for 1minute					
Insulation Resistance	Primary-Secondary 100MΩ(minimum) by DC500V insulation tester					
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s^2,20minut/cycle, period for 30minutes along each axis X,Y,Z (non-operating)					
Shock	294m/s^2					
Cooling	Convection					
Weight (typical)	open board type: 5g					

Conditions:

*1 At 25°C and rated input/output
*2 OTQ**WC05 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 is changed from 4V to 8V at rated output
*5 When output current is changed from 0mA to rated current at rated input
(OTQ**WC05: when output current of both outputs changed from 0mA to rated current identically at rated input)
*6 When output current is changed from 0mA to rated current
(OTQ**WC05: when output current is changed from 0mA to rated current keeping the current of other output within rated current at rated input)
*7 At -20 to +80°C
*8 For 7hour period after 1hour warm-up at 25°C and rated input/output
*9 When output current is changed rapidly between 25% and 75% of rated current at rated input
(OTQ-**WC05: when output current is changed rapidly between 25% and 75% of rated current at rated input while output current of the other channel is in a range of 10 to 100% of rated current)
*10 Total power to be maximum 2W when input voltage is in a range of 4.0 to 4.5V

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Specifications<DC/DC>	Model											
	Single Output								Dual Output			
OTQSC / WC1224 3WATTS/ SINGLE / 2 OUTPUTS**	OTQ-05SC1224		OTQ-12SC1224		OTQ-15SC1224		OTQ-24SC1224		OTQ-22WC1224		OTQ-23WC1224	
Input Characteristics												
Input Voltage DC[V]	12	24	12	24	12	24	12	24	12	24	12	24
Input Range DC[V] *10	8 - 32											
Inrush Current [A]	no regulation											
at no load [mA](typical)	22	23	22	22	25	24	31	29	26	26	29	28
at full load [mA](typical)	324	171	329	173	308	164	317	168	329	178	312	166
Line Back Noise [mVp-p](typical)	500	300	500	300	500	300	500	300	500	300	500	300
Efficiency [%] (typical) *1	77	71	80	75	81	76	81	76	79	74	80	76
Output Characteristics												
Output Voltage [V]	5		12		15		24		+12	-12	+15	-15
Output Current [A]	0.5		0.26		0.20		0.13		0.13		0.10	
Voltage Tolerance +/-[mV](maximum) *2	150		360		450		720		360		450	
Ripple and Noise [mVp-p](maximum) *3	100											
Regulation												
a.Static Line Regulation [mV](maximum)	25		60		75		120		60		75	
b.Dynamic Line Regulation [mV](maximum) *4	200		480		600		960		600		750	
c.Static Load Regulation [mV](maximum) *5	25		60		75		120		60		75	
Cross-regulation [mV](maximum) *6	-	-	-	-	-	-	-	-	1200		1500	
d.Temperature Coefficient *7	0.03%/°C(maximum)											
e.Drift[mV](maximum) *8	40		75		90		135		75		90	
f.Dynamic Load Regulation +/-[mV](typical) *9	200		480		600		960		600		750	
g.Recovery Time *4, *9	20mS(maximum)											
Rise up time	10mS(maximum) at rated input/output											
Hold up time	not specified											
Functions												
Over current Protection	Foldback/Current Limiting with automatic recovery at discontinuous short circuit conditions											
Over voltage Protection	not available											
Remote Sense	not available											
Trimming of output voltage [mV]	not available											
Input Fuse	Installed (2A)											
Environmental												
Operating Temperature *10	-20 to +80°C											
(derating)	50mW/°C from 70°C (out of warranty on and above 80°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 at 5mA for 1minute											
Insulation Resistance	Primary-Secondary 100MΩ(minimum) by DC500V insulation tester											
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s^2,20minutes, period for 30minutes each along X,Y,Z axes(non-operating)											
Shock	294m/s^2											
Cooling	Convection											
Weight (typical)	open board type: 5g											

Conditions:
*1 At 25°C and rated input/output
*2 OTQ**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 0 to 100Mhz bandwidth
*4 When input voltage is changed from 8V to 32V at rated output
*5 When output current is changed from 0mA to rated current at rated input
(OTQ**WC1224: when output current of both outputs is changed from 0mA to rated current identically at rated input)
*6 When output current is changed from 0mA to rated current
(OTQ**WC1224: when output current is changed from 0mA to rated current keeping the current of other output within rated current at rated input)
*7 At -20 to +80°C
*8 For 7hour period after 1hour warm-up at 25°C and rated input/output
*9 When output current is changed rapidly between 25% and 75% of rated current at rated input
(OTQ-**WC1224: when output current is changed rapidly between 25% and 75% of rated current at rated input while output current of the other channel is in a range
of 10 to 100% of rated current)
*10 Out of warranty when center value of output goes over 26V and at on/over 50°C

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Specifications<DC/DC>	Model											
	Single Output								Dual Output			
OTQSC / WC2448 3WATTS/ SINGLE / 2 OUTPUTS**	OTQ-05SC2448		OTQ-12SC2448		OTQ-15SC2448		OTQ-24SC2448		OTQ-22WC2448		OTQ-23WC2448	
Input Characteristics												
Input Voltage DC[V]	24	48	24	48	24	48	24	48	24	48	24	48
Input Range DC[V] *10	18 - 72											
Inrush Current [A]	no regulation											
at no load [mA](typical)	9	11	12	14	13	16	16	18	15	17	16	17
at full load [mA](typical)	160	82	162	86	154	83	158	86	164	89	154	84
Line Back Noise [mVp-p](typical)	400	400	400	400	400	400	400	400	400	400	400	400
Efficiency [%] (typical) *1	78	72	80	74	82	75	82	75	79	73	80	74
Output Characteristics												
Output Voltage [V]	5		12		15		24		+12	-12	+15	-15
Output Current [A]	0.5		0.26		0.20		0.13		0.13		0.10	
Voltage Tolerance +/-[mV](maximum) *2	150		360		450		720		360		450	
Ripple and Noise [mVp-p](maximum) *3	100											
Regulation												
a.Static Line Regulation [mV](maximum)	25		60		75		120		60		75	
b.Dynamic Line Regulation [mV](maximum) *4	200		480		600		960		600		750	
c.Static Load Regulation [mV](maximum) *5	25		60		75		120		60		75	
Cross-regulation [mV](maximum) *6	-	-	-	-	-	-	-	-	1200		1500	
d.Temperature Coefficient *7	0.03%/°C(maximum)											
e.Drift[mV](maximum) *8	40		75		90		135		75		90	
f.Dynamic Load Regulation +/-[mV](typical) *9	200		480		600		960		600		750	
g.Recovery Time *4, *9	20mS(maximum)											
Rise up time	10mS(maximum) at rated input/output											
Hold up time	not specified											
Functions												
Over current Protection	Foldback/Current Limiting with automatic recovery at discontinuous short circuit conditions											
Over voltage Protection	not available											
Remote Sense	not available											
Trimming of output voltage [mV]	not available											
Input Fuse	Installed (2A)											
Environmental												
Operating Temperature *10	-20 to +80°C											
(derating)	50mW/°C from 70°C (out of warranty on and above 80°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 at 5mA for 1minute											
Insulation Resistance	Primary-Secondary 100MΩ(minimum) by DC500V insulation tester											
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s^2,20minutes, period for 30minutes each along X,Y,Z axes(non-operating)											
Shock	294m/s^2											
Cooling	Convection											
Weight (typical)	open board type: 5g											

Conditions:

*1 At 25°C and rated input/output

*2 OTQ**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 0 to 100Mhz bandwidth

*4 When input voltage is changed from 18V to 72V at rated output

*5 When output current changed from 0mA to rated current at rated input
(OTQ**WC2448: when output current of both outputs changed from 0mA to rated current identically at rated input)

*6 When output current is changed from 0mA to rated current
(OTQ**WC2448: when output current is changed from 0mA to rated current keeping the current of other output within rated current at rated input)

*7 At -20 to +80°C

*8 For 7hour period after 1hour warm-up at 25°C and rated input/output

*9 When output current is changed rapidly between 25% and 75% of rated current at rated input
(OTQ-**WC2448: when output current is changed rapidly between 25% and 75% of rated current at rated input while output current of the other channel is in a range of 10 to 100% of rated current)

*10 Out of warranty when center value of output goes over 52.8V and at on/over 50°C

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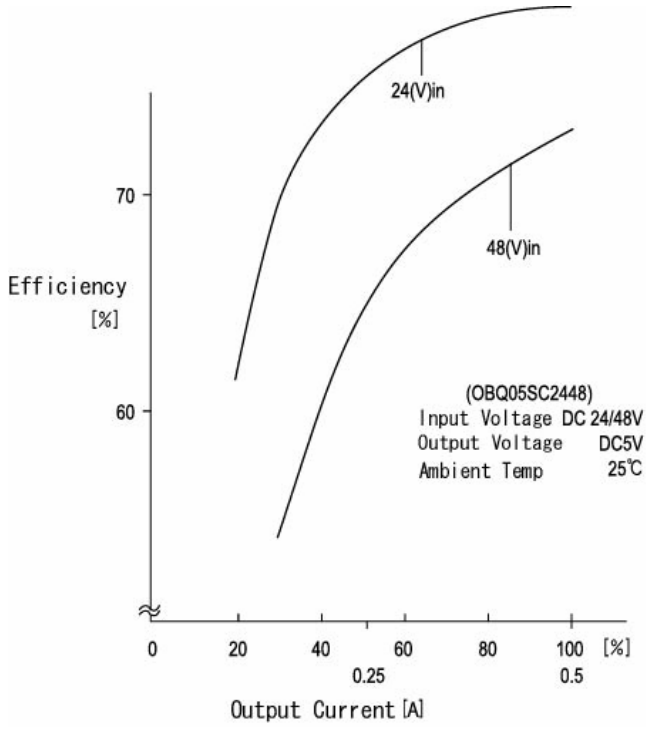
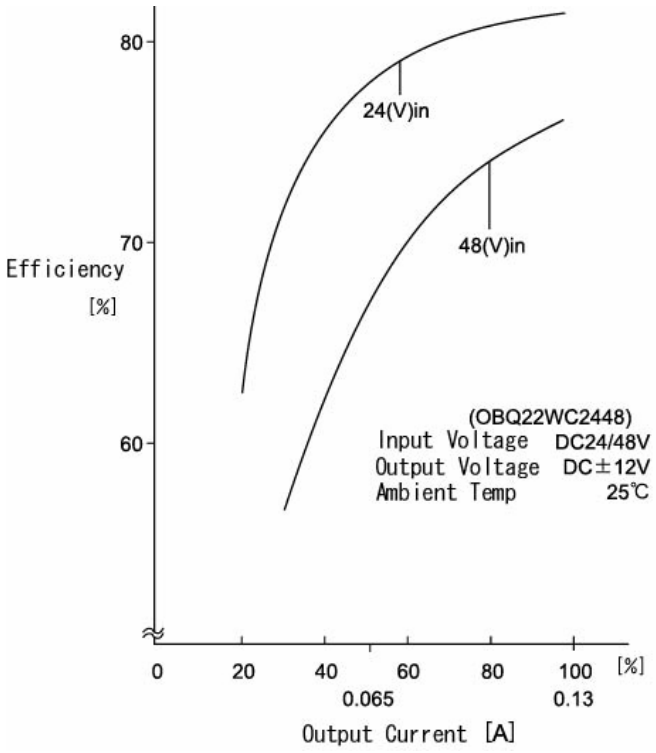
Efficiency: OTQ**SC2448

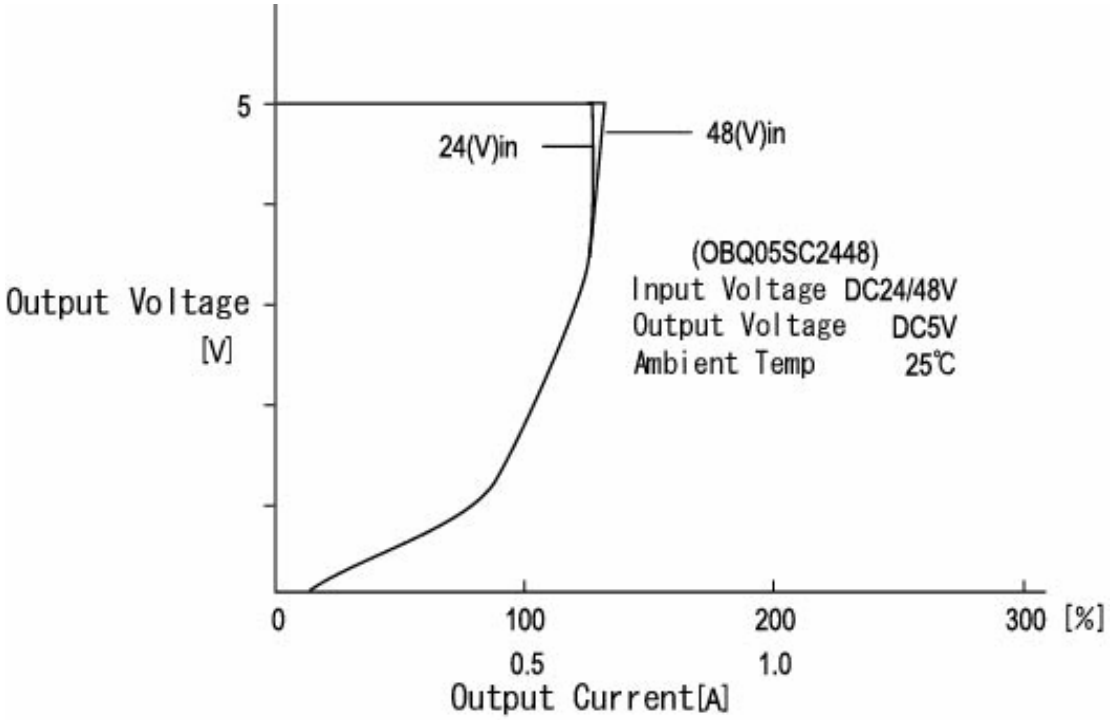
(same as OBQ**SC052448)



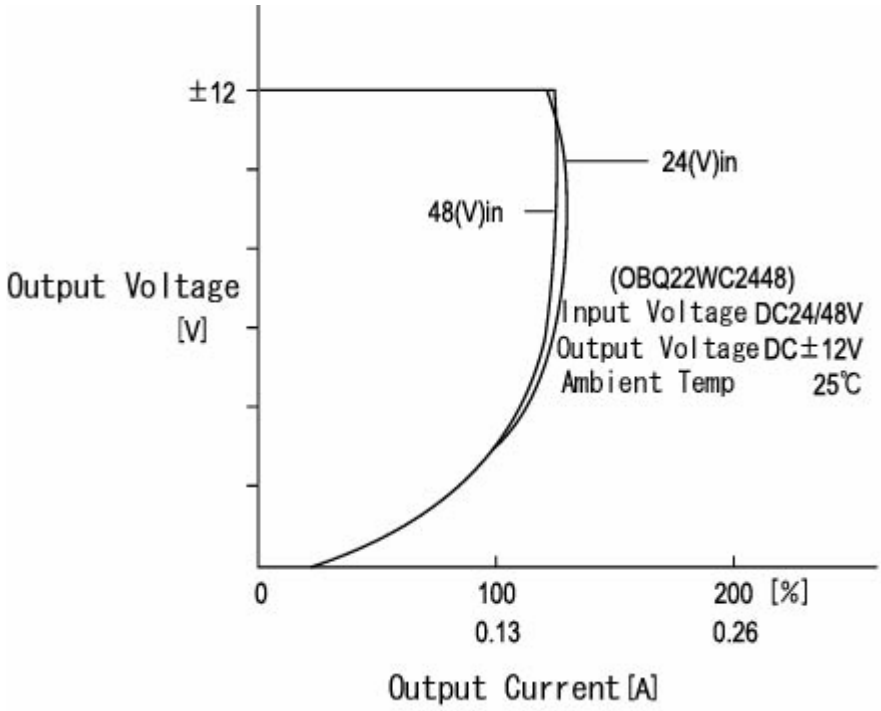
Efficiency: OTQ**WC2448



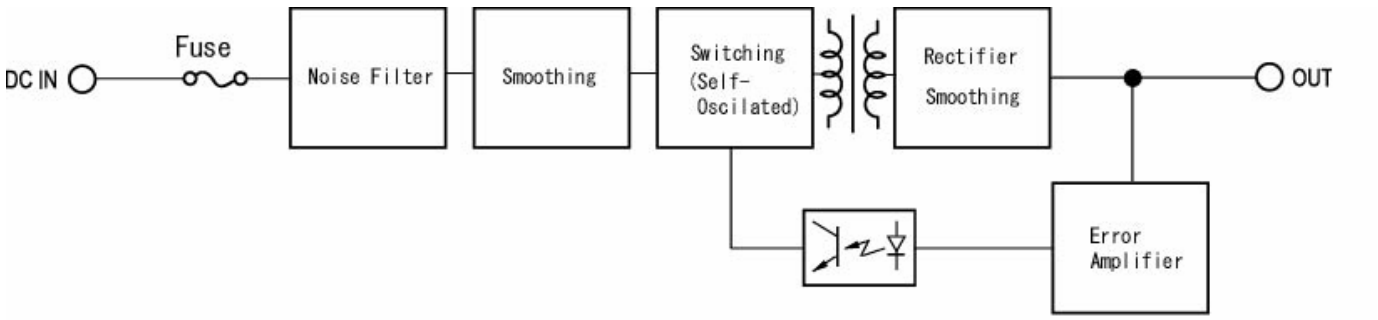
OCP: OTQ**SC2448



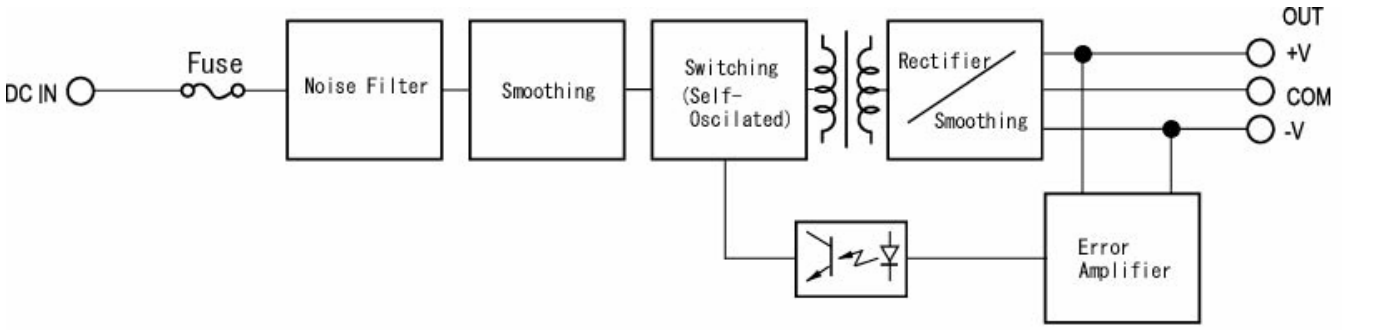
OCP: OTQ**WC2448



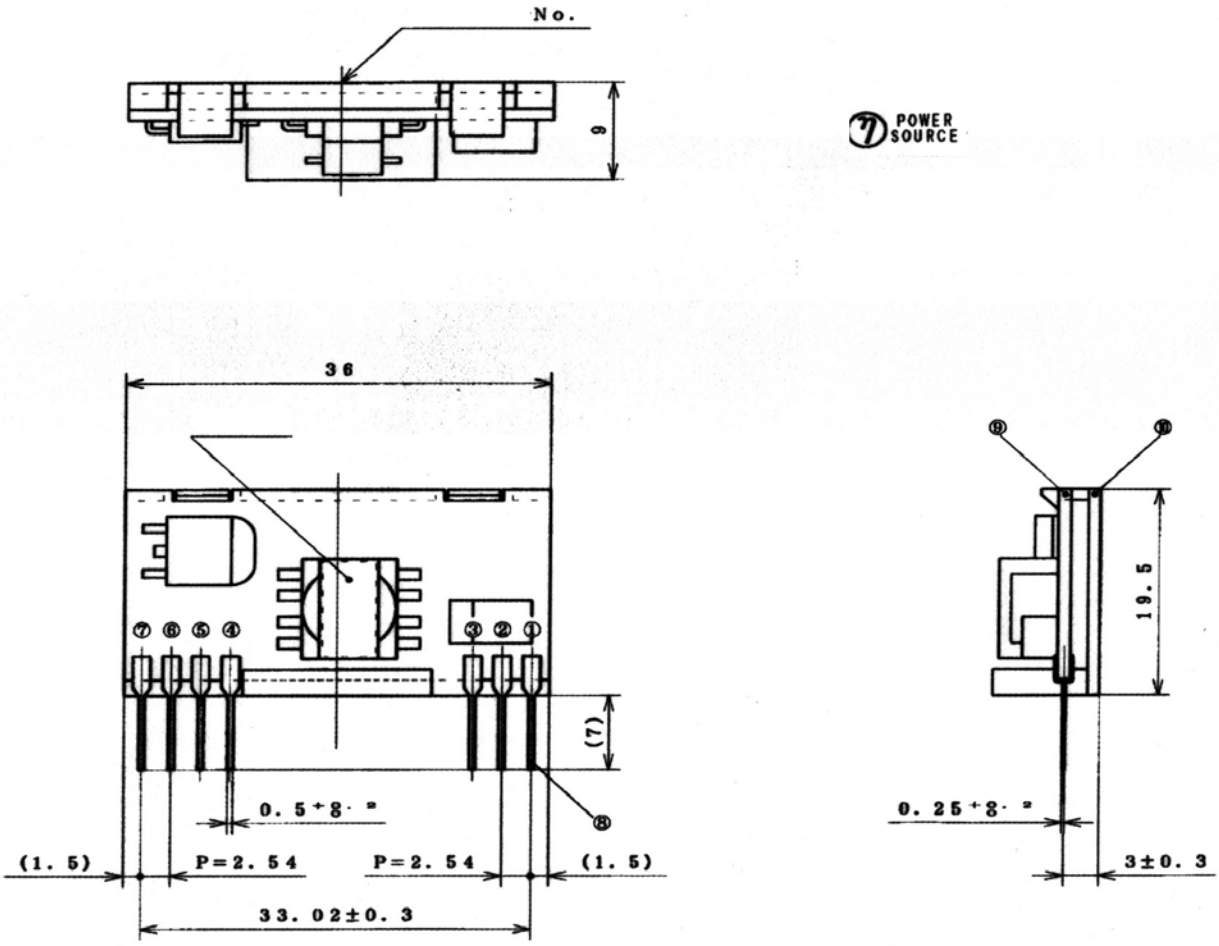
Block diagram: OTQ**SC



Block diagram: OTQ**WC



Dimensions: OTQ***C****



	2
① NC	① −V OUT
② 0V OUT	② COM
③ +V OUT	③ +V OUT
④ 0V IN	④ 0V IN
⑤ 0V IN	⑤ 0V IN
⑥ +V IN	⑥ +V IN
⑦ +V IN	⑦ +V IN

⑧ PE2.54-0.9-8 C5191R-1/2H
2~3μm
3~8μm

⑨ FR4 t=1.0
⑩ PC UL94V2
* ±0.5

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