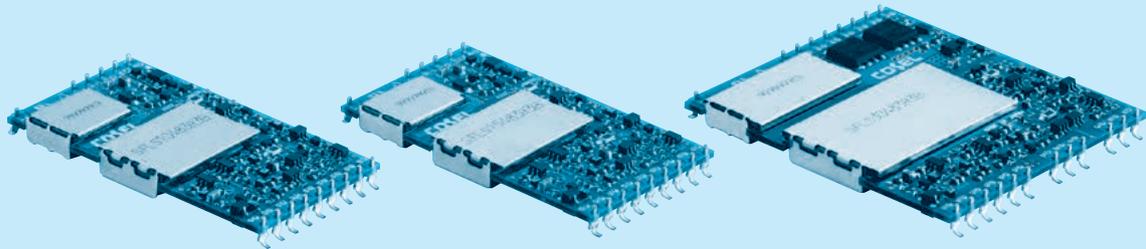




# SFLS-series



## ■ Feature

- Low profile SMD mounting type
- High efficiency (synchronous rectifier circuit)
- Parallel operation is possible
- Built-in overcurrent, overvoltage and lowvoltage circuits
- Built-in remote ON/OFF, alarm
- Built-in Power ready / Sequence control

## ■ CE marking

- Low Voltage Directive
- RoHS Directive

## ■ UKCA marking

- Electrical Equipment Safety Regulations
- RoHS Regulations

## ■ Safety agency approvals

- UL60950-1, C-UL, EN62368-1

## ■ 5-year warranty

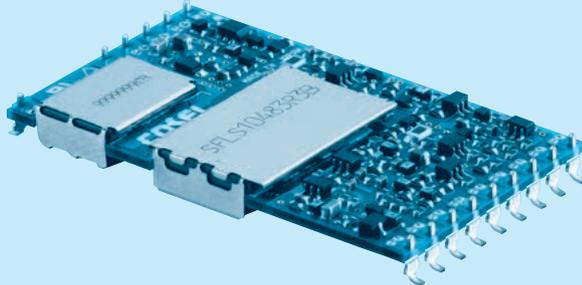
# SFLS10

SFL S 10 48 3R3 B

① ② ③ ④ ⑤ ⑥



RoHS



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage  
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type  
B :SMD

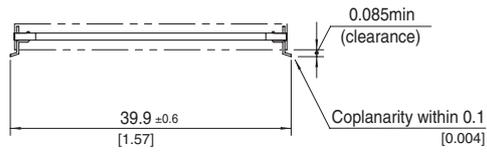
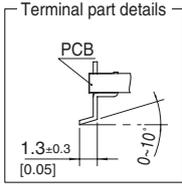
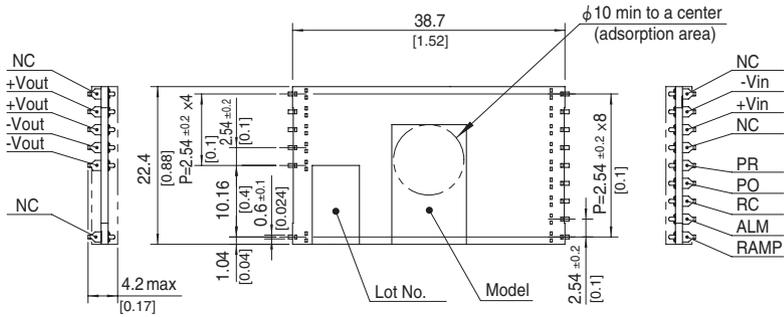
MODEL	SFLS10482R5	SFLS10483R3	SFLS104805
MAX OUTPUT WATTAGE[W]	7.5	9.9	10.0
DC OUTPUT	2.5V 3A	3.3V 3A	5V 2A

## SPECIFICATIONS

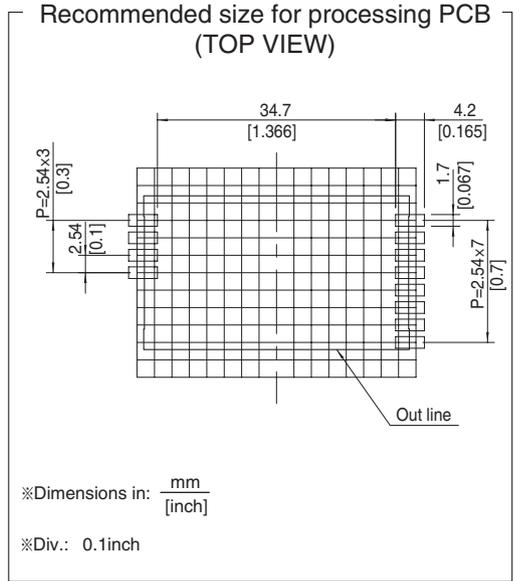
	MODEL	SFLS10482R5	SFLS10483R3	SFLS104805
INPUT	VOLTAGE[V]	DC36 - 76		
	CURRENT[A]	*1 0.18typ	0.24typ	0.24typ
	EFFICIENCY[%]	*1 86typ	87typ	88typ
	START-UP VOLTAGE[V]	DC32 - 36		
	HYSTERESIS VOLTAGE[V]	DC2 min		
OUTPUT	VOLTAGE[V]	2.5	3.3	5
	CURRENT[A]	3	3	2
	VOLTAGE ACCURACY[%]	+5, -3		
	RIPPLE[mVp-p]	25max		
	RIPPLE NOISE[mVp-p]	50max		
START-UP TIME[ms]	20 - 100max (DCIN 48V, Io=100%)			
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 103% of rating		
	OVERVOLTAGE PROTECTION	Works at 115 - 150% of rating		
	LOWVOLTAGE PROTECTION	Works at 93% max of rating		
	REMOTE ON/OFF	Provided(RC open : ON, short between RC and +Vin : OFF)		
ISOLATION	INPUT-OUTPUT	DC1,500V 1minute, DC500V 50MΩ min (20±15℃)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-40 to +85℃, 20 - 95%RH (Non condensing), 3,000m (10,000feet) max		
	STORAGE TEMP.,HUMID.AND ALTITUDE	-40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (Refer to the Instruction Manual)		
	VIBRATION	10 - 55Hz, 49.0m/s <sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis		
SAFETY	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1		
OTHERS	CASE SIZE/WEIGHT	38.7 × 4.2 × 22.4mm [1.52 × 0.166 × 0.88 inches] (W × H × D) / 8g max		
	COOLING METHOD	Convection		

\*1 At rated input(DC48V), rated load and 25℃

External view



- ※Dimensions in mm, [ ]= inches
- ※Tolerance ±0.5 [±0.02]
- ※Weight: 8g max
- ※Terminal thickness: 0.3±0.1 [0.012]
- Terminal material: copper alloy
- Plating treatment of terminal  
:Sn with Ni barrier



- ※Dimensions in:  $\frac{\text{mm}}{\text{[inch]}}$
- ※Div.: 0.1inch

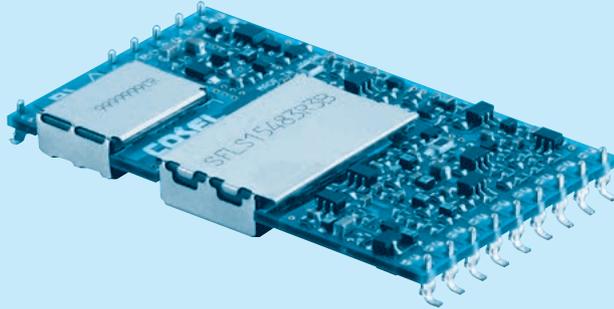
# SFLS15

SFL S 15 48 3R3 B

① ② ③ ④ ⑤ ⑥



RoHS



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage  
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type  
B :SMD

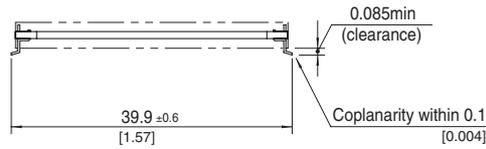
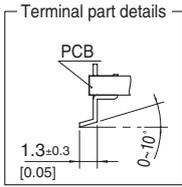
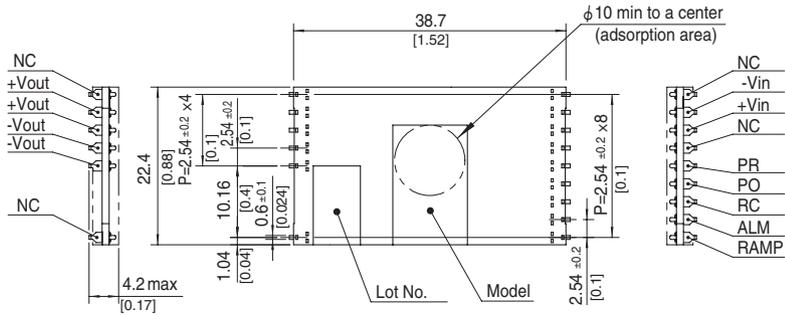
MODEL	SFLS15481R2	SFLS15481R5	SFLS15481R8	SFLS15482R5	SFLS15483R3	SFLS154805	SFLS15485R2	SFLS154812
MAX OUTPUT WATTAGE[W]	6.24	7.8	8.1	11.25	14.85	15.0	15.6	15.0
DC OUTPUT	1.2V 5.2A	1.5V 5.2A	1.8V 4.5A	2.5V 4.5A	3.3V 4.5A	5V 3A	5.2V 3A	12V 1.25A

## SPECIFICATIONS

	MODEL	SFLS15481R2	SFLS15481R5	SFLS15481R8	SFLS15482R5	SFLS15483R3	SFLS154805	SFLS15485R2	SFLS154812	
INPUT	VOLTAGE[V]	DC36 - 76								
	CURRENT[A]	*1 0.16typ	0.20typ	0.20typ	0.27typ	0.35typ	0.35typ	0.37typ	0.35typ	
	EFFICIENCY[%]	*1 81typ	82typ	85typ	87typ	89typ	89typ	89typ	89typ	
	START-UP VOLTAGE[V]	DC32 - 36								
	HYSTERESIS VOLTAGE[V]	DC2 min								
OUTPUT	VOLTAGE[V]	1.2	1.5	1.8	2.5	3.3	5	5.2	12	
	CURRENT[A]	5.2	5.2	4.5	4.5	4.5	3	3	1.25	
	VOLTAGE ACCURACY[%]	+5, -3								
	RIPPLE[mVp-p]	25max							120max	
	RIPPLE NOISE[mVp-p]	50max							150max	
START-UP TIME[ms]	20 - 100max (DCIN 48V, Io=100%)									
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 103% of rating								
	OVERVOLTAGE PROTECTION	Works at 115 - 160% of rating			Works at 115 - 150% of rating					
	LOWVOLTAGE PROTECTION	Works at 93% max of rating								
	REMOTE ON/OFF	Provided(RC open : ON, short between RC and +Vin : OFF)								
ISOLATION	INPUT-OUTPUT	DC1,500V 1minute, DC500V 50MΩ min (20±15°C)								
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-40 to +85°C, 20 - 95%RH (Non condensing), 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (Refer to the Instruction Manual)								
	VIBRATION	10 - 55Hz, 49.0m/s <sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis								
	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
SAFETY	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1								
OTHERS	CASE SIZE/WEIGHT	38.7 × 4.2 × 22.4mm [1.52 × 0.166 × 0.88 inches] (W × H × D) / 8g max								
	COOLING METHOD	Convection								

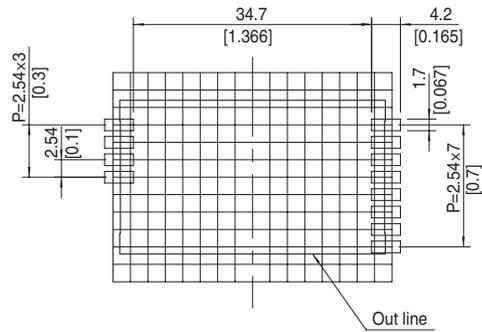
\*1 At rated input(DC48V), rated load and 25°C

External view



- ※Dimensions in mm, [ ]= inches
- ※Tolerance ±0.5 [±0.02]
- ※Weight: 8g max
- ※Terminal thickness: 0.3±0.1 [0.012]
- Terminal material: copper alloy
- Plating treatment of terminal: Sn with Ni barrier

Recommended size for processing PCB (TOP VIEW)



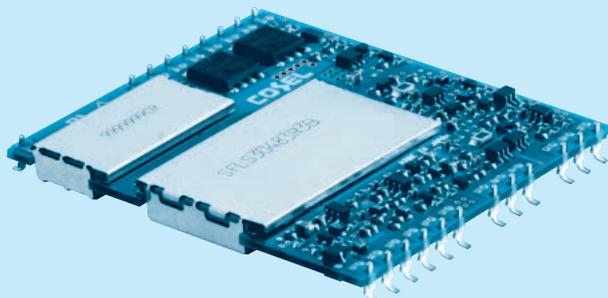
※Dimensions in:  $\frac{\text{mm}}{\text{[inch]}}$

※Div.: 0.1inch

# SFLS30

**SFL S 30 48 3R3 B**

① ② ③ ④ ⑤ ⑥


**RoHS**


- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage  
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type  
B :SMD

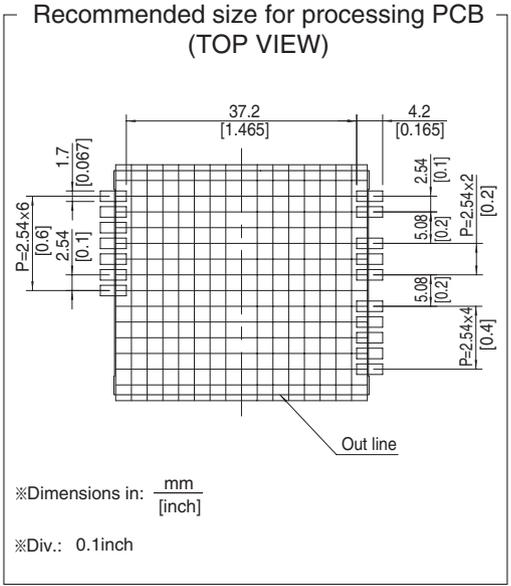
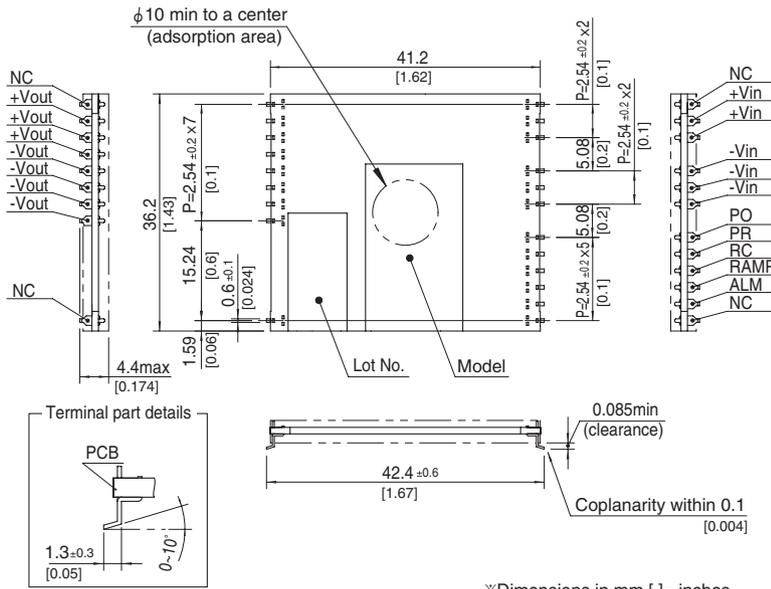
MODEL	SFLS30481R2	SFLS30481R5	SFLS30481R8	SFLS30482R5	SFLS30483R3	SFLS304805
MAX OUTPUT WATTAGE[W]	14.4	16.5	19.8	25.0	29.7	30.0
DC OUTPUT	1.2V 12A	1.5V 11A	1.8V 11A	2.5V 10A	3.3V 9A	5V 6A

## SPECIFICATIONS

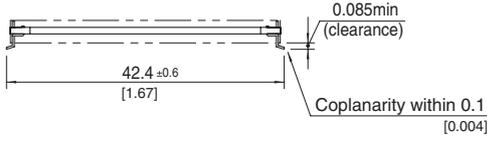
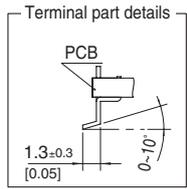
	MODEL	SFLS30481R2	SFLS30481R5	SFLS30481R8	SFLS30482R5	SFLS30483R3	SFLS304805
INPUT	VOLTAGE[V]	DC36 - 76					
	CURRENT[A]	*1 0.36typ	0.40typ	0.47typ	0.58typ	0.68typ	0.69typ
	EFFICIENCY[%]	*1 84typ	86typ	88typ	90typ	91typ	91typ
	START-UP VOLTAGE[V]	DC32 - 36					
	HYSTERESIS VOLTAGE[V]	DC2 min					
OUTPUT	VOLTAGE[V]	1.2	1.5	1.8	2.5	3.3	5
	CURRENT[A]	12	11	11	10	9	6
	VOLTAGE ACCURACY[%]	+5, -3					
	RIPPLE[mVp-p]	25max					
	RIPPLE NOISE[mVp-p]	50max					
START-UP TIME[ms]	20 - 100max (DCIN 48V, Io=100%)						
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 103% of rating					
	OVERVOLTAGE PROTECTION	Works at 115 - 160% of rating			Works at 115 - 150% of rating		
	LOWVOLTAGE PROTECTION	Works at 93% max of rating					
	REMOTE ON/OFF	Provided(RC open : ON, short between RC and +Vin : OFF)					
ISOLATION	INPUT-OUTPUT	DC1,500V 1minute, DC500V 50MΩ min (20±15°C)					
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-40 to +85°C, 20 - 95%RH (Non condensing), 3,000m (10,000feet) max					
	STORAGE TEMP.,HUMID.AND ALTITUDE	-40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (Refer to the Instruction Manual)					
	VIBRATION	10 - 55Hz, 49.0m/s <sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis					
	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis					
SAFETY	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1					
OTHERS	CASE SIZE/WEIGHT	41.2 × 4.4 × 36.2mm [1.62 × 0.174 × 1.43 inches] (W × H × D) / 16g max					
	COOLING METHOD	Convection					

\*1 At rated input(DC48V), rated load and 25°C

External view

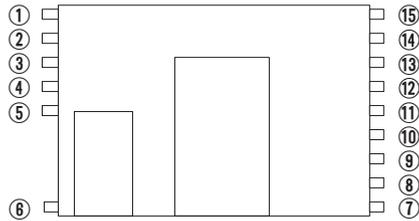


- ※Dimensions in mm, [ ]= inches
- ※Tolerance  $\pm 0.5$  [ $\pm 0.02$ ]
- ※Weight: 16g max
- ※Terminal thickness:  $0.3 \pm 0.1$  [ $0.012$ ]
- Terminal material: copper alloy
- Plating treatment of terminal : Sn with Ni barreir



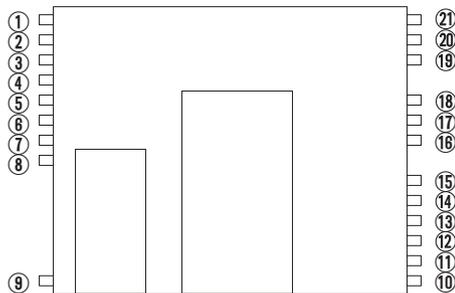
## Pin Configuration

### SFLS10 / SFLS15



No.	Pin Name	Function
①	NC	Not connected / Adhesive dispensing
②,③	+Vout	+DC output
④,⑤	-Vout	-DC output
⑥	NC	Not connected / Adhesive dispensing
⑦	RAMP	Ramp-rate control
⑧	ALM	Alarm
⑨	RC	Remote ON/OFF
⑩	PO	Start in/out
⑪	PR	Power ready / Sequence control
⑫	NC	Not connected
⑬	+Vin	+DC input
⑭	-Vin	-DC input
⑮	NC	Not connected / Adhesive dispensing

### SFLS30



No.	Pin Name	Function
①	NC	Not connected / Adhesive dispensing
②,③,④	+Vout	+DC output
⑤,⑥,⑦,⑧	-Vout	-DC output
⑨,⑩	NC	Not connected / Adhesive dispensing
⑪	ALM	Alarm
⑫	RAMP	Ramp-rate control
⑬	RC	Remote ON/OFF
⑭	PR	Power ready / Sequence control
⑮	PO	Start in/out
⑯, ⑰, ⑱	-Vin	-DC input
⑲, ⑳	+Vin	+DC input
㉑	NC	Not connected / Adhesive dispensing

## Assembling and Installation Method

### Automatic mounting

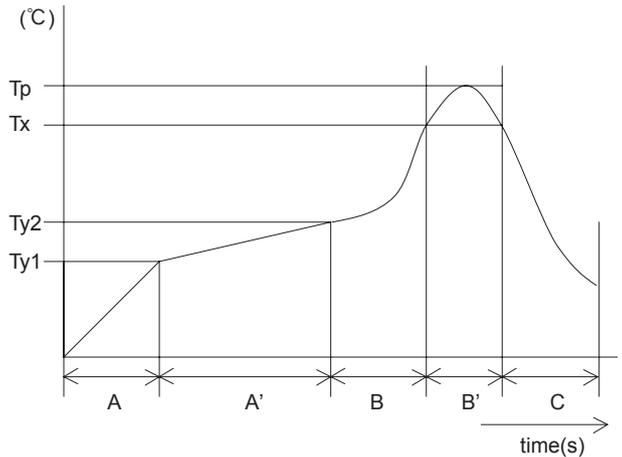
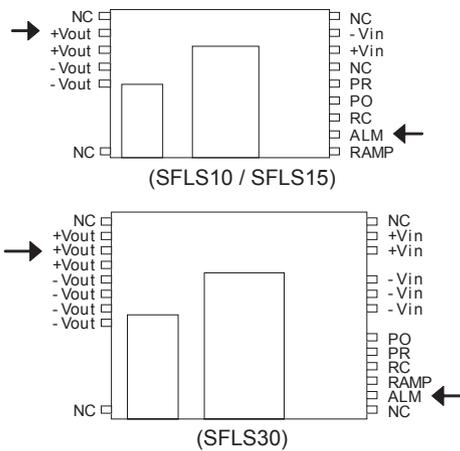
- SFLS series is designed to have a large flat area in the center of the top surface to serve as a pick up point for automated vacuum pick and place equipment.
- An excessively low bottom dead point of the suction nozzle imposes great force on the core during mounting, causing cracked core. So during mounting, take enough care.

Implementation · Mounting Method

Soldering temperature

(1) Reflow soldering

- Below and right figure show the conditions of reflow soldering. Please verify the temperature of the ALM pin and +Vout pin satisfy to reflow condition.
- Improper reflow condition may degrade the reliability of the internal components.
- While soldering, having vibration or impact on the unit should be avoided, because of solder melting.



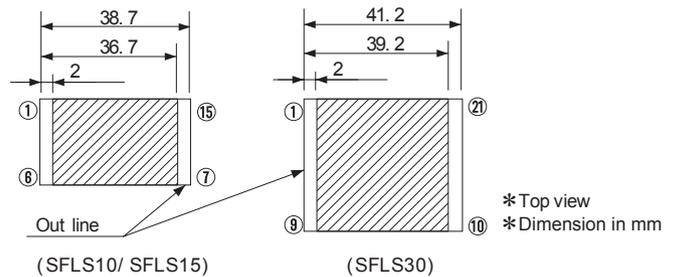
A	1.0 - 5.0°C / s
A'	Ty1 : 160±10°C Ty2 : 180±10°C Ty1 - Ty2 : 120s max
B	1.0 - 5.0°C / s
B'	Tp : Max245°C 10s max Tx : 220°C or more : 70s max
C	1.0 - 5.0°C / s

(2) Soldering iron

- 340°C to 360°C, less than 5 seconds.

Mounting method

- Avoid placing pattern layout in hatched area in right figure to insulate between pattern and power supply.



Stress to the product

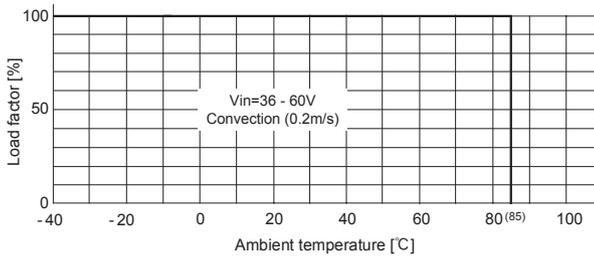
- SFLS series transformer core and choke coil core are attached by glue, and there is a cover over the core, which is attached by a clasp. There is a possibility that the core will be removed and power supply will be damaged when it took stress by the fall or some kind of stress.

## Derating

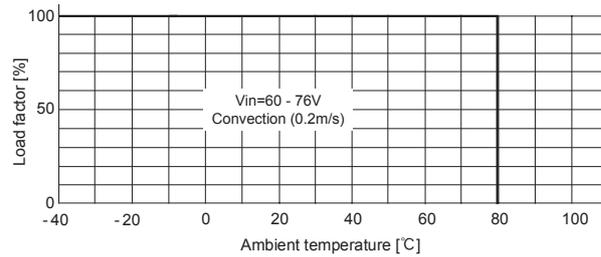
### Ambient temperature derating curve

■ It is necessary to note thermal fatigue life by power cycle. Please reduce the temperature fluctuation range as much as possible when the up and down of temperature are frequently generated.

① Vin=DC36V - 60V



② Vin=DC60V - 76V



## Instruction Manuals

◆ Please see catalog and instructionmanual before you use.

Instruction Manuals <https://www.cosel.co.jp/redirect/catalog/en/SFLS/>  
 Before using our product <https://en.cosel.co.jp/technical/caution/index.html>

SFLS



NOTICE



## Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current	Rated input fuse	Inrush current protection	PCB/Pattern			Series/Parallel operation availability	
						Material	Single sided	Double sided	Series operation	Parallel operation
SFLS10	Single ended forward converter	630 - 710	*1	-	-	glass fabric base,epoxy resin		Multilayer	Yes	Yes
SFLS15	Single ended forward converter	630 - 710	*1	-	-	glass fabric base,epoxy resin		Multilayer	Yes	Yes
SFLS30	Single ended forward converter	480 - 540	*1	-	-	glass fabric base,epoxy resin		Multilayer	Yes	Yes

\*1 Refer to Specification.