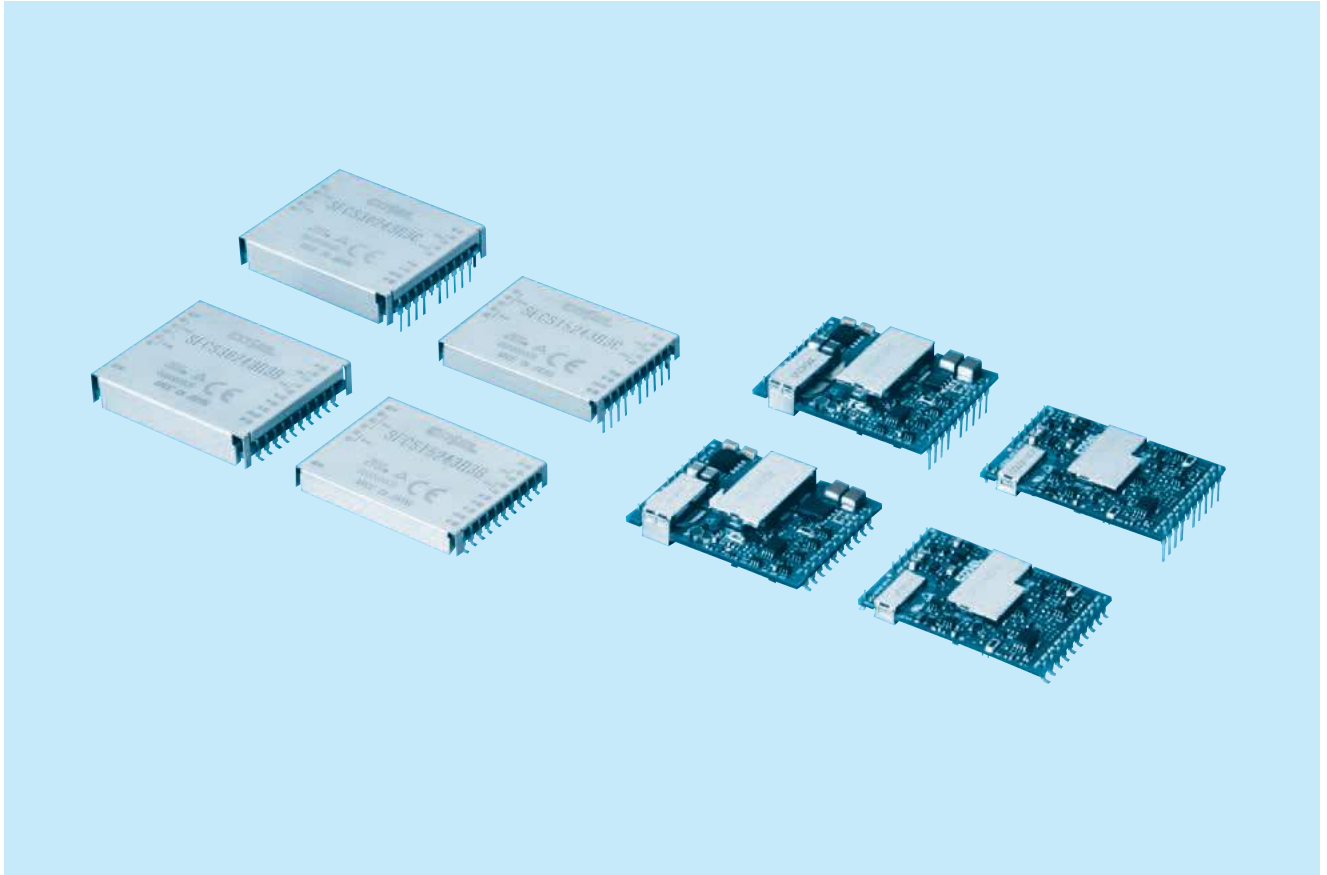




SFS-series / SFCS-series



■ Feature

- SMD mounting type and through-hole mounting type
- High efficiency (synchronous rectifier circuit)
- Parallel operation is possible
- Built-in overcurrent, overvoltage and lowvoltage circuits
- Built-in remote ON/OFF, alarm
- High reliability : not built-in aluminum and tantalum electrolytic capacitor

■ CE marking

- Low Voltage Directive
- RoHS Directive

■ UKCA marking

- Electrical Equipment Safety Regulations
- RoHS Regulations

■ Safety agency approvals

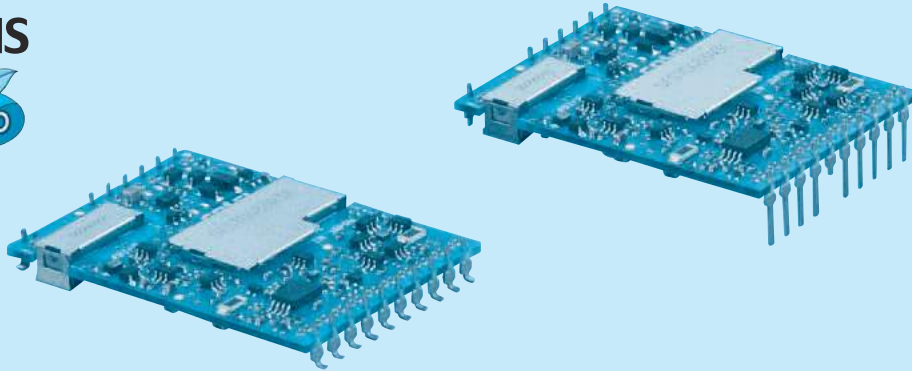
- UL60950-1, C-UL, EN62368-1

■ 5-year warranty

SFS10

SF S 10 48 3R3 B

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
(Soldering process)
B :SMD(Pb-free solder)
C :DIP(Pb-free solder)

| MODEL | SFS10481R2 | SFS10481R5 | SFS10481R8 | SFS10482R5 | SFS10483R3 | SFS104805 | SFS104812 | SFS104815 |
|-----------------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 4.2 | 5.25 | 5.4 | 7.5 | 9.9 | 10.0 | 10.8 | 10.5 |
| DC OUTPUT | 1.2V 3.5A | 1.5V 3.5A | 1.8V 3A | 2.5V 3A | 3.3V 3A | 5V 2A | 12V 0.9A | 15V 0.7A |

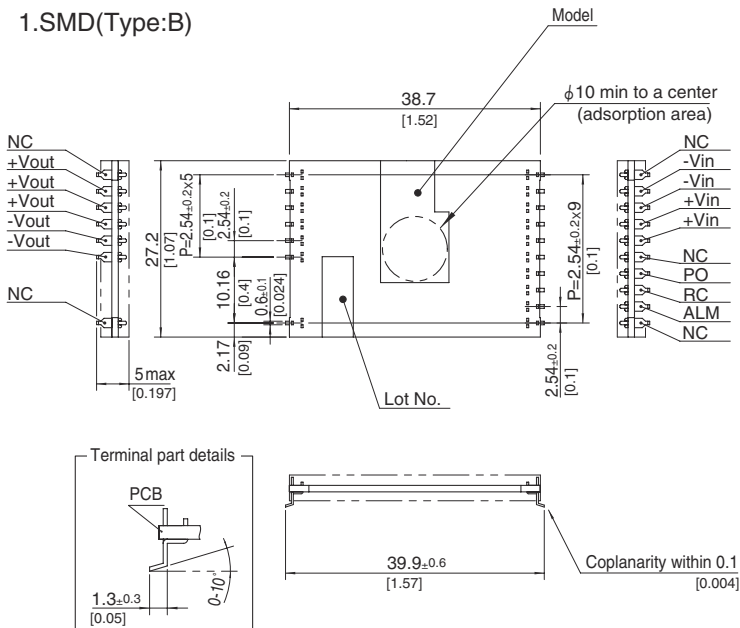
SPECIFICATIONS

| | MODEL | SFS10481R2 | SFS10481R5 | SFS10481R8 | SFS10482R5 | SFS10483R3 | SFS104805 | SFS104812 | SFS104815 | |
|-------------------------------|------------------------------------|---|------------|------------|------------|------------|-----------|-----------|-----------|--|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | | | | | |
| | CURRENT[A] | *1 0.11typ | 0.13typ | 0.13typ | 0.18typ | 0.23typ | 0.23typ | 0.26typ | 0.25typ | |
| | EFFICIENCY[%] | *1 80typ | 82typ | 84typ | 86typ | 88typ | 89typ | 88typ | 88typ | |
| | 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 | 12 | 15 | |
| | CURRENT[A] | 3.5 | 3.5 | 3 | 3 | 3 | 2 | 0.9 | 0.7 | |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | | | | | |
| | RIPPLE[mVp-p] | 25max | | | | | | 120max | | |
| | RIPPLE NOISE[mVp-p] | 50max | | | | | | 150max | | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 48V, Io=100%) | | | | | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ±1% of rated output voltage | | | | | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | | | | | |
| ISOLATION | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | | | | | |
| ENVIRONMENT | INPUT-OUTPUT | DC1,500V 1minute, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| | 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 (SMD:Refer to the Instruction Manual) | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | |
| SAFETY | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | | | | | | |
| | AGENCY APPROVALS | UL60950-1, C-UL (CSA60950-1), EN62368-1 | | | | | | | | |
| OTHERS | CASE SIZE/WEIGHT | 38.7 × 5.0 × 27.2mm [1.52 × 0.197 × 1.07 inches] (W × H × D) /12g max | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | |

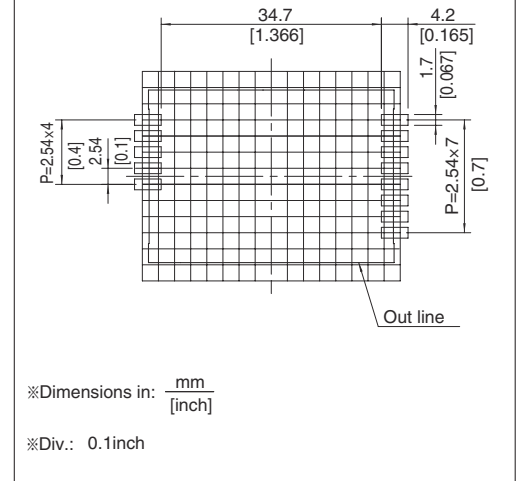
*1 At rated input(DC48V), rated load and 25°C

External view

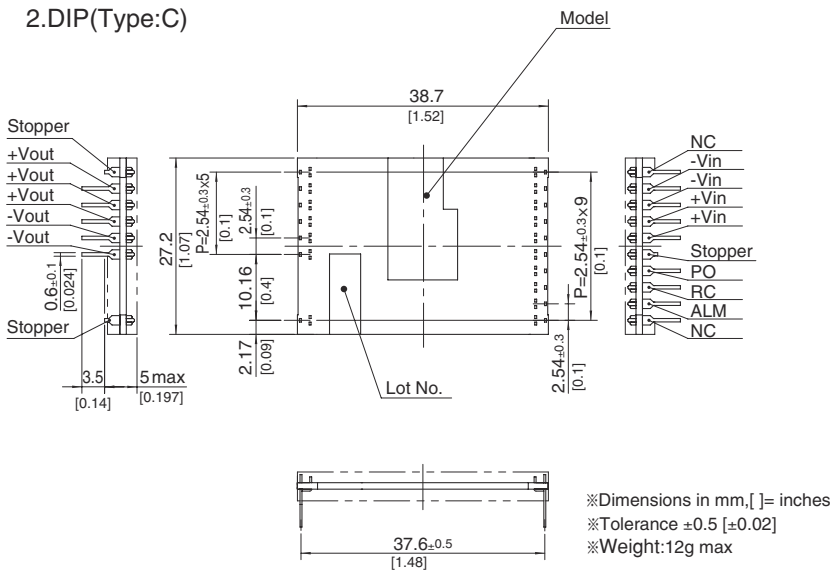
1.SMD(Type:B)



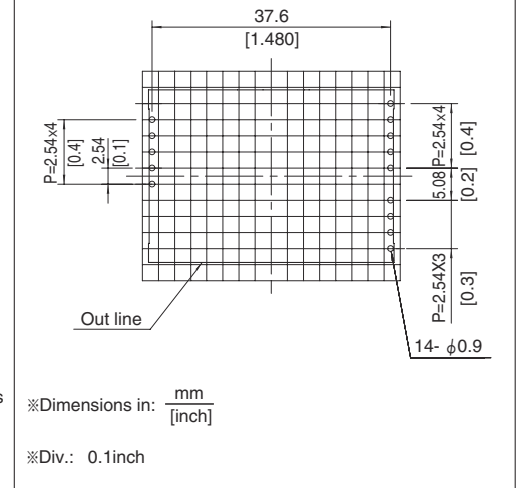
Recommended size for processing PCB (TOP VIEW)



2.DIP(Type:C)



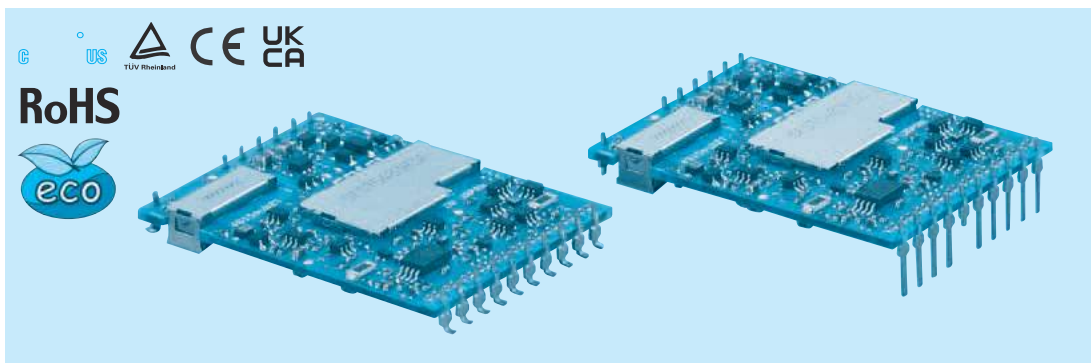
Recommended size for processing PCB (TOP VIEW)



SFS15

SF S 15 48 3R3 B

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
24:DC18 - 36V
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
(Soldering process)
B : SMD (Pb-free solder)
C : DIP (Pb-free solder)

| MODEL | SFS15242R5 | SFS15243R3 | SFS152405 | SFS152412 | SFS152415 |
|-----------------------|------------|------------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 11.25 | 14.85 | 15.0 | 15.0 | 15.0 |
| DC OUTPUT | 2.5V 4.5A | 3.3V 4.5A | 5V 3A | 12V 1.25A | 15V 1A |

SPECIFICATIONS

| | MODEL | SFS15242R5 | SFS15243R3 | SFS152405 | SFS152412 | SFS152415 |
|-------------------------------|---------------------------|---|------------|-----------|-----------|-----------|
| INPUT | VOLTAGE[V] | DC18 - 36 | | | | |
| | CURRENT[A] | *1 0.54typ | 0.7typ | 0.69typ | 0.7typ | 0.7typ |
| | EFFICIENCY[%] | *1 87typ | 89typ | 90typ | 89typ | 89typ |
| | START-UP VOLTAGE[V] | DC16 - 18 | | | | |
| | HYSTERESIS VOLTAGE[V] | DC1 min | | | | |
| OUTPUT | VOLTAGE[V] | 2.5 | 3.3 | 5 | 12 | 15 |
| | CURRENT[A] | 4.5 | 4.5 | 3 | 1.25 | 1 |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | |
| | RIPPLE[mVp-p] | 25max | | | 120max | |
| | RIPPLE NOISE[mVp-p] | 50max | | | 150max | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 24V, Io=100%) | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ±1% of rated output voltage | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | |
| | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | |

| MODEL | SFS15481R2 | SFS15481R5 | SFS15481R8 | SFS15482R5 | SFS15483R3 | SFS154805 | SFS154812 | SFS154815 |
|-----------------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 6.24 | 7.8 | 8.1 | 11.25 | 14.85 | 15.0 | 15.0 | 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 | 12V 1.25A | 15V 1A |

SPECIFICATIONS

| | MODEL | SFS15481R2 | SFS15481R5 | SFS15481R8 | SFS15482R5 | SFS15483R3 | SFS154805 | SFS154812 | SFS154815 |
|-------------------------------|---------------------------|---|------------|------------|------------|------------|-----------|-----------|-----------|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | | | | |
| | CURRENT[A] | *1 0.16typ | 0.2typ | 0.2typ | 0.27typ | 0.35typ | 0.35typ | 0.35typ | 0.35typ |
| | EFFICIENCY[%] | *1 82typ | 83typ | 85typ | 87typ | 89typ | 90typ | 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 | 12 | 15 |
| | CURRENT[A] | 5.2 | 5.2 | 4.5 | 4.5 | 4.5 | 3 | 1.25 | 1 |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | | | | |
| | RIPPLE[mVp-p] | 25max | | | | | | 120max | |
| | RIPPLE NOISE[mVp-p] | 50max | | | | | | 150max | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 48V, Io=100%) | | | | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ±1% of rated output voltage | | | | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | | | | |
| | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | | | | |

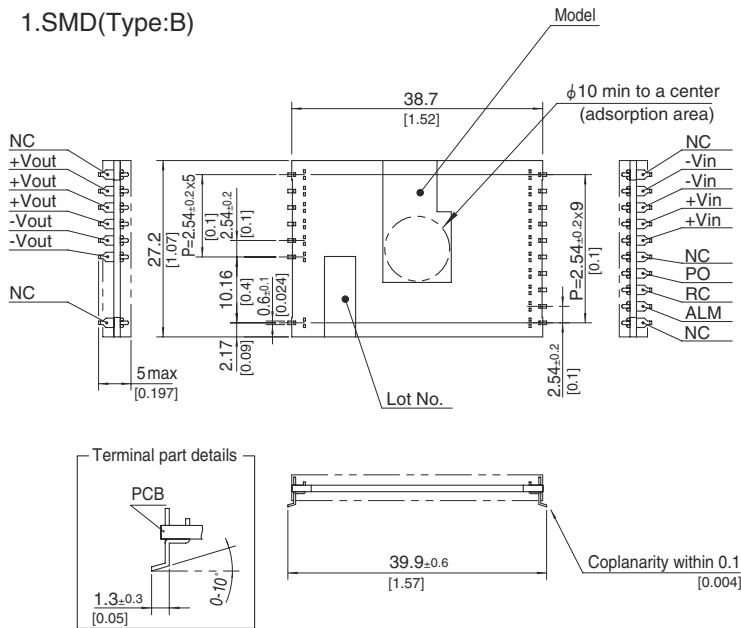
GENERAL SPECIFICATIONS

| | | |
|--------------------|--|---|
| ISOLATION | INPUT-OUTPUT | DC1,500V 1minute, DC500V 50MΩ min (20±15°C) |
| ENVIRONMENT | OPERATING TEMP.,HUMID.AND ALTIUDE | -40 to +85°C, 20 - 95%RH (Non condensing), 3,000m (10,000feet) max |
| | STORAGE TEMP.,HUMID.AND ALTIUDE | -40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (SMD:Refer to the Instruction Manual) |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL (CSA60950-1), EN62368-1 |
| OTHERS | CASE SIZE/WEIGHT | 38.7×5.0×27.2mm [1.52×0.197×1.07 inches] (W×H×D) /12g max |
| | COOLING METHOD | Convection |

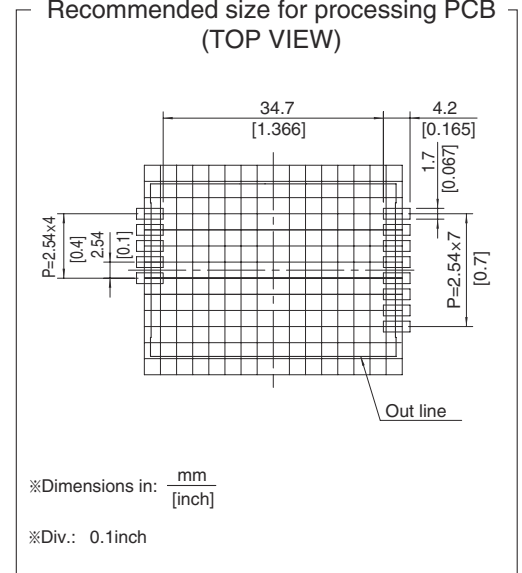
*1 At rated input(DC24V, DC48V), rated load and 25°C

External view

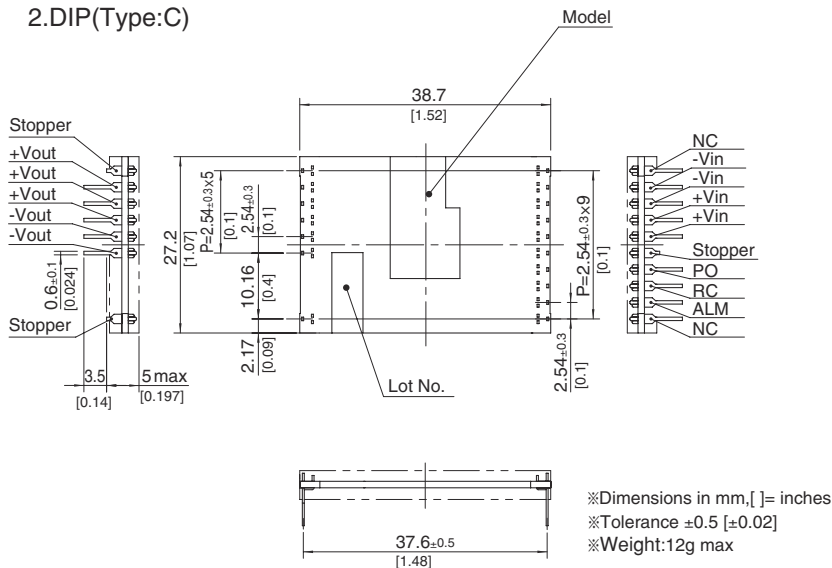
1.SMD(Type:B)



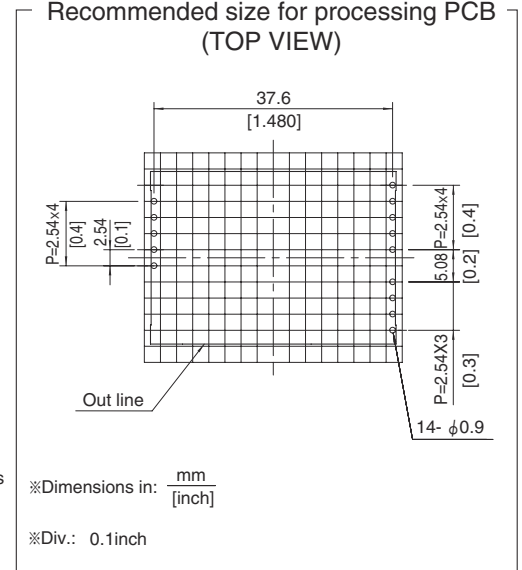
Recommended size for processing PCB (TOP VIEW)



2.DIP(Type:C)



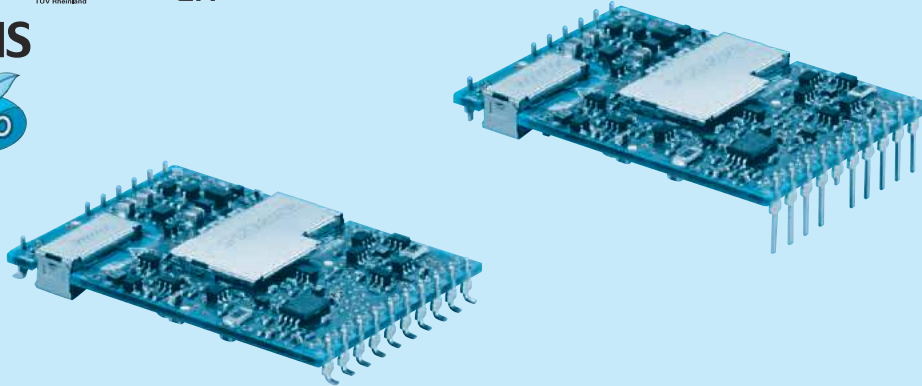
Recommended size for processing PCB (TOP VIEW)



SFS20

SF S 20 48 3R3 B

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
(Soldering process)
B : SMD(Pb-free solder)
C : DIP(Pb-free solder)

| | | | | | |
|--|---------|---------|---------|---------|-------|
| | 13.5 | 14.4 | 17.5 | 19.8 | 20.0 |
| | 1.5V 9A | 1.8V 8A | 2.5V 7A | 3.3V 6A | 5V 4A |

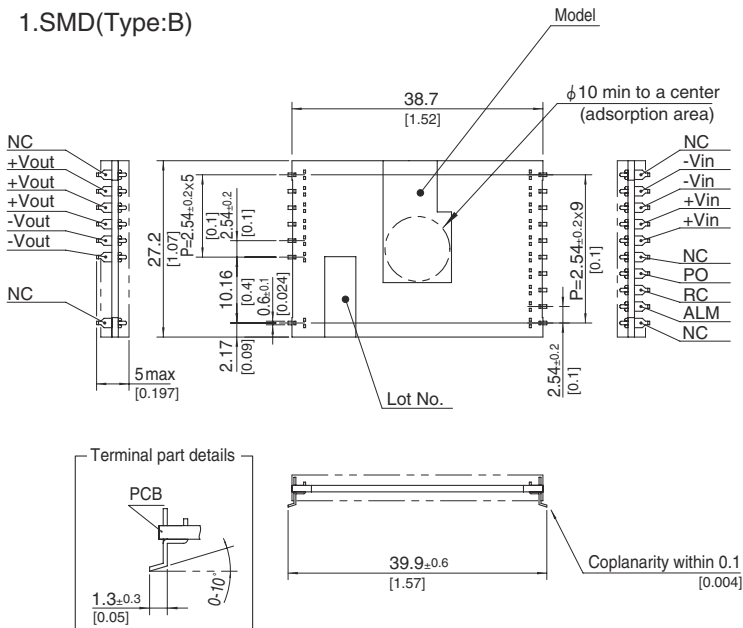
SPECIFICATIONS

| | MODEL | SFS20481R5 | SFS20481R8 | SFS20482R5 | SFS20483R3 | SFS204805 |
|-------------------------------|------------------------------------|---|------------|------------|------------|-----------|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | |
| | CURRENT[A] | *1 0.33typ | 0.35typ | 0.41typ | 0.46typ | 0.46typ |
| | EFFICIENCY[%] | *1 86typ | 85typ | 88typ | 90typ | 90typ |
| | START-UP VOLTAGE[V] | DC32 - 36 | | | | |
| | HYSTERESIS VOLTAGE[V] | DC2 min | | | | |
| OUTPUT | VOLTAGE[V] | 1.5 | 1.8 | 2.5 | 3.3 | 5 |
| | CURRENT[A] | 9 | 8 | 7 | 6 | 4 |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | |
| | RIPPLE[mVp-p] | 50max | | | | |
| | RIPPLE NOISE[mVp-p] | 50max | | | | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 48V, Io=100%) | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | +2, -1% of rated output voltage | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | |
| | OVERVOLTAGE PROTECTION | Works at 115 - 145% of rating | | | | |
| | LOWVOLTAGE PROTECTION | Works at 95% max of rating | | | | |
| 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 (SMD:Refer to the Instruction Manual) | | | | |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis | | | | |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL(CSA60950-1), EN62368-1 | | | | |
| OTHERS | CASE SIZE/WEIGHT | 38.7×5.0×27.2mm [1.52×0.197×1.07 inches] (W×H×D) /12g max | | | | |
| | COOLING METHOD | Convection/Forced air | | | | |

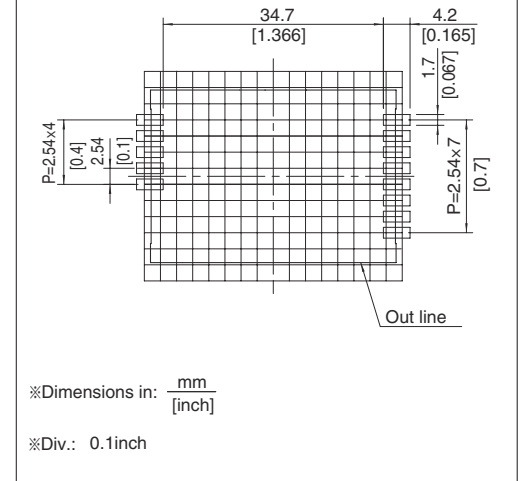
*1 At rated input(DC48V), rated load and 25°C

External view

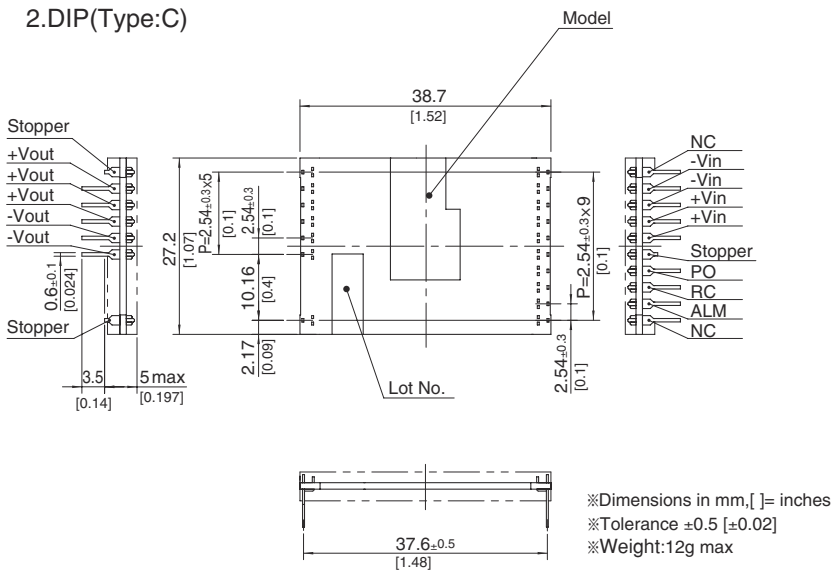
1.SMD(Type:B)



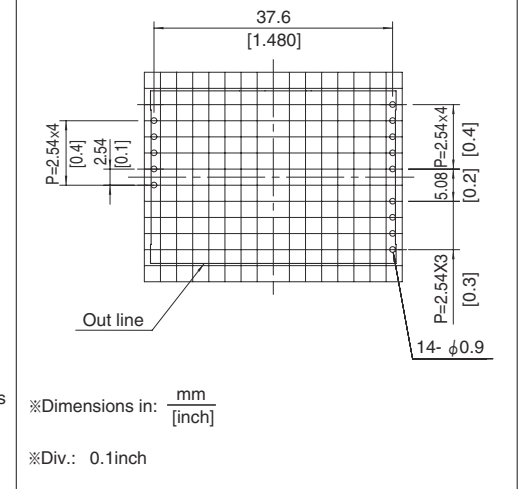
Recommended size for processing PCB (TOP VIEW)



2.DIP(Type:C)



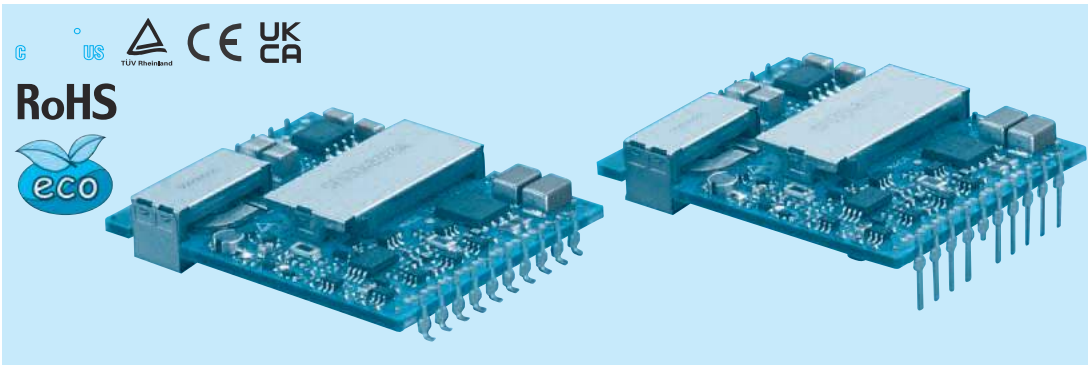
Recommended size for processing PCB (TOP VIEW)



SFS30

SF S 30 48 3R3 B

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
24:DC18 - 36V
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
(Soldering process)
B : SMD(Pb-free solder)
C : DIP(Pb-free solder)

| MODEL | SFS30242R5 | SFS30243R3 | SFS302405 | SFS302412 | SFS302415 |
|-----------------------|------------|------------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 22.5 | 29.7 | 30.0 | 30.0 | 30.0 |
| DC OUTPUT | 2.5V 9A | 3.3V 9A | 5V 6A | 12V 2.5A | 15V 2A |

SPECIFICATIONS

| | MODEL | SFS30242R5 | SFS30243R3 | SFS302405 | SFS302412 | SFS302415 |
|-------------------------------|---------------------------|---|------------|-----------|-----------|-----------|
| INPUT | VOLTAGE[V] | DC18 - 36 | | | | |
| | CURRENT[A] | *1 1.04typ | 1.36typ | 1.36typ | 1.36typ | 1.39typ |
| | EFFICIENCY[%] | *1 90typ | 91typ | 92typ | 92typ | 90typ |
| | START-UP VOLTAGE[V] | DC16 - 18 | | | | |
| | HYSTERESIS VOLTAGE[V] | DC1 min | | | | |
| OUTPUT | VOLTAGE[V] | 2.5 | 3.3 | 5 | 12 | 15 |
| | CURRENT[A] | 9 | 9 | 6 | 2.5 | 2 |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | |
| | RIPPLE[mVp-p] | 25max | | | 120max | |
| | RIPPLE NOISE[mVp-p] | 50max | | | 150max | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 24V, Io=100%) | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ± 1% of rated output voltage | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | |
| | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | |

| MODEL | SFS30481R2 | SFS30481R5 | SFS30481R8 | SFS30482R5 | SFS30483R3 | SFS304805 | SFS304810 | SFS304812 | SFS304815 |
|-----------------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 12.48 | 15.6 | 16.2 | 22.5 | 29.7 | 30.0 | 30.0 | 30.0 | 30.0 |
| DC OUTPUT | 1.2V 10.4A | 1.5V 10.4A | 1.8V 9A | 2.5V 9A | 3.3V 9A | 5V 6A | 10V 3A | 12V 2.5A | 15V 2A |

SPECIFICATIONS

| | MODEL | SFS30481R2 | SFS30481R5 | SFS30481R8 | SFS30482R5 | SFS30483R3 | SFS304805 | SFS304810 | SFS304812 | SFS304815 | |
|-------------------------------|---------------------------|---|------------|------------|------------|------------|-----------|-----------|-----------|-----------|--|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | | | | | | |
| | CURRENT[A] | *1 0.30typ | 0.37typ | 0.38typ | 0.52typ | 0.67typ | 0.68typ | 0.69typ | 0.68typ | 0.68typ | |
| | EFFICIENCY[%] | *1 86typ | 87.5typ | 89typ | 91typ | 92typ | 92.5typ | 91typ | 92typ | 92typ | |
| | 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 | 10 | 12 | 15 | |
| | CURRENT[A] | 10.4 | 10.4 | 9 | 9 | 9 | 6 | 3 | 2.5 | 2 | |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | | | | | | |
| | RIPPLE[mVp-p] | 25max | | | | | | 120max | | | |
| | RIPPLE NOISE[mVp-p] | 50max | | | | | | 150max | | | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 48V, Io=100%) | | | | | | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ± 1% of rated output voltage | | | | | | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | | | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | | | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | | | | | | |
| | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | | | | | | |

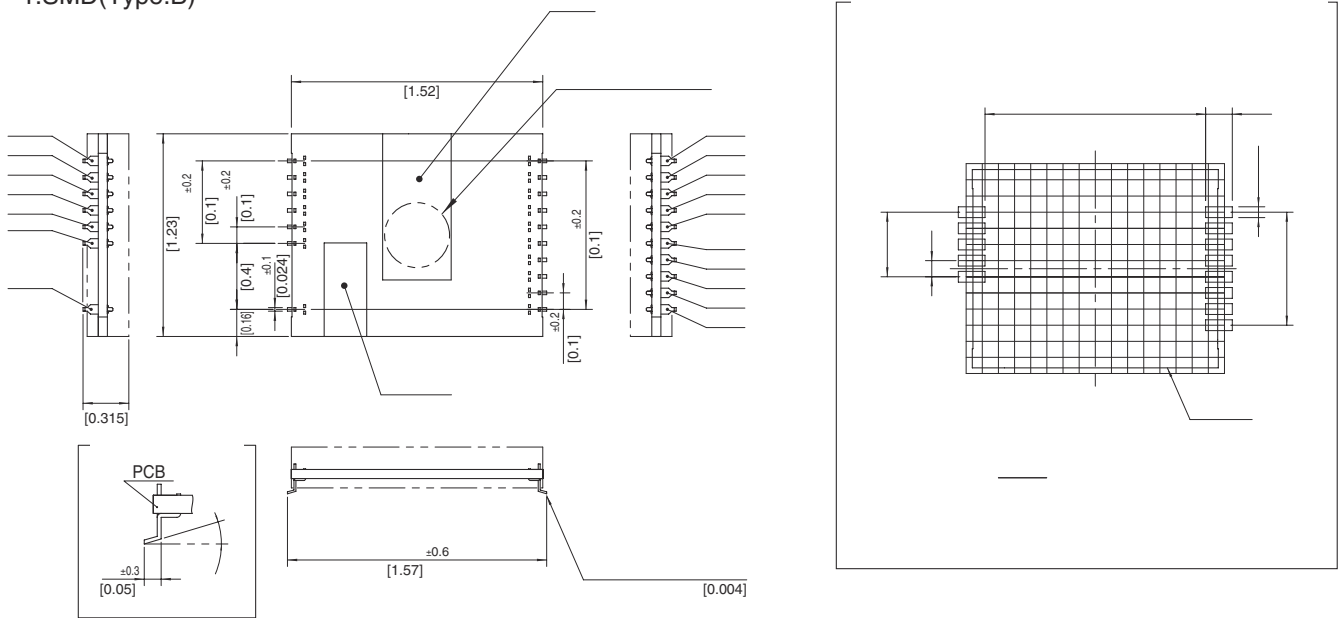
GENERAL SPECIFICATIONS

| | | |
|--------------------|---|---|
| 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 (SMD:Refer to the Instruction Manual) |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL (CSA60950-1), EN62368-1 |
| OTHERS | CASE SIZE/WEIGHT | 38.7×8.0×31.2mm [1.52×0.315×1.23 inches] (W×H×D) /20g max |
| | COOLING METHOD | Convection/Forced air |

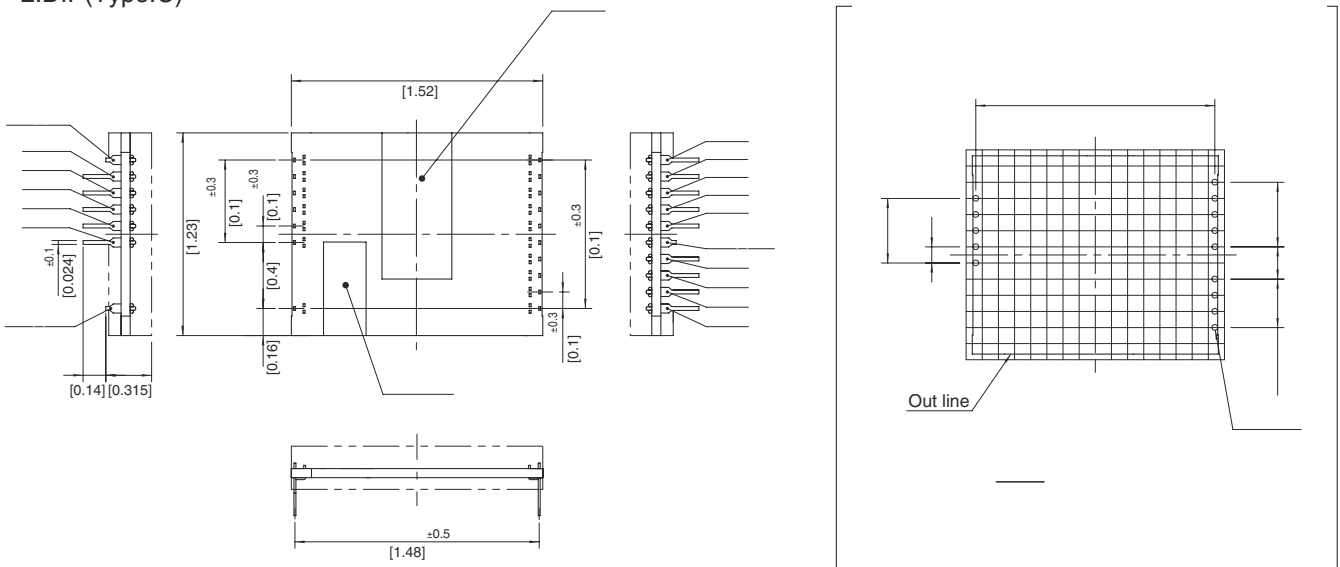
*1 At rated input(DC24V, DC48V), rated load and 25°C

External view

1.SMD(Type:B)



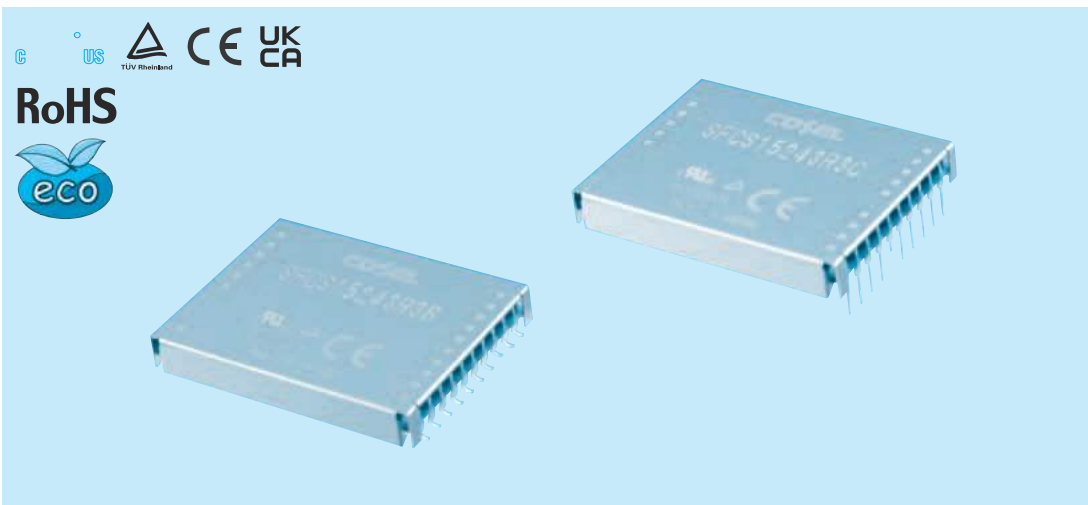
2.DIP(Type:C)



SFCS15

SFC S 15 24 3R3 C

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
24:DC18 - 36V
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
B :SMD
C :DIP

| | | | | | | | | | |
|--|-----------|-------|-----------|--------|-----------|-------|-----------|--------|------|
| | | | | | | | | | |
| | 14.85 | 15.0 | 15.0 | 15.0 | 14.85 | 15.0 | 15.0 | 15.0 | 15.0 |
| | 3.3V 4.5A | 5V 3A | 12V 1.25A | 15V 1A | 3.3V 4.5A | 5V 3A | 12V 1.25A | 15V 1A | |

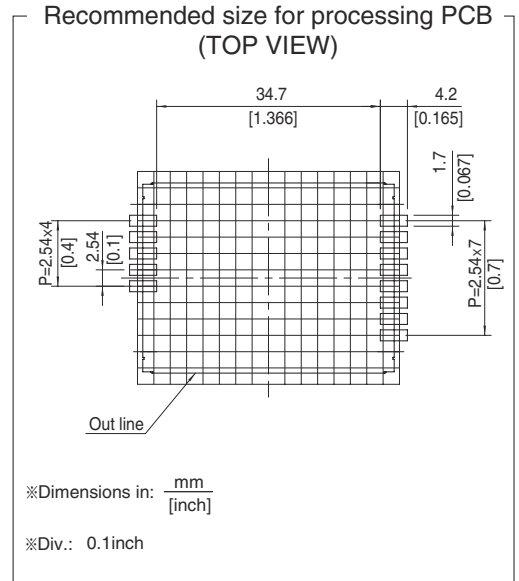
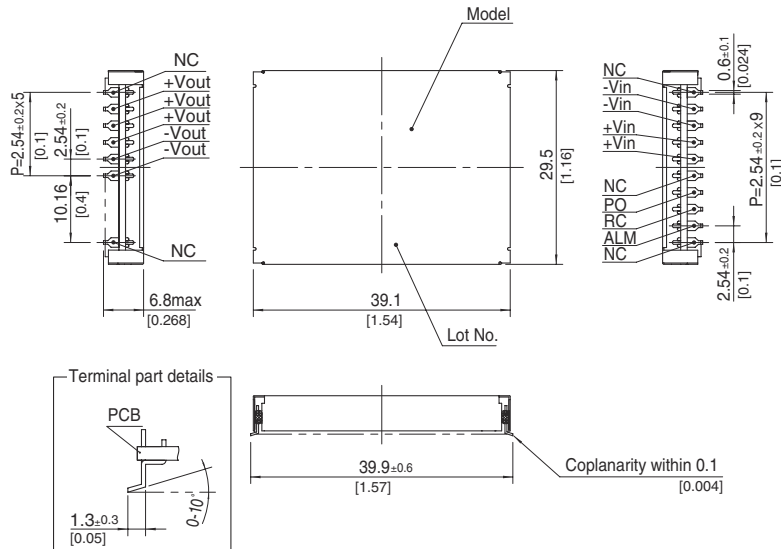
SPECIFICATIONS

| | MODEL | SFCS15243R3 | SFCS152405 | SFCS152412 | SFCS152415 | SFCS15483R3 | SFCS154805 | SFCS154812 | SFCS154815 | |
|-------------------------------|------------------------------------|---|------------|------------|------------|---------------------------------|------------|------------|------------|--|
| INPUT | VOLTAGE[V] | DC18 - 36 | | | | DC36 - 76 | | | | |
| | CURRENT[A] | *1 0.7typ | 0.69typ | 0.7typ | 0.7typ | 0.35typ | 0.35typ | 0.35typ | 0.35typ | |
| | EFFICIENCY[%] | *1 89typ | 90typ | 89typ | 89typ | 89typ | 90typ | 89typ | 89typ | |
| | START-UP VOLTAGE[V] | DC16 - 18 | | | | DC32 - 36 | | | | |
| | HYSTERESIS VOLTAGE[V] | DC1 min | | | | DC2 min | | | | |
| OUTPUT | VOLTAGE[V] | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | |
| | CURRENT[A] | 4.5 | 3 | 1.25 | 1 | 4.5 | 3 | 1.25 | 1 | |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | | | | | |
| | RIPPLE[mVp-p] | 25max | | | 120max | | 25max | | 120max | |
| | RIPPLE NOISE[mVp-p] | 50max | | | 150max | | 50max | | 150max | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 24V, Io=100%) | | | | 20 - 200max (DCIN 48V, Io=100%) | | | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 103% of rating | | | | | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | | | | | |
| | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | DC1,000V or AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| | INPUT-CASE | DC500V or AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| | OUTPUT-CASE | DC500V or AC500V 1minute, Cutoff current = 10mA, 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 (SMD:Refer to the Instruction Manual) | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL (CSA60950-1), EN62368-1 | | | | | | | | |
| OTHERS | CASE SIZE/WEIGHT | 39.1 × 6.8 × 29.5mm [1.54 × 0.268 × 1.16 inches] (W × H × D) /16g max | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | |

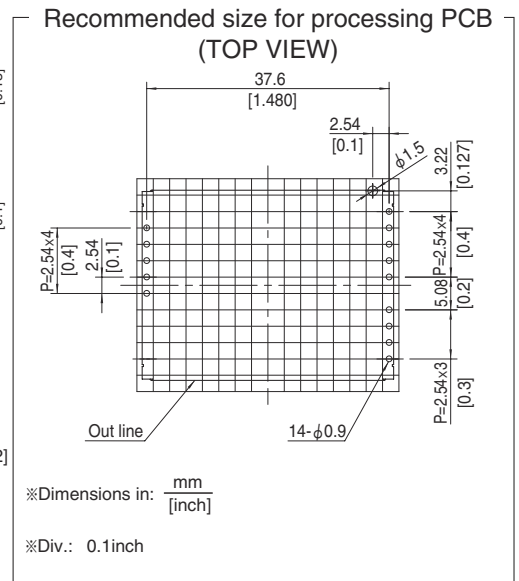
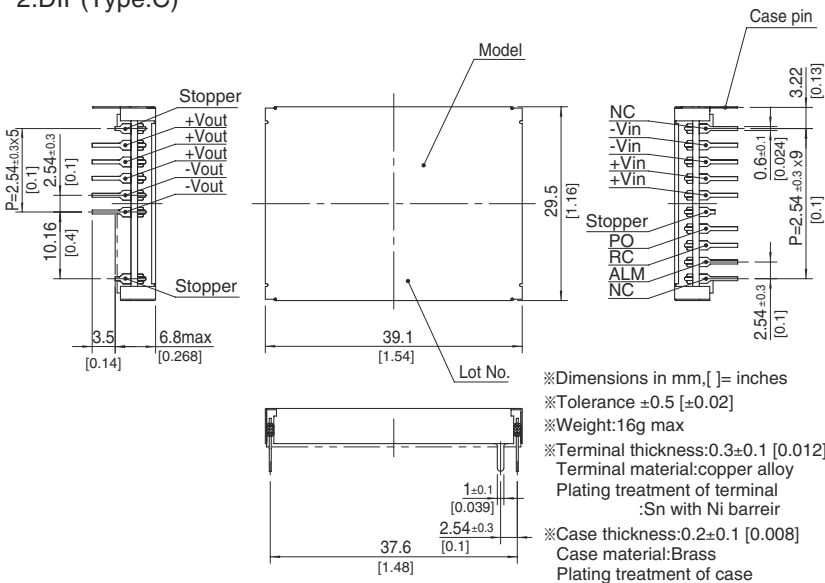
*1 At rated input(DC24V, DC48V), rated load and 25°C

External view

1.SMD(Type:B)



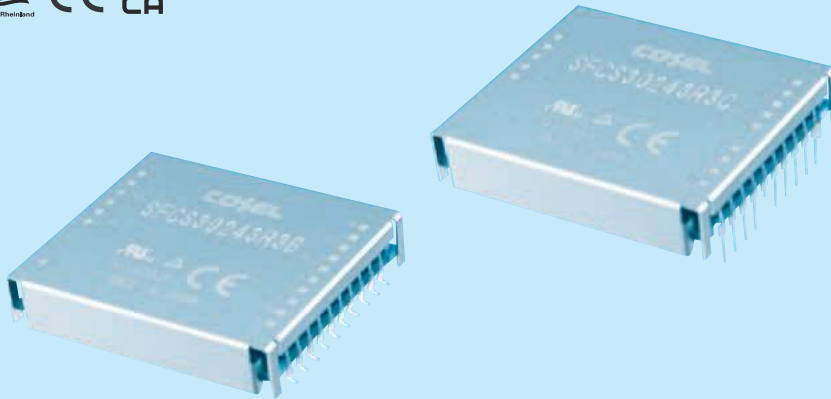
2.DIP(Type:C)



SFCS30

SFC **S** **30** **24** **3R3** **C**

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
24:DC18 - 36V
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Mounting type
B : SMD
C : DIP

| | | | | | | | | |
|--|---------|-------|----------|--------|---------|-------|----------|--------|
| | 29.7 | 30.0 | 30.0 | 30.0 | 29.7 | 30.0 | 30.0 | 30.0 |
| | 3.3V 9A | 5V 6A | 12V 2.5A | 15V 2A | 3.3V 9A | 5V 6A | 12V 2.5A | 15V 2A |

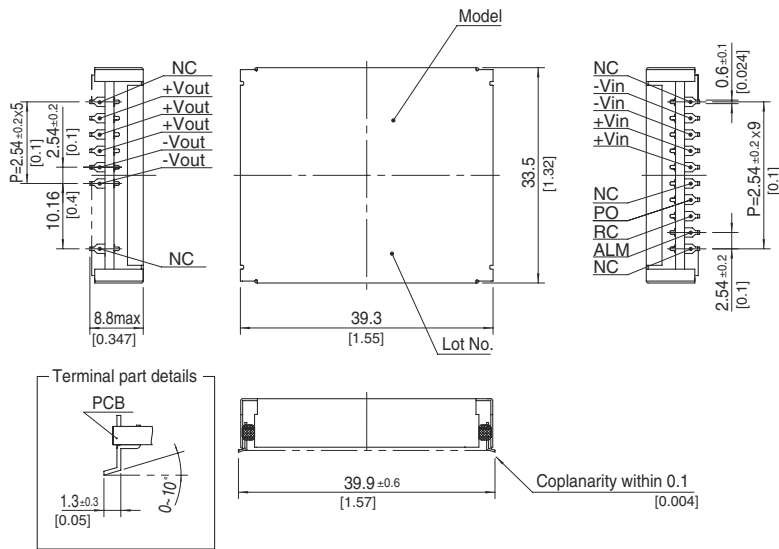
SPECIFICATIONS

| | MODEL | SFCS30243R3 | SFCS302405 | SFCS302412 | SFCS302415 | SFCS30483R3 | SFCS304805 | SFCS304812 | SFCS304815 | |
|-------------------------------|--------------------------------------|--|------------|------------|------------|---------------------------------|------------|------------|------------|--|
| INPUT | VOLTAGE[V] | DC18 - 36 | | | | DC36 - 76 | | | | |
| | CURRENT[A] | *1 1.36typ | 1.36typ | 1.36typ | 1.39typ | 0.67typ | 0.68typ | 0.68typ | 0.68typ | |
| | EFFICIENCY[%] | *1 91typ | 92typ | 92typ | 90typ | 92typ | 92.5typ | 92typ | 92typ | |
| | START-UP VOLTAGE[V] | DC16 - 18 | | | | DC32 - 36 | | | | |
| | HYSTERESIS VOLTAGE[V] | DC1 min | | | | DC2 min | | | | |
| OUTPUT | VOLTAGE[V] | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | |
| | CURRENT[A] | 9 | 6 | 2.5 | 2 | 9 | 6 | 2.5 | 2 | |
| | VOLTAGE ACCURACY[%] | +5, -3 | | | | | | | | |
| | RIPPLE[mVp-p] | 25max | | | 120max | | 25max | | 120max | |
| | RIPPLE NOISE[mVp-p] | 50max | | | 150max | | 50max | | 150max | |
| | START-UP TIME[ms] | 20 - 200max (DCIN 24V, Io=100%) | | | | 20 - 200max (DCIN 48V, Io=100%) | | | | |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE SETTING *1 | ±1% of rated output voltage | | | | | | | | |
| | OVERCURRENT PROTECTION | Works over 103% of rating | | | | | | | | |
| | OVERVOLTAGE PROTECTION | Works at 120 - 140% of rating | | | | | | | | |
| | LOWVOLTAGE PROTECTION | Works at 90% max of rating | | | | | | | | |
| ISOLATION | REMOTE ON/OFF | Provided(RC open : ON, short between RC and +Vin : OFF) | | | | | | | | |
| | INPUT-OUTPUT | DC1,000V or AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| | INPUT-CASE | DC500V or AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| ENVIRONMENT | OUTPUT-CASE | DC500V or AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| | 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 (SMD: Refer to the Instruction Manual) | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 49.0m/s ² (5G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | |
| SAFETY | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | | | | | | |
| | AGENCY APPROVALS | UL60950-1, C-UL (CSA60950-1), EN62368-1 | | | | | | | | |
| OTHERS | CASE SIZE/WEIGHT | 39.3 × 8.8 × 33.5mm [1.55 × 0.347 × 1.32 inches] (W × H × D) /25g max | | | | | | | | |
| | COOLING METHOD | Convection / Forced air | | | | | | | | |

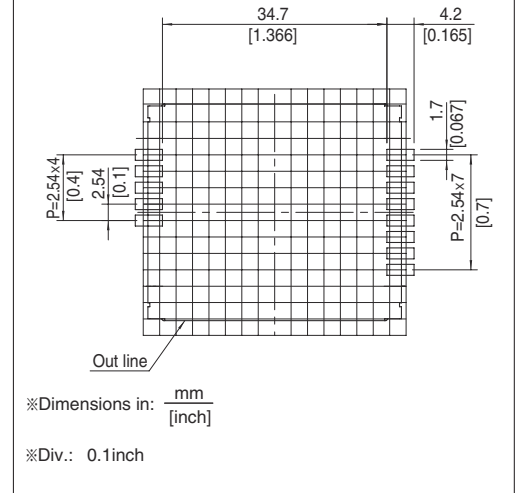
*1 At rated input(DC24V, DC48V), rated load and 25°C

External view

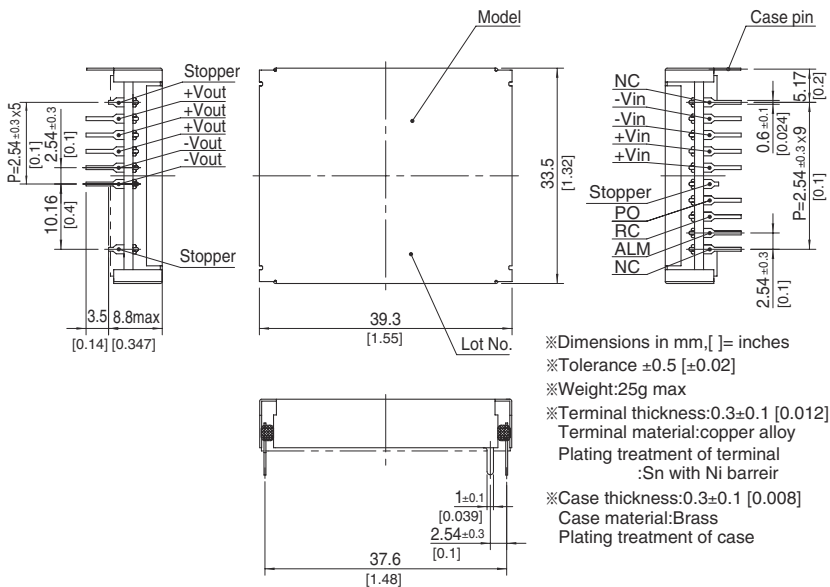
1.SMD(Type:B)



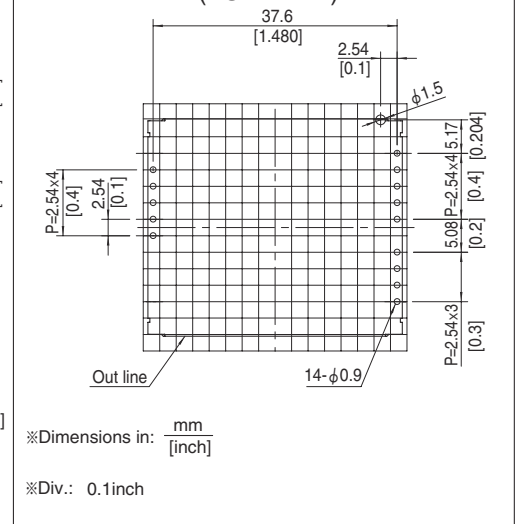
Recommended size for processing PCB (TOP VIEW)



2.DIP(Type:C)

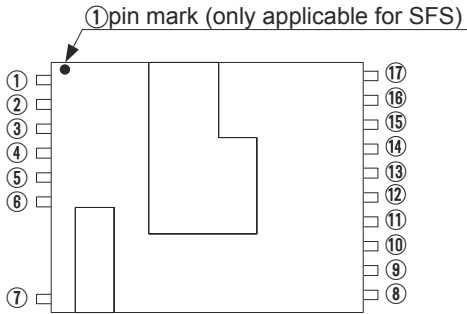


Recommended size for processing PCB (TOP VIEW)

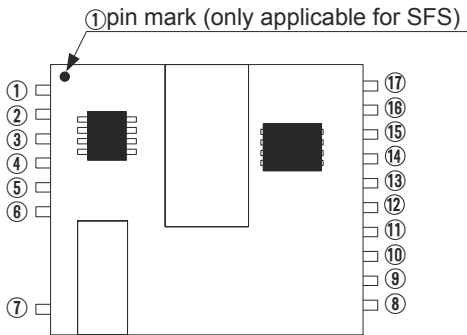


Pin Configuration

SFS10 / SFS15 / SFS20 / SFCS15



SFS30 / SFCS30



| No. | Pin Name | Function |
|---------------------|--------------|---|
| ① | NC(SMD) | Not connected / Adhesive dispensing |
| | Stopper(DIP) | Stopper |
| ② | +Vout | +DC output |
| ③ | +Vout | +DC output |
| ④ | +Vout | +DC output |
| ⑤ | -Vout | -DC output |
| ⑥ | -Vout | -DC output |
| ⑦ | NC(SMD) | Not connected / Adhesive dispensing |
| | Stopper(DIP) | Stopper |
| ⑧ | NC(SMD) | Not connected / Adhesive dispensing |
| | NC(DIP) | Not connected |
| ⑨ | ALM | Alarm |
| ⑩ | RC | Remote ON / OFF |
| ⑪ | PO | Start in / out |
| ⑫ | NC(SMD) | Not connected |
| | Stopper(DIP) | Stopper |
| ⑬ | +Vin | +DC input |
| ⑭ | +Vin | +DC input |
| ⑮ | -Vin | -DC input |
| ⑯ | -Vin | -DC input |
| ⑰ | NC(SMD) | Not connected / Adhesive dispensing |
| | NC(DIP) | Not connected |
| Case connecting pin | | Isolated from internal circuit Only applicable for SFCS type C (DIP) |

Implementation · Mounting Method

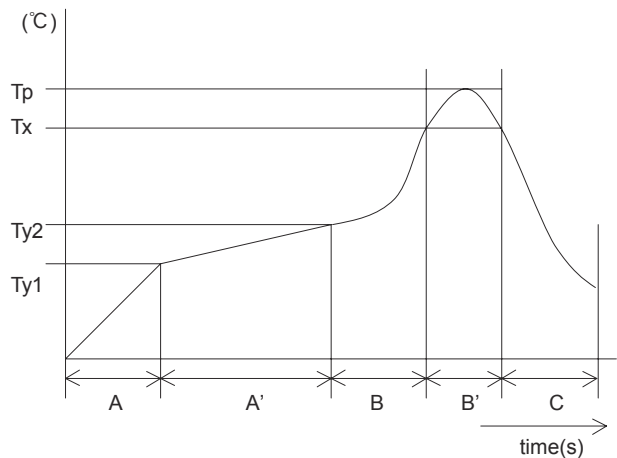
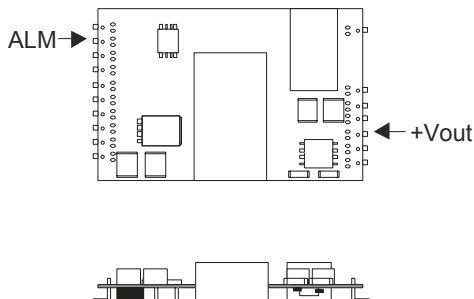
Automatic mounting

- SFS / SFCS 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 of SFS series during mounting, causing cracked core. So during mounting, take enough care.

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.



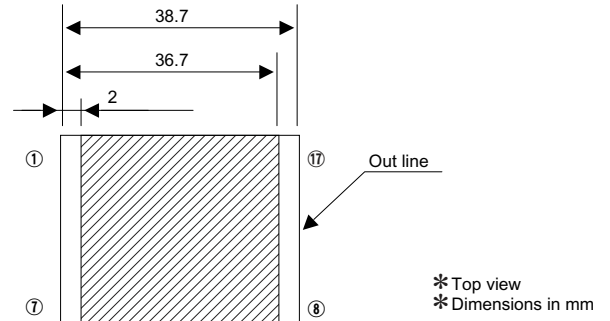
| | |
|----|--|
| A | 1.0 - 5.0°C / s |
| A' | Ty1 : 160±10°C Ty2 : 180±10°C Ty1 - Ty2 : 120s max |
| B | 1.0 - 5.0°C / s |
| B' | Tp : Max245°C 10s max Tx : 220°C or more : 70s max |
| C | 1.0 - 5.0°C / s |

Implementation · Mounting Method

- (2) Flow soldering
 - 260°C, less than 15 seconds.
- (3) 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

- SFS/SFCS 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.

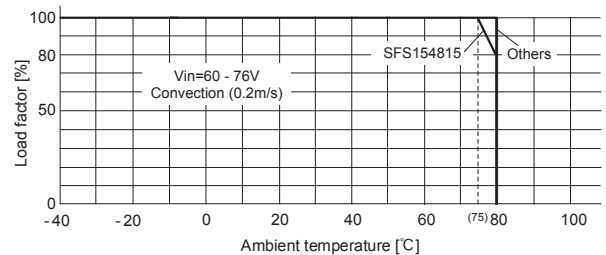
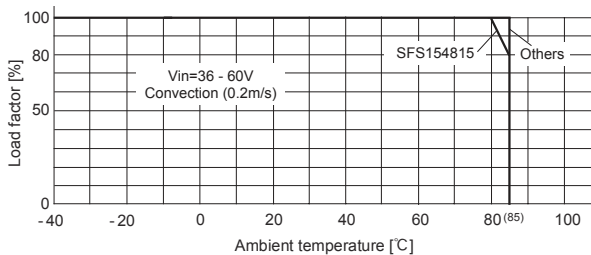
Derating

Ambient temperature derating curve

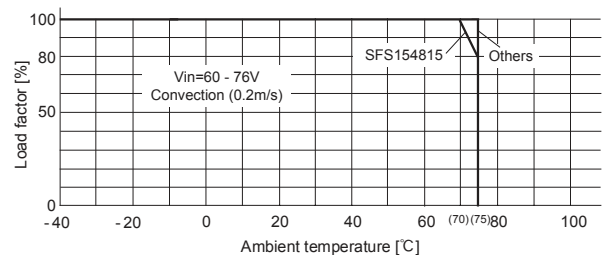
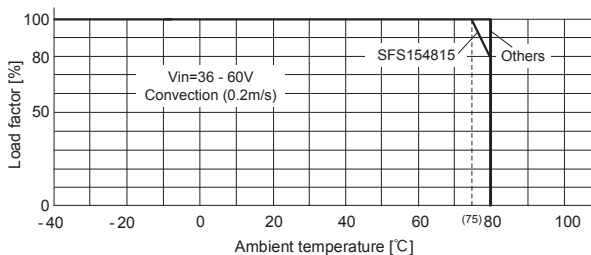
- It is necessary to note thermal fatigue life by power cycle. Please reduce the temperature fluctuation range as much as possible when the up and down of temperature are frequently generated.
- In case of forced air, ventilation must keep the temperature of point A and B below the temperatures shown in Instruction Manual 8.

● SFS1048, SFS1548

(1) Single and series operation



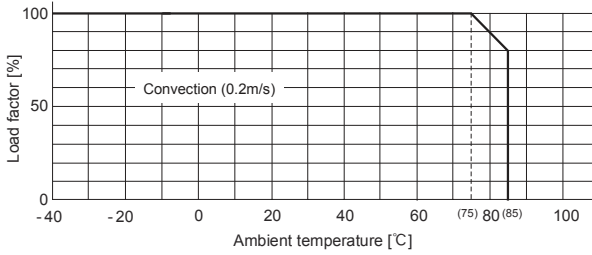
(2) Parallel operation



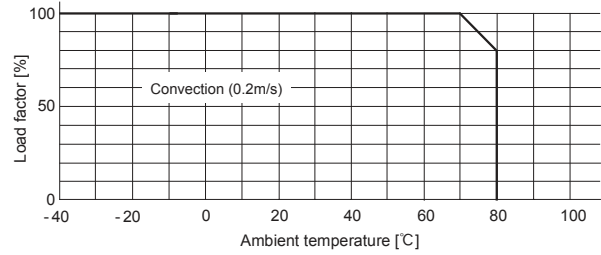
Derating

● SFS1524, SFCS15

(1) Single and series operation



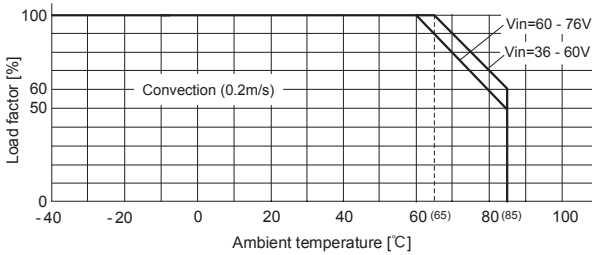
(2) Parallel operation



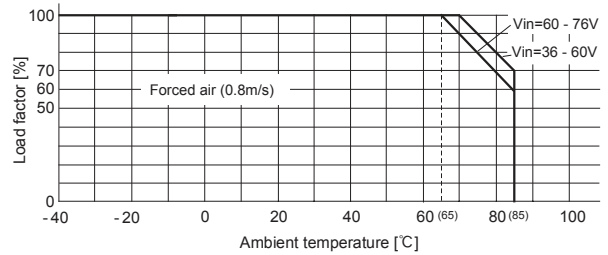
● SFS2048

(1) Single, series and parallel operation

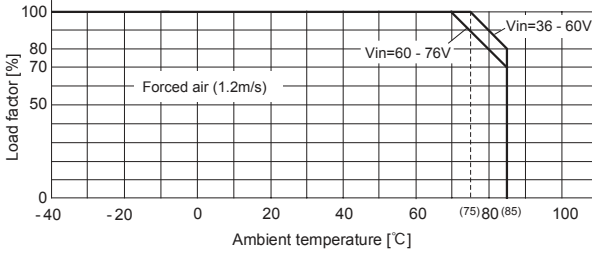
① Natural convection cooling (0.2m/s)



② Forced air cooling (0.8m/s)



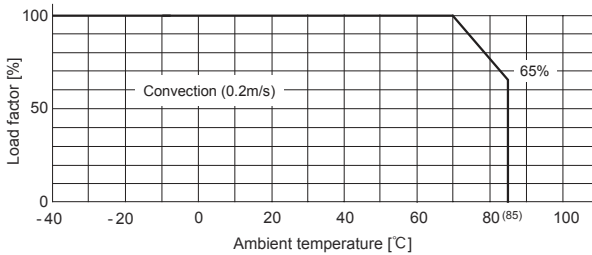
③ Forced air cooling (1.2m/s)



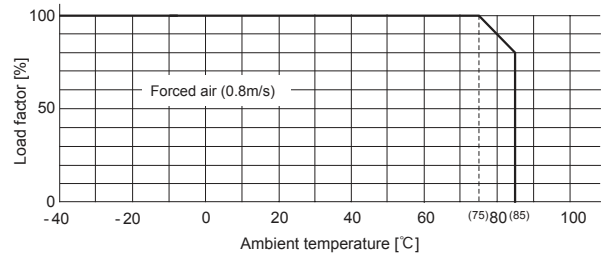
● SFS3024, SFCS30

(1) Single and series operation

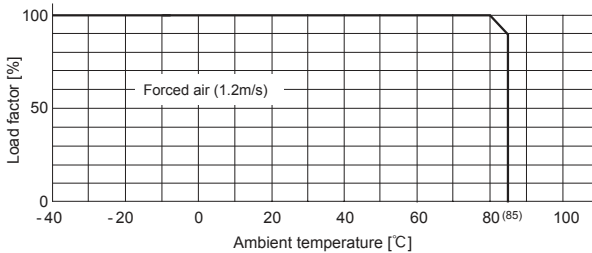
① Natural convection cooling (0.2m/s)



② Forced air cooling (0.8m/s)



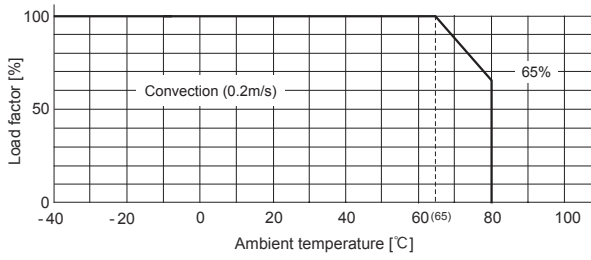
③ Forced air cooling (1.2m/s)



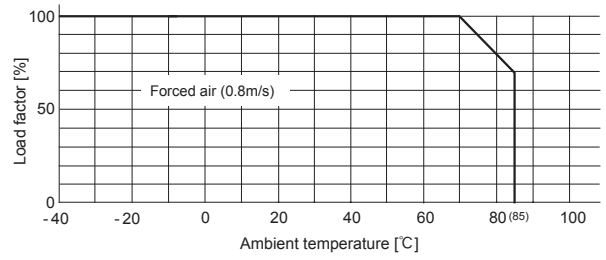
Derating

(2) Parallel operation

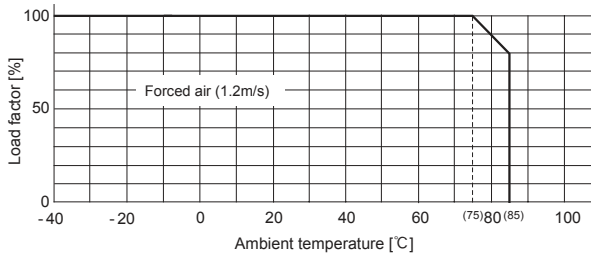
① Natural convection cooling (0.2m/s)



② Forced air cooling (0.8m/s)



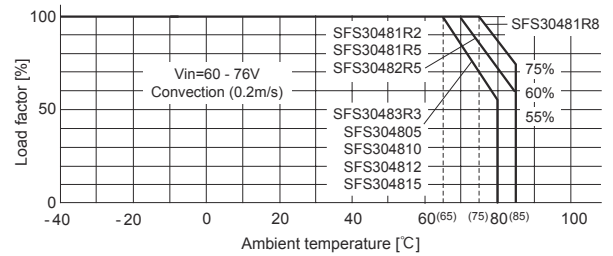
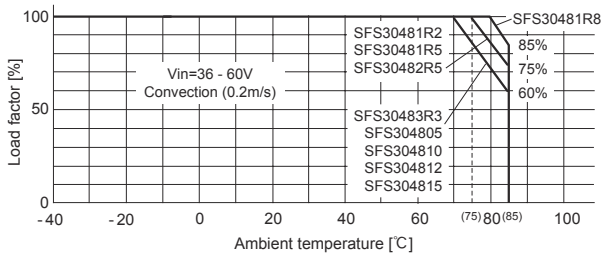
③ Forced air cooling (1.2m/s)



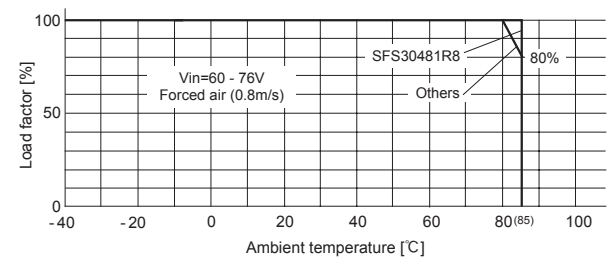
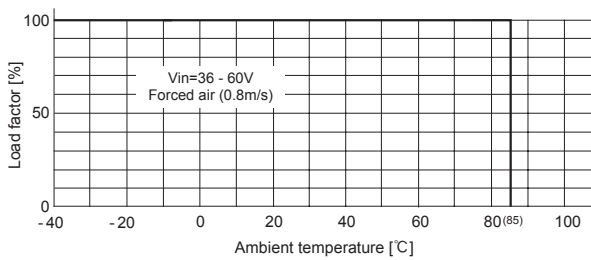
SFS3048

(1) Single and series operation

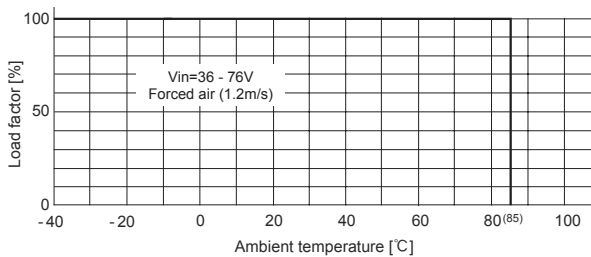
① Natural convection cooling (0.2m/s)



② Forced air cooling (0.8m/s)



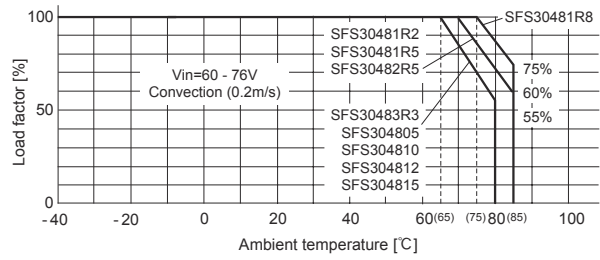
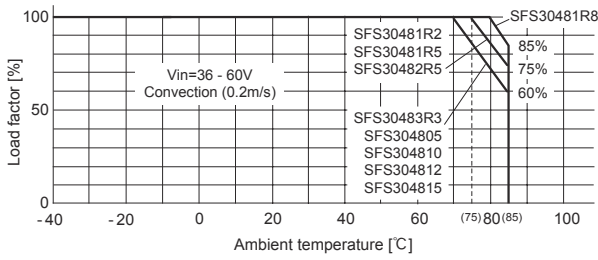
③ Forced air cooling (1.2m/s)



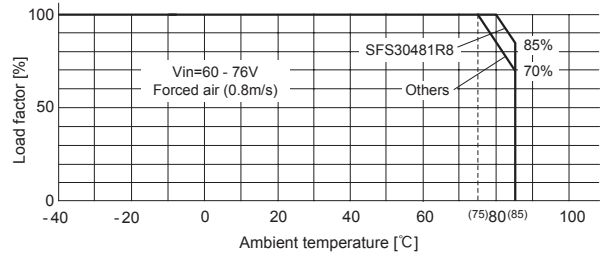
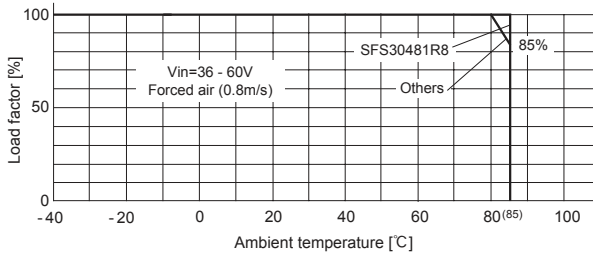
Derating

(2) Parallel operation

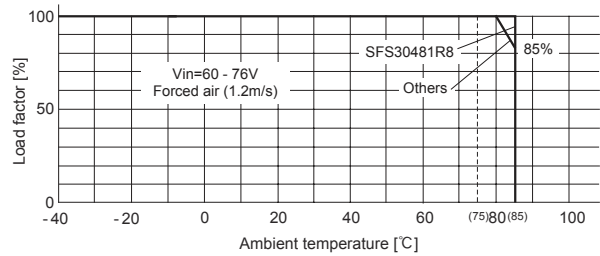
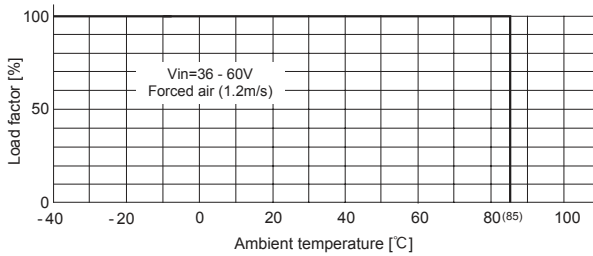
① Natural convection cooling (0.2m/s)



② Forced air cooling (0.8m/s)



③ Forced air cooling (1.2m/s)



Instruction Manual

- ◆ It is necessary to read the "Instruction Manual" and "Before using our product" before you use our product.

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

SFS



SFCS



NOTICE



Basic Characteristics Data

| | | [kHz] | Input current | | Inrush current protection | PCB/Pattern | | | Series/Parallel operation availability | |
|-----------------|--------------------------------|-----------|---------------|---|---------------------------|-------------------------------|--------------|--------------|--|--------------------|
| | | | | | | Material | Single sided | Double sided | Series operation | Parallel operation |
| | Single ended forward converter | 570 - 670 | *1 | - | - | glass fabric base,epoxy resin | | Multilayer | Yes | Yes |
| SFS15 SFCS15 | Single ended forward converter | 570 - 670 | *1 | - | - | glass fabric base,epoxy resin | | Multilayer | Yes | Yes |
| SFS20 | Single ended forward converter | 570 - 670 | *1 | - | - | glass fabric base,epoxy resin | | Multilayer | Yes | Yes |
| SFS30 SFCS30 | Single ended forward converter | 440 - 530 | *1 | - | - | glass fabric base,epoxy resin | | Multilayer | Yes | Yes |

*1 Refer to Specification.