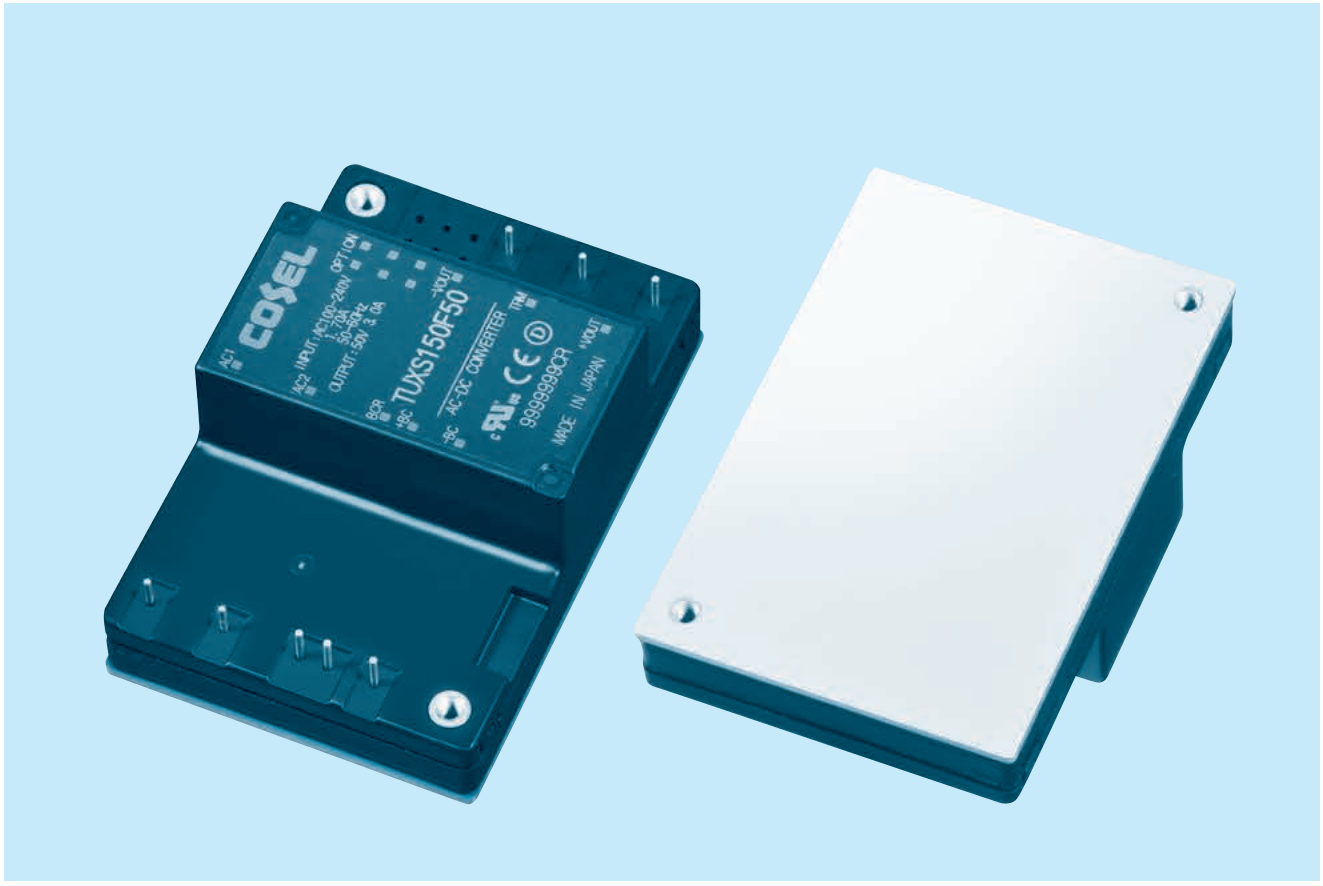
AC-DC Power Supplies Power Module Type

Power Factor Correction | World wide | Safety Approvals | Inrush current limiting | Isolated | OCP | OVP

TUXS-series



Feature

AC-DC Power Module Type Converter
Harmonic attenuator (Complies with IEC61000-3-2 class A)
Small size
Built-in overcurrent, overvoltage and thermal protection circuits
Mounting hole (M3 tapped)
High efficiency 94%

CE marking

Low voltage directive
RoHS Directive

Safety Approval

UL60950-1, C-UL, EN60950-1

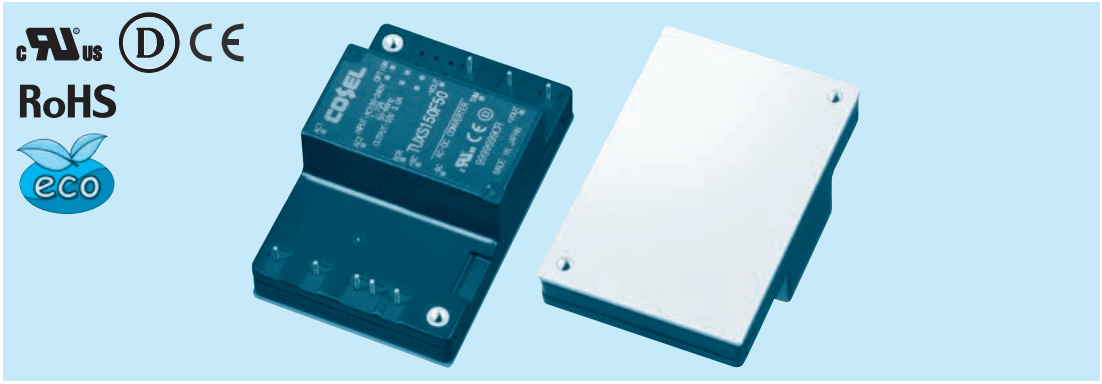
5-year warranty

COSEL AC-DC Power Supplies Power Module Type

TUXS150F

Ordering information

TUX	S	150	F	50	-□
①	②	③	④	⑤	⑥



①Series name
②Single output
③Output wattage
④Universal Input
⑤Output voltage
⑥Optional
T : with Mounting hole (φ3.4 thru)
N : Auto restart in protection circuit working

*Avoid short circuit between +BC and -BC. It may cause the failure of inside components.
*Keep TRM open, if output voltage adjustment is not necessary.

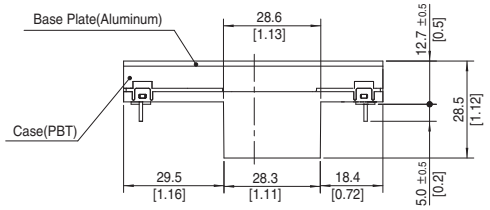
MODEL	TUXS150F50
MAX OUTPUT WATTAGE[W]	150.0
DC OUTPUT	50V 3A

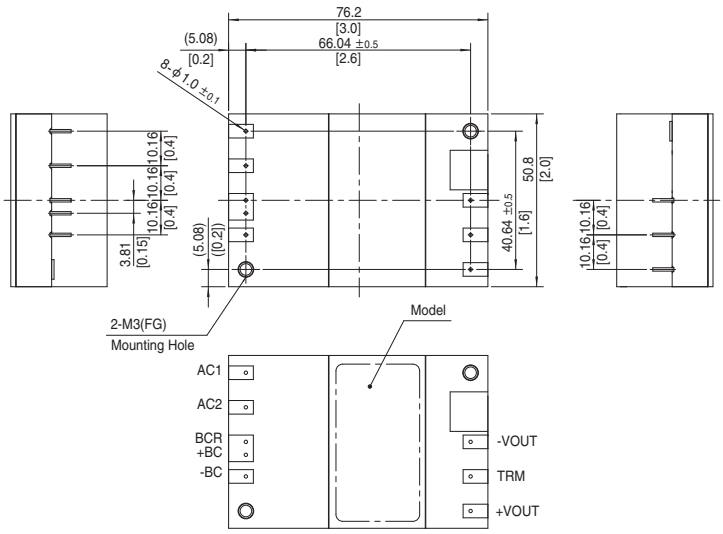
SPECIFICATIONS

	MODEL		TUXS150F50
INPUT	VOLTAGE[V]		AC85 - 264 1φ
	CURRENT[A]	ACIN 100V	1.70typ (Io=100%)
		ACIN 200V	0.80typ (Io=100%)
	FREQUENCY[Hz]		50/60 (45 - 66)
	EFFICIENCY[%]	ACIN 100V	93typ
		ACIN 200V	94typ
	POWER FACTOR (Io=100%)	ACIN 100V	0.96typ
		ACIN 200V	0.93typ
	INRUSH CURRENT		Limited by external components (Thermistor)
	LEAKAGE CURRENT[mA]		0.75max (ACIN 240V 60Hz, Io=100%, According to IEC60950-1)
OUTPUT	VOLTAGE[V]		50
	CURRENT[A]		3
	LINE REGULATION[mV]		100max
	LOAD REGULATION[mV]		100max
	RIPPLE[mVp-p]	-20 to +100℃ *1	200max
		-40 to -20℃ *1	300max
	RIPPLE NOISE[mVp-p]	-20 to +100℃ *1	200max
		-40 to -20℃ *1	300max
	TEMPERATURE REGULATION[mV]	0 to +100℃	500max
		-40 to +100℃	1000max
	DRIFT[mV]	*2	200max
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed (TRM pin open), adjustable by external resistor or external signal
			45.0 - 55.0
	OUTPUT VOLTAGE SETTING[V]		49.2 - 50.8
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically
	OVERVOLTAGE PROTECTION[V]		57.5 - 67.5
	REMOTE SENSING		Not provided
	REMOTE ON/OFF		Not provided
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)
	OUTPUT-FG		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to "Derating"), 4,000m (13,000 feet) max
	STORAGE TEMP.,HUMID.AND ALTITUDE		-40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max
	VIBRATION		10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis
	IMPACT		196.1m/s² (20G), 11ms, once each along X, Y and Z axis
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) *3
OTHERS	CASE SIZE/WEIGHT		76.2×28.5×50.8mm [3.0×1.12×2.0 inches] (W×H×D) / 150g max
	COOLING METHOD		Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)

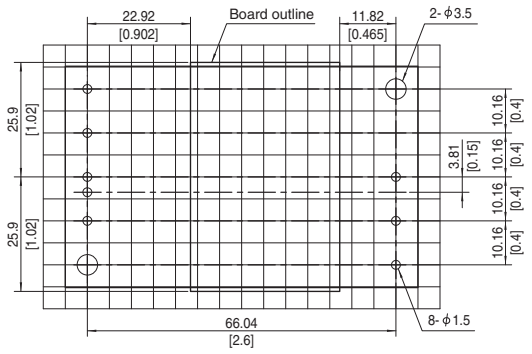
*1 Refer to instruction manual for measuring method of electric characteristics.
*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃, with the input voltage held constant at the rated input/output.
*3 Please contact us about another class.

External view





※ Recommending size for processing PCB
(TOP VIEW)



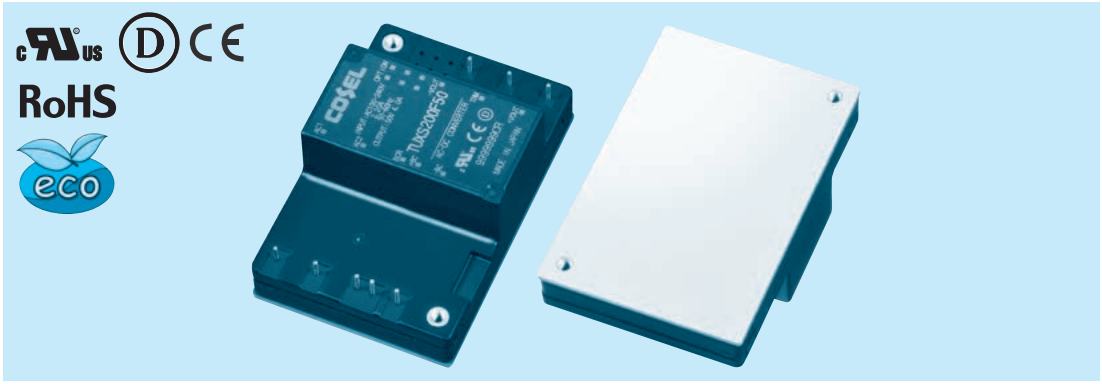
※ Tolerance : ±0.3 [±0.012]
※ Weight : 150g max
※ Dimensions in mm, [ ]=inches
※ Mounting hole screwing torque : 0.49N/m (5.0kgf/cm) max

COSEL AC-DC Power Supplies Power Module Type

TUXS200F

Ordering information

TUX	S	200	F	50	-□
①	②	③	④	⑤	⑥



①Series name
②Single output
③Output wattage
④Universal Input
⑤Output voltage
⑥Optional
T : with Mounting hole (φ3.4 thru)
N :Auto restart in protection circuit working

*Avoid short circuit between +BC and -BC. It may cause the failure of inside components.
*Keep TRM open, if output voltage adjustment is not necessary.

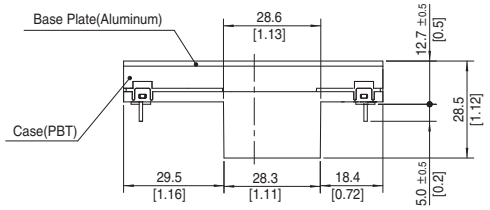
MODEL	TUXS200F24	TUXS200F28	TUXS200F32	TUXS200F42	TUXS200F50
MAX OUTPUT WATTAGE[W]	199.2	196.0	198.4	197.4	200.0
DC OUTPUT	24V 8.3A	28V 7.0A	32V 6.2A	42V 4.7A	50V 4.0A

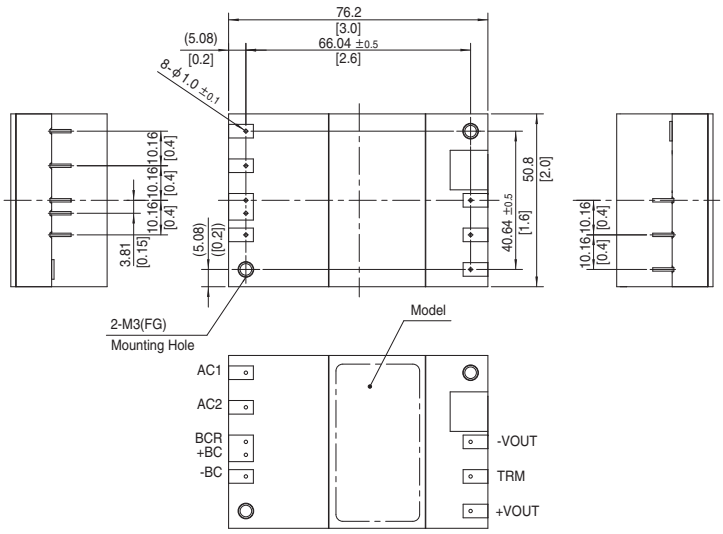
SPECIFICATIONS

	MODEL		TUXS200F24	TUXS200F28	TUXS200F32	TUXS200F42	TUXS200F50
INPUT	VOLTAGE[V]		AC85 - 264 1φ				
	CURRENT[A]	ACIN 100V	2.20typ (Io=100%)				
		ACIN 200V	1.10typ (Io=100%)				
	FREQUENCY[Hz]		50/60 (45 - 66)				
	EFFICIENCY[%]	ACIN 100V	90typ	90typ	91typ	91typ	92typ
		ACIN 200V	91typ	91typ	92typ	92typ	93typ
	POWER FACTOR (Io=100%)	ACIN 100V	0.96typ				
		ACIN 200V	0.93typ				
	INRUSH CURRENT		Limited by external components (Thermistor)				
	LEAKAGE CURRENT[mA]		0.75max (ACIN 240V 60Hz, Io=100%, According to IEC60950-1)				
OUTPUT	VOLTAGE[V]		24	28	32	42	50
	CURRENT[A]		8.3	7.0	6.2	4.7	4.0
	LINE REGULATION[mV]		48max	56max	64max	84max	100max
	LOAD REGULATION[mV]		48max	56max	64max	84max	100max
	RIPPLE[mVp-p]	-20 to +100℃ *1	144max	168max	192max	252max	300max
		-40 to -20℃ *1	192max	224max	256max	336max	400max
	RIPPLE NOISE[mVp-p]	-20 to +100℃ *1	144max	168max	192max	252max	300max
		-40 to -20℃ *1	192max	224max	256max	336max	400max
	TEMPERATURE REGULATION[mV]	0 to +100℃	240max	280max	320max	420max	500max
		-40 to +100℃	480max	560max	640max	820max	1000max
	DRIFT[mV]	*2	96max	112max	128max	168max	200max
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed (TRM pin open), adjustable by external resistor or external signal				
			21.60 - 26.40	25.20 - 30.80	28.80 - 35.20	37.80 - 46.20	45.00 - 55.00
	OUTPUT VOLTAGE SETTING[V]		23.62 - 24.38	27.55 - 28.45	31.49 - 32.51	41.33 - 42.67	49.20 - 50.80
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically				
	OVERVOLTAGE PROTECTION[V]		27.60 - 28.80	32.20 - 33.60	36.80 - 38.40	48.30 - 50.40	57.50 - 60.00
	REMOTE SENSING		Not provided				
	REMOTE ON/OFF		Not provided				
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)				
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃)				
	OUTPUT-FG		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)				
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to "Derating"), 4,000m (13,000 feet) max				
	STORAGE TEMP.,HUMID.AND ALTITUDE		-40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max				
	VIBRATION		10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis				
	IMPACT		196.1m/s² (20G), 11ms, once each along X, Y and Z axis				
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178				
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) *3				
OTHERS	CASE SIZE/WEIGHT		76.2×28.5×50.8mm [3.0×1.12×2.0 inches] (W×H×D) / 150g max				
	COOLING METHOD		Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)				

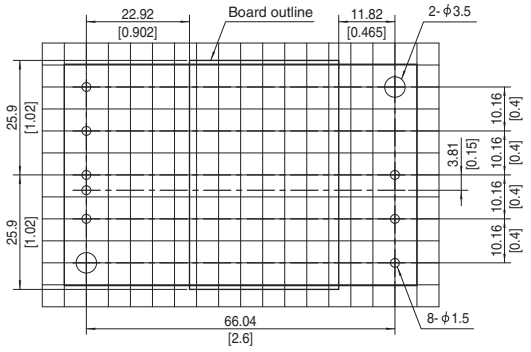
*1 Refer to instruction manual for measuring method of electric characteristics.
*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃, with the input voltage held constant at the rated input/output.
*3 Please contact us about another class.

External view



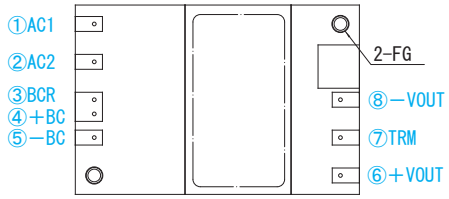


※ Recommending size for processing PCB
(TOP VIEW)



※ Tolerance : ±0.3 [±0.012]
※ Weight : 150g max
※ Dimensions in mm, [ ]=inches
※ Mounting hole screwing torque : 0.49N/m (5.0kgf/cm) max

Pin Configuration



✻Bottom view

No.	Pin Connection	Function
①	AC1	AC input
②	AC2	
③	BCR	+BC output
④	+BC	+BC output
⑤	-BC	-BC output
⑥	+VOUT	+DC output
⑦	TRM	Adjustment of output voltage
⑧	-VOUT	-DC output
-	FG	Mounting hole (FG)

Implementation • Mounting Method

Mounting method

■The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Aluminum base plate temperature of each power supply should not exceed the temperature range shown in "Derating".

■Avoid placing the AC input line pattern layout underneath the unit. It will increase the line conducted noise. Make sure to leave an ample distance between the line pattern layout and the unit. Also avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.

■Avoid placing the signal line pattern layout underneath the unit because the power supply might become unstable. Lay out the pattern away from the unit.

■High-frequency noise radiates directly from the unit to the atmosphere. Therefore, design the shield pattern on the printed circuit board and connect it to FG.
The shield pattern prevents noise radiation.

■When a heat sink cannot be fixed on the base plate side, order the power module with "-T" option. A heat sink can be mounted by affixing a M3 tap on the heat sink. Please make sure a mounting hole will be connected to a grounding capacitor CY.

	Mounting hole
Standard	M3 tapped
Optional : -T	ϕ3.4 thru

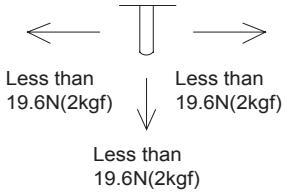
Stress onto the pins

■When too much stress is applied to the pins may damage internal connections. Avoid applying stress in excess of that shown in right figure.

■The pins are soldered onto the internal PCB.
Therefore, Do not bend or pull the leads with excessive force.

■Mounting hole diameter of PCB should be 3.5mm to reduce the stress to the pins.

■Fix the unit on PCB (fixing fittings) by screws to reduce the stress to the pins. Be sure to mount the unit first, then solder the unit.



Soldering

■Flow soldering : 260℃less than 15 seconds.

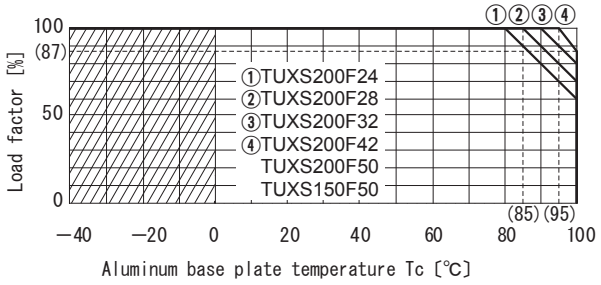
■Soldering iron (26W) : 450℃less than 5 seconds.

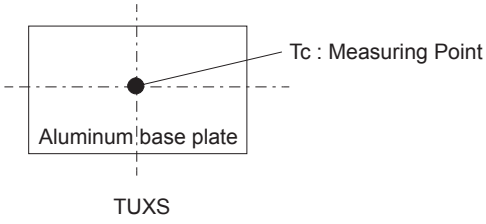
Derating

Output voltage derating curve

■Use the power modules with conduction cooling (e.g. heat dissipation from the aluminum base plate to the attached heat sink). Below shows the derating curves with respect to the aluminum base plate temperature. Note that operation within the hatched areas will cause a significant level of ripple and ripple noise.

■Please measure the temperature on the aluminum base plate edge side when you cannot measure the temperature of the center part of the aluminum base plate. In this case, please take 5deg temperature margin from the derating characteristics shown in Below. Please reduce the temperature fluctuation range as much as possible when the up and down of the temperature are frequently generated. Contact us for more information on cooling methods.





Instruction Manual

◆ It is neccessary to read the “Instruction Manual” and “Before using our product” before you use our product.

Instruction Manual	https://en.cosel.co.jp/product/powersupply/TUXS/
Before using our product	https://en.cosel.co.jp/technical/caution/index.html

TUXS NOTICE

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A] ＊1	Inrush current protection circuit	PCB/Pattern			Series/Parallel operation availability	
					Material	Single sided	Double sided	Series operation	Parallel operation
TUXS150F	Active filter	80-600	1.70	Thermistor	Aluminum	Yes		Yes	＊2
	LLC resonant converter	100-300							
TUXS200F	Active filter	80-600	2.20	Thermistor	Aluminum	Yes		Yes	＊2
	LLC resonant converter	100-300							

＊1 The value of input current is at ACIN 100V and rated load.
＊2 Refer to instruction manual.

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