KTEC

SPECIFICATION FOR APPROVAL

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KEC-260A-02FP

Switch mode power supply (Open Frame)

Switch mode power supply (Open Frame)

KEC-260A-02FP Manufacturer Part No.: KS260335

Customer Name KTEC

Customer Part NO. _____

Project Modify List

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1. INPUT REQUIREMENTS

1.1 Highlight & Features

- Simple design philosophy.
- This specification defines the performance and characteristics of an open frame power supply.
- This power supply provides dual sets of outputs.
- Cooling: Air-cooled.

1.2 General Description

This specification describes the performance of a 260W AC-DC switching power supply model with 55V 3.64A (200.2W) and 12V 5A(60W) DC output.

1.3 Chemical Substance Control Laws

PAHS 6P NP REACH ROHS

1.4 Input Conditions

The supply shall operate over the voltage ranges as follows:

Rated input voltage	100-240Vac
Operating range	90-264Vac
Rated input frequency	50/60Hz +/- 3Hz
Rated input current	4A maximum
Power consumption	/ maximum
Primary current protection	An adequate internal fuse on the AC input line is provided.
Power factor	> 0.95 at 115Vac , 60Hz & 0.9 at 230Vac,50Hz with a full load.

1.5 AC inrush current

< 30A at 115Vac and 60Hz, at 25°C cold start.

< 60A at 230Vac and 50Hz, at 25°C cold start.

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2. OUTPUT REQUIREMENTS

2.1 Output voltage and current

Item	Performance		Remarks
Output Voltage	55Vdc	12Vdc	
Output Tolerance	+/-5%	+/-5%	
Load Regulation	+/-5%	+/-5%	
Minimum Load	0.022A	0.2A	
Rated Load	3.64A	5A	
Ripple and Noise	500mVp-p	120mVp-p	Refer to Note (1)
Regulation with dynamic load	+/-5%	+/-5%	Refer to Note (2)
Over voltage protection	63V Max	16V Max	
Over Current protection	120%~160%	120%~160%	
Overshoot	<5%	<5%	
Undershoot	<5%	<5%	
Hold up Time	10ms Min.		Refer to Note (3)
Turn on Time	2.5 Sec Max.		Refer to Note (4)

NOTE:

(1)The ripple voltage measurement is done with an oscilloscope that bandwidth is set from 0Hz to 20M Hz. The 55Vdc output and 12Vdc are paralleled with a 100uF E-capacitor (minimum100mΩ ESR) and a 0.47uF ceramic capacitor.

(2)The dynamic response of power supply will be measured including the minimum system capacitive load. The following table gives the maximum acceptable voltage transient for the current transients on the 55V and 12V output.

Output	Minimum load	Maximum load	Transient repetition rate	Minimum cap
55V	0.022A	50%	Frequency:50Hz/5KHz Duty ratio:50%	400uF
	0.022A	70%		
	0.022A	100%		
12V	0.5	70%		1350uF

Current transients have edge rate of 0.5A/uS on the 55V and 0.5A/uS on the 12V output.

(3)Hold-up time shall test at 115Vac/60Hz. It is measured from when the line is shut off to the drop of 55V output below 50V and the drop of 12V output below 10.8V with full load and no external output capacitance.

(4) Start-up time will be less than 2.5 seconds at full load and full system capacitance.

It is measured as the delay between input voltage being applied at 0° phase angle and when output arrive within 10% of output voltage.

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2.2 Efficiency

The Efficiency should be measured at 115 and 230Vac.

80 Plus Silver rating efficiency requirements (Non-Redundant).

Input Voltage	10% of rated load	20% of rated load	50% of rated load	100% of rated load
115Vac,60Hz	78%	85%	88%	85%
230Vac,50Hz	80%	87%	90%	91%

2.3 Hold up time

Hold-up time shall test at 90Vac. It is measured from when the line is shut off to the drop of 55V output below 50V and the drop of 12V output below 10.8V with full load and no external output capacitance.

2.4 Turn on time

Start-up time will be less than 2.5 seconds at full load and full system capacitance. It is measured as the delay between input voltage being applied at 0° phase angle and when output arrive within 10% of output voltage.

2.5 Capacitive Loading

The PSU shall turn on smoothly under the range of the below capacitive load matrix.

Output	Min	Max	Units
POE+ Output	100	500	μF
12V Output	1000	5000	

2.6 Short-circuit protection

The PSU shall be protected against output short circuit.

The power supply shall recover itself after the short current condition is cleared.

2.7 Over voltage protection

The output should be less than 200ms when exceed 63V on the 55V output and typical 16V on the 12V output. After the anomaly is cleared, it can automatically recover.

2.8 Over current protection

The PSU should protect after an over current condition occurs (120~160% at Maximum output load condition). After the anomaly is cleared, it can automatically recover.

2.9 Over temperature protection

After the fan in the case doesn't work and the ambient temperature rises beyond the operating temperature, the PSU should be turned off When the ambient temperature drops to the normal operating temperature, the power supply should auto-restart.

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3. MECHANICAL

3.1 Enclosure and Layout

Weight	550 g (Typ.)
Dimensions	(L)190mm X (W) 90mm X (H) 34mm

4. REGULATORY COMPLIANCE

4.1 EMC Specifications

The information contained in this paragraph is/was the criteria and approvals anticipated at the time of release of this document. Based upon the intended marketing and use of the product, it is required that the external power supply work closely with the customer's equipment in order to get the best EMC solution.

4.1.1 Radiated and Conducted Emission

FCC part 15: Class B for radiated and conducted emissions.

EN55032, Class B for radiated and conducted emissions.

4.1.2 Harmonics

Meet EN 61000-3-2.

4.2 Immunity

4.2.1 Electrostatic Discharge Immunity

EN 55035, EN 61000-4-2

Air Discharge: ±15kV

Contact Discharge: ±8kV

Performance Criteria A

Electrostatic-discharge test by contact or air should be conducted with Static-discharge tester (energy storage capacitance of 150pF and discharge resistance of 330Ω) 15kV air discharge, 8kV contact discharge.

4.2.2 Radiated Field Immunity

EN 55035, EN 61000-4-3

Frequency Range: 80-1000MHz, still need test singly 1800MHz, 2600MHz, 3500MHz, 5000MHz

Field Strength: 3V/m with 80% amplitude modulation of 1kHz

Performance Criteria A

Radio-frequency electromagnetic field susceptibility test, RS 80-1000MHz, 3V/m, 80%AM(1KHz).

4.2.3 Fast Transient Immunity

EN 55035, EN 61000-4-4

Power line: 1kV

Performance Criteria A

4.2.4 Surge Immunity

EN 55035, EN 61000-4-5

Line to line: ±2kV

Line to earth: ±4kV

+ 90°/ -270°

Lightning surge voltage of differential and common modes shall be applies across AC input lines and across input and frame ground.

4.3 Safety Requirements and Certification

4.3.1 Regulatory Standard

The power supply shall comply with the following international regulatory standards:

for short	Country or Region	Certified Status	Standard
UL/CUL	USA	/	UL 62368-1
CCC	China	/	GB4943.1
FCC	America	/	Class B part 15
CE	Europe	/	EN 62368-1
CCC	China	/	GB4943.1
BSMI	Taiwan	/	CNS15598-1

4.3.2 Additional Safety Requirements

◎ Input – FG: AC 1.5KV 1min. (cut current 10mA) nominal temp. nominal humidity.
AC 1.8KV 3sec. (cut current 10mA) at factory nominal temp. nominal humidity.

◎ Input – Output AC 3KV 1min. (cut current 10mA) nominal temp. nominal humidity.
DC 4.242KV 3sec. (cut current 10mA) at factory nominal temp. nominal humidity.

◎ Insulation Resistance, Input to output: 2MΩ(MIN.) at 500 VDC.

◎ The leakage current shall not exceed 3.25mA.

5. RELIABILITIES

5.1 MTBF

MTBF must be greater than 100,000 hours per SR-332 at 115Vac/60Hz, full load, and ambient temperature of 25°C.

5.2 E-Caps Life time

Life expectancy of these caps shall be 5 years minimum measured at 100Vac input voltage, full rated output load and 40°C temperature ambient to the power supply. The E-Caps shall be sourced from Taiwan & Japan based vendors and be rated 105°C.

5.3 Shock

Frequency 10~55Hz

Acceleration 19.6m/s^2

Sweep Rate 1min

Test Axis X, Y, Z axis

Test Time 30min each axis

5.4 Vibration

Wave Form Half sine wave

Acceleration 50m/s^2

Duration Time 11mS

NO . of Shock Each axis 1 times

Shock Direction X, Y, Z axis

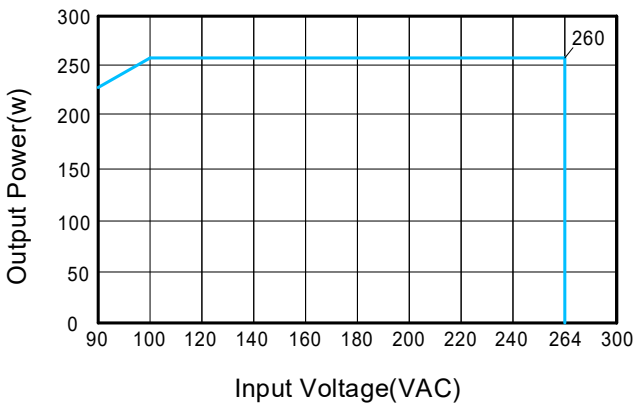
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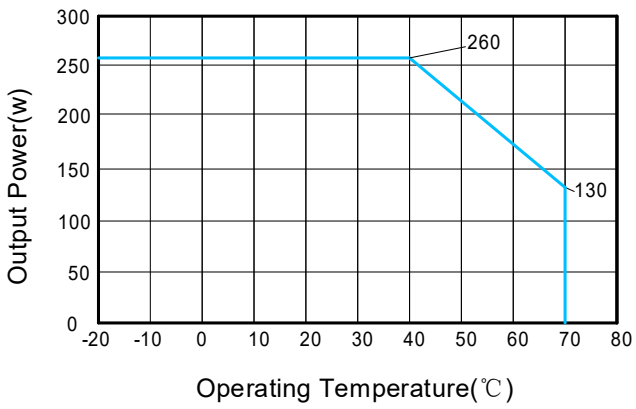
6. ENVIRONMENTAL REQUIREMENTS

Temperature	Operating	-20°C ~ +70°C, Derating linear 100% load @ 40°C to 50% load @ 70°C. (See. Figure).
	Non-Operating	-40°C ~ +80°C
Humidity	Operating	5%~95% (Non Condensing)
	Non-Operating	5%~95% (Non Condensing)
Altitude	Meet 5000 meters.	

INPUT VOLTAGE DERATING CURVE （25℃ ）



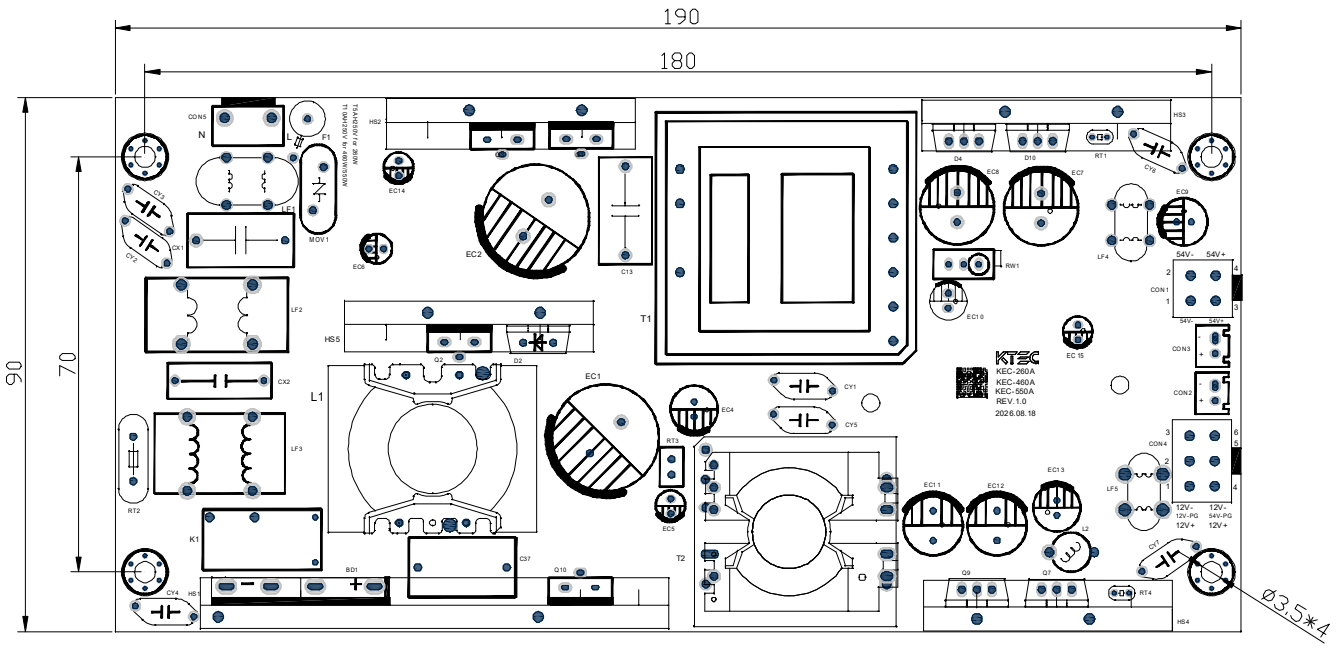
TEMPERATURE DERATING CURVE



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7. APPEARANCE DRAWING: (UNIT: MM)



NOTE:

1. PAHS 6P NP REACH ROHS
2. Tolerance: +/-1.0mm

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8. CONNECTOR & PIN DEFINE

AC CONNECTOR: CON5	
PIN NO.	DEFINE
1	N
2	NC
3	L

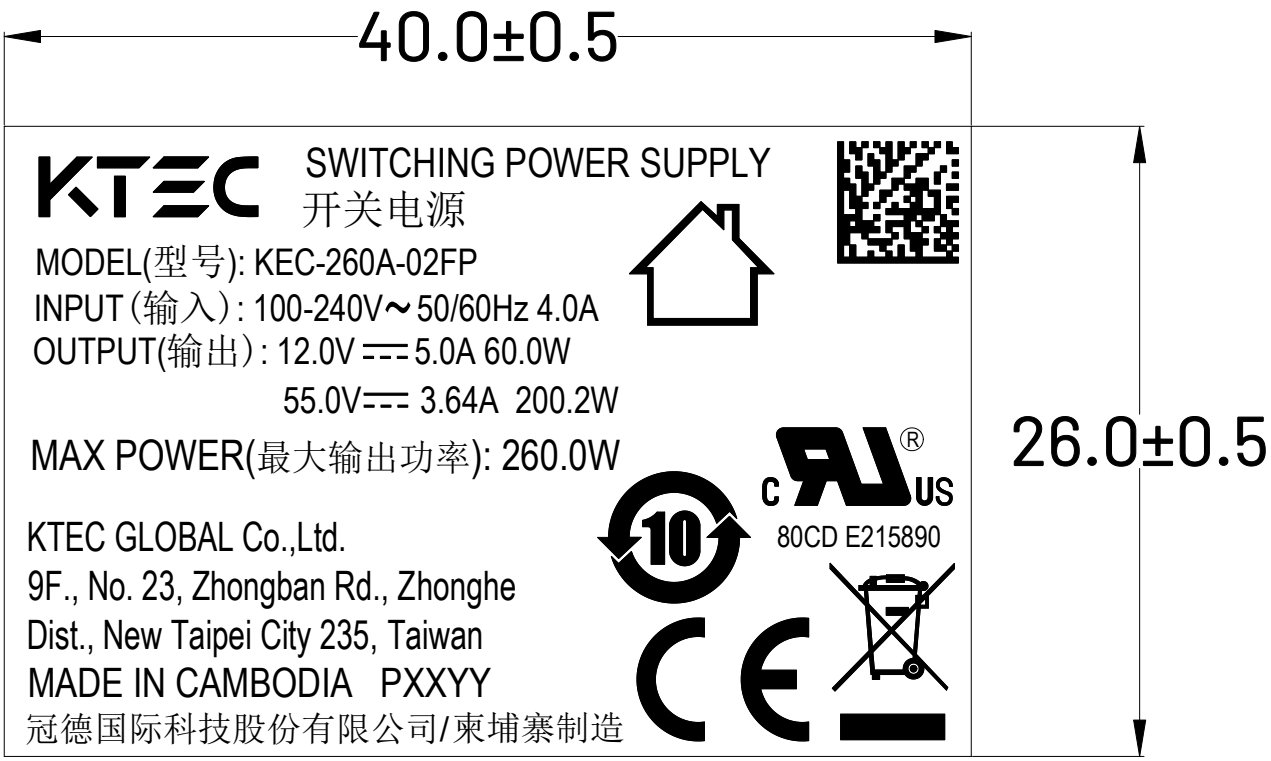
12V CONNECTOR: CON4	
PIN NO.	DEFINE
1	+12V
2	NA
3	12V_GND
4	+12V
5	NA
6	12V_GND

55V CONNECTOR: CON1	
PIN NO.	DEFINE
1	55V_GND
2	55V_GND
3	55V
4	55V

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9. NAMEPLATE (UNIT: MM)



Note: 1. MATERIAL: silver polyester（消银龙）; Thickness: 0.08+-0.01mm

Black characters silver background

PAHS 6P NP REACH ROHS

PXXYY(P=PAHS,6P,NP, XX=WEEK YY=YEAR) 按实际生产日期制作

2. Attach to transformer HS2

3. SN (Data Matrix Code size: 5*5mm):

First code G(KTEC) + Production part number (Product code) + Ten yards of flow code SSSSSSSSSS (decimal)

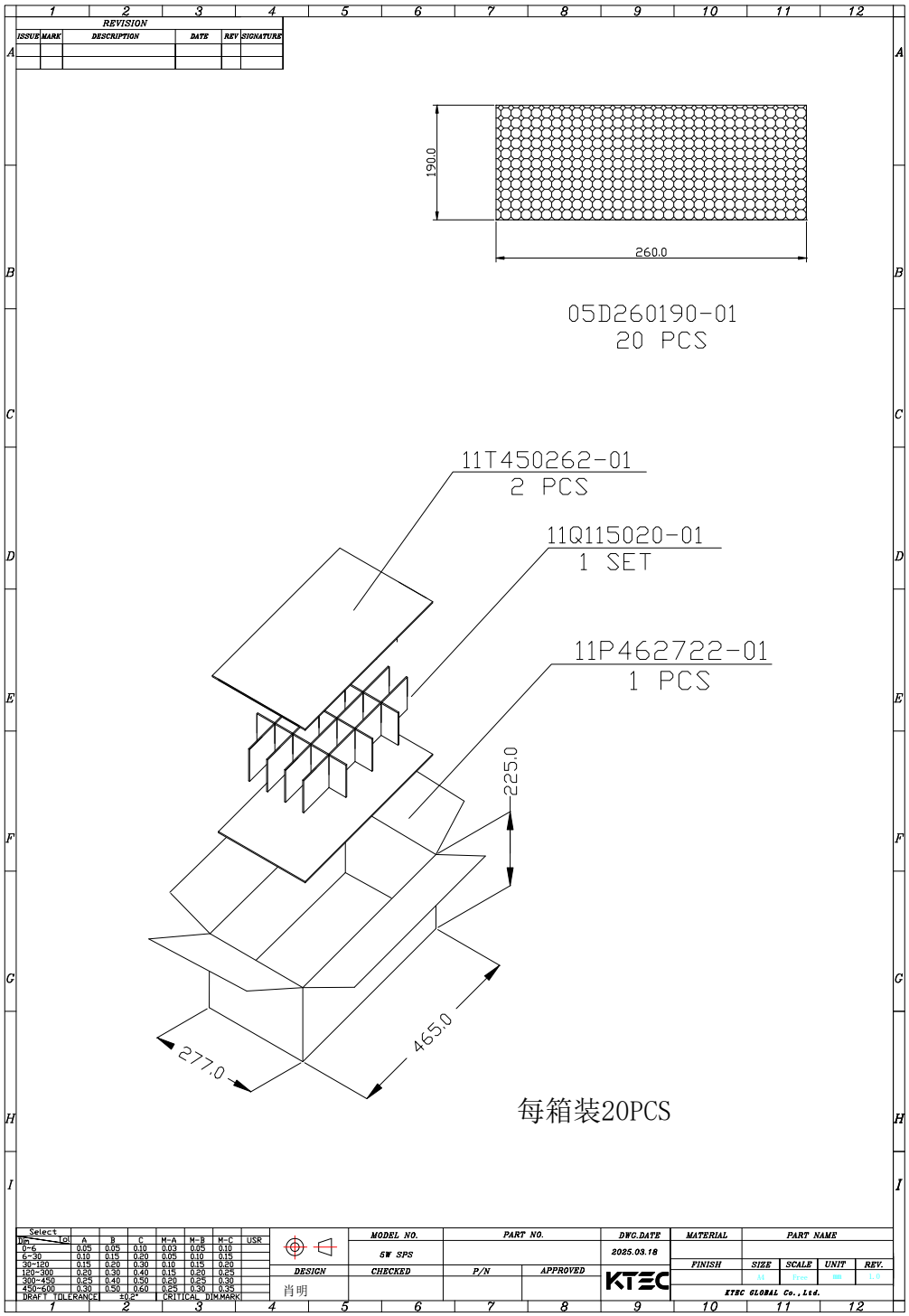
Total 19 codes

Example: GKS2603350000000001, GKS2603350000000002...GKS2603359999999999.

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10. PACKING (UNIT: MM)



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