



SPECIFICATION FOR APPROVAL

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KSA-140P-D5

USB-PD CHARGER

Customer Part NO.

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SALES	QE	APPROVED BY	MADE BY
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USB-PD CHARGER

KSA-140P-D5 Manufacturer Part No.: KS251573



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1. INPUT REQUIREMENTS

1.1 Highlight & Features

- Simple design philosophy.
- Reliability level of 100K hours MTBF @ 25°C (rated input voltage, 80% load and using the Telcordia SR-332 issue 3 method).
- DC output voltage must be Safe Extra Low Voltage (SELV) & Limited Power as defined by UL62368-1.
- Compliant with Class B USB Type-C Power Delivery Specification.
- The adapter meets PD 3.0, PD3.1.

1.2 General Description

This specification defines the performance characteristics for a class II adapter, single-phase 140.0 watts. Single output level power supply.

1.3 Chemical Substance Control Laws

PAHS 6P NP REACH ROHS NOP PROP65

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	2.0A max. @ 100Vac to 240Vac
Power consumption(no-loading)	0.3W max. @ 230Vac
Primary current protection	An adequate internal fuse on the AC input line is provided.
Input Configuration	2 Conductor

1.5 Ac inrush current

No damage shall be occurred and the input fuse shall not be blown up nominal input voltage full load 25°C cold start.

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2. OUTPUT REQUIREMENTS

2.1	Nominal DC output voltage	Type C1/C2	Fixed PDO					
2.2	Minimum load current		5.0V	9.0V	12.0V	15.0V	20.0V	28.0V
2.3	Rating load current		0.0A					
2.4	Rating output power		3.0A	3.0A	3.0A	3.0A	5.0A	5.0A
			140.0W Max.					
2.5	Nominal DC output voltage	C3	Fixed PDO					
2.6	Minimum load current		5.0V		9.0V		12.0V	
2.7	Rating load current		0.0A					
2.8	Rating output power		3.0A		2.22A		1.67A	
			20.0W Max.					
2.9	Line regulation	The line regulation is less than ±5% while measuring at rated load. Test conditions: C To C 50CM/20# USB cable.						
2.10	Load regulation	The load regulation for +5V, +9V, +12V, +15V, +20V, +28V is less than ±5%, at measured output load from 0% to 100% rated load. Test conditions: C TO C 50CM/20# USB cable.						
2.11	Ripple and noise	Fixed PDO						
		5.0V	9.0V	12.0V	15.0V	20.0V	28.0V	
		150mVp-p	200mVp-p	250mVp-p	250mVp-p	300mVp-p	300mVp-p	
		Add 0.1uF/50V ceramic capacitor and 10uF/50V aluminum electrolytic capacitor in parallel the output terminal. Measured with 20MHz Bandwidth Oscilloscope at full load land rated input voltage 115Vac & 230Vac.						
2.12	Average efficiency	Meet DOE VI						
		AC115V/60Hz and 230V/50Hz,full load						
		The test point: end PCBA board, no include DC cable.						
2.13	Turn on delay time	4000ms maximum at nominal input AC voltage and full load.						
2.14	Rise time	The supply shall have a start-up rise time of less than 100ms to rise to within regulation limits for all DC outputs.						
2.15	Hold up time	When power off, DC output must be maintained <u>8ms</u> in regulation limit at 115V/230Vac and full load.						
2.16	Output over-shoot	Less than 10% of nominal voltage value.						
2.17	LED indication function	/						

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2.18	Protection function	
	Over-voltage protection	7.5V max. (5.0V mode); 11.25V max. (9.0V mode); 15.0V max. (12.0V mode); 19.0V max. (15.0V mode); 25.0V max. (20.0V mode), 35.0V max. (28.0V mode), The output voltage shall be clamped by internal protection.
	Short-circuit protection	The adapter shall not be damaged by short the DC output to Ground. The adapter shall resume normal operation when a short circuited fault condition is removed.
	Over current protection	When overload is applied to the output, the power supply shall be shut down and enter auto-recovery or latch mode 7.0A max.

3. POWER DISTRIBUTION

PD 3C 140.0W				Output power(Max.)
Output port	C1	C2	C3	
Single port output	PD 140.0W (The power drop to 100W after reaching the preset temperature)	-		140.0W
	-	PD 140.0W (The power drop to 100W after reaching the preset temperature)		140.0W
	-	-	PD 20.0W	20.0W
Two port output	PD 65.0W (The power drop to 45W after reaching the preset temperature)	PD 65.0W (The power drop to 45W after reaching the preset temperature)	-	130.0W
	PD 120.0W (The power drop to 65W after reaching the preset temperature)	-	PD 20.0W	140.0W
	-	PD 120.0W (The power drop to 65W after reaching the preset temperature)	PD 20.0W	140.0W
Combined output	PD 60.0W (The power drop to 30W after reaching the preset temperature)	PD 60.0W (The power drop to 30W after reaching the preset temperature)	PD 20.0W	140.0W

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4. MECHANICAL

4.1 Enclosure and Layout

Plastic case	UL94V-0
Weight	/ g (Max.)
Dimensions	76x76x33mm
Color	WHITE(WT-07)

4.2 Input and Output Configuration

Input pin	International Pin
Output connector	USB Type C1/C2: 5.0V 3.0A, 9.0V 3.0A, 12.0V 3.0A, 15.0V 3.0A, 20.0V 5.0A, 28.0V. 5.0A 140.0W Max.
	USB Type C3: 5.0V 3.0A, 9.0V 2.22A, 12.0V 1.67A, 20.0W Max.
	USB Type C1+C2: 65.0W+65.0W=130.0W Max.
	USB Type C1+C3: 120.0W+20.0W=140.0W Max.
	USB Type C2+C3: 120.0W+20.0W=140.0W Max.
	USB Type C1+C2+C3: 60.0W+60.0W+20.0W=140.0W Max.

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5. REGULATORY COMPLIANCE

5.1 EMC Specifications

The external power supply must meet all specification in this section. it is required that the external power supply work closely with the customer's equipment in order to get the best EMC solution.

5.1.1 Radiated and Conducted Emission

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

EN55032, Class B for radiated and conducted emissions.

5.2 Immunity

5.2.1 Electrostatic Discharge Immunity

EN 55035, EN 61000-4-2

Air Discharge: $\pm 8\text{kv}$

Contact Discharge: $\pm 4\text{kv}$

Performance Criteria B

Electrostatic-discharge test by contact or air should be conducted with Static-discharge tester (energy storage capacitance of 150pF and discharge resistance of 330 Ω) 8kv air discharge, 4kv contact discharge.

5.2.2 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).

5.2.3 Conducted Field Immunity

EN 55035, EN 61000-4-6

Frequency Range: 0.15-80MHz(0,15 to 10 MHz , 3V ; 10 to 30 MHz , 3-1V ; 30 to 80 MHz , 1V)

Field Strength: 3A/m with 80% amplitude modulation of 1KHz

Performance Criteria A

5.2.4 Fast Transient Immunity

EN 55035, EN 61000-4-4

Power line: 1kv

Performance Criteria B

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5.2.5 Surge Immunity

EN 55035, EN 61000-4-5

Line to line: ±1kv

Line to earth: ±2kv

+ 90°/ -270°

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

5.3 Safety Requirements and Certification

5.3.1 Regulatory Standard

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

for short	Country	Certified Status	Standard
CE	Europe	/	Declared& CE Mark EN62368-1
UL	USA	/	UL 62368-1
CUL	Canada	/	CSA C22.2 NO.62368-1

5.3.2 Additional Safety Requirements

- © Dielectric Withstand Voltage, Primary (input AC short)-to-Secondary (output DC short): 3000Vac, 5mA, 1minute.
- © Insulation Resistance, Input to output: 100MΩ (MIN.) at 500 VDC.
- © Reinforced insulation system, Primary-to-Ground and Primary-to-Secondary.
- © The leakage current shall not exceed 0.25mA.

6. ENVIRONMENTAL REQUIREMENTS

Temperature	Operating	0°C +25°C
	Non-Operating	-20°C +70°C
Humidity	Operating	10%~90% (Non Condensing)
	Non-Operating	10%~90% (Non Condensing)
Altitude	Sea level to 2000m	

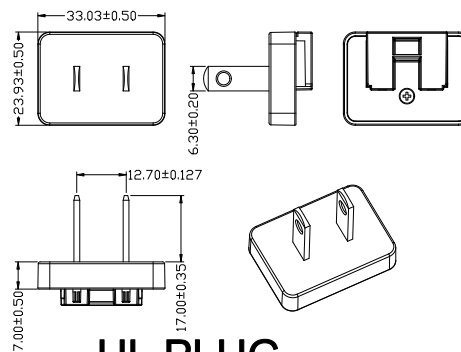
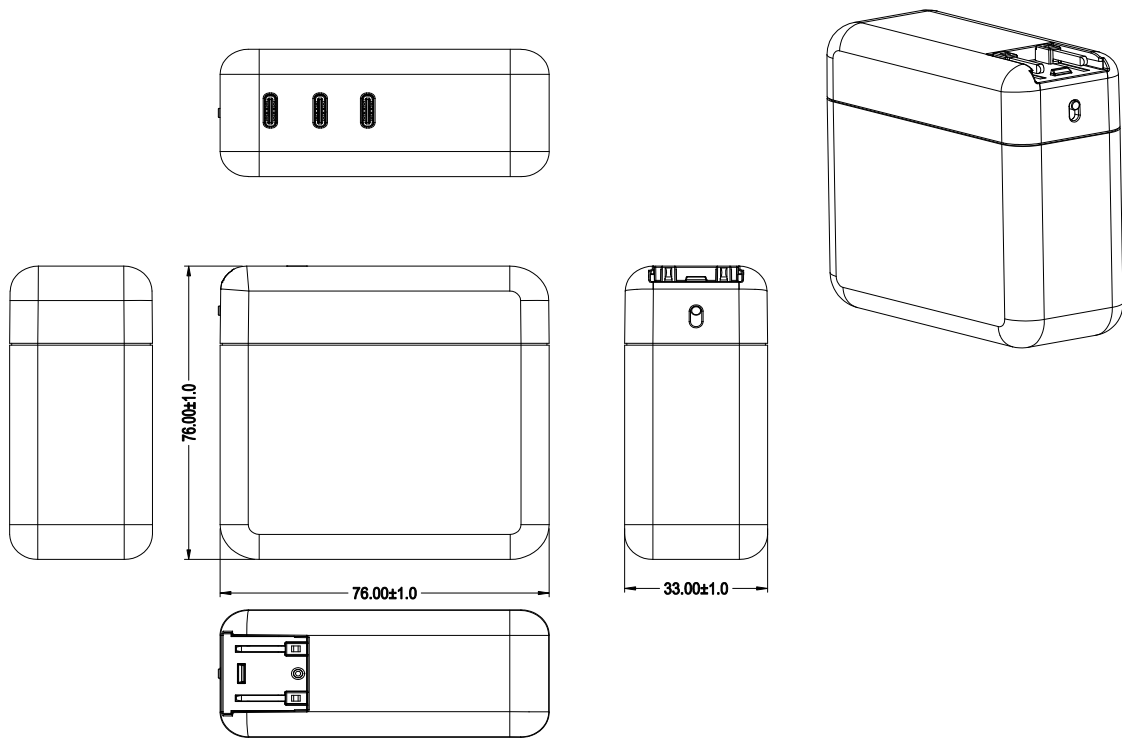
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7. APPEARANCE DRAWING: (UNIT: MM)



UL PLUG

NOTE:

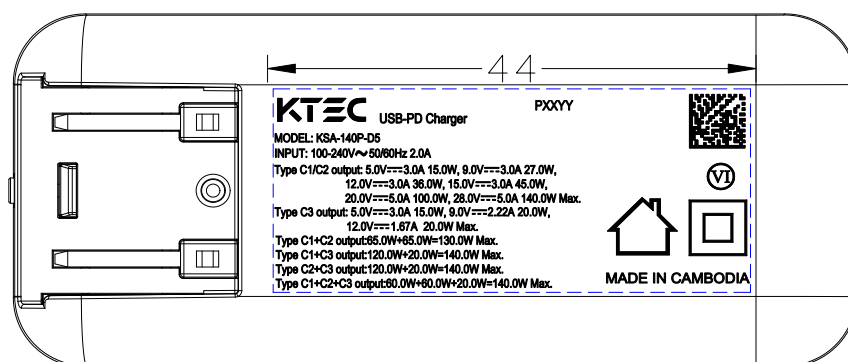
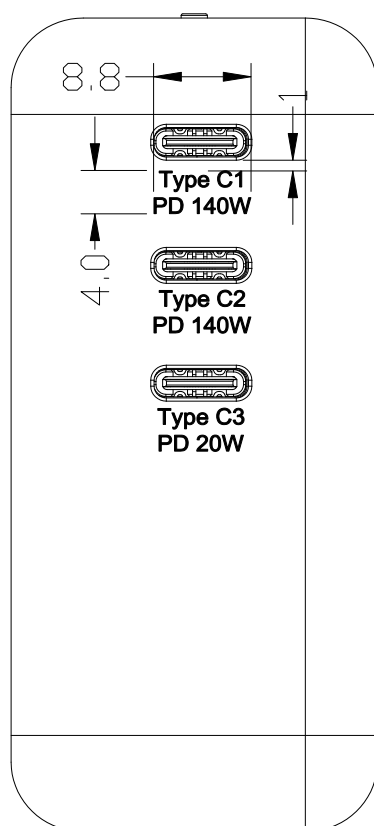
1. Case cover & chassis material: PC WHITE (WT-07) (NO KTEC)
2. AC PIN MATERIAL: BRASS (NI PLATED)
3. PAHS 6P NP REACH ROHS NOP PROP65
4. Satin Finish
5. Top mold: MSS024014 Bottom mold: MSS024015

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8. NAME PLATE



Note: Laser

PXXYY (P=PAHS XX=Week, YY=Year), use the actual production date.

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 : GKS2515730000000001, GKS2515730000000002...GKS2515739999999999.

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KTEC

9. PACKING (UNIT: MM)

