GlobTek, Inc. www.globtek.com 186 Veterans Drive, Northvale, NJ 07647 Tel. (201) 784-1000 Fax (201) 784-0111	Drawing Title: High Power DC Connectors, , Efficiency Level: , Case Color/Style: GlobTek Black, , , Input Rating: , , Output Rating: W, 0.0V@0.0A, Output Configuration: mm, / Cond, , , Ferrite: , , GT Cord # , Pin Out: , Blades/Input Cord: , Approvals: to , GT Cab	
	Model No. High Power DC Connectors	
	Part No./Ordering No. JACK-L-PC-10A-RA(R)	Rev F

In Addition to GlobTek Inc.'s renewed ISO9001:2008 - Quality Management System Certification, GlobTek Inc. is now certified to:

ISO13485:2003 - Medical Devices Quality Management System Certification
ISO14001:2004 - Environmental Management System Certification

ISO Certificates are available online at http://www.globtek.com/iso-certificates/

The acceptance of this specification and use of the product described in this document indicates the acceptance and binding of the customer to Globtek TERMS AND CONDITIONS (attached to the end of this document), which supersede all other agreements, terms, and conditions (http://www.globtek.com/terms-and-conditions/).
Prop 65 Statement:https://www.globtek.com/prop-65-statement.pdf

Footnote:

GlobTek Inc. will not be liable for the safety and performance of these power supplies if unauthorized access and repair occurs. End user should consult applicable UL, CSA or EN standards for proper installation instruction.

Limitation of Use:

GlobTek products are intended for use with commercial, medical, and/or industrial equipment only. GlobTek product are not authorized for use as mission critical components in life support hazardous environment, nuclear or aircraft applications without prior written approval from the CEO of GlobTek Inc.
Contents of this document are subject to change without prior notice.

Customer Approval of Specification:

Please approve, sign and send back to GlobTek so we can complete order processing.
A delay in receipt of this form will delay delivery schedule.

Company Name:	Customer P/N:
Quote Number:	Date:
Authorized Representative Name:	Authorized Representative Signature:

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REVISION HISTORY

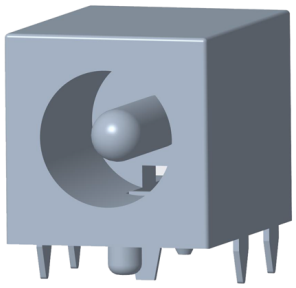
REV	DESCRIPTION	SUB	DATE	APPROVED
F	Update 3-D file and mechanical drawing	QA	03/14/2024	QA
E1	Add product picture, update the datasheet to add "Similar to: " and "Mates with:"	QA	01/24/2024	QA
E	Add tab material and plating	QA	11/03/2021	QA
D2	Add packing	QA	08/31/2021	QA
D1	Update to SF format	QA	07/16/2021	QA
D	Remove contact resistance between terminal in closed circuit	QA	03/23/2021	QA
C	Update drawing with determination the mating depth and the distance of the contacts from the opening	QA	02/20/2020	QA
B	Update drawing from chip to outer spring contact	QA	04/09/2019	QA
A	Initial release	QA	03/26/2018	QA

3D CAD FILE:
https://www.globtek.com/file/dl/JACK-L-PC-10A-RA_JACK-C-PC-10A-RA.ZIP

AGENCY ONLINE DOCUMENTS

RoHS/RoHS3 Declaration	https://www.globtek.com/pdf/rohs_cert/01t0c000008OOv2AAG
REACH Declaration	https://www.globtek.com/pdf/iso_certificates/REACH.pdf
Conflict Minerals Declaration	https://www.globtek.com/pdf/conflict-minerals.pdf
Prop 65 Statement	https://en.globtek.com/prop-65-statement.pdf

IPXY rating is based on 3rd party testing and customers should check suitability and test system level IPXY rating before ordering.



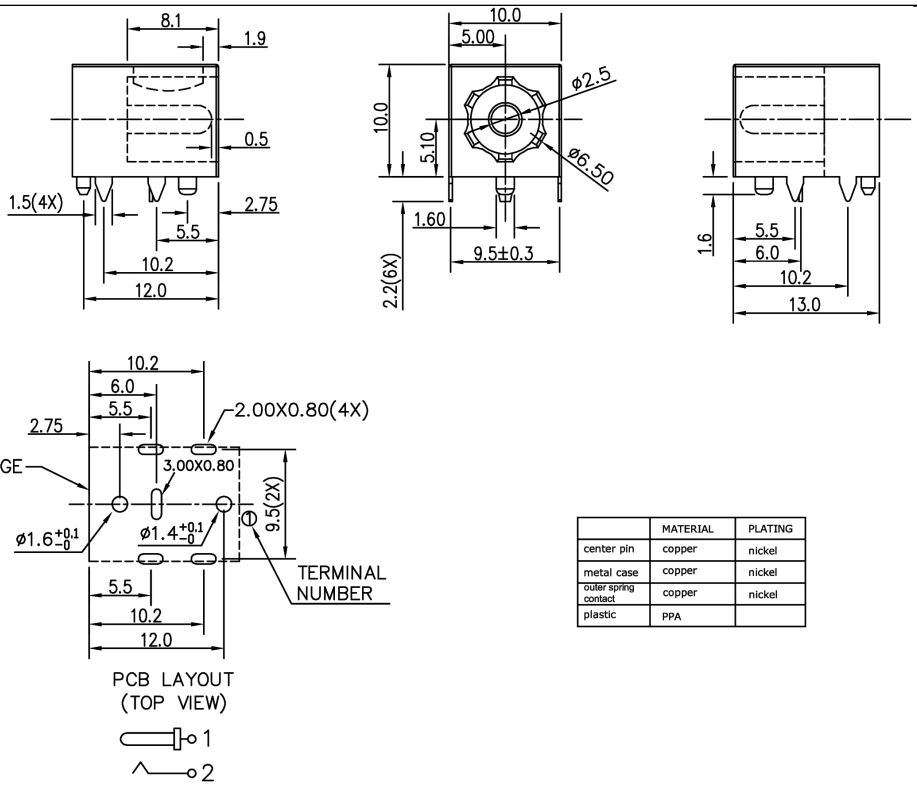
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Model No. High Power DC Connectors

Part No./Ordering No. JACK-L-PC-10A-RA(R) | Rev F



	MATERIAL	PLATING
center pin	copper	nickel
metal case	copper	nickel
outer spring contact	copper	nickel
plastic	PPA	

SPECIFICATIONS

parameter	conditions/description	min	typ	max	units
rated input voltage			50		Vdc
rated input current				10	A
contact resistance1	between terminal and mating plug			30	mΩ
	between terminal in a closed circuit			30	mΩ
insulation resistance	at 500 Vdc	100			MΩ
voltage withstand	at 50/60Hz for 1 minute 500 Vac			500	Vac
insertion/withdrawal force		0.3		3	kg
terminal strength	any direction for 15 seconds			200	gf
operating temperature		-25		85	°C
life			5000		cycles

Note: 1. When measured at a current of less than 100 mA/1 kHz

Similar to: RAPC712S KLDHCX-8-0202-B 54-00128 PJ-080BH PJ-082BH PJ-063BH ADC-096-2-T/R DCJ250-20-B-K1-A

Mates with: T-L-95-S(R) T-L-12-S(R) T-L-14-S(R) 760 765 KLDX-PA-0202-B PP3-002B 55-00050 EP501B 4840.1210

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Thermal Design for High Current PCB-Mount Barrel Jacks

GlobTek Inc. 2019

The below information pertains to the following GlobTek parts:

- JACK-L-PC-10A-RA(R)
- JACK-C-PC-10A-RA(R)

GlobTek's JACK-L-PC-10A-RA(R) and JACK-C-PC-10A-RA(R) jacks carry a 10A continuous current rating, allowing a high current connection to be made directly to the target PCB. The contacting interface in an electrical connection is never perfect, leading to an equivalent *contact resistance* at the junction of the male and female connectors.

Robust connectors, like GlobTek's 10A PCB-mount jacks, have low values of contact resistance. Even so, at high operating currents, this resistance is not negligible and causes heating in the connector. Operating the connector at excessive temperatures can cause damage to the connector, the PCB, and poses a potential safety risk.

Therefore, it is important to assess whether additional measures are required to keep the jack at a safe operating temperature. The main contributing factors are:

1. Ambient temperature
2. Maximum continuous current

The most straight-forward approach is to provide heatsinking via additional PCB copper area near the connector. This increased surface area allows for better cooling via natural convection. The required copper area depends largely on the the application.

GlobTek produced a thermal evaluation board to test the effectiveness of PCB heatsinking in this application. (Image shown on next page.) Using the smallest PCB area (*22.0 x 28.0mm on front and back sides*), testing showed that it was possible to pass 10A through the connector, at 55°C, with no degradation to the connector during a 24 hour test. Under these conditions, the connector center pin temperature, reaches just over 130°C. Therefore, if using GlobTek's jacks in a similar scenario, it is important to consider the maximum operating temperature of the PCB. Use of a 130°C minimum operating temperature rated board is required.

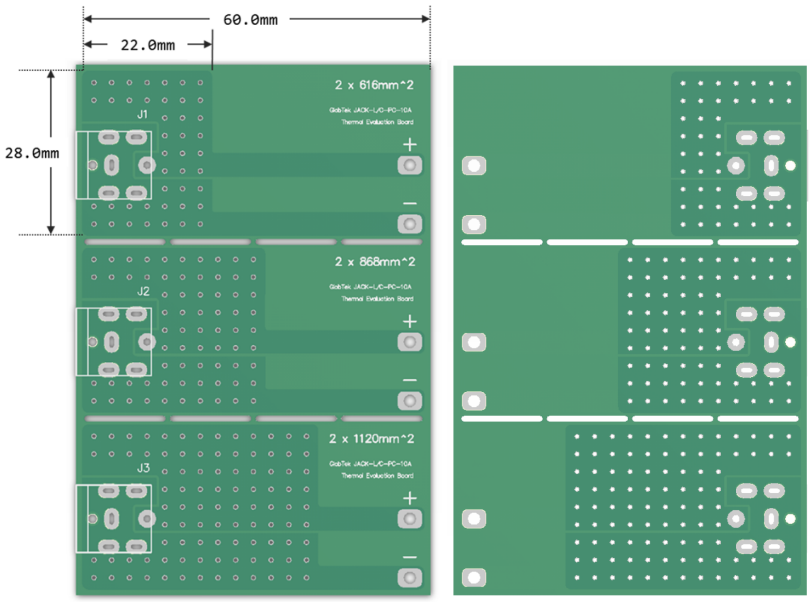
If using GlobTek's PCB-mount barrel jacks with a higher ambient temperature, 85°C for example, the following solutions may be applied:

1. Increased PCB copper area (*especially on higher resistance center pin plane*)
2. Increased copper thickness
3. Increased PCB operating temperature rating

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Above: GlobTek Thermal Evaluation Board for JACK-L-PC-10A-RA(R) and JACK-C-PC-10A-RA(R)
Copper thickness: 2oz (0.071mm)

Sample PCBs for customer thermal evaluation are available upon customer request to GlobTek, a small service charge may be applied.

Please note, the sample PCB has options for 3 different copper areas. The 22 x 28mm copper area evaluation board, has been tested under various conditions, see following page for thermal data. The largest board on the bottom, has approximately twice the copper area.

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Date: 05-Nov-2018

CONNECTOR TEMPERATURE MEASUREMENT SUMMARY

USED PSU P/N:
TR9KE9000CCP-IM(R6B)
TR9KE9000LCP-IM(R6B)

Connector's P/N:
JACK-C-PC-10A-RA(R) 2.1mm
JACK-L-PC-10A-RA(R) 2.5mm

Test condition A

CONNECTOR P/N	Ambient Temp	Load	Total Hours	CENTER Pin_Highest temp reading	SHELL_Highest temp reading
JACK-C-PC-10A-RA(R) 2.1mm	55°C	10A	22.86	116.4°C	88.9°C
JACK-L-PC-10A-RA(R) 2.5mm	55°C	10A	22.86	132.8°C	97.6°C

Test condition B

CONNECTOR P/N	Ambient Temp	Load	Total Hours	CENTER Pin_Highest temp reading	SHELL_Highest temp reading
JACK-C-PC-10A-RA(R) 2.1mm	85°C	8A	25.11	156.54°C	116.31°C
JACK-L-PC-10A-RA(R) 2.5mm	85°C	8A	25.11	141.97°C	115.88°C

Test condition C

CONNECTOR P/N	Ambient Temp	Load	Total Hours	CENTER Pin_Highest temp reading	SHELL_Highest temp reading
JACK-C-PC-10A-RA(R) 2.1mm	85°C	10A	21.45	176.14°C	128.89°C
JACK-L-PC-10A-RA(R) 2.5mm	85°C	10A	21.45	177.46°C	134.33°C

All testing done with thermal chamber with still air, and with 22x28mm copper area top and bottom side, 2 oz copper.

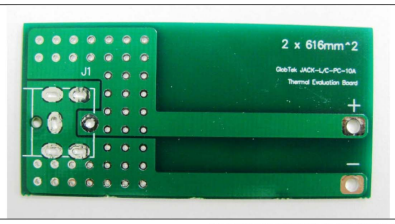
Tested by: EV

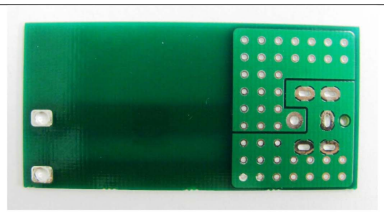
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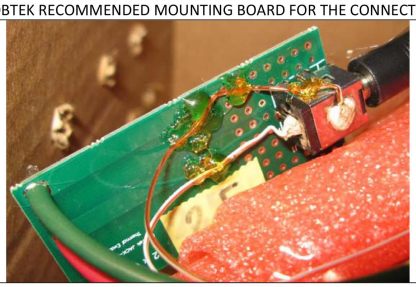
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CONNECTOR EVALUATION BOARD & TEST SET-UP PHOTOS





GLOBTEK RECOMMENDED MOUNTING BOARD FOR THE CONNECTORS



Note, maximum hotspot temperature on the PCB will be approximately 10°C cooler than the hot spot on the center pin, due to thermal gradient along the pin length as it merges into the large copper plane area.

Suggested board operating temperature rating (*please confirm in end application, with thermal probes*)

Condition A - 130°C or 140°C

Condition B - 150°C or 160°C

Condition C - 170°C or 180°C

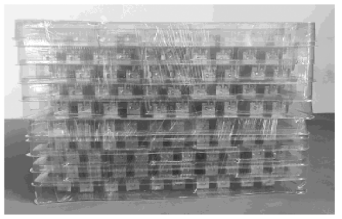
Tested by: EV

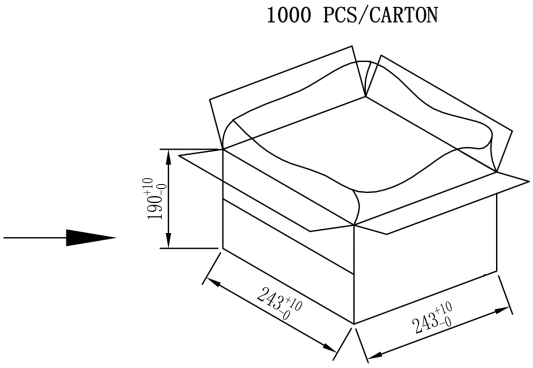
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Packing:





Note:
1. outside carton: 6mm corrugated fiberboard, dim. measured exterior face
2. actual dim. of outside carton subject to change at time of manufacture.

OUTSIDE CARTON

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PACKAGING

Packing Spec P/N:	
Box Qty:	1000
Gift Box Size (mm):	
Gift Box Color:	White
Master Carton Size (mm):	243 x 243 x 190
Master Carton Cubic Volume (m^3):	0.01
Master GW (Kg):	kg
wt Ea. (Kg):	kg
wt Ea. (Kg):	kg

LABEL SPECS: ,

PACK SPEC:

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