

研吉简介

研吉电子是以研发QC3.0,USB TYPE-C,USB TYPE-C PD充电器、移动电源，车充为主导的专业型方案公司，我们的技术团队均来自于在行业内从业多年，有资深经验的顶尖RD人员。更有像Didoes、Fairchild（ON）、STM、Semi-High、Hunteck、CT Micro、MagnaChip、LITEON、龙腾、等原厂,都是我们的长期战略合作伙伴，可以第一时间拿到最新的技术及样品支持。

研吉可以为客户提供最专业的方案和PCBA，在市场竞争越来越加剧的现状下，为客户节省了研发费用，更直接缩短了研发周期，让客户以最高的效率去抢占市场份额。

产品特征

➤ **2 IN 1 PD+QC2.0快充全兼容**

➤ **65W PD充电器，单口输出同时支持 Quick Charge（高通） 2.0**

➤ **Diodes（达尔）/AP3108L（PWM）+ PD Protocol 协议控制
（Canyon Cy2211）**

Target specification

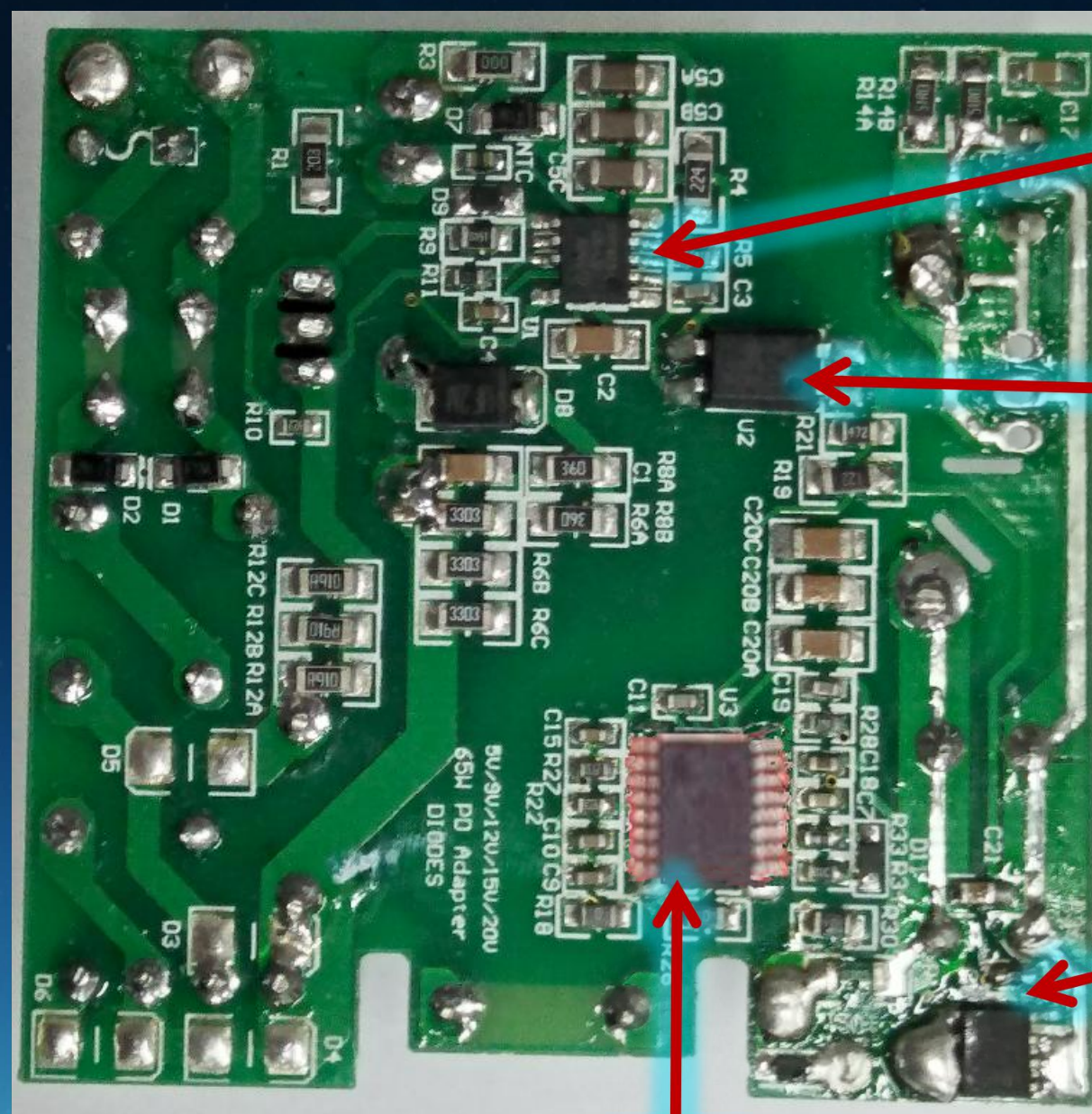
Description	Min	Type	Max	Units	Conditions
input					
Voltang	90		264	VAC	
Frequency	47	50/60	63	Hz	
No-Load input power(230Vac)	15	40	60	mW	
Output					
Output Voltage	5.0	5.0	20	V	
Output Current	3.25.		3.25	A	
Output Power		65		W	
Output Ripple Voltage			100	mVp-p	Iout=3A @25°C,20MHzbandwidth
Common Mode Noise			2	Vp-p	30k-500kHz,Load with 5ohm Resistor
Output Over Current Protection	3.25		3.30		Hiccup,Auto Restart
Ambient Temperature			25	°C	
Efficiency					
Averang Efficiency (COC-Tie 2)	82		89	%	Measured at end of output DC-Cable,115Vac & 230Vac @ 25°C

Key Performance

Item	Spec	Test Conditions	Test Data	Result
Output Voltage	4.75-21V	90-264Vac@0-3A	5.00-21.0	Pass
Ripple	<120mVp-p	90-264Vac@0-3A	100mV	Pass
Standby Power	<150mW	230Vac@0A	100mW	Pass
Dynamic	4.5-5.5V	90-264Vac@3.0-0.3A 10mS 0.5A/uS	4.58-5.44V	Pass
Common Mode Noise	<2Vp-p	90-264Vac@2A 30K-500kHz	1.2Vp-p	Pass
ESD	18kV	230Vac@4A	20kV	Pass



PHOTO-BOTTOM



PWM IC
AP3108L

光耦
CT1019

P-MOS:
HTN036P03

识别 IC:
Canyon CY2111

核心器件:DIODES –AP3108L



AP3108L

HIGH-PERFORMANCE GREEN MODE PWM CONTROLLER

Description

The AP3108L is a Current Mode PWM controller specially designed for offline power supply that requires ultra-low standby power, high-power density and comprehensive protection. AP3108L coordinates with Diodes' secondary side controller, such as the AP4320. This can be applied a the situation that requests for constant CC and constant CV.

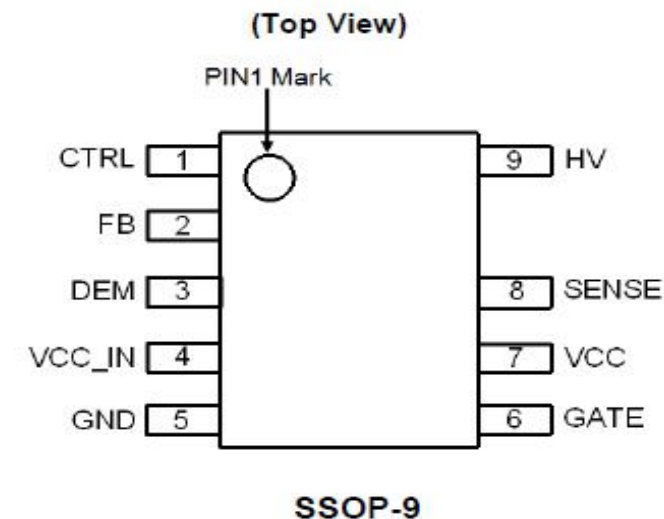
The maximum switching frequency of AP3108L is set at 65Khz. The switching frequency can be modulated through green mode, in which it will smoothly decrease along with the decreasing load. This will cause the minimum switching frequency to be clamped at about 22kHz to avoid audible noise.

The AP3108L provides an inner high-voltage start-up function through HV pin which can save the use of the external start-up resistor, reducing the standby loss. The HV pin also realizes X-CAP discharge function. This is a useful function for power saving when a X-CAP is connected to a system, for it will discharge the X-CAP when the AC line voltage is off automatically without the need for extra discharge resistors.

The AP3108L integrates a VCC LDO circuitry, allowing the LDO to regulate the wide range V_{CC_IN} , which is rectified from auxiliary winding to an acceptable value. This makes the AP3108L a good choice in wide range output voltage application.

There are also versatile system protections provided by AP3108L, such as secondary side OVP, secondary side UVP, constant output current limit, cycle-by-cycle current limit, brown-out protection, programmable external OTP, etc.

Pin Assignments



核心器件介绍----- Canyon **CY2211**



Canyon Semiconductor Inc.

www.canyon-semi.com.tw

Preliminary

CY2211

V 1.0 May 2016

USB Type-C Power Delivery Controller with Legacy Capability

FEATURES

- USB Type-C Spec 1.1 compatible
- USB PD Spec rev2.0 v1.1 compatible
- Vout 0.1V/step from 3 to 25V without mismatch
- CC/CV included for direct feedback control
- Low standby current below 500uA
- Output voltage with dynamic OVP/UVP
- Cable compensation for different load condition
- Support synchronous rectifier
- Support external DC/DC converter
- Support e-Marker cable detection and Vconn
- Support OCP/SCP/OTP functions
- Maximum 30V input voltage rating
- One-Time-Programming for configuration and ID

- Built-in 5V/1.8V LDO
- Support non-USB PD and auto detection with:
 - Qualcomm QC 2.0 built-in
 - Apple Legacy built-in
 - BC 1.2 Legacy built-in
- Ambient temperature range: -40°C to 85°C
- Package: TSSOP-16L /TSSOP-20L

APPLICATIONS

- AC adapters
- Car chargers
- Power banks
- Power hubs
- USB PD converter

核心器件介绍----- P-MOS HTN036P03



HTN036P03

P-1

30V P-Ch Power MOSFET

Feature

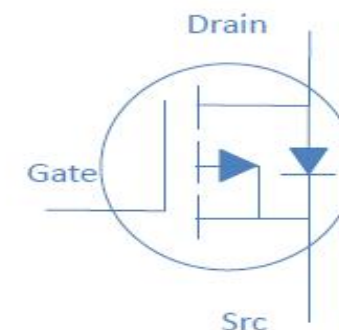
- ◇ High Speed Power Switching, Logic Level
- ◇ Enhanced Avalanche Ruggedness
- ◇ 100% UIS Tested, 100% Rg Tested
- ◇ Lead Free, Halogen Free

Application

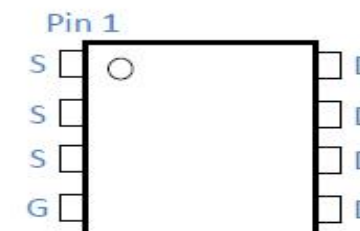
- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Industrial

V_{DS}		-30	V
$R_{DS(on),typ}$	$V_{GS}=10V$	3	m Ω
$R_{DS(on),typ}$	$V_{GS}=4.5V$	4.6	m Ω
I_D (Silicon Limited)		-80	A

DFN5x6



Part Number	Package	Marking
HTN036P03	DFN5*6	TN036P03



Absolute Maximum Ratings at $T_j=25^\circ\text{C}$ (unless otherwise specified)



**CT1010, CT1011, CT1012, CT1013
CT1014, CT1017, CT1018, CT1019**

DC Input 4-Pin Long Mini-Flat Phototransistor Optocoupler

Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- Extra low coupling capacitance
- DC input with transistor output
- Temperature range - 55 °C to 110 °C
- Regulatory Approvals
 - UL - UL1577 (E364000)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950
- Creepage distance > 8 mm
- Green Package

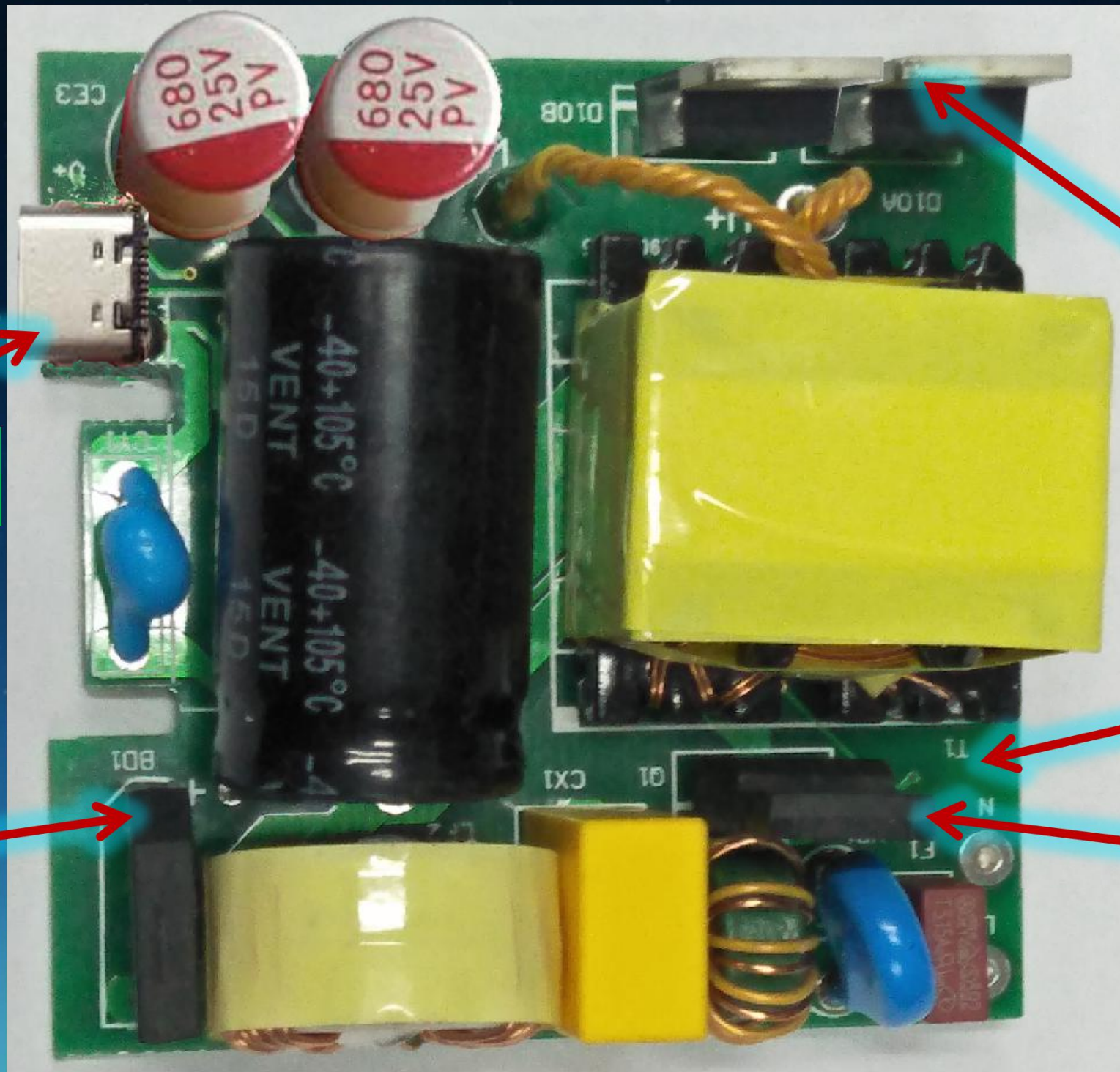
Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface

Description

The CT1010, CT1011, CT1012, CT1013, CT1014, CT1017, CT1018, CT1019 series consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead SOP Package.

PHOTO -TOP



Type C母座：金晟科技

桥堆：
GBP410

肖特基: Diodes
SBR40U120C

PCB制造商：
卓荣电子

高压MOS：
LONTEN
LSD11N65

核心器件介绍----- Lonten LSD11N65



西安龙腾新能源科技发展有限公司是一家致力于新型功率半导体器件产品的研发及销售于一体的高新技术企业。公司由一批在电力电子、半导体等相关行业的资深人士创立，管理团队由具备国际化视野及上市公司管理背景的专业化人员组成。公司视技术创新为企业发展的核心竞争力，建有国内一流水准的研发中心及应用测试实验室。公司已通过ISO9001:2008质量体系认证，在功率半导体器件设计及应用领域已申请52项专利。

西安龙腾为开关电源、逆变器等电能变换产品的应用领域提供600V-900V超级结MOSFET系列产品、中低压Trench和SGT技术MOSFET系列产品、600V-1200V 单管IGBT系列产品、1200V-1700V IGBT模块、快速二极管等系列产品。西安龙腾功率半导体产品采用优化的设计、先进的工艺和可靠的封装，具有低功耗和高可靠性，尤其适用于对功率密度和能效要求较高的产品，产品已在TV板卡电源、充电器、适配器、计算机及服务器电源、LED驱动电源和工业电源等多个领域得到广泛应用。

公司的长期发展目标是成为全球功率半导体器件重要供应商。

Voltage level	part Number	VDS (V)	ID(A) 25°C	PD (w) 25°C	Rds(on)(Ω) (VGS=10v)		Qg(nc) (vGS=10V)	VGS (V)	VGS(th) (v)	Package
					TYP.	Max.	TYP.			
650V	LSD11N65	650	11	33	0.33	0.35	28	30	3.5	TO-220F

核心器件介绍----- 肖特基 SBR40U120CT



SBR40U120CT

**40A SBR[®]
SUPER BARRIER RECTIFIER**

Features

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 150°C Operating Junction Temperature
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **Also Available in Green Molding Compound (Note 2)**

Mechanical Data

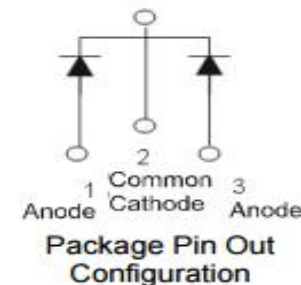
- Case: TO-220AB
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 ⁽³⁾
- Weight: 1.85 grams (approximate)



TO-220AB
Top View



TO-220AB
Bottom View



Ordering Information (Notes 2 & 3)

Part Number	Case	Packaging
SBR40U120CT	TO-220AB	50 pieces/tube
SBR40U120CT-G	TO-220AB	50 pieces/tube

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at <http://www.diodes.com>.
 2. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR40U120CT-G.
 3. For packaging details, go to our website at <http://www.diodes.com>.

核心器件介绍----- 平伟桥堆 GBP410



GBP4005 THRU GBP410

GBP4005 THRU GBP410

SINGLE PHASE 4.0 AMPS. GLASS PASSIVATED BRIDGE RECTIFIERS

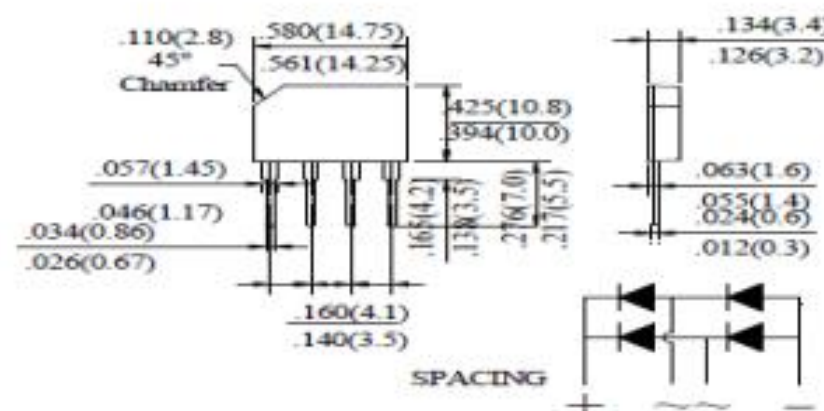
FEATURE

- . Ideal for printed circuit board
- . Glass passivated chip junctions
- . High case dielectric strength
- . Low leakage
- . Low forward voltage
- . High surge current capability
- . High temperature soldering guaranteed:
260°C/10seconds/375", (9.5mm) lead lengths

MECHANICAL DATA

- . Case: Molded plastic body
- . Epoxy: UL 94V-0 rate flame retardant
- . Terminals: Pure tin plated, Lead free. Leads solderable per MIL-STD-750, Method 2026.
- . Polarity: Symbols molded or marked on body
- . Mounting position: Any

GBP



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

[illegible]

核心器件介绍

- ◆PCB是世界标准生产厂家：卓荣电子，特别提供
- ◆卓荣电子，专业生产各种高精密单多口PCB, 特别在电源，汽车及背光源有着特别的经验技术。以先进的设备和多年的经验在行业内得到优良的口碑。

Standby Power

Output Voltage	Input Voltage	Standby Power (mW)
5V	85	14
	115	15
	230	20
	264	24

效率参数

Vin	Vo	25%	50%	75%	100%	Average Efficiency	Energy Star Level VI	Energy Star Level V	10% Load Efficiency
115V/60Hz	5V-2A	84.29%	83.24%	81.60%	79.88%	82.25%	>78.7%	>73.7%	84.48%
	9V -2A	87.63%	86.99%	85.89%	84.94%	86.36%	>85%	>80.29%	85.38%
	12V-2A	88.53%	88.09%	87.29%	86.46%	87.59%	>86.2%	>82.09%	85.93%
	15V-3.25A	88.68%	87.58%	86.53%	85.73%	87.13%	>87.77%	>86.53%	87.76%
	20V-3.25A	89.31%	88.47%	87.81%	86.47%	88.01%	>88%	>87%	87.88%
230V/50Hz	5V-2A	80.85%	81.32%	80.64%	79.65%	80.62%	>78.7%	>73.7%	82.05%
	9V -2A	85.26%	86.23%	85.77%	85.02%	85.57%	>85%	>80.29%	82.91%
	12V-2A	86.84%	87.76%	87.42%	86.82%	87.21%	>86.2%	>82.09%	81.25%
	15V-3.25A	88.41%	88.10%	87.69%	86.86%	87.77%	>87.77%	>86.53%	85.72%
	20V-3.25A	89.66%	89.30%	88.80%	88.41%	89.04%	>88%	>87%	86.42%

研吉电子有限公司

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