Features

- Current source for LED lamp
- Adjustable constant current up to 400mA
- Suitable for high LED lamp
- Negative temperature coefficient

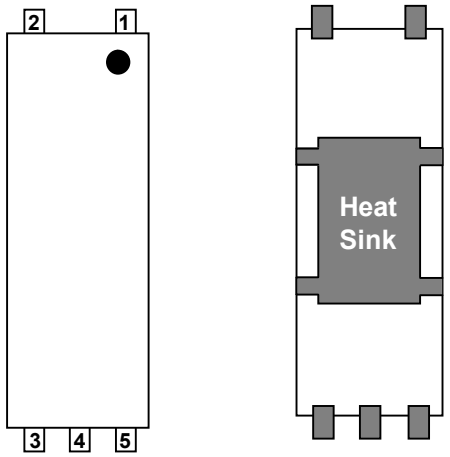
Applications

- MR16 type LED lamp
- Universal constant current source

General Description

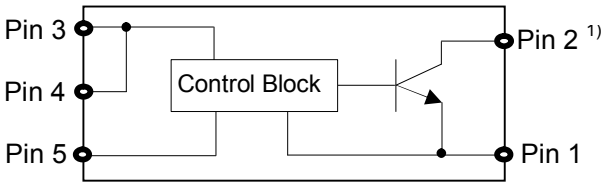
RLD1203 is a LED drive IC for driving LED lamp of operating current ranges from 100mA up to 400mA. The output current level is adjustable via an external current adjust resistor. The NTC (Negative Temperature Coefficient) characteristic of the control block ensures stable operation of LED lamps under over voltage and over temperature. RLD1203 offers the competitive solution for drive LED lamps with a robust long lifetime and cost effectiveness.

Package Type : P-6020G



[Top view] [Bottom view]

Schematic & PIN Configuration



1 : ADJ 2 : OUT 3,4 : Drain 5 : GND

1) Heat sink connected to pin 2

Absolute Maximum Ratings at T_A = 25 °C

Parameter	Symbol	Ratings	Unit
Drain Voltage	V_{DD}	16	V
Output Voltage	V_{OUT}	16	V
Output Current	I_{OUT}	400	mA
Power Dissipation*1)	P_D	2.0	W
Operating Temperature	T_{OP}	-40 ~ 85	°C
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-65 ~ 150	°C

*1) Output voltage and output current should be determined by considering the Power Dissipation Rating

Classification

V_{DD}, V_{OUT}=10V, R_{ADJ}=open, T_A= 25 °C

	Class A	Class B	Unit
V_{ADJ}	0.95 ~ 1.10	1.05 ~1.20	V

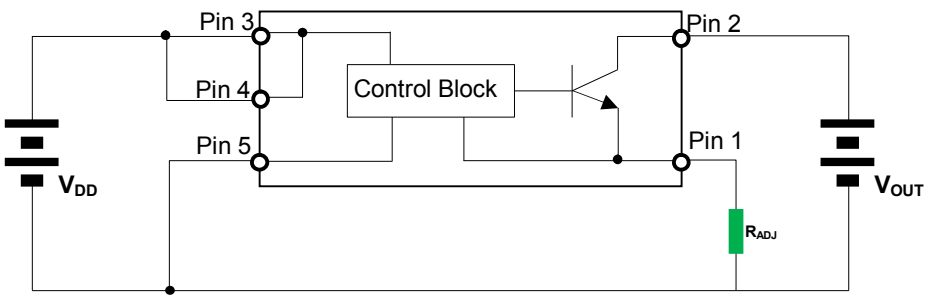
Electrical Characteristics

300mm² Heat sink*2), T_A= 25 °C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain Voltage	V_D		9		16	V
Output Current (Class A)	I_{OUT}	R_{ADJ} = 1.6 Ω, V_{DD}=10V, V_{OUT}=2.5V		400		mA
		R_{ADJ} = 2.2 Ω, V_{DD}=10V, V_{OUT}=2.5V		300		mA
		R_{ADJ} = 4.0 Ω, V_{DD}=10V, V_{OUT}=2.5V		200		mA
		R_{ADJ} = 8.2 Ω, V_{DD}=10V, V_{OUT}=2.5V		100		mA
Output Current (Class B)	I_{OUT}	R_{ADJ} = 1.8 Ω, V_{DD}=10V, V_{OUT}=2.5V		400		mA
		R_{ADJ} = 2.4 Ω, V_{DD}=10V, V_{OUT}=2.5V		300		mA
		R_{ADJ} = 4.4 Ω, V_{DD}=10V, V_{OUT}=2.5V		200		mA
		R_{ADJ} = 9.0 Ω, V_{DD}=10V, V_{OUT}=2.5V		100		mA

*2) Device mounted on 2oz copper heat sink on FR4

Test circuit

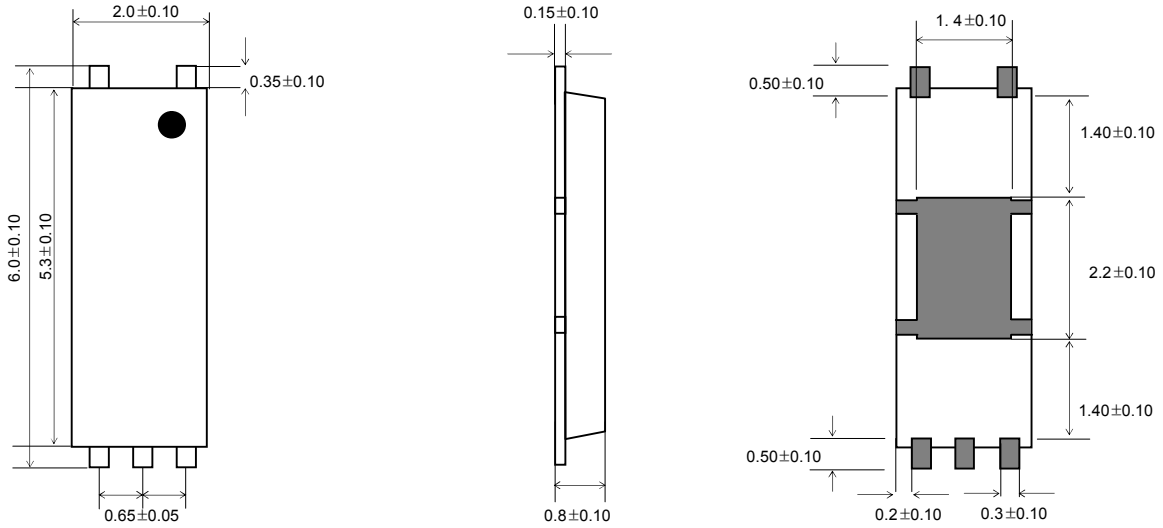


Marking Information

A : Classification

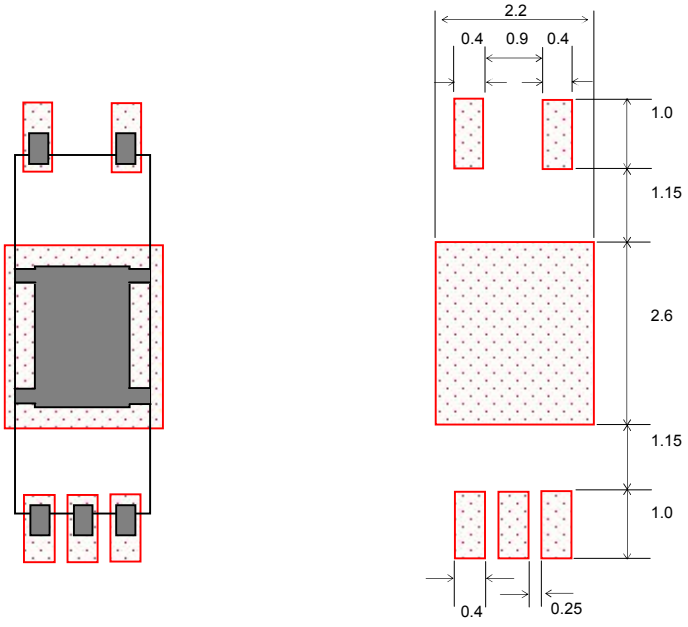
PKG Dimensions

Unit : mm



Land Pattern

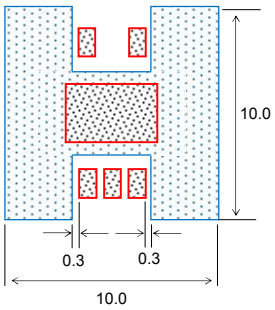
Unit : mm



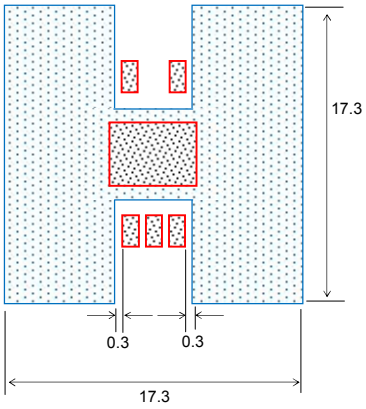
Heat sink Pattern

Unit : mm

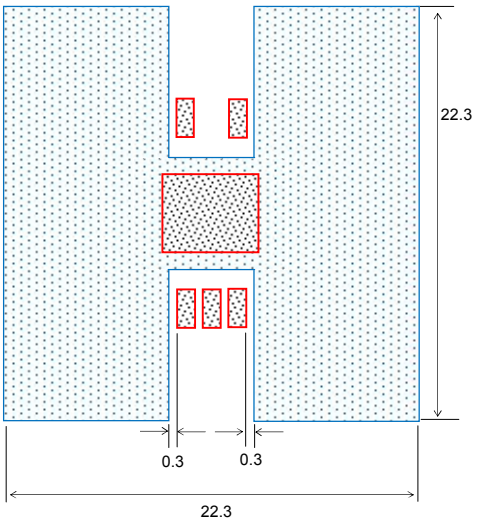
100mm^2 / Copper 2oz



300mm^2 / Copper 2oz

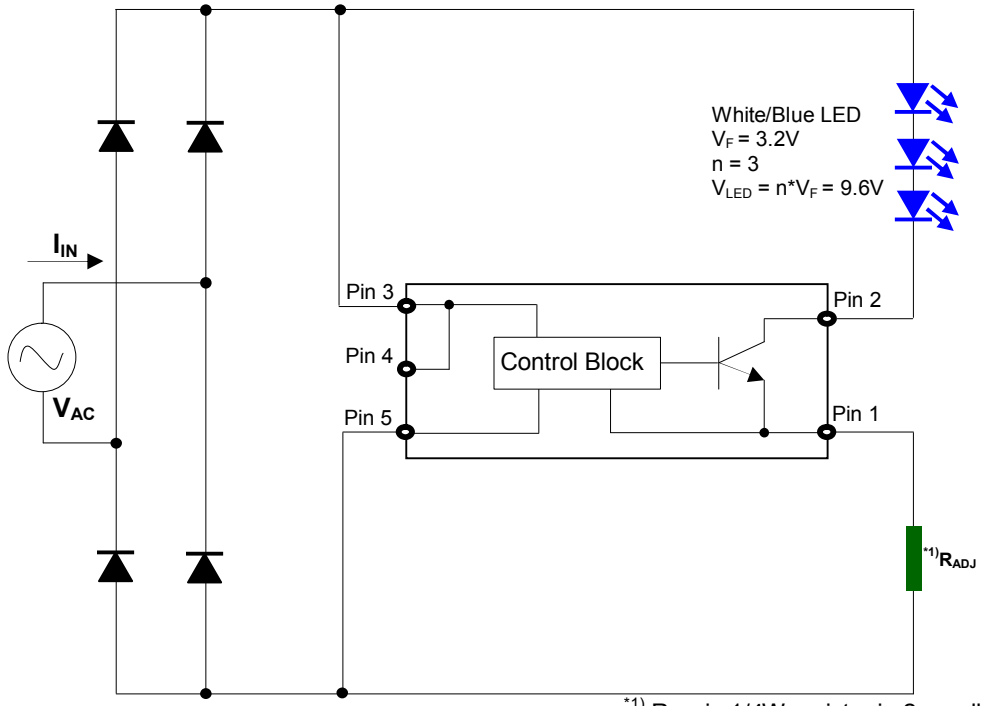


500mm^2 / Copper 2oz



Application note

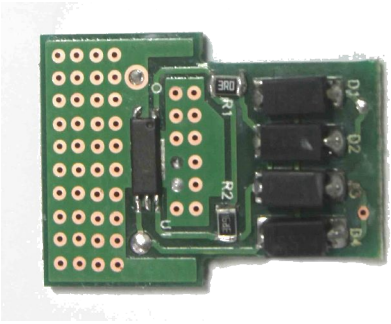
Application circuit



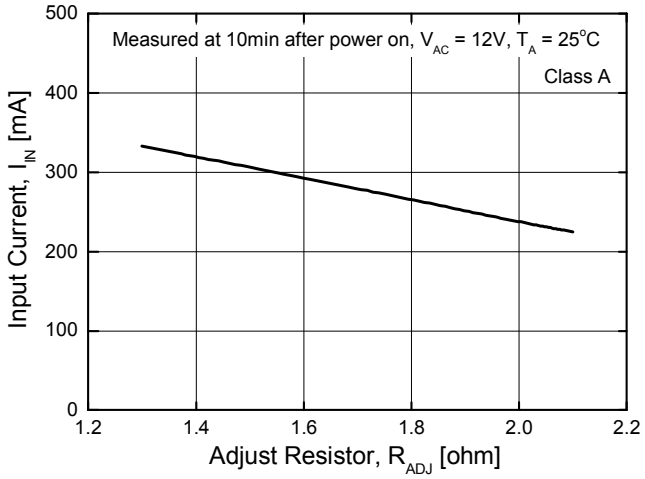
*1) R_{ADJ} is 1/4W resistor in 2 parallel connection

MR16 type lamp

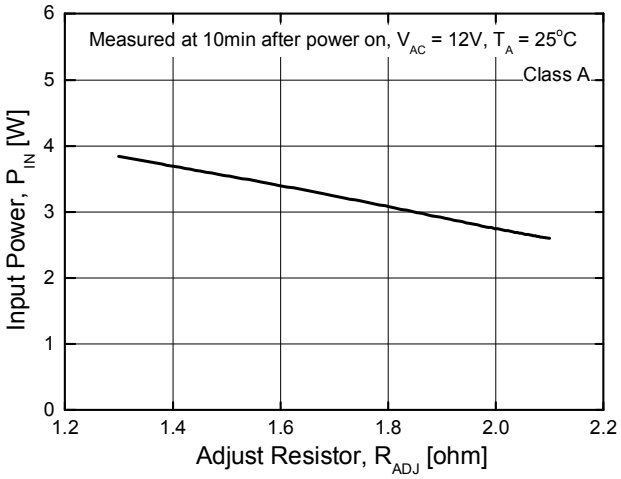
MR16 type PCB



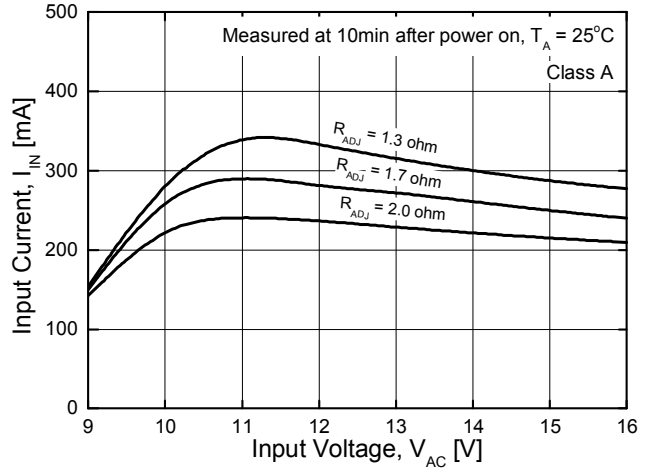
Input Current vs. Adjust Resistor



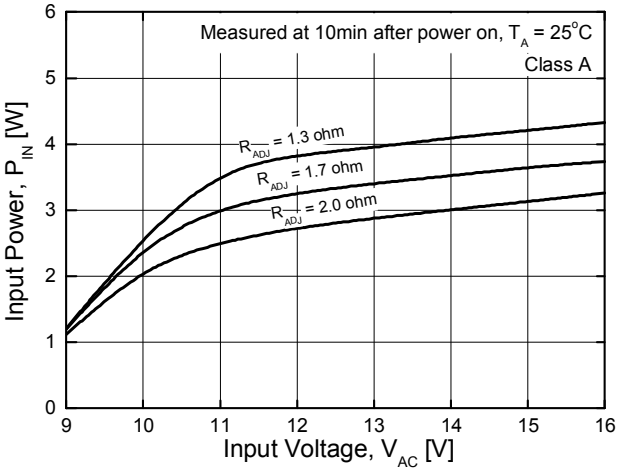
Input Power vs. Adjust Resistor



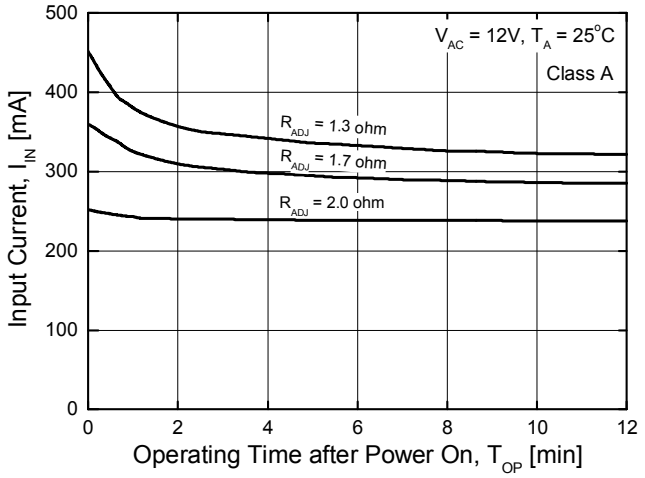
Input Current vs. Input Voltage



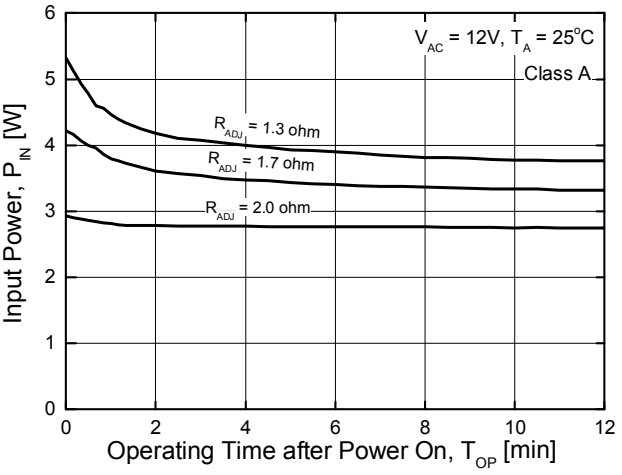
Input Power vs. Input Voltage



Input Current vs. Operating Time

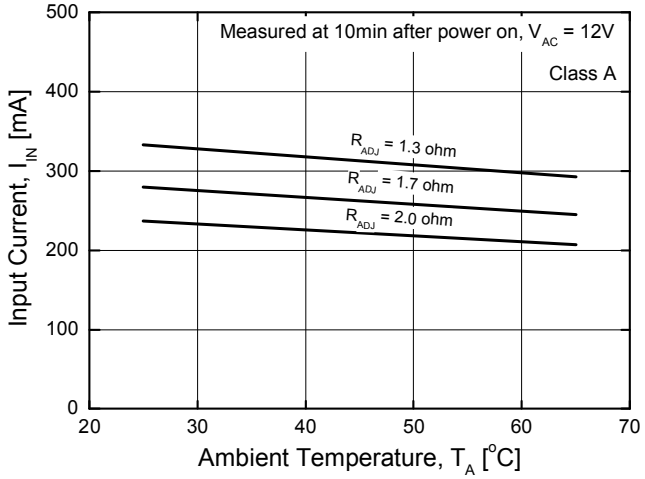


Input Power vs. Operating Time

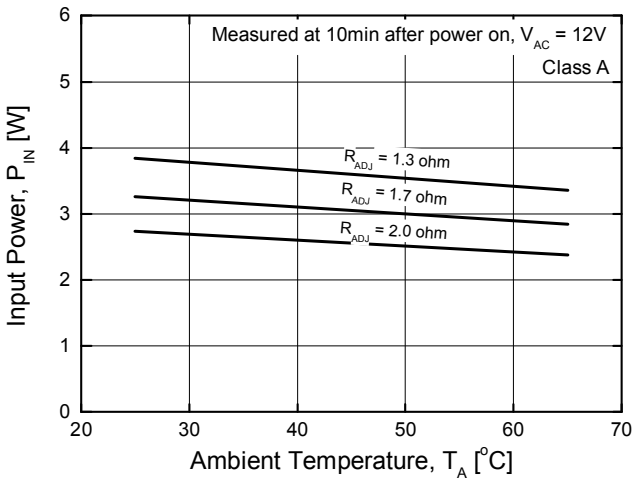


All graphs are measurement results of the application circuit.

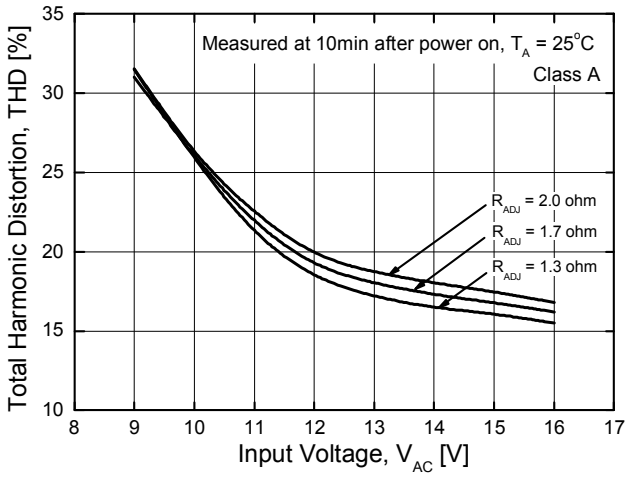
Input Current vs. Ambient Temperature



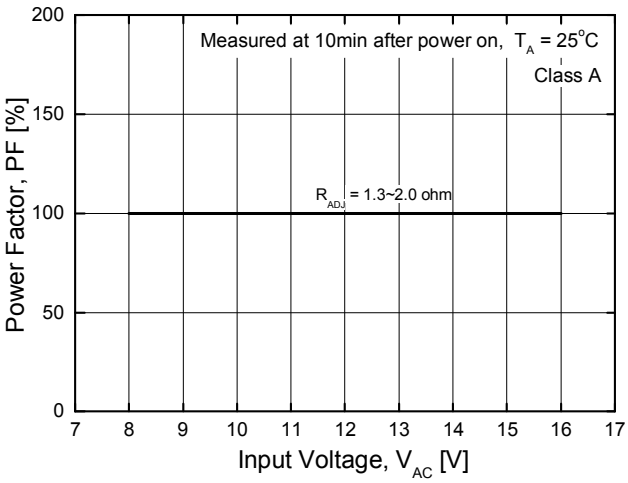
Input Power vs. Ambient Temperature



THD vs. Input Voltage



Power Factor vs. Input Voltage



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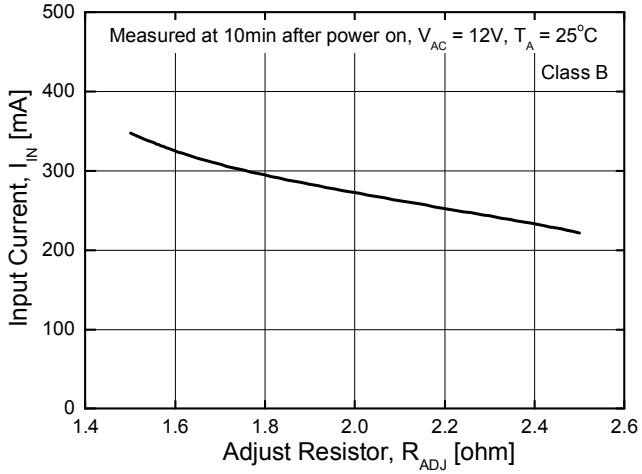
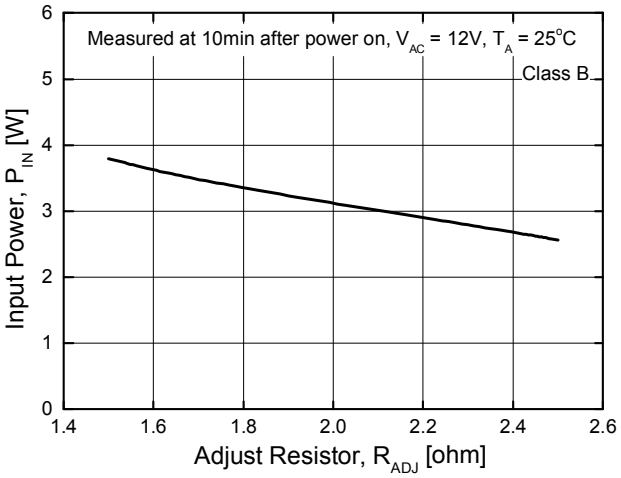
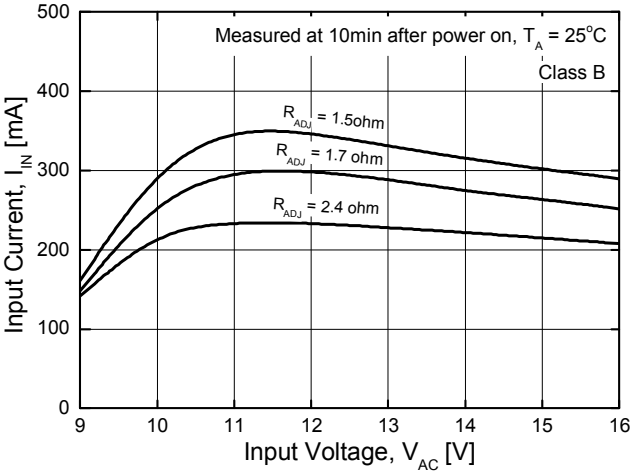
Input Current vs. Adjust Resistor



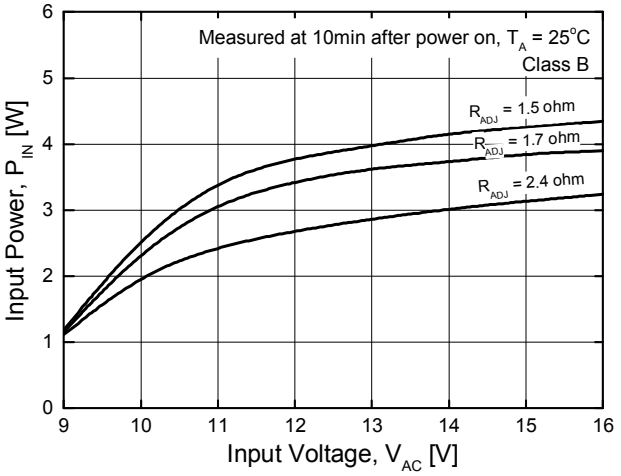
Input Power vs. Adjust Resistor



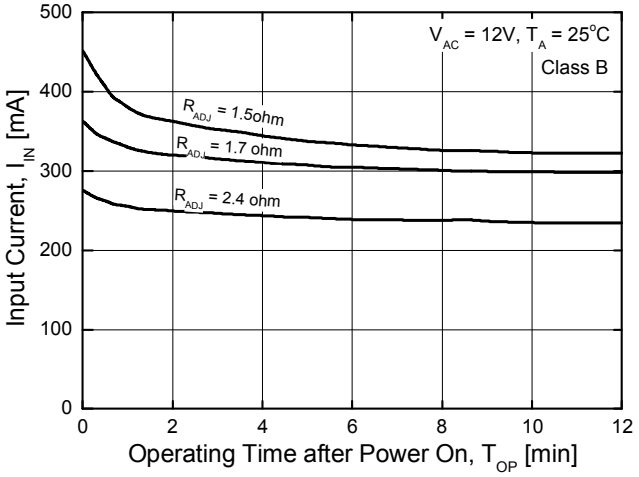
Input Current vs. Input Voltage



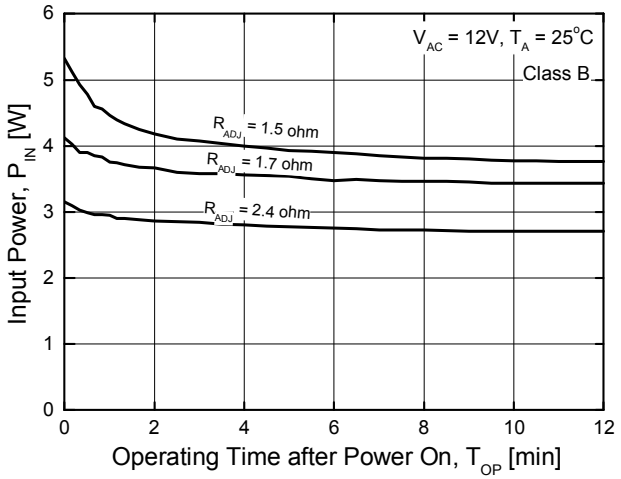
Input Power vs. Input Voltage



Input Current vs. Operating Time



Input Power vs. Operating Time



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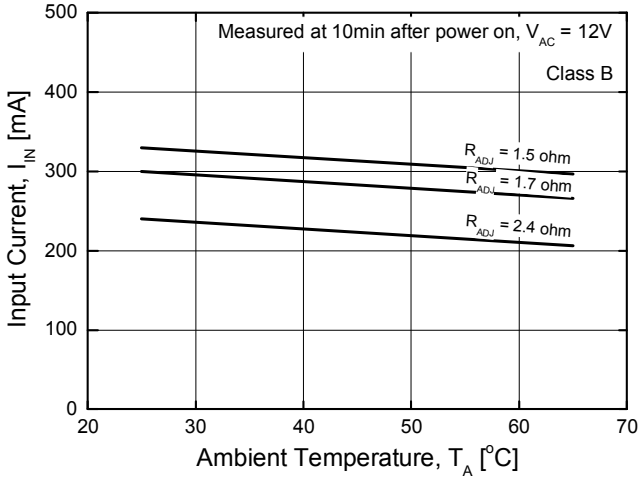
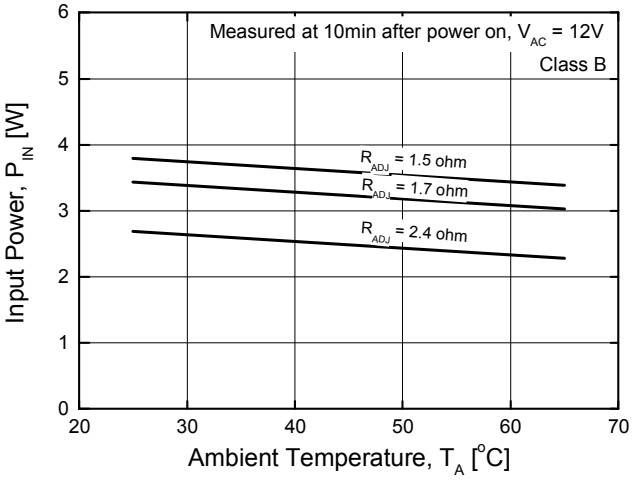
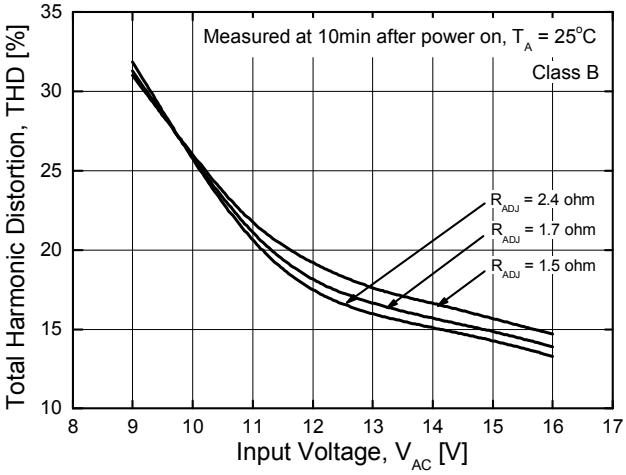
Input Current vs. Ambient Temperature



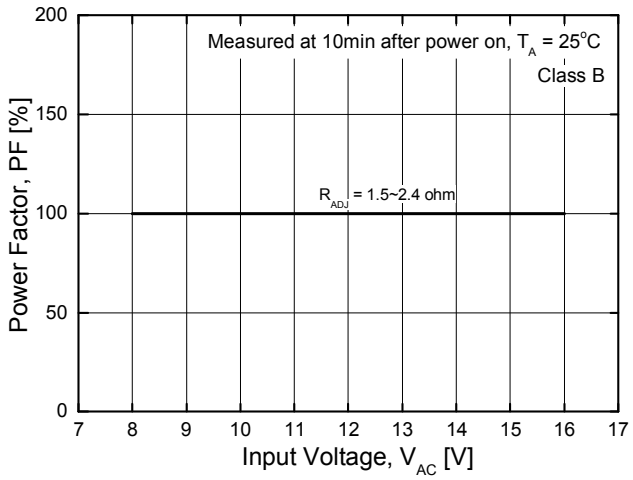
Input Power vs. Ambient Temperature



THD vs. Input Voltage



Power Factor vs. Input Voltage



All graphs are measurement results of the application circuit.

Power Derating vs. Ambient Temperature