RT9H301C/P/S

Adjustable Precision Shunt Regulator

DESCRIPTION

The RT9H301C/P/S is adjustable shunt regulator, which provides a highly accurate 1.0%. Output voltage can be set to any value between VREF and 36V with two external resistors.

FEATURE

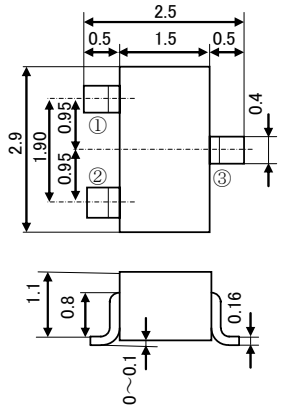
- Reference voltage:
  VREF=2.495V±1%(Ta=25℃)
- Adjustable output voltage:
  VREF to 36V
- Low output impedance:
  |ZKA|=0.2Ω(Typ.)
- Small package:
  SC-59,SC-62(SOT-89)

APPLICATION

- Source of reference voltage, such as a general electric device
- Secondary side control of a switching power supply

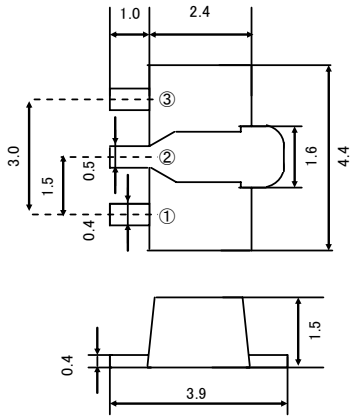
PIN CONFIGURATION［UNIT：mm］

RT9H301C



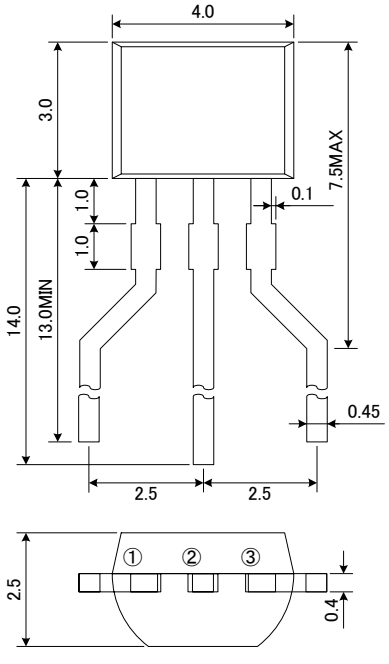
Outline : SC-59
①Reference voltage(VREF)
②Cathode(K)
③Anode(A)

RT9H301P



Outline : SC-62(SOT-89)
①Reference voltage(VREF)
②Anode(A)
③Cathode(K)

RT9H301S

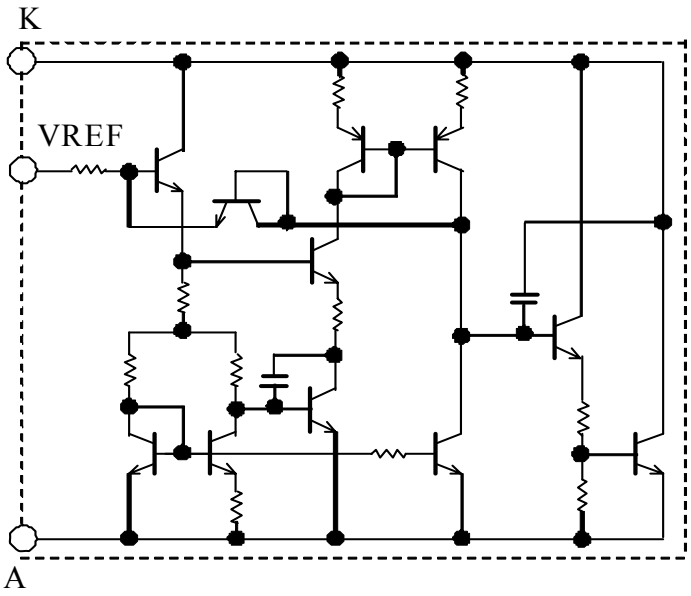


Outline : TO-92S
①Cathode(K)
②Anode(A)
③Reference voltage(VREF)

RT9H301C/P/S

Adjustable Precision Shunt Regulator

EQUIVALENT SCHEMATIC



ABSOLUTE MAXIMUM RATINGS (Ta=25℃, unless otherwise noted)

Symbol	Parameter	Ratings		Unit
V_{KA}	Cathode voltage	37		V
I_K	Cathode current	-100～100		mA
I_{REF}	Reference input current	-0.05～10		mA
T_{JOPT}	Operating junction temperature (Non condensing)	-40～+150		℃
T_{STG}	Storage temperature	-55～+150		℃
Pd	Power dissipation	SC-59	200	mW
		SC-62(SOT-89)	500	mW
		TO-92S	600	mW

RECOMMENDED OPERATING CONDITIONS (Ta=25℃, unless otherwise noted)

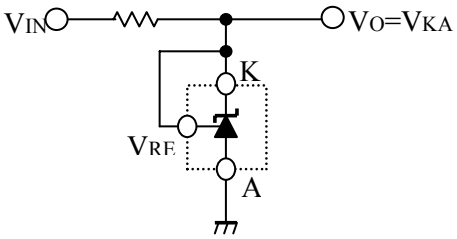
Symbol	Parameter	Limits		Unit
		Min.	Max.	
V_{KA}	Cathode voltage	V_{REF}	36	V
IK	Cathode current	1.0	100	mA

ELECTRICAL CHARACTERISTICS (Ta=25℃, unless otherwise noted)

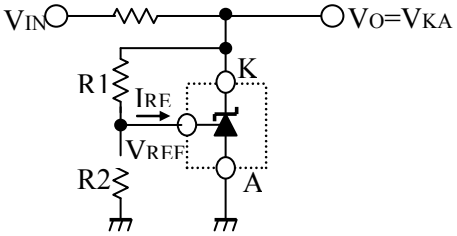
Symbol	Parameter	Test condition	Limits			Unit
			Min.	Typ.	Max.	
V_{REF}	Reference voltage	$V_{KA}=V_{REF}$, I_K=10mA	2.470	2.495	2.520	V
$\Delta V_{REF}/\Delta Ta$	Deviation of reference input voltage over temperature	$V_{KA}=V_{REF}$, I_K=10mA, Ta=-20～85℃	-	-	30	mV
$\Delta V_{REF}/\Delta V_K$	Ratio of VREF change in cathode voltage change	$\Delta V_{KA}=V_{REF}$～10V, I_K=10mA	-2.7	-1.4	-	mV/V
		ΔV_{KA}=10V～36V, I_K=10mA	-2	-1	-	mV/V
I_{REF}	Reference input current	IK=10mA,R1=10K, R2=∞	-	-	4	uA
$\Delta I_{REF}/\Delta Ta$	Deviation of reference input current over temperature	I_K=10mA,R1=10K, R2=∞, Ta=-20～85℃	-	-	2.5	uA
I_{kmin}	Minimum cathode current for regulation	$V_{KA}=V_{REF}$	-	0.3	0.6	mA
I_{OFF}	Off-state cathode current	V_{KA}=36V, V_{REF}=0V	-	0.1	1.0	uA
$\|Z_{KA}\|$	Dynamic impedance	$V_{KA}=V_{REF}$,I_K=1～100mA, f<1.0KHz	-	0.2	0.5	Ω

PARAMETER MEASUREMENT INFORMATION

(1)$V_{KA}=V_{REF}$

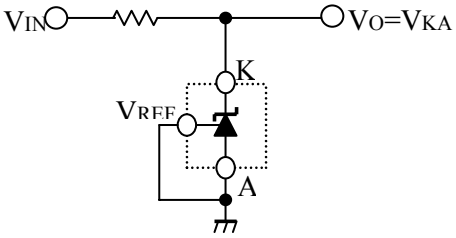


(2)$V_{KA}>V_{REF}$



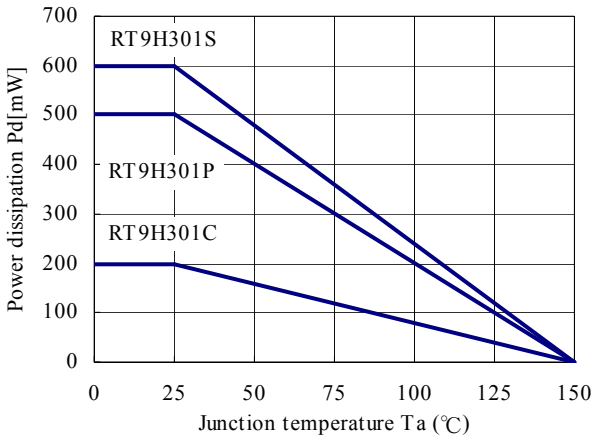
VO=(1+R1/R2)・VREF

(3)I_{OFF}

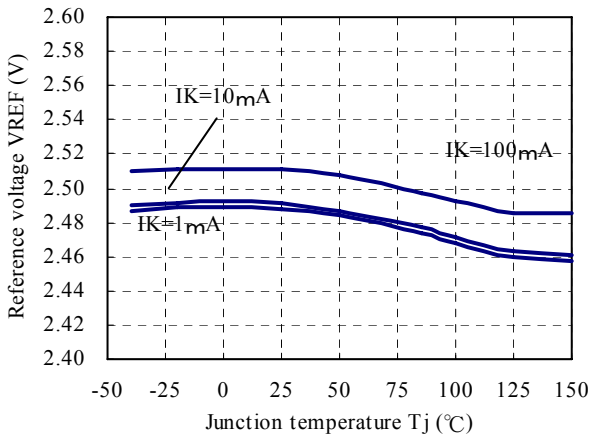


<TYPICAL CHARACTERISTICS>

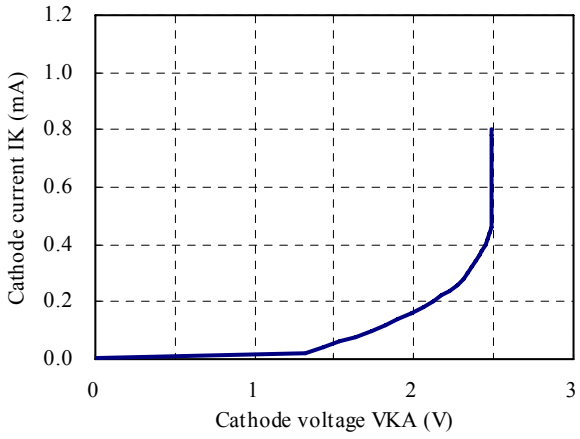
Pd-Ta



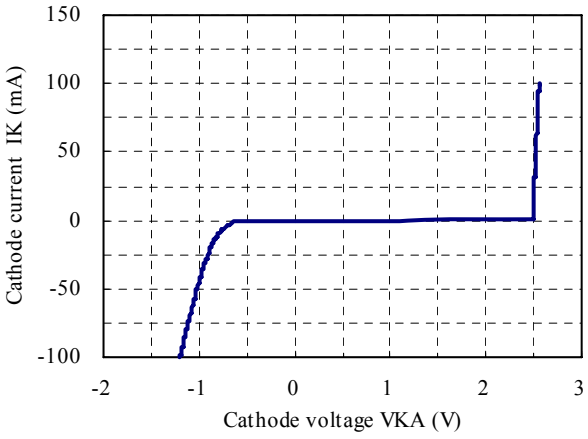
VREF-Tj



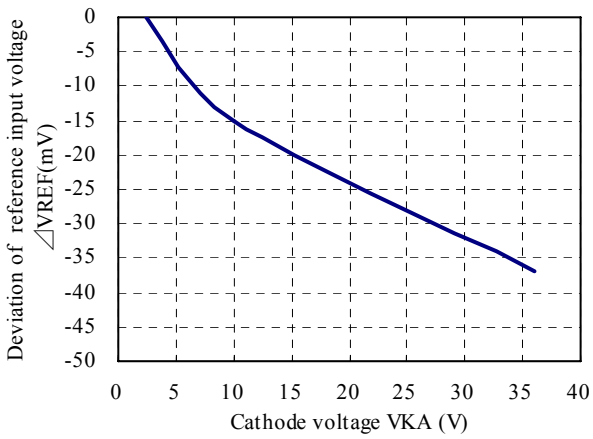
IK-VKA（1）



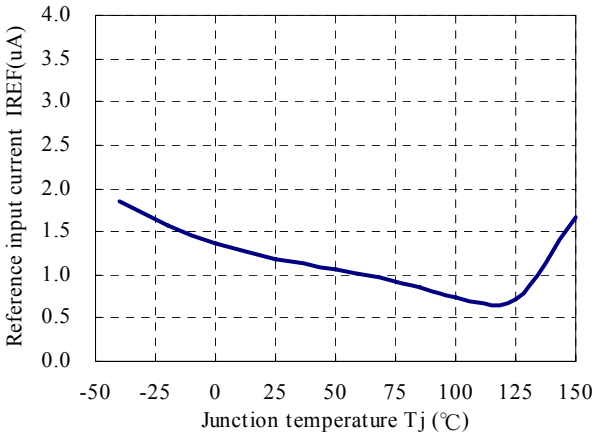
IK-VKA（2）



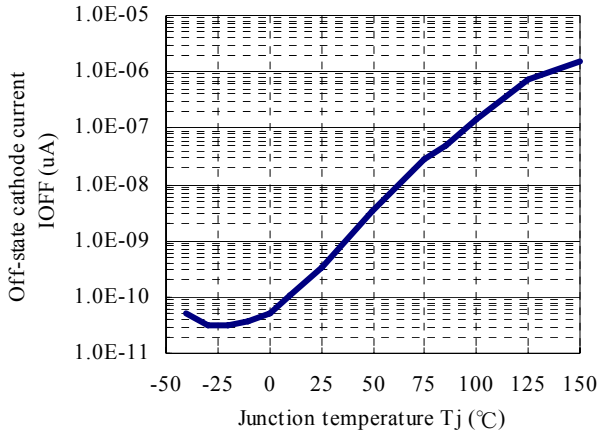
⊿VREF-VKA



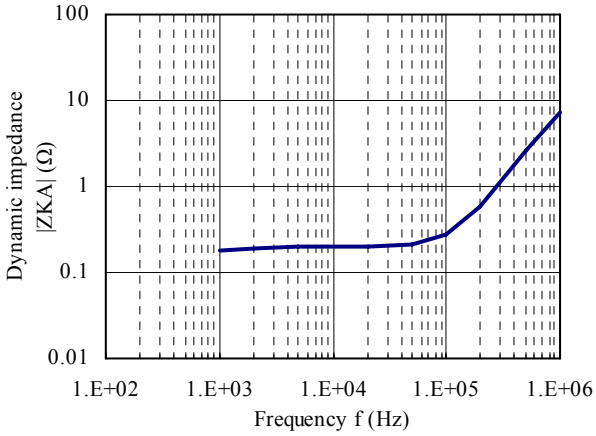
IREF-Tj



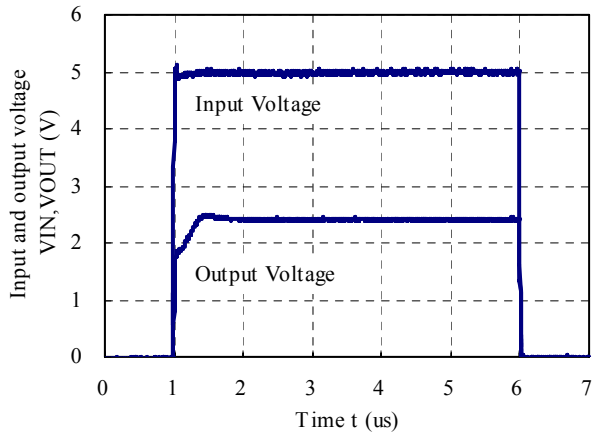
IOFF-Tj



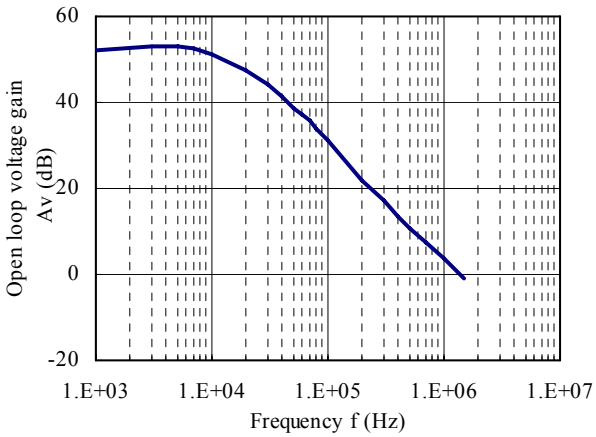
|ZKA|-f



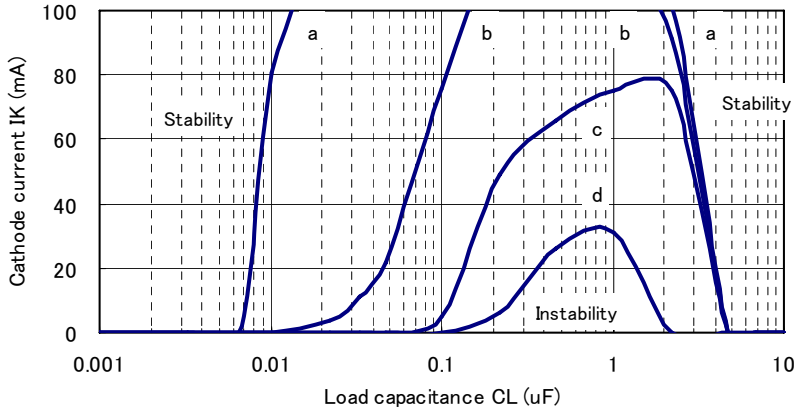
Pulse response



Av-f



Stability boundary conditions



a:VKA=VREF
b:VKA=5V
c:VKA=10V
d:VKA=15V
Cathode voltage temperature Ta=25□
IKA=10mA CL=:Ceramic capacitor

ISAHAYA ELECTRONICS CORPORATION

Keep safety first in your circuit designs!

·ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary, (2) use of non-farmable material or (3) prevention against any malfunction or mishap.

Notes regarding these materials

·These materials are intended as a reference to our customers in the selection of the ISAHAYA products best suited to the customer’ s application; they don't convey any license under any intellectual property rights, or any other rights, belonging ISAHAYA or third party.

·ISAHAYA Electronics Corporation assumes no responsibility for any damage, or infringement of any third party's rights, originating in the use of any product data, diagrams, charts or circuit application examples contained in these materials.

·All information contained in these materials, including product data, diagrams and charts, represent information on products at the time of publication of these materials, and are subject to change by ISAHAYA Electronics Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor for the latest product information before purchasing product listed herein.

·ISAHAYA Electronics Corporation products are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.

·The prior written approval of ISAHAYA Electronics Corporation is necessary to reprint or reproduce in whole or in part these materials.

·If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination. Any diversion or re-export contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.

·Please contact ISAHAYA Electronics Corporation or authorized ISAHAYA products distributor for further details on these materials or the products contained therein.