

# RT9H321C

## Adjustable Precision Shunt Regulator

### DESCRIPTION

The RT9H321C 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.

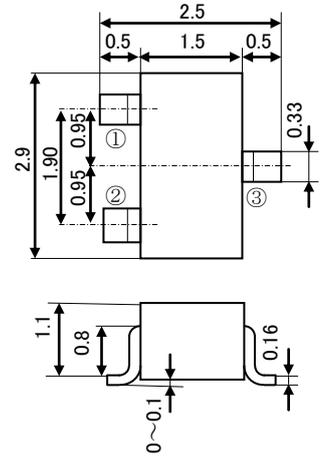
### FEATURE

- Reference voltage :  $V_{REF}=1.250V\pm 1\%$  ( $T_a=25^\circ C$ )
- Adjustable output voltage : VREF to 36V
- Low output impedance :  $|Z_{KA}|=0.25\Omega$  (Typ.)
- Small package : SC-59

### APPLICATION

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

### PIN CONFIGURATION [UNIT:mm]



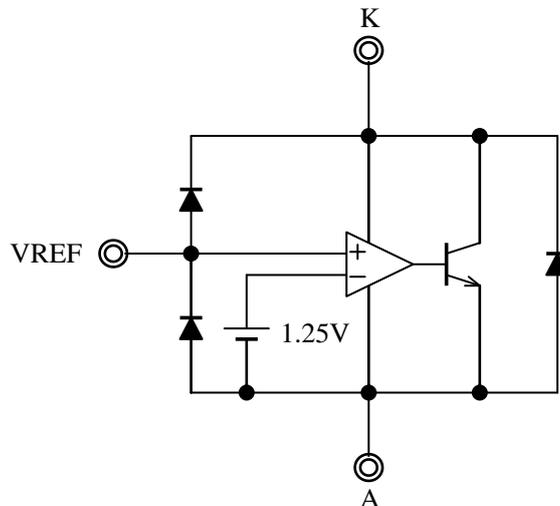
Outline : SC-59

①Reference voltage(VREF)

②Cathode(K)

③Anode(A)

### BLOCK DIAGRAM



**RT9H321C****Adjustable Precision Shunt Regulator**

## ABSOLUTE MAXIMUM RATINGS ( Ta=25°C, unless otherwise noted )

Symbol	Parameter	Ratings	Unit
V <sub>KA</sub>	Cathode voltage	37	V
I <sub>K</sub>	Cathode current	-80~80	mA
I <sub>REF</sub>	Reference input current	-0.05~10	mA
T <sub>jOPT</sub>	Operating junction temperature ( Non condensing )	-40~+150	°C
T <sub>STG</sub>	Storage temperature	-55~+150	°C
P <sub>d</sub>	Power dissipation	200	mW

## RECOMMENDED OPERATING CONDITIONS ( Ta=25°C, unless otherwise noted )

Symbol	Parameter	Limits		Unit
		Min.	Max.	
V <sub>KA</sub>	Cathode voltage	V <sub>REF</sub>	36	V
I <sub>K</sub>	Cathode current	0.2	80	mA

## ELECTRICAL CHARACTERISTICS ( Ta=25°C, unless otherwise noted )

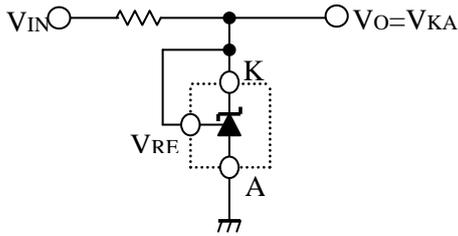
Symbol	Parameter	Test condition	Limits			Unit
			Min.	Typ.	Max.	
V <sub>REF</sub>	Reference voltage	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>K</sub> =1mA	1.237	1.250	1.236	V
ΔV <sub>REF</sub> /ΔT <sub>a</sub>	Deviation of reference input voltage over temperature	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>K</sub> =1mA, T <sub>a</sub> =-20~85°C	-	-	30	mV
ΔV <sub>REF</sub> /ΔV <sub>K</sub>	Ratio of V <sub>REF</sub> change in cathode voltage change	ΔV <sub>KA</sub> =V <sub>REF</sub> ~5V, I <sub>K</sub> =1mA	-2.7	-1.4	-	mV/V
		ΔV <sub>KA</sub> =5V~36V, I <sub>K</sub> =1mA	-2	-1	-	mV/V
I <sub>REF</sub>	Reference input current	I <sub>K</sub> =10mA, R1=10K, R2=∞	-	0.2	0.5	uA
ΔI <sub>REF</sub> /ΔT <sub>a</sub>	Deviation of reference input current over temperature	I <sub>K</sub> =10mA, R1=10K, R2=∞, T <sub>a</sub> =-20~85°C	-	0.1	0.5	uA
I <sub>kmin</sub>	Minimum cathode current for regulation	V <sub>KA</sub> =V <sub>REF</sub>	-	0.08	0.20	mA
I <sub>OFF</sub>	Off-state cathode current	V <sub>KA</sub> =28V, V <sub>REF</sub> =0V	-	0.1	1.0	uA
Z <sub>KA</sub>	Dynamic impedance	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>K</sub> =0.5~80mA, f<1.0KHz	-	0.25	0.50	Ω

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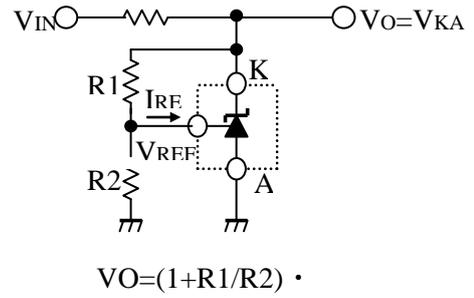
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### PARAMETER MEASUREMENT INFORMATION

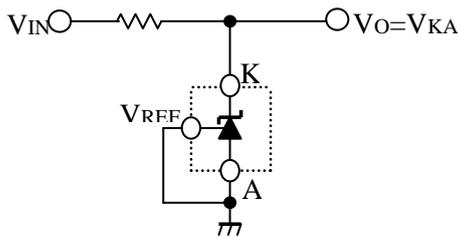
(1)  $V_{KA} = V_{REF}$



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



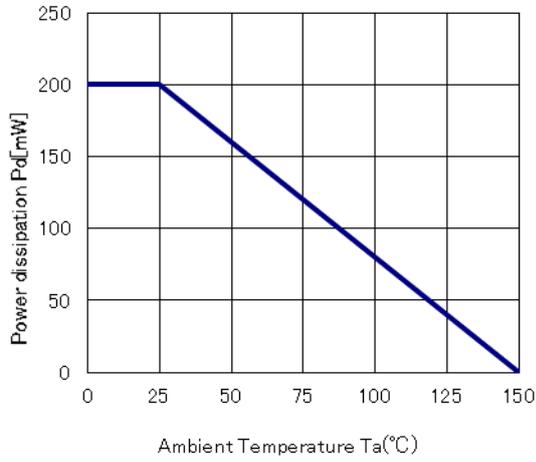
(3)  $I_{OFF}$



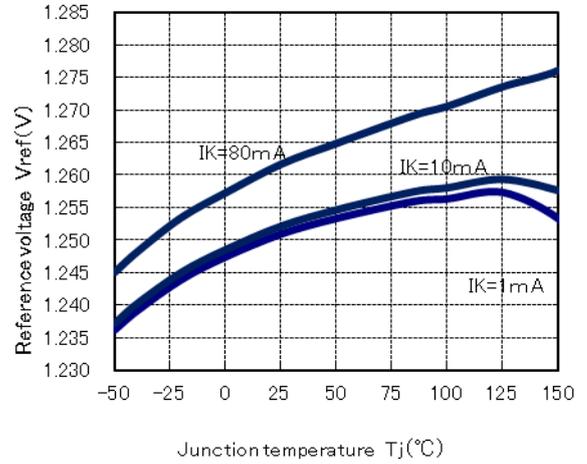
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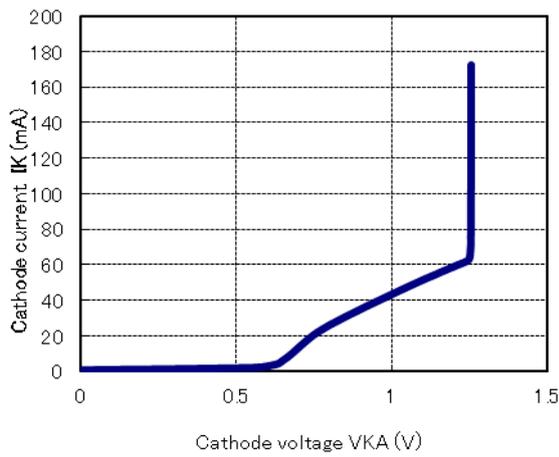
Pd-Ta



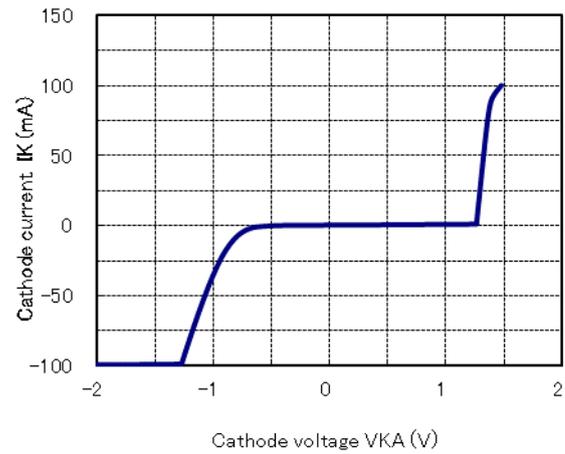
VREF-Tj



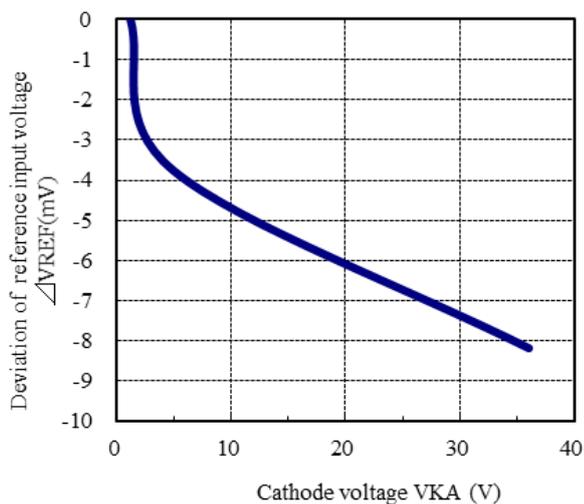
IK-VKA (1)



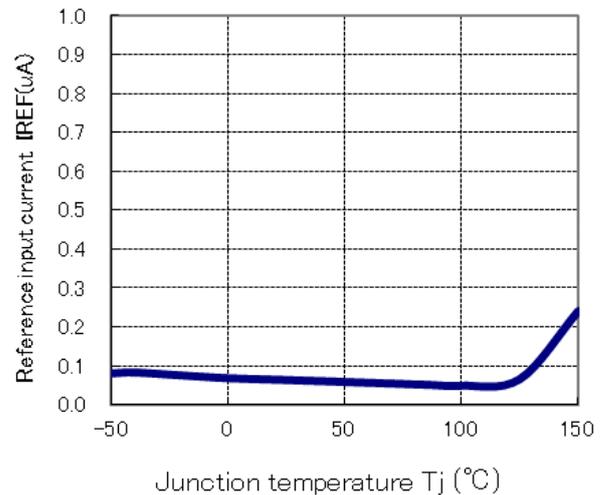
IK-VKA (2)



$\Delta V_{REF}$ -VKA

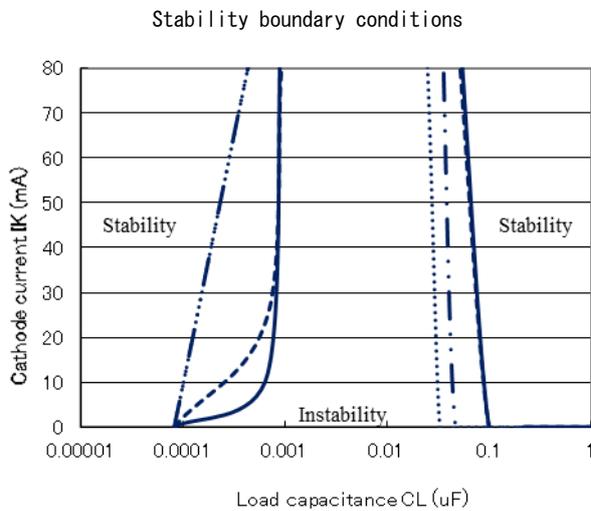
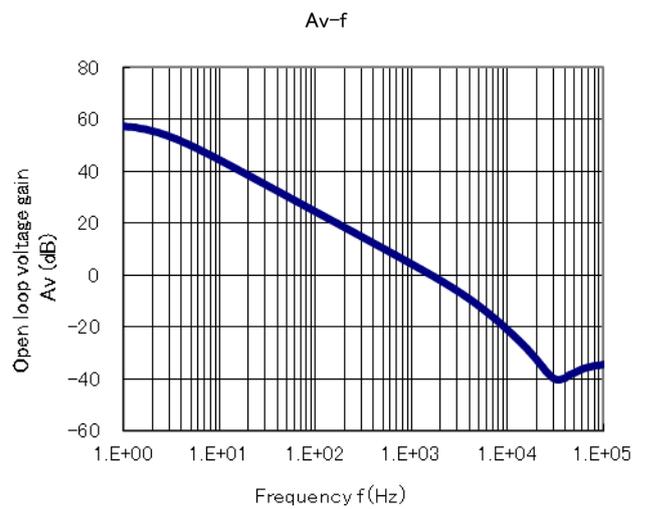
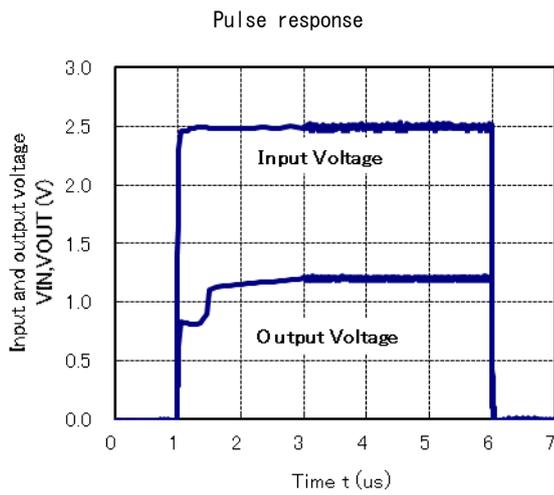
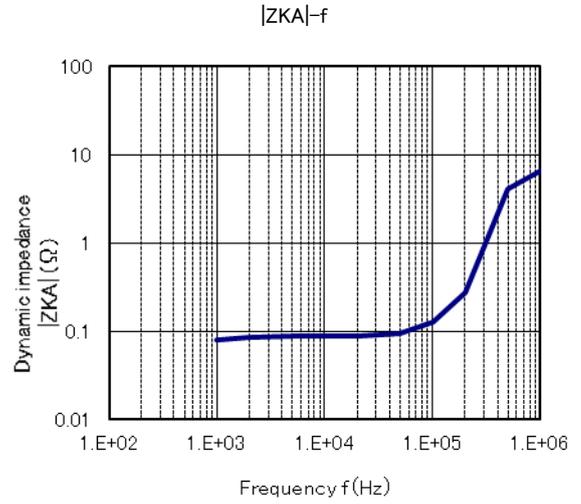
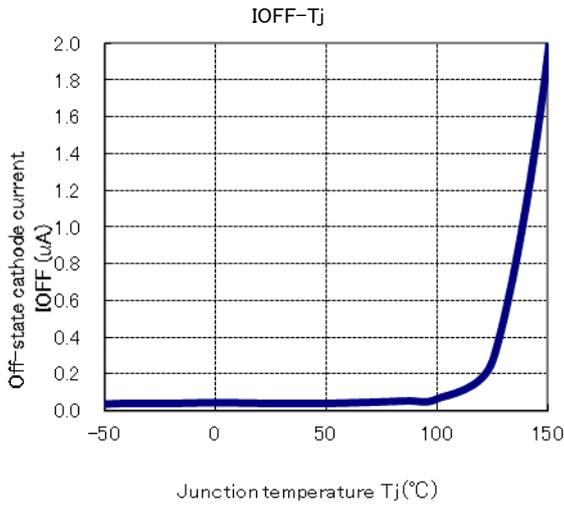


IREF-Tj



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A: VKA=VREF  
B: VKA=2.5V  
C: VKA=5V  
D: VKA=10V  
Cathode voltage temperature Ta=25°C  
IKA=10mA CL=:Ceramic capacitor

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**Keep safety first in your circuit designs!**

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