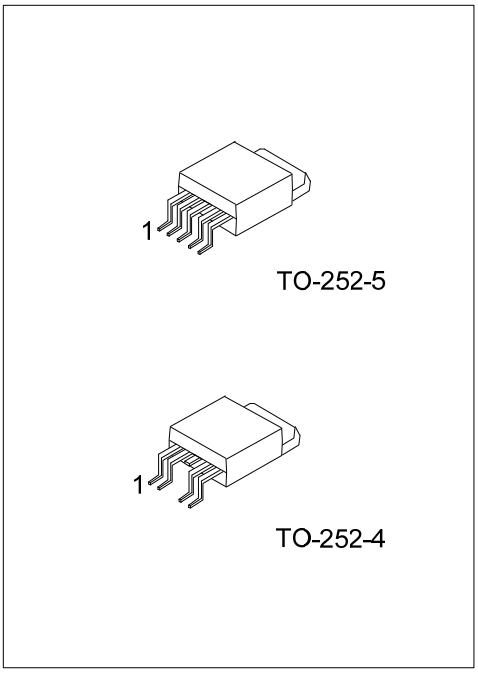
R200LD10

LINEAR INTEGRATED CIRCUIT

VOLTAGE REGULATOR



Lead-free: R200LD10L
Halogen-free: R200LD10G

■ DESCRIPTION

The UTC **R200LD10** shows a high current, high accuracy, low-dropout voltage. The features are: low dropout voltage, very low ground current. Cause the series have been designed for high current loads, so they are also used in lower current, extremely low dropout-critical systems (in which their tiny dropout voltage and ground current values are important attributes).

■ FEATURES

* Built-in ON/OFF function,
* Over current protection function,
* ASO protection function
* Overheat protection function
* 0.3A / 3.3V(R1=2KΩ)
  Output low dropout voltage regulator

■ ORDERING INFORMATION

Ordering Number			Package	Packing
Normal	Lead Free	Halogen Free		
R200LD10-TN4-R	R200LD10L-TN4-R	R200LD10G-TN4-R	TO-252-4	Tape Reel
R200LD10-TN4-T	R200LD10L-TN4-T	R200LD10G-TN4-T	TO-252-4	Tube
R200LD10-TN5-R	R200LD10L-TN5-R	R200LD10G-TN5-R	TO-252-5	Tape Reel
R200LD10-TN5-T	R200LD10L-TN5-T	R200LD10G-TN5-T	TO-252-5	Tube

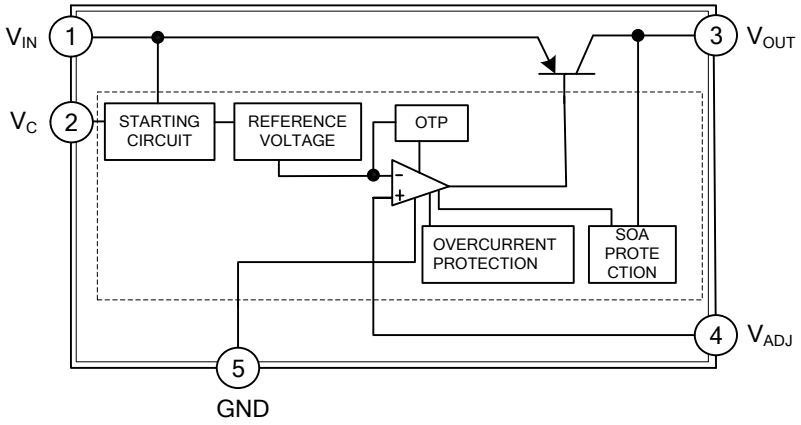
R200LD10L-TN4-R
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel, T: Tube
(2) TN4: TO-252-4, TN5: TO-252-5
(3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn

■ PIN DESCRIPTIONS

PIN NO.	PIN NAME	PIN FUNCTION
1	V_{IN}	DC Input Voltage.
2	V_C	On/Off Control
3	V_{OUT}	DC Output Voltage.
4	V_{ADJ}	Output Voltage Adjustment
5	GND	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage (Note 2)	V_{IN}	24	V
ON/OFF Control Terminal Voltage (Note 2)	V_C	24	V
Output Adjustment Pin Voltage (Note 2)	V_{ADJ}	5	V
Output Current	I_{OUT}	1	A
Power Dissipation (with infinite heat sink)	P_D	8	W
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C

Note: 1.Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2.All are open except GND and applicable terminals.

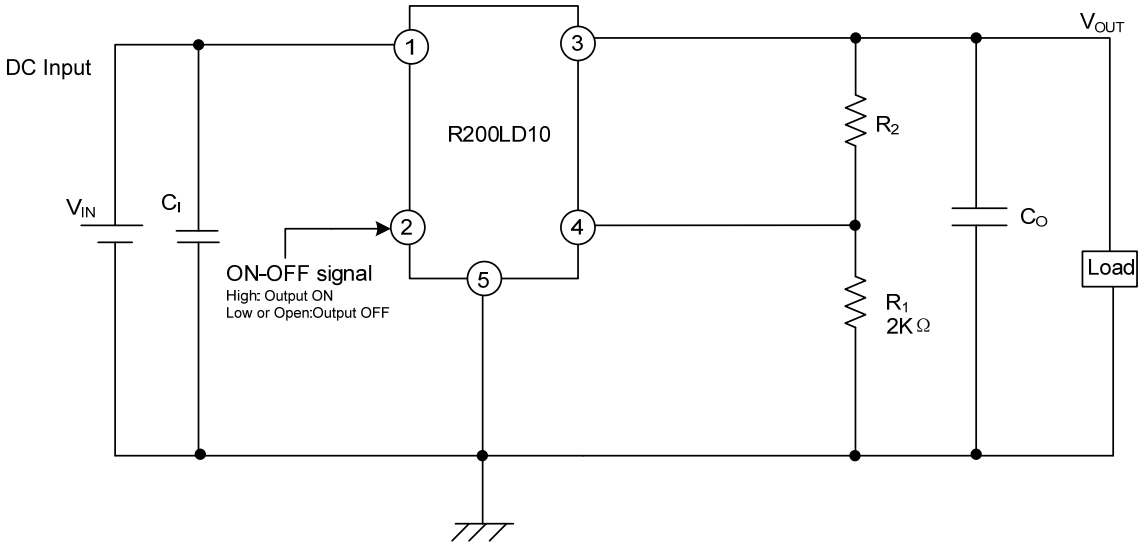
■ ELECTRICAL CHARACTERISTICS

(V_{IN}=5V, V_{OUT}=3.3 V(R_1=2kΩ), I_{OUT}=0.3A, V_C=2.7V, T_J=25°C, C_I=0.33μF, C_O=10μF, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	V_{IN}		3.5		24	V
Output Voltage	V_{OUT}		3.0		20	V
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	I_{OUT} = 5mA~ 1A			1.0	%
Line Regulation	$\Delta V_{OUT}/\Delta V_{IN}$	V_{IN} = 4~ 10V, I_{OUT}=5mA			1.0	
Ripple Rejection	RR	Refer to Fig 3		60		dB
Dropout Voltage	V_D	V_{IN}=3.5V			0.5	V
Reference Voltage	V_{REF}		2.583	2.65	2.717	
Temperature Coefficient of Reference Voltage	T_CV_{REF}	T_J =0 ~ 125°C, I_{OUT} = 5mA		±1.0		%
On-State Voltage for Control	$V_{C(ON)}$	(Note)	2.0			V
On-State Current for Control	$I_{C(ON)}$				200	μA
On-State Voltage for Control	$V_{C(OFF)}$	I_{OUT}=0A			0.8	V
On-State Current for Control	$I_{C(OFF)}$	I_{OUT}=0A,V_C=0.4V			-2	μA
Quiescent Current	I_Q	I_{OUT}=0A			8	mA
Output Off-State Consumption Current	I_{QS}	V_C=0.4V			5	μA

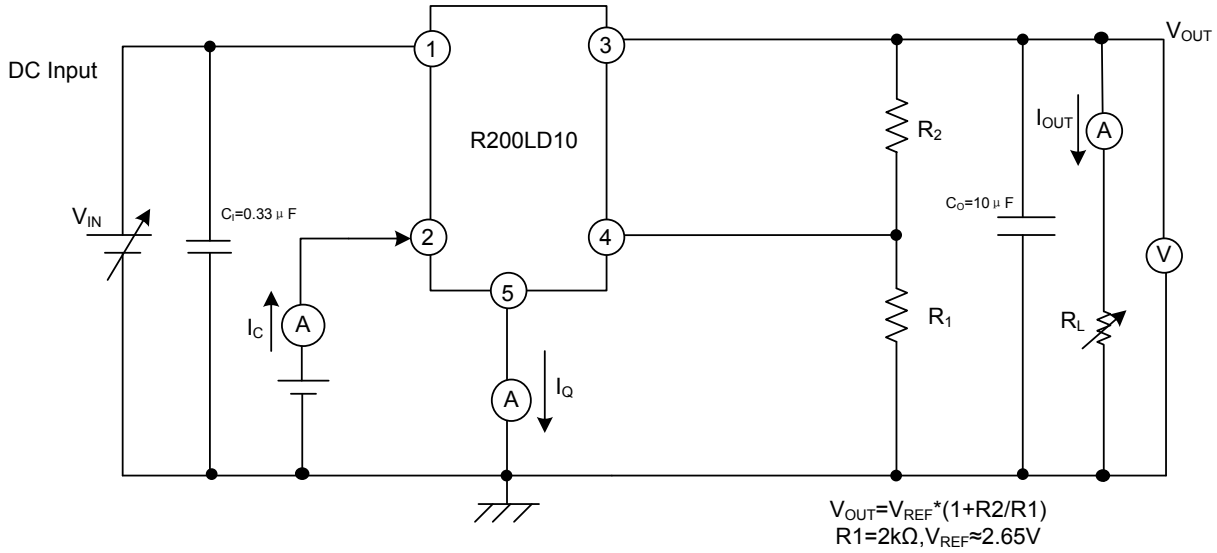
Note: In case of V_C pin, output voltage turns OFF.

■ TYPICAL APPLICATION CIRCUIT



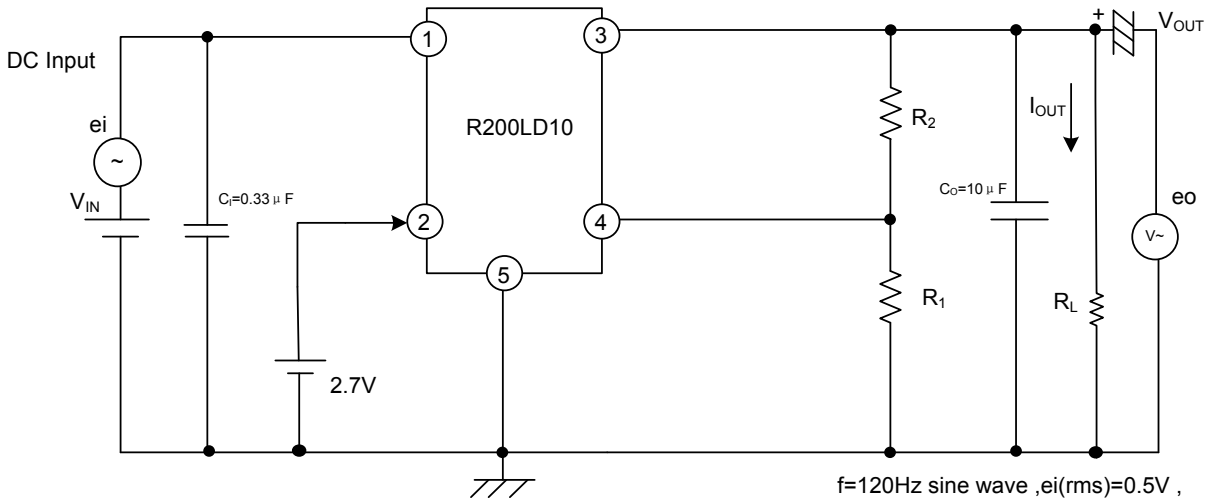
■ TEST CIRCUIT

For Standard Measuring Circuit of Regulation Portion



$V_{OUT}=V_{REF}*(1+R2/R1)$
$R1=2k\Omega, V_{REF}\approx 2.65V$

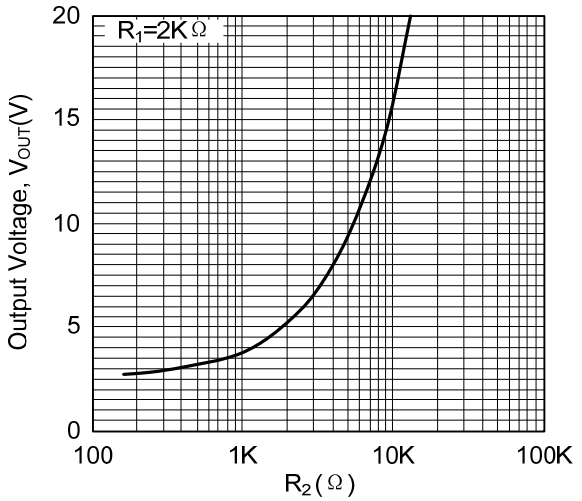
For Standard Measuring Circuit of Ripple Rejection Critical Rate



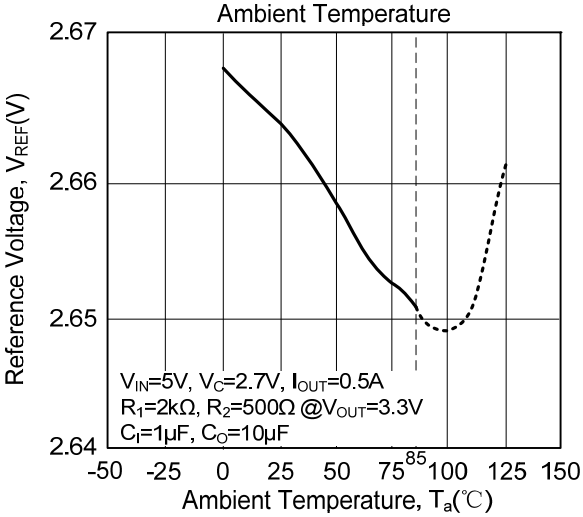
f=120Hz sine wave ,ei(rms)=0.5V ,
$V_{IN}=5V, V_{OUT}=3.3V(R1=2k\Omega)$
$I_{OUT}=0.3A$, RR=20log{ei(rms)/eo(rms)}

■ TYPICAL CHARACTERISTICS

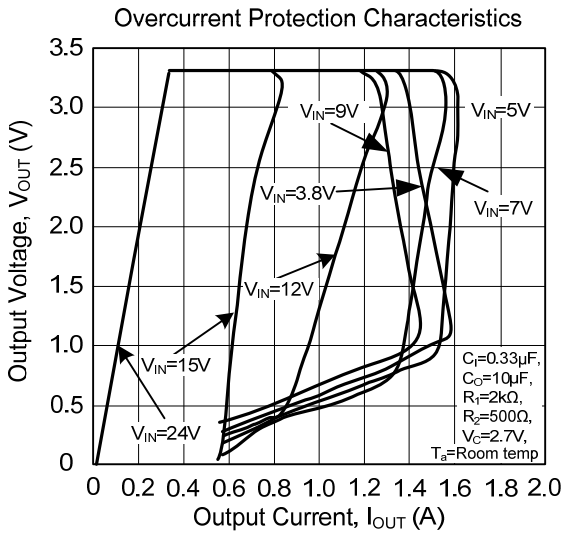
Output Voltage Adjustment Characteristics



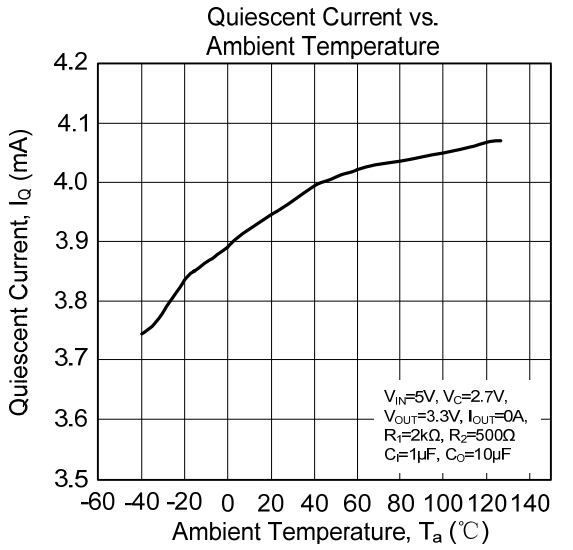
Reference Voltage vs. Ambient Temperature



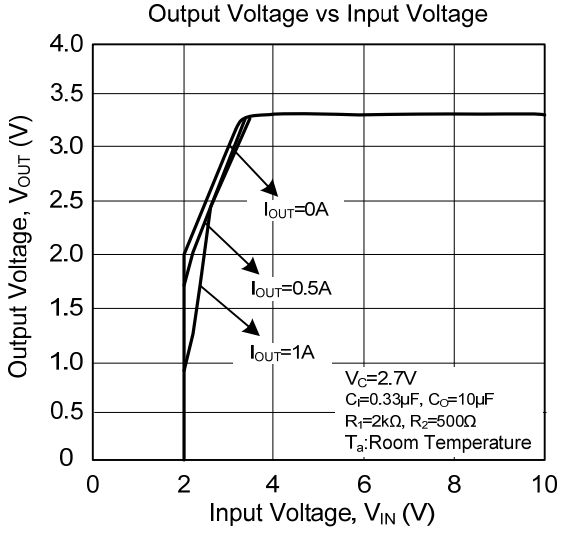
Overcurrent Protection Characteristics



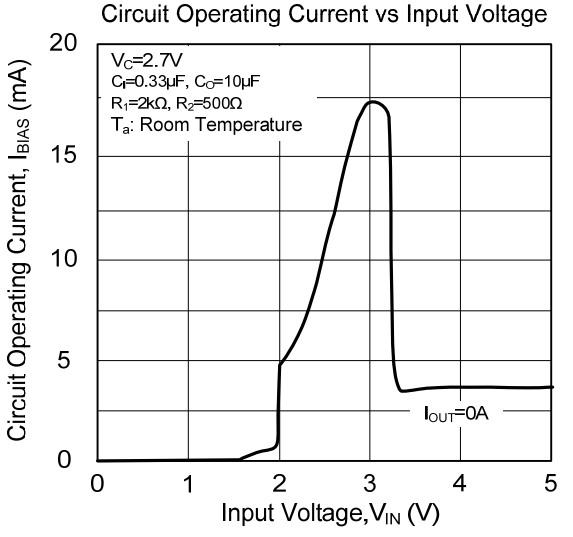
Quiescent Current vs. Ambient Temperature



Output Voltage vs Input Voltage

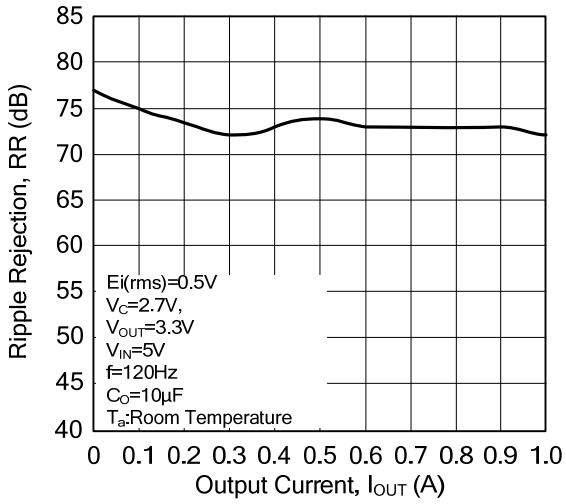


Circuit Operating Current vs Input Voltage

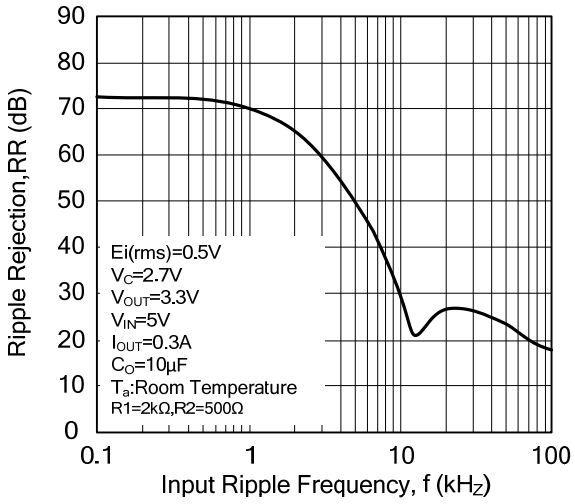


■ TYPICAL CHARACTERISTICS(Cont.)

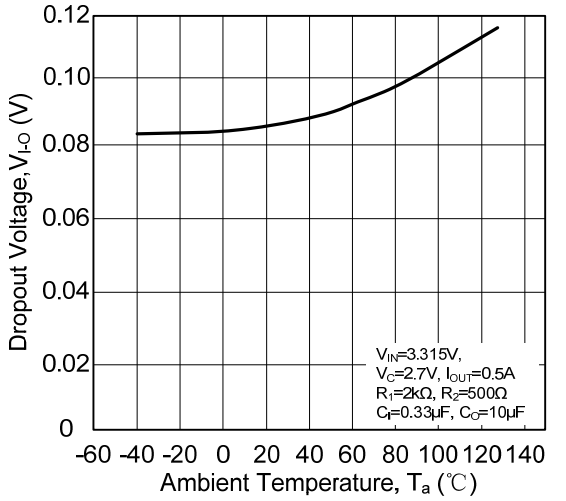
Ripple Rejection vs Output Current



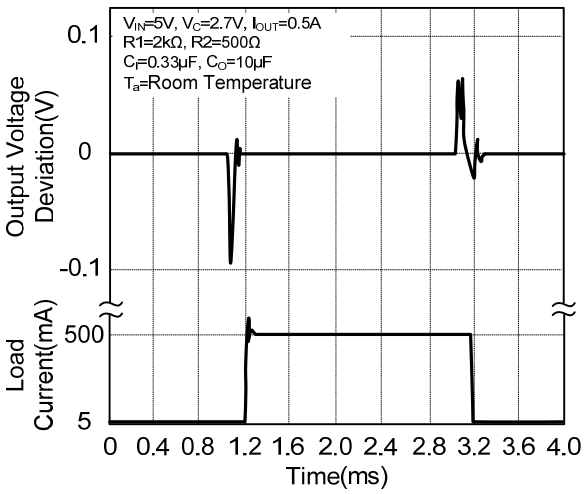
Ripple Rejection vs Input Ripple Frequency



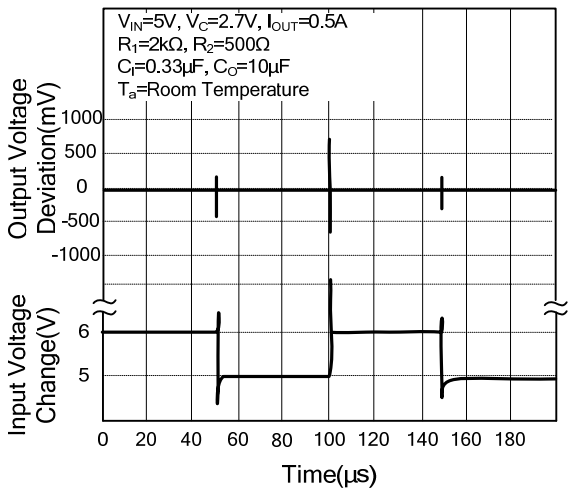
Dropout Voltage vs Ambient Temperature



Load Transient Response



Line Transient Response



ESR VS. Output Current