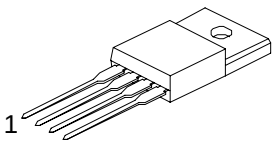
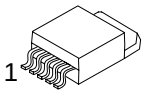
# RXXLD10

**LINEAR INTEGRATED CIRCUIT**

## LOW VOLTAGE OPERATION LOW POWER-LOSS VOLTAGE REGULATORS




TO-220F-4



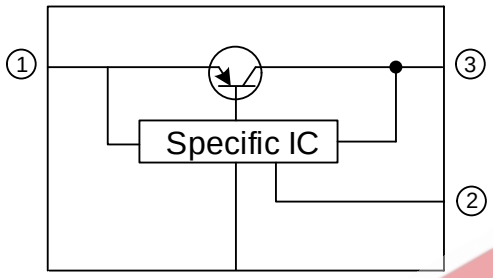

TO-252-5

*Pb-free plating product number: RXXLD10L

### ■ FEATURES

* Operating under low voltage range (Minimum: 2.35V) input 2.5V, available output around 1.5 ~ 1.8V
* Low dissipation current
* Built-in overcurrent protection and over temperature protection functions

### ■ EQUIVALENT




⑤ / ④ For TO-220F-4 Package

### ■ ORDERING INFORMATION

| Order Number | | Package | Packing |
|---|---|---|---|
| Normal | Lead Free Plating | | |
| RXXLD10-TF4-T | RXXLD10L-TF4-T | TO-220F-4 | Tube |
| RXXLD10-TN5-R | RXXLD10L-TN5-R | TO-252-5 | Tape Reel |
| RXXLD10-TN5-T | RXXLD10L-TN5-T | TO-252-5 | Tube |

RXXLD10L-TF4-R

| | |
|---|---|
| (1)Packing Type | (1) R: Tape Reel, T: Tube |
| (2)Package Type | (2) TF4: TO-220F-4, TN5: TO-252-5 |
| (3)Lead Plating | (3) L: Lead Free Plating, Blank: Pb/Sn |
| (4)Output Voltage Code | (4) xx: refer to Marking Information |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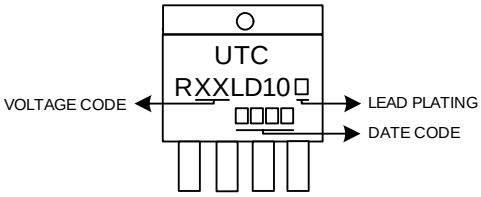
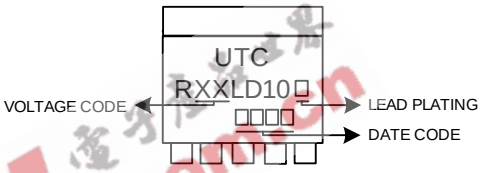
## ■ PIN DESCRIPTION

| PIN NO. | | PIN NAME |
|---|---|---|
| TO-220F-4 | TO-252-5 | |
| 1 | 1 | INPUT |
| 2 | 2 | ON/OFF |
| 3 | 3 | OUTPUT |
| - | 4 | NC |
| 4 | 5 | GND |

## ■ MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | MARKING |
|---|---|---|
| TO-220F-4 | 15:1.5V<br>18:1.8V<br>25:2.5V<br>03:3.0V<br>33:3.3V |  |
| TO-252-5 | |  |

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## ■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 10 | V |
| ON/OFF Control Terminal Voltage (Note 2) | $V_C$ | 10 | V |
| Output Current | $I_{OUT}$ | 1.0 | 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

($V_{IN}$ = $V_{O\ (TYP.)}$+1V, $I_{OUT}$ = 0.5A, $V_C$ = 2.7V, Ta = 25°C, unless otherwise specified.)

| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Input Voltage | R15LD10 | $V_{IN}$ | | 2.35 | | 10 | V |
| | R18LD10 | | | 2.35 | | 10 | |
| | R25LD10 | | | $V_{OUT}$+0.5 | | 10 | |
| | R03LD10 | | | $V_{OUT}$+0.5 | | 10 | |
| | R33LD10 | | | $V_{OUT}$+0.5 | | 10 | |
| Output Voltage | R15LD10 | $V_{OUT}$ | | 1.45 | 1.5 | 1.55 | V |
| | R18LD10 | | | 1.75 | 1.8 | 1.85 | |
| | R25LD10 | | | 2.438 | 2.5 | 2.562 | |
| | R03LD10 | | | 2.925 | 3 | 3.075 | |
| | R33LD10 | | | 3.218 | 3.3 | 3.382 | |
| Voltage for Control (Note 1) | ON | $V_{C\ (ON)}$ | | 2 | | | V |
| | OFF | $V_{C\ (OFF)}$ | | | | 0.8 | V |
| Current for Control | ON | $I_{C\ (ON)}$ | | | | 200 | μA |
| | OFF | $I_{C\ (OFF)}$ | $V_C$ = 0.4V | | | 2 | μA |
| Quiescent Current | | $I_Q$ | $I_{OUT}$ = 0A | | 1 | 2 | mA |
| Output Off-state Dissipation Current | | $I_{QS}$ | $I_{OUT}$ = 0A, $V_C$ = 0.4V | | | 5 | μA |
| Load Regulation | | $\Delta V_{OUT}$ | $I_{OUT}$ = 5mA ~ 1A | | 0.2 | 2 | % |
| Line Regulation | | $\Delta V_{OUT}$ | $V_{IN}$ = $V_{O\ (TYP)}$+1V~$V_{O\ (TYP)}$+6V<br>$I_{OUT}$ = 5mA | | 0.1 | 1 | % |
| Dropout Voltage(Note 2) | | $V_D$ | $I_{OUT}$ = 1A | | 0.2 | 0.5 | V |
| Temperature Coefficient of Output Voltage | | $T_C$ $V_O$ | $T_J$ = 0 ~ 125°C, $I_{OUT}$ = 5mA | | ±0.01 | | %/°C |
| Ripple Rejection | | RR | Refer to Fig.2 | 45 | 60 | | dB |

Note 1: In case of opening control terminal pin 2, output voltage turns off.
2: Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

## ■ TEST CIRCUIT

TO-220F-4 Package:

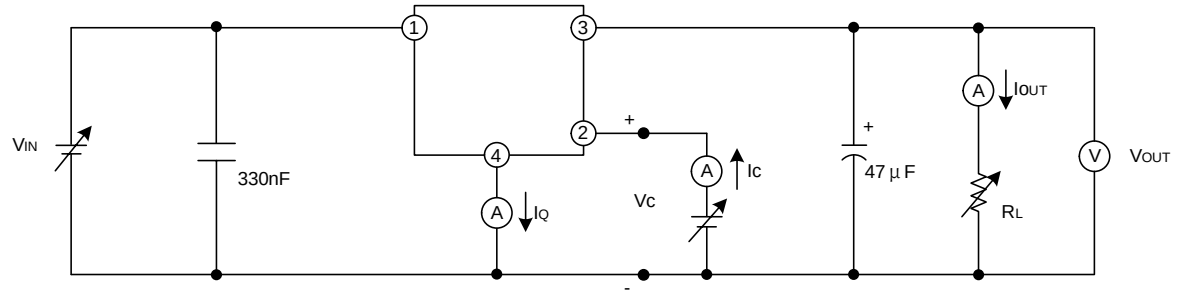



Fig.1

TO-252-5 Package:

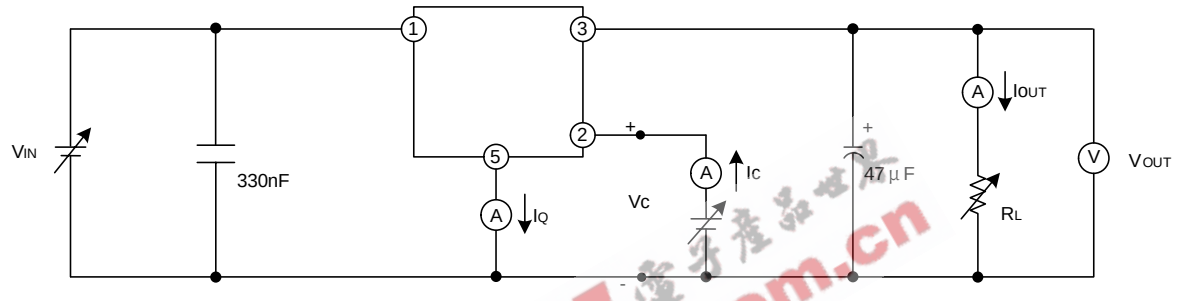
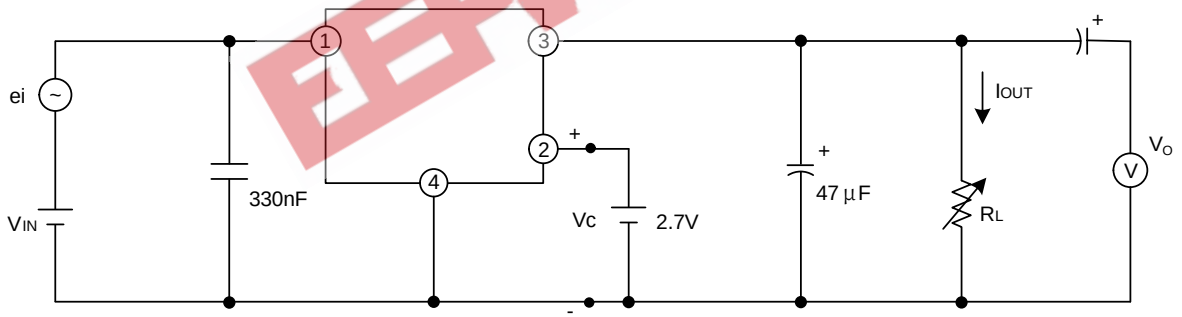



Fig.2

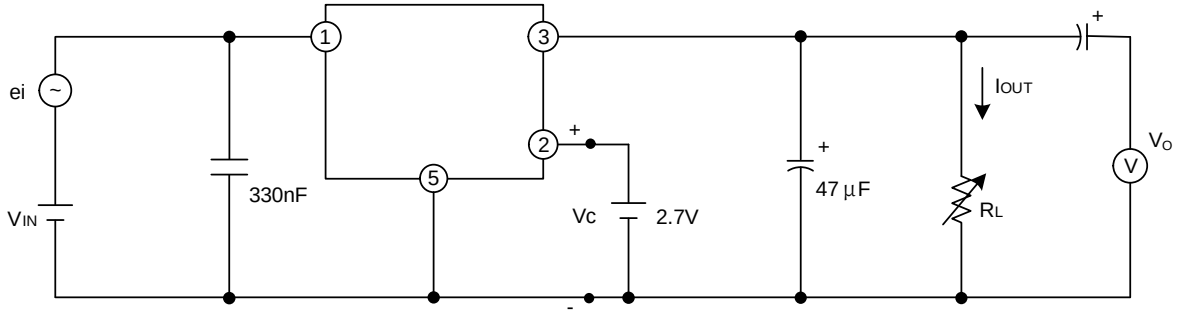
TO-220F-4 Package:




f = 120Hz (sine wave), ei (rms) = 0.5V, $V_{IN}$ = $V_{O\ (TYP)}$+2V, $I_{OUT}$ = 0.5A, RR = 20log (ei (rms) /$V_O$(rms))

Fig.3 For Ripple Rejection

TO-252-5 Package:




f = 120Hz (sine wave), ei (rms) = 0.5V, $V_{IN}$ = $V_{O\ (TYP)}$+2V, $I_{OUT}$ = 0.5A, RR = 20log (ei (rms) /$V_O$(rms))

Fig.4 For Ripple Rejection

## ■ TYPICAL APPLICATION CIRCUIT

TO-220F-4 Package:

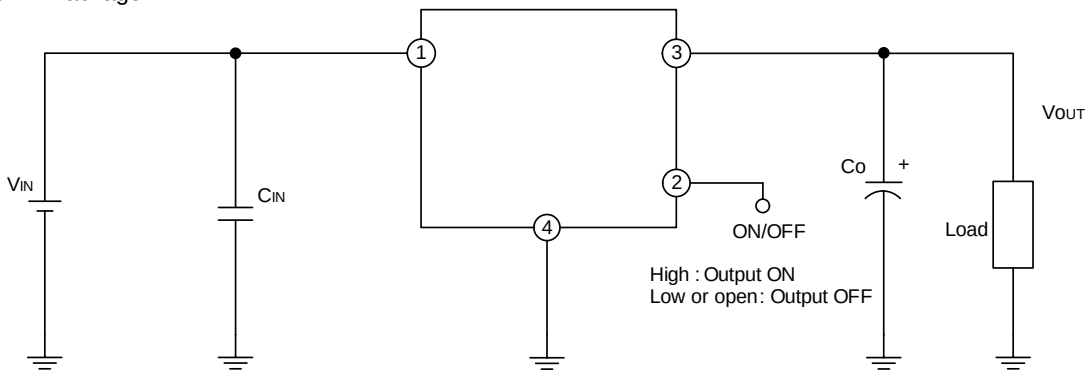



Fig. 5

TO-252-5 Package:

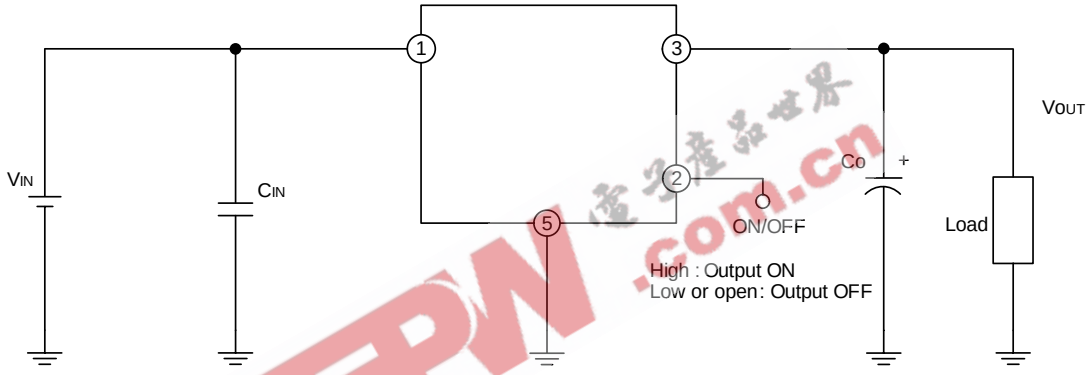



Fig. 6

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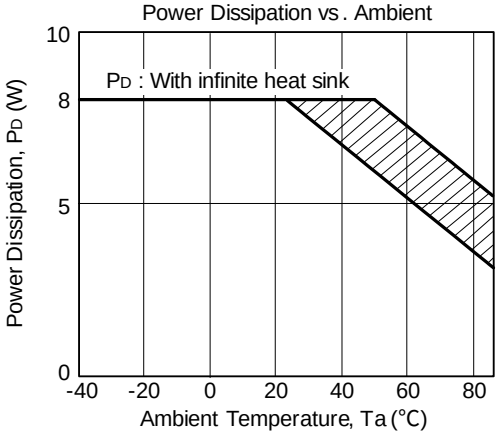
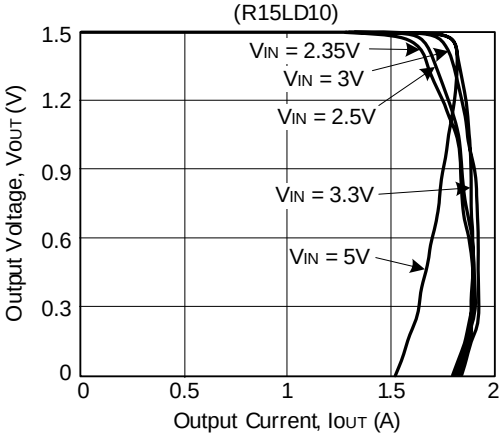
## ■ TYPICAL CHARACTERISTICS

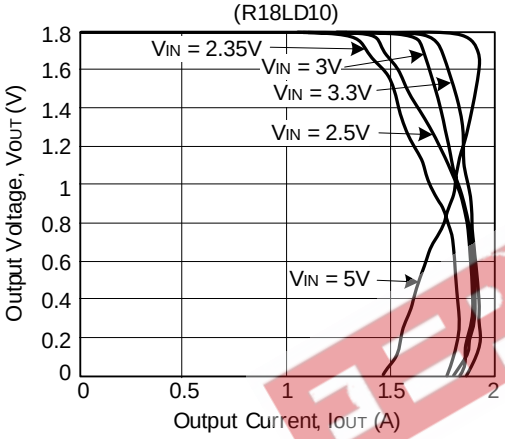
Power Dissipation vs. Ambient



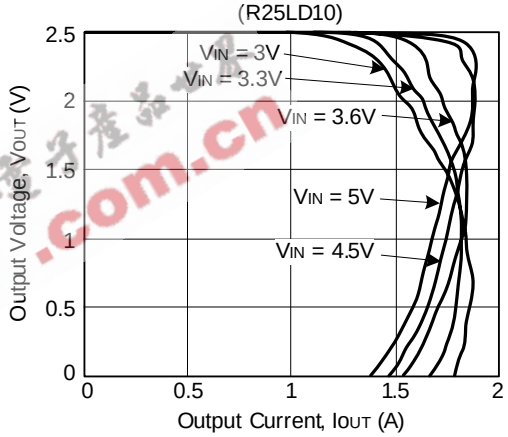

Overcurrent Protection Characteristics (R15LD10)



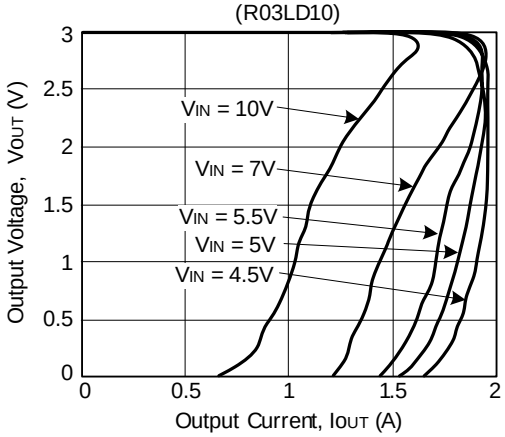

Overcurrent Protection Characteristics (R18LD10)



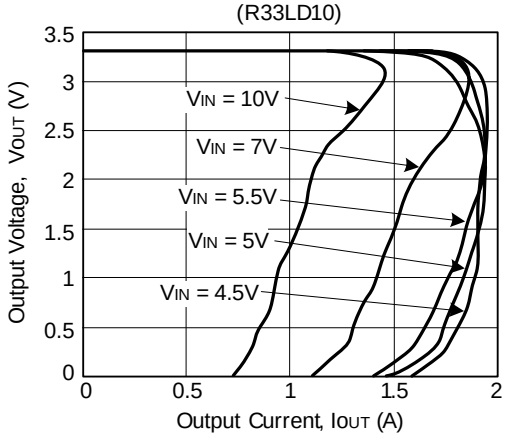

Overcurrent Protection Characteristics (R25LD10)




Overcurrent Protection Characteristics (R03LD10)




Overcurrent Protection Characteristics (R33LD10)

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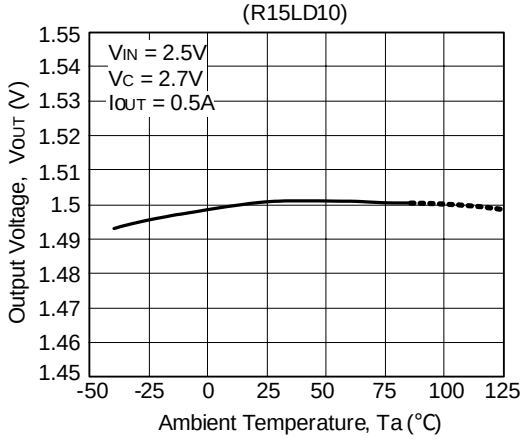
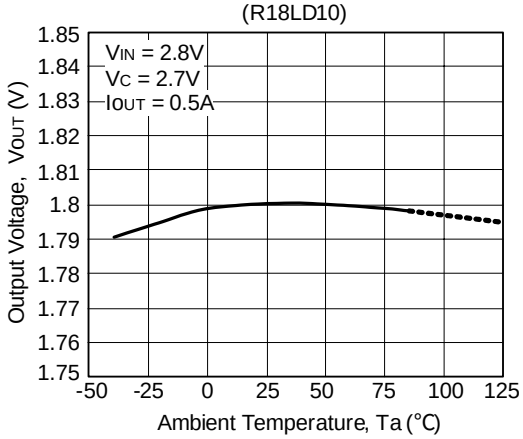
## ■ TYPICAL CHARACTERISTICS(Cont.)

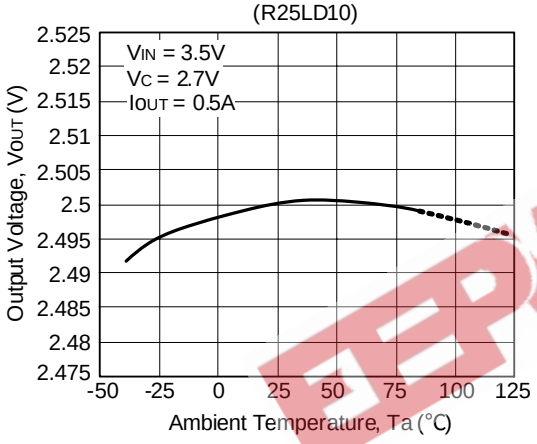
Output Voltage vs. Ambient Temperature (R15LD10)



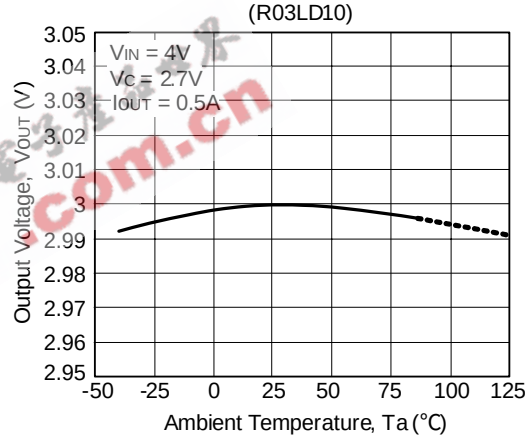

Output Voltage vs. Ambient Temperature (R18LD10)



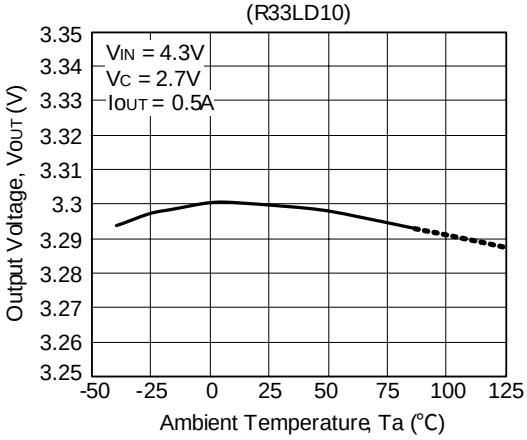

Output Voltage vs. Ambient Temperature (R25LD10)



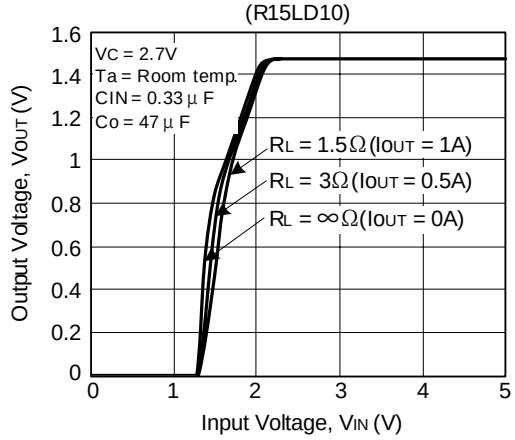

Output Voltage vs. Ambient Temperature (R03LD10)




Output Voltage vs. Ambient Temperature (R33LD10)

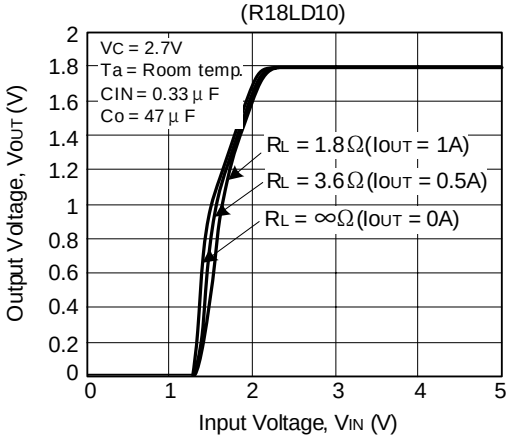



Output Voltage vs. Input Voltage (R15LD10)

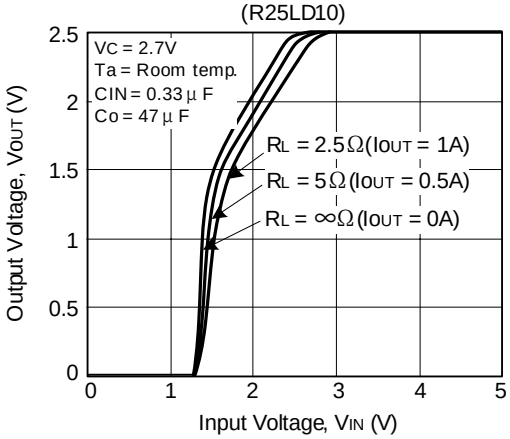


## ■ TYPICAL CHARACTERISTICS(cont.)

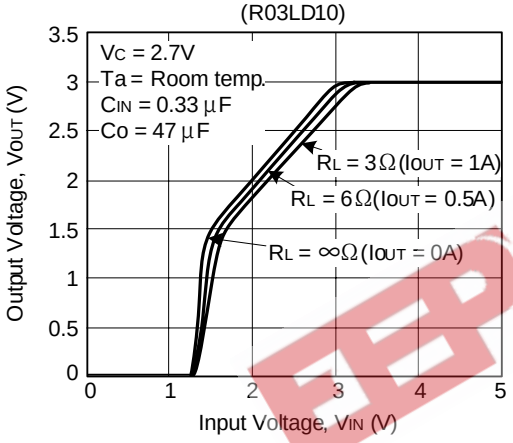
Output Voltage vs. Input Voltage
(R18LD10)



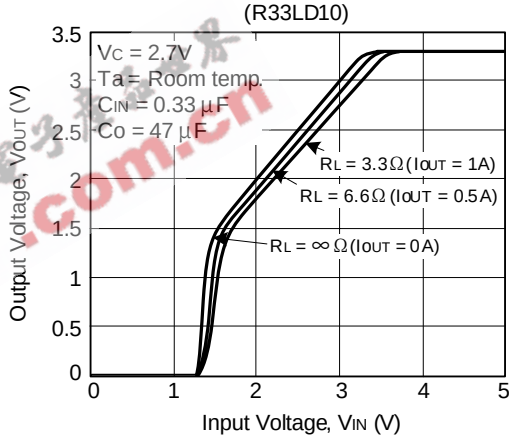

Output Voltage vs. Input Voltage
(R25LD10)



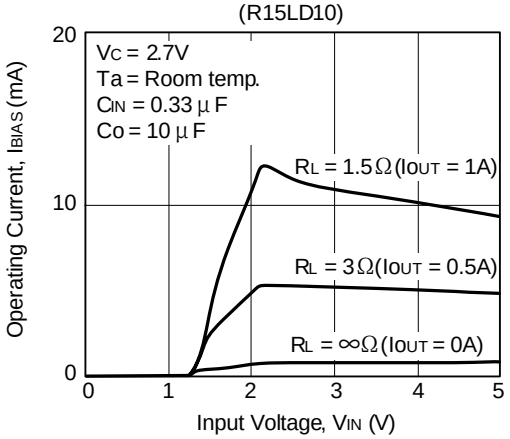

Output Voltage vs. Input Voltage
(R03LD10)



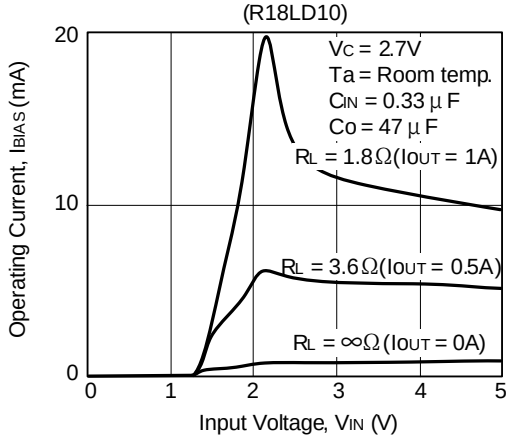

Output Voltage vs. Input Voltage
(R33LD10)




Circuit Operating Current vs. Input Voltage
(R15LD10)




Circuit Operating Current vs. Input Voltage
(R18LD10)

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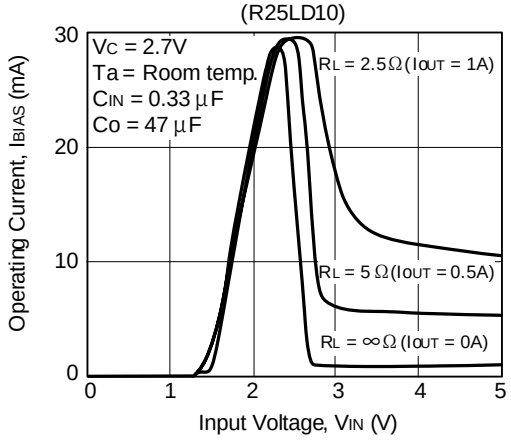
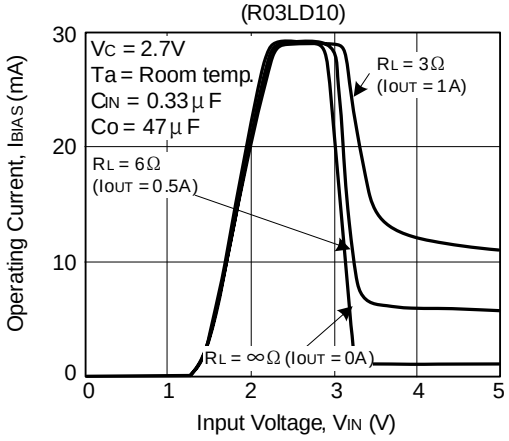
## ■ TYPICAL CHARACTERISTICS(Cont.)

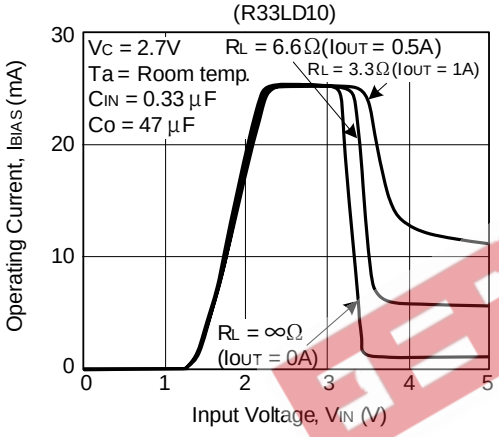
Circuit Operating Current vs. Input Voltage (R25LD10)



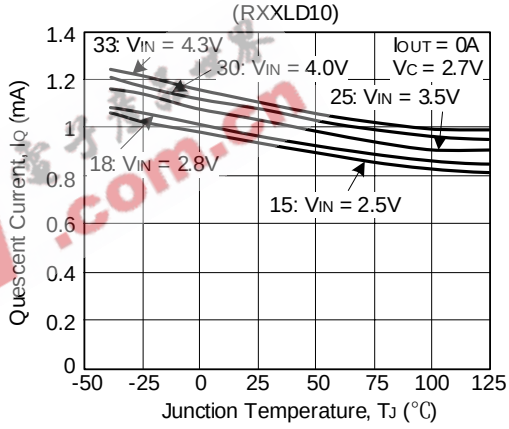

Circuit Operating Current vs. Input Voltage (R03LD10)



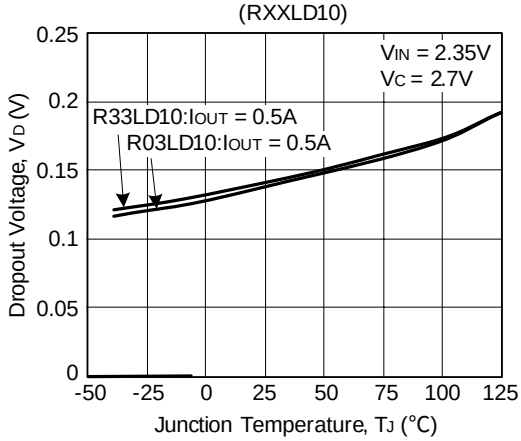

Circuit Operating Current vs. Input Voltage (R33LD10)



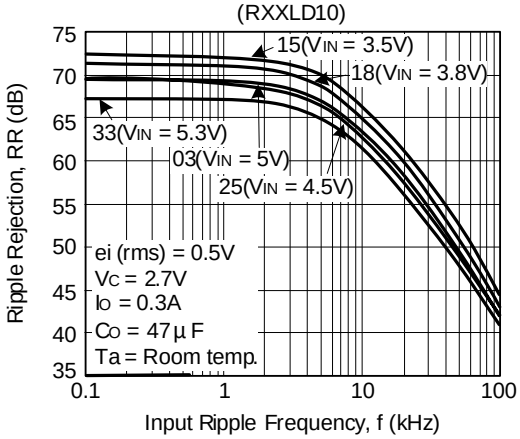

Quescent Current vs. Junction Temperature (RXXLD10)




Dropout Voltage vs. Junction Temperature (RXXLD10)

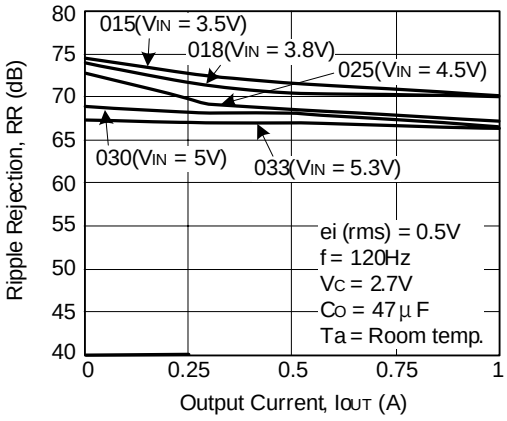



Ripple Rejection vs. Input Ripple Frequency (RXXLD10)



■ TYPICAL CHARACTERISTICS(Cont.)

Ripple Rejection vs. Output Current
(RXXLD10)

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