

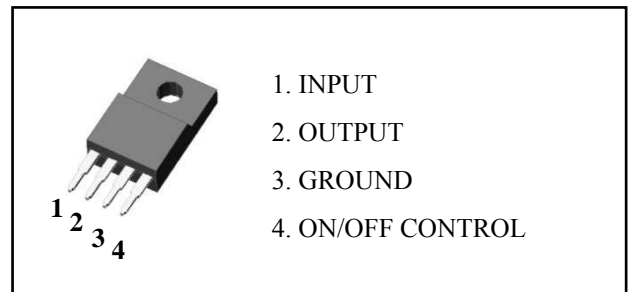
## Description

The A278Rxx Series is a low dropout voltage regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220F-4SL lead full-mold package. Dropout voltage of A278Rxx Series is below Max.0.5V in full rated current (2.0A). This regulator has various functions such as current limit protection, over voltage protection and output on/off control.

## Features

- 2.0A output low dropout regulator
- TO-220F-4SL full-mold package (4pin)
- Current limit protection
- Over voltage protection
- Thermal shutdown protection
- With output on/off control (At typical 1.5V)
- Control pin open or high signal, output on

## Pin Connection



1. INPUT
2. OUTPUT
3. GROUND
4. ON/OFF CONTROL

## Ordering Information

Product	Marking	Package
A278RxxPIC	A278RxxPI	TO-220F-4SL

A278RxxPI(①)

● YYWW(②)

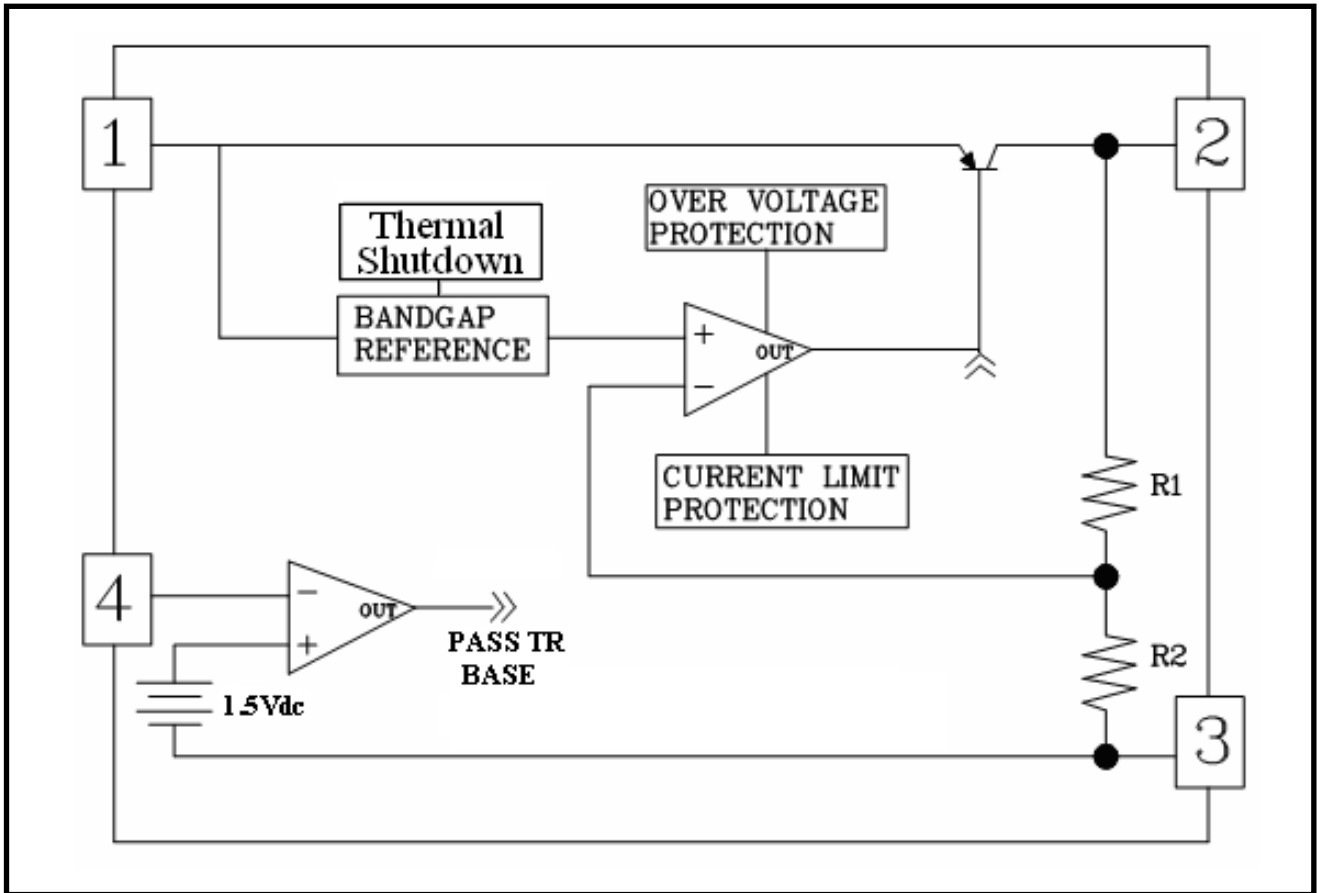
① Device Code

② Year & Week Code

## Device Selection Guide

Device	Output Voltage
A278R33PIC	3.3V
A278R35PIC	3.5V
A278R05PIC	5.0V
A278R06PIC	6.0V
A278R08PIC	8.0V
A278R09PIC	9.0V
A278R12PIC	12.0V

## Block Diagram



## Absolute Maximum Ratings

[Ta=25°C]

Characteristic	Symbol	Rating	Unit
Input Voltage	V <sub>I</sub>	18(All Others)	V
		25(A278R12PIC)	V
Control Input Voltage	V <sub>CT</sub>	18	V
Power Dissipation	P <sub>D1</sub> (No Heatsink)	2.0	W
	P <sub>D2</sub> (With Heatsink)	20	W
Junction Temperature	T <sub>J</sub>	150	°C
Operating Temperature Range	T <sub>opr</sub>	-20 ~ 80	°C
Storage Temperature Range	T <sub>stg</sub>	-55 ~ 150	°C

## Electrical Characteristics

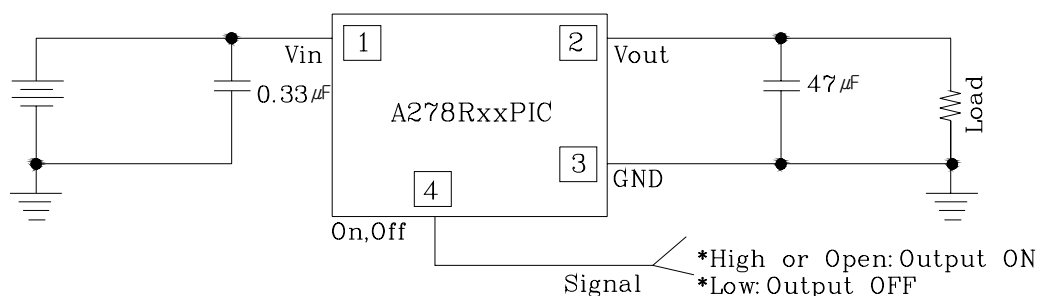
( $V_I = V_O + 2V$ ,  $I_O = 1.0A$ ,  $V_{CT(High)} = 2.7V$ ,  $T_a = 25^\circ C$ , unless otherwise specified)

Electric Characteristic	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Output Voltage	$V_O$	A278R33PIC	-	3.22	3.3	3.38	V
		A278R35PIC	-	3.41	3.5	3.59	V
		A278R05PIC	-	4.88	5.0	5.12	V
		A278R06PIC	-	5.85	6.0	6.15	V
		A278R08PIC	-	7.80	8.0	8.20	V
		A278R09PIC	-	8.78	9.0	9.22	V
		A278R12PIC	-	11.7	12.0	12.3	V
Line Regulation	$\Delta V_{O(\Delta V_I)}$	Note1, $I_O = 1.0A$	-	0.5	2.5	%	
Load Regulation	$\Delta V_{O(\Delta I_L)}$	$5mA \leq I_O \leq 2.0A$	-	0.1	2.0	%	
Quiescent Current	$I_{QC}$	$I_O = 0mA$	-	-	10	mA	
Ripple Rejection Ratio	RR	$(V_O + 2V) \leq V_I \leq 12V$ , $I_O = 50mA$ $f = 120Hz$	45	55	-	dB	
Dropout Voltage	$V_{DROP}$	$I_O = 1.0A$	-	-	0.3	V	
		$I_O = 2.0A$	-	-	0.5	V	
Control Voltage High	$V_{CT(High)}$	$I_O = 0mA$ , Output ON	2.0	-	-	V	
Control Voltage Low	$V_{CT(Low)}$	$I_O = 0mA$ , Output OFF	-	-	0.8	V	
Control Bias Current High	$I_{CT(High)}$	$V_{CT(High)} = 2.7V$	-	-	20	$\mu A$	
Control Bias Current Low	$I_{CT(Low)}$	$V_{CT(Low)} = 0.4V$	-	-	-0.4	mA	

Note

- |                                   |                                |
|-----------------------------------|--------------------------------|
| 1. A278R33: $V_I = 4.3V \sim 12V$ | A278R35: $V_I = 4.5V \sim 12V$ |
| A278R05: $V_I = 6V \sim 12V$      | A278R06: $V_I = 7V \sim 15V$   |
| A278R08: $V_I = 9V \sim 16V$      | A278R09: $V_I = 10V \sim 16V$  |
| A278R12: $V_I = 12V \sim 16V$     |                                |

### ◆ Test Circuit of A278RxxPIC



## Electrical Characteristic Curves

Fig.1  $I_O$  vs.  $V_O$

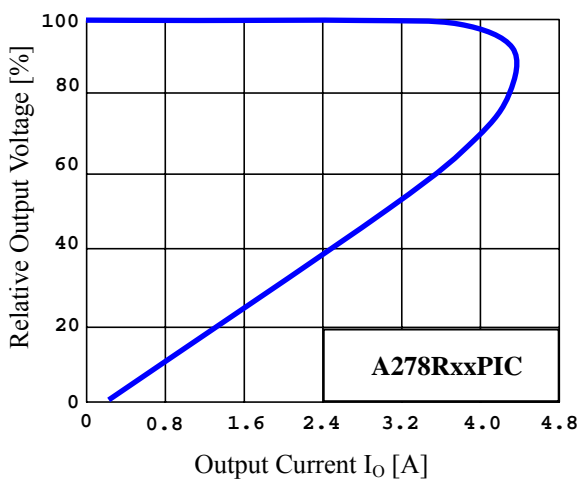


Fig.2  $T_a$  vs.  $P_D$

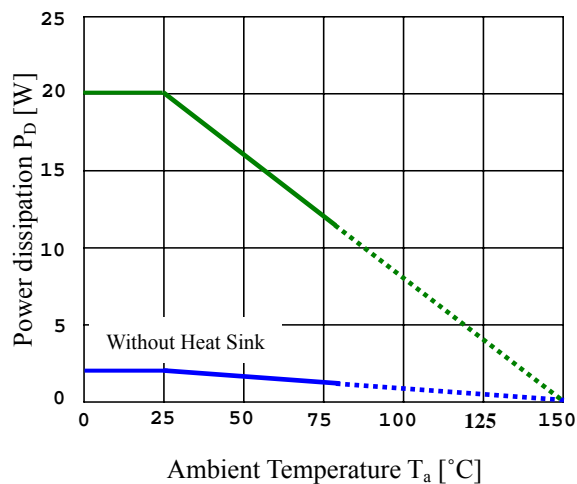


Fig.3  $V_I$  vs.  $I_{QC}$

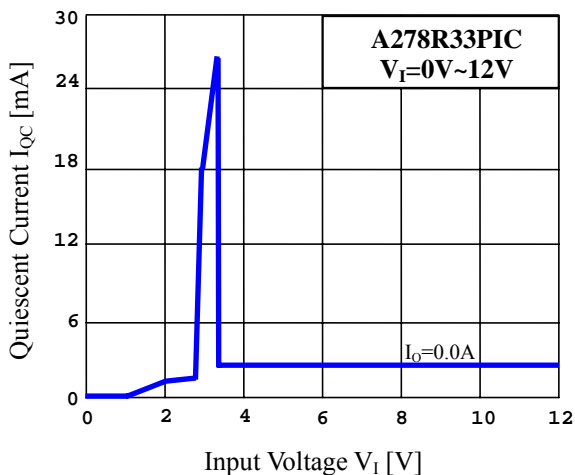


Fig.4  $V_I$  vs.  $I_{QC}$

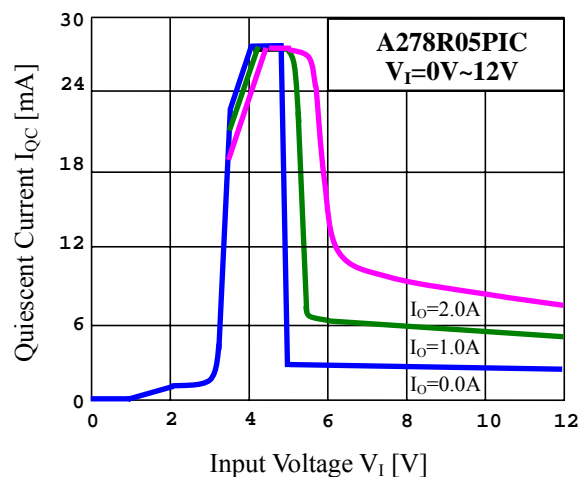


Fig.6  $V_I$  vs.  $I_{QC}$

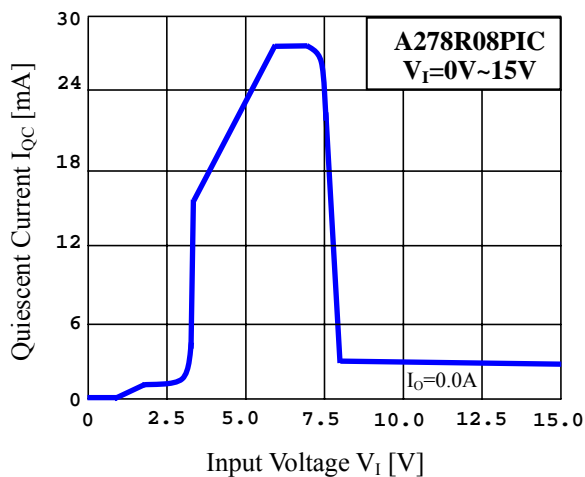
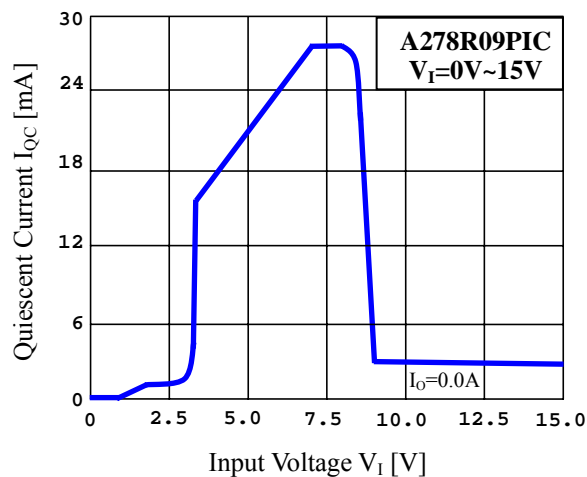


Fig.7  $V_I$  vs.  $I_{QC}$



## Electrical Characteristic Curves

Fig.8  $V_I$  vs.  $I_{QC}$

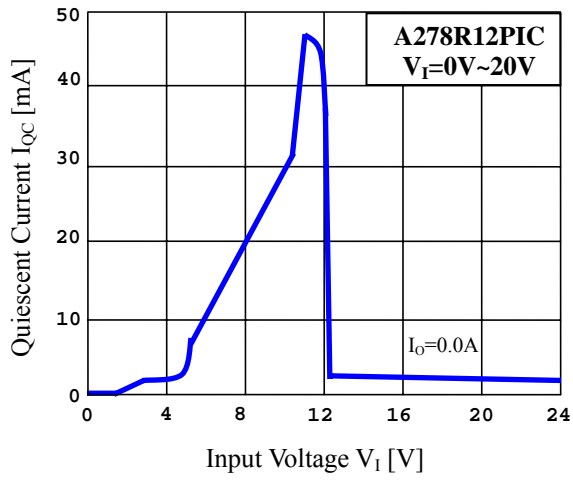


Fig.9  $T_j$  vs.  $I_{QC}$

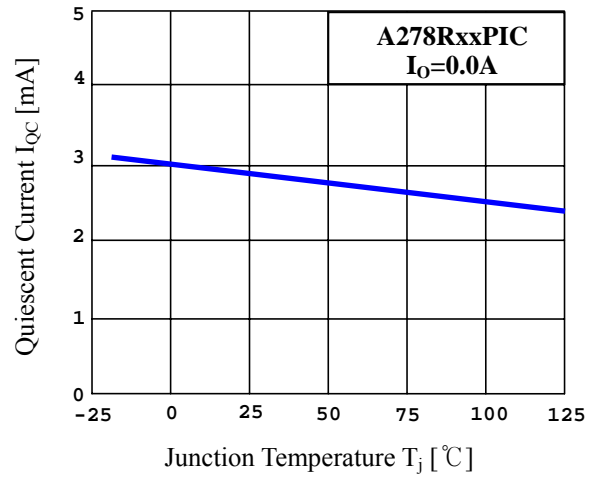


Fig.10  $V_{CT}$  vs.  $V_O$

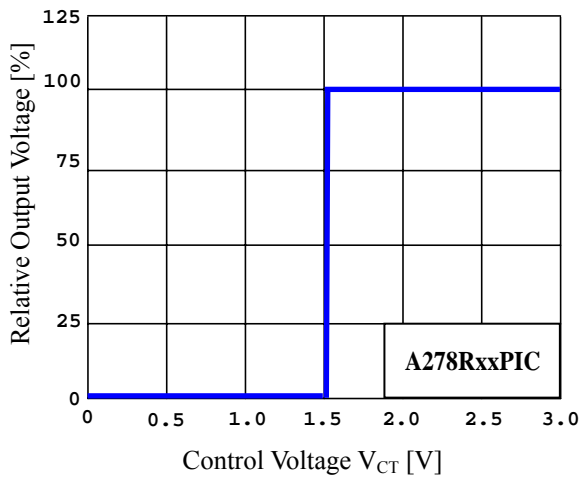
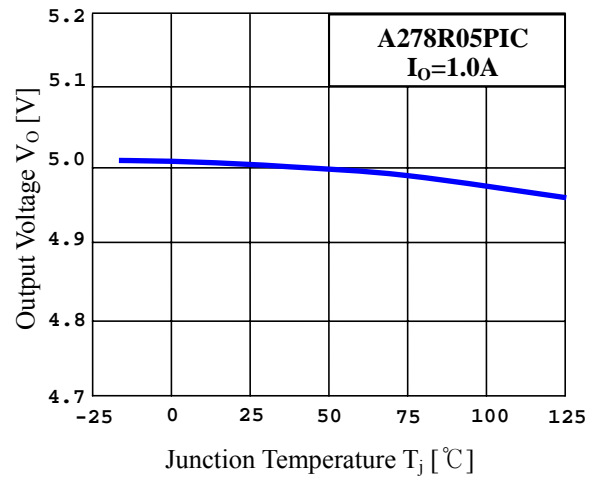
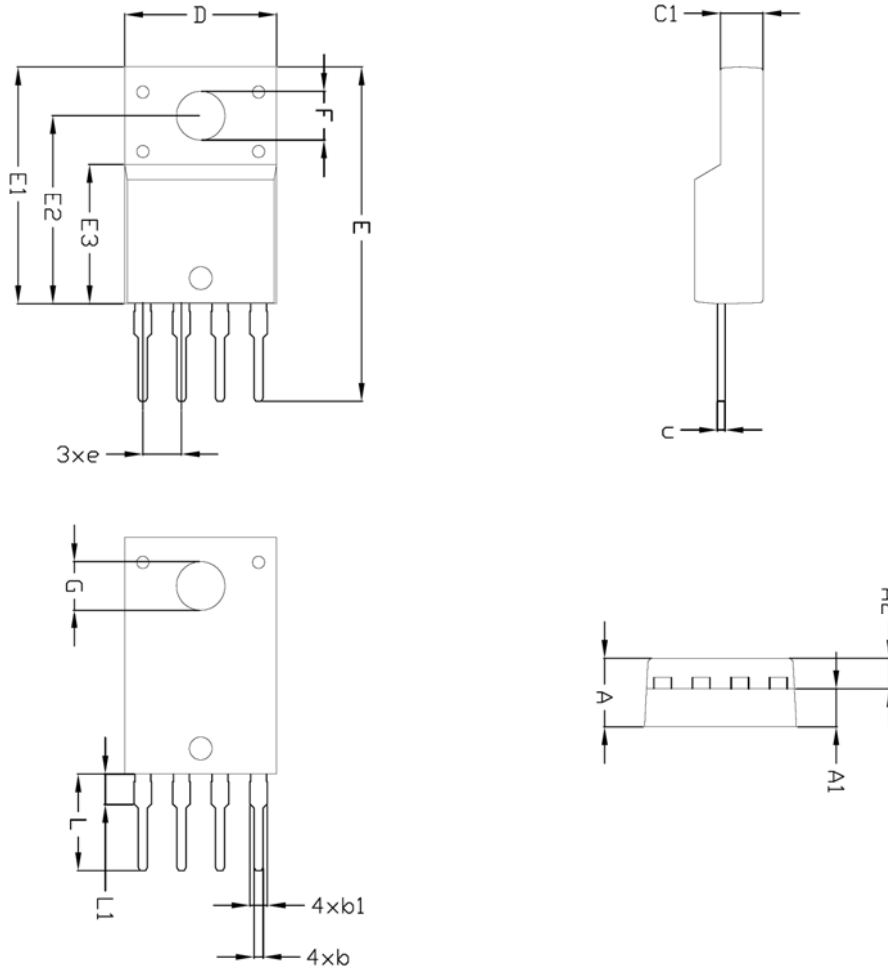


Fig.11  $T_j$  vs.  $V_O$



## Outline Dimension



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	-	-	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.50	0.60	0.70	
b1	0.85	1.05	1.25	
c	0.40	0.50	0.60	
c1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	20.80	-	21.40	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.10	3.20	3.30	
G	3.30	3.40	3.50	
e	2.54 BSC			
L	5.20	-	5.80	
L1	2.00 BSC			

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