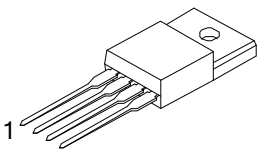
4 TERMINAL 2A OUTPUT LOW DROP VOLTAGE REGULATOR



TO-220F-4

■ DESCRIPTION

The UTC **278RXX** Series are Low Drop Voltage Regulator suitable for various electronic equipments.

It provides constant voltage power source with TO-220F-4 terminal lead full molded PKG. The Regulator has multi function such as over current protection, overheat protection and ON/OFF control.

■ FEATURES

* 2.0A Output Low Drop Voltage Regulator.
* Built in ON/OFF Control Terminal.
* Built in Over Current Protection, Over Heat Protection Function.

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
278RXXL-TF4-T	278RXXG-TF4-T	TO-220F-4	Tube

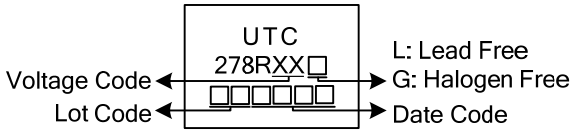
Note: xx: Output Voltage, refer to Marking Information.

278RXXG-TF4-T

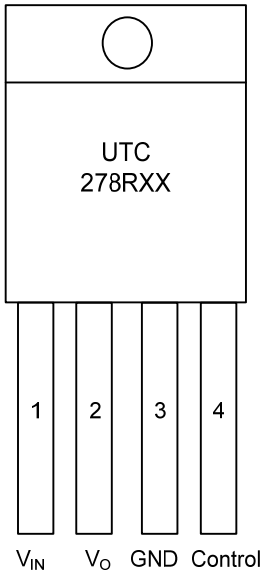
(1)Packing Type
(2)Package Type
(3)Green Package
(4)Voltage Code

(1) T: Tube
(2) TF4: TO-220F-4
(3) G: Halogen Free and Lead Free, L: Lead Free
(4) XX: Refer to Marking Information

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-220F-4	05: 5.0V 08: 8.0V 12: 12V 15: 15V 33: 3.3V	

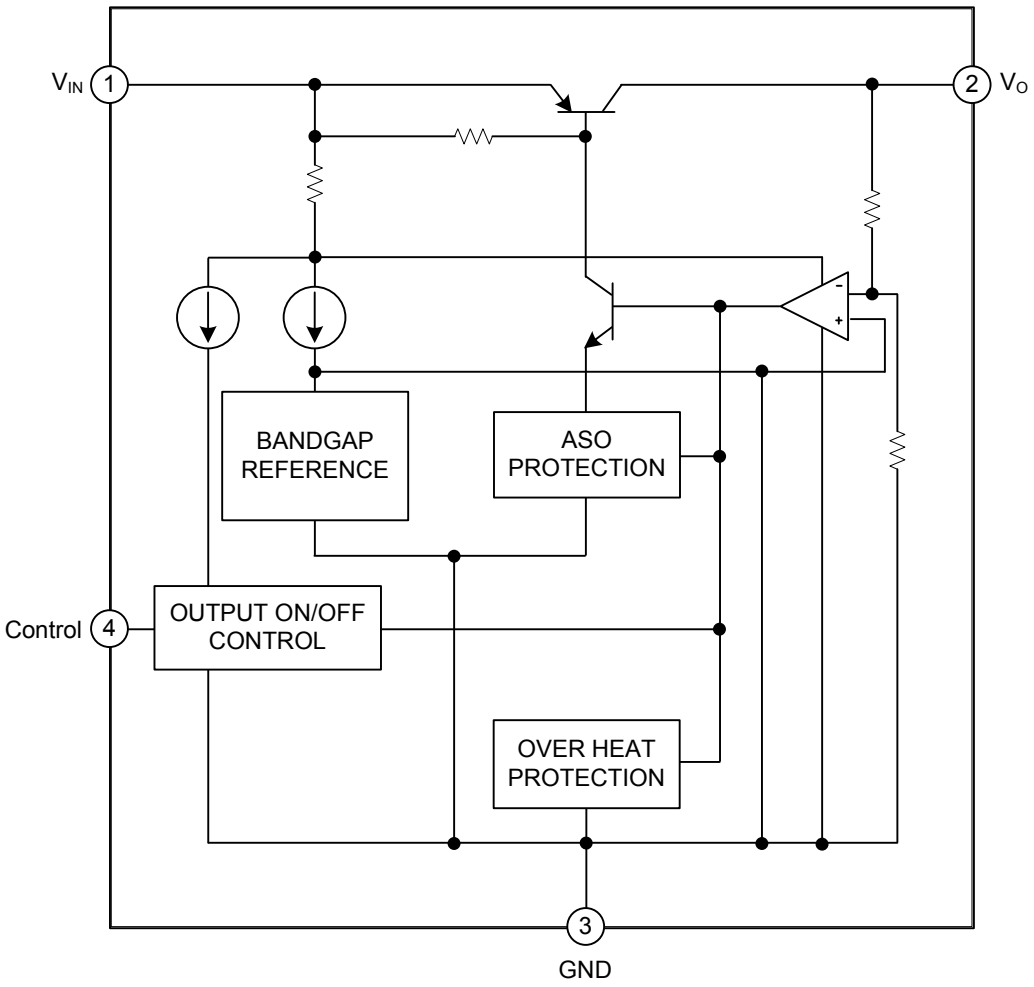
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{IN}	Input DC supply voltage
2	V_{OUT}	Output voltage pin
3	GND	Ground pin for the IC
4	Control	ON/OFF control pin

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	REMARK	RATINGS	UNIT
Input Voltage	V_{IN}		35	V
ON/OFF Control Voltage	V_C		35	V
Output Current	I_O		2	A
Power Dissipation 1	P_{D1}	No heatsink	1.5	W
Junction Temperature	T_J		+125	°C
Operating Temperature	T_{OPR}		-20 ~ +80	°C
Storage Temperature	T_{STG}		-30 ~ +125	°C

Note: 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.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, I_O=1.0A, unless otherwise specified)

For 278R05 (V_{IN}=7V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_O		4.875	5.0	5.125	V
Load Regulation	Reg Load	I_O=5mA~2A		0.1	2.0	%
Line Regulation	Reg Line	V_{IN}=6~12V		0.5	2.5	%
Ripple Rejection	R • R		45	55		dB
Drop Out Voltage (Note)	V_D	I_O=2A			0.5	V
Output ON State for Control Voltage	$V_{C(ON)}$		2.0			V
Output ON State for Control Current	$I_{C(ON)}$	V_C=2.7V			20	μA
Output OFF State for Control Voltage	$V_{C(OFF)}$				0.8	V
Output OFF State for Control Current	$I_{C(OFF)}$	V_C=0.4V			0.4	mA
Quiescent Current	I_Q	I_O=0			10	mA

For 278R08 (V_{IN}=10V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_O		7.800	8.0	8.200	V
Load Regulation	Reg Load	I_O=5mA~2A		0.1	2.0	%
Line Regulation	Reg Line	V_{IN}=9~15V		0.5	2.5	%
Ripple Rejection	R • R		45	55		dB
Drop Out Voltage (Note)	V_D	I_O=2A			0.5	V
Output ON State for Control Voltage	$V_{C(ON)}$		2.0			V
Output ON State for Control Current	$I_{C(ON)}$	V_C=2.7V			20	μA
Output OFF State for Control Voltage	$V_{C(OFF)}$				0.8	V
Output OFF State for Control Current	$I_{C(OFF)}$	V_C=0.4V			0.4	mA
Quiescent Current	I_Q	I_O=0			10	mA

For 278R12 (V_{IN}=18V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_O		11.70	12.0	12.30	V
Load Regulation	Reg Load	I_O=5mA~2A		0.1	2.0	%
Line Regulation	Reg Line	V_{IN}=13~29V		0.5	2.5	%
Ripple Rejection	R • R		45	55		dB
Drop Out Voltage (Note)	V_D	I_O=2A			0.5	V
Output ON State for Control Voltage	$V_{C(ON)}$		2.0			V
Output ON State for Control Current	$I_{C(ON)}$	V_C=2.7V			20	μA
Output OFF State for Control Voltage	$V_{C(OFF)}$				0.8	V
Output OFF State for Control Current	$I_{C(OFF)}$	V_C=0.4V			0.4	mA
Quiescent Current	I_Q	I_O=0			10	mA

■ ELECTRICAL CHARACTERISTICS (Cont.)

For 278R15 (V_{IN}=21V)

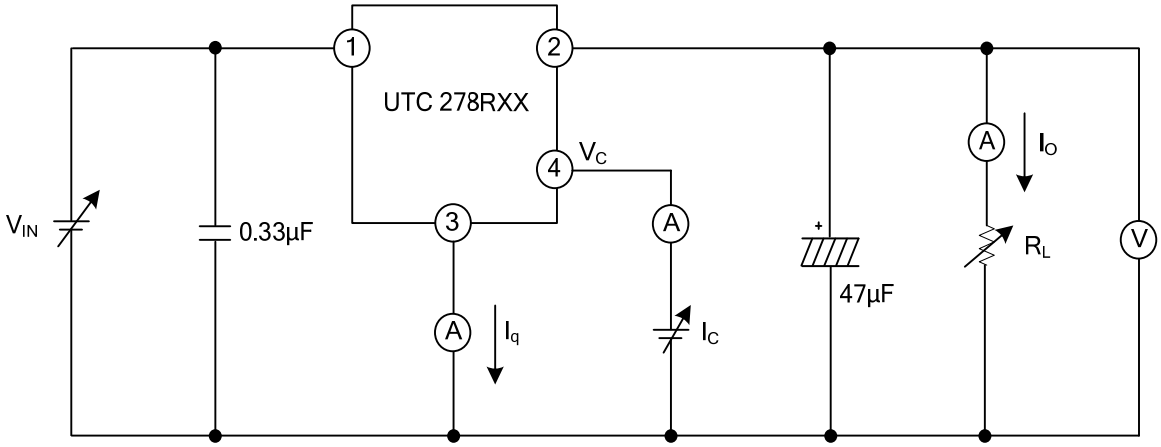
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_O		14.70	15.0	15.30	V
Load Regulation	Reg Load	I_O=5mA~2A		0.1	2.0	%
Line Regulation	Reg Line	V_{IN}=16~32V		0.5	2.5	%
Ripple Rejection	R • R		45	55		dB
Drop Out Voltage (Note)	V_D	I_O=2A			0.8	V
Output ON State for Control Voltage	$V_{C(ON)}$		2.0			V
Output ON State for Control Current	$I_{C(ON)}$	V_C=2.7V			20	μA
Output OFF State for Control Voltage	$V_{C(OFF)}$				0.8	V
Output OFF State for Control Current	$I_{C(OFF)}$	V_C=0.4V			0.4	mA
Quiescent Current	I_Q	I_O=0			10	mA

For 278R33 (V_{IN}=5V)

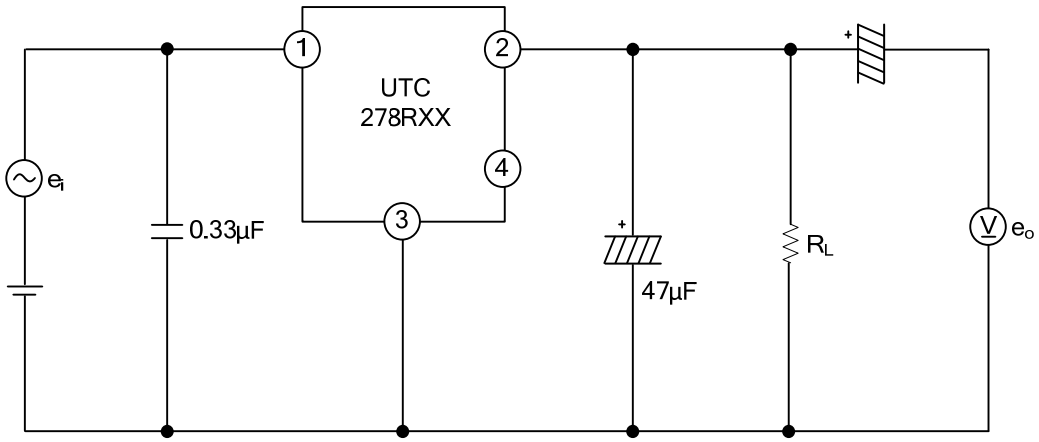
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_O		3.218	3.3	3.383	V
Load Regulation	Reg Load	I_O=5mA~2A		0.1	2.0	%
Line Regulation	Reg Line	V_{IN}=6~12V		0.5	2.5	%
Ripple Rejection	R • R		45	55		dB
Drop Out Voltage (Note)	V_D	I_O=2A			0.5	V
Output ON State for Control Voltage	$V_{C(ON)}$		2.0			V
Output ON State for Control Current	$I_{C(ON)}$	V_C=2.7V			20	μA
Output OFF State for Control Voltage	$V_{C(OFF)}$				0.8	V
Output OFF State for Control Current	$I_{C(OFF)}$	V_C=0.4V			0.4	mA
Quiescent Current	I_Q	I_O=0			10	mA

Note: Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

■ TEST CIRCUIT



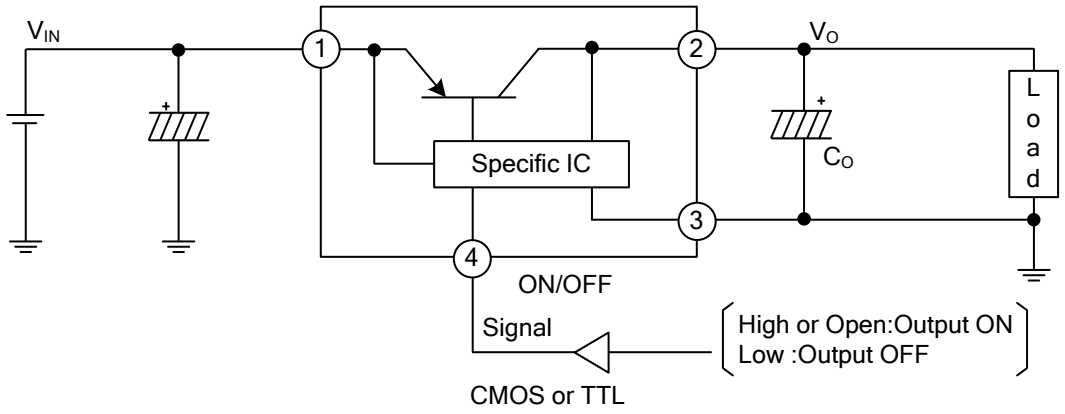
Standard Test Circuit



f=120Hz (sine wave)
ei=0.5Vrms
RR=20log (ei/eo)

Ripple Rejection Test Circuit

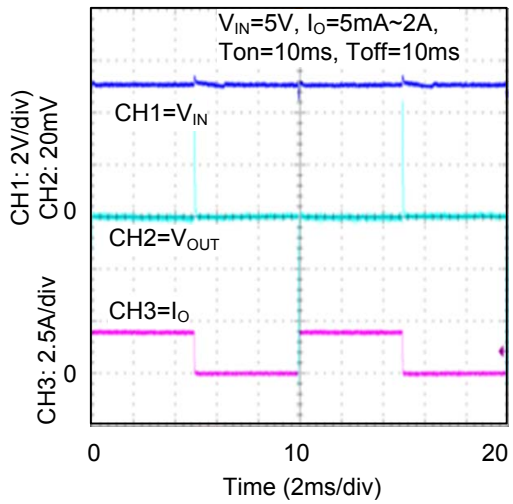
■ TYPICAL APPLICATION CIRCUIT



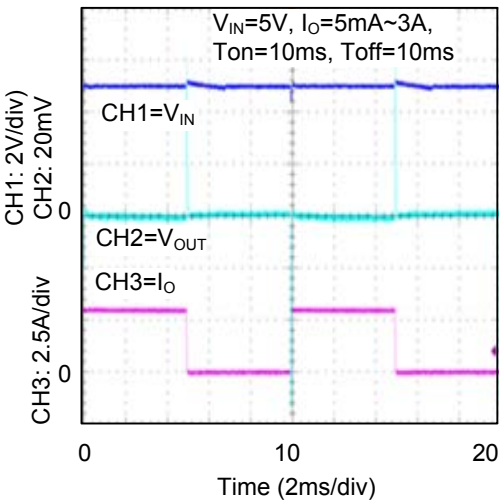
Application Circuit Standard

■ TYPICAL CHARACTERISTICS

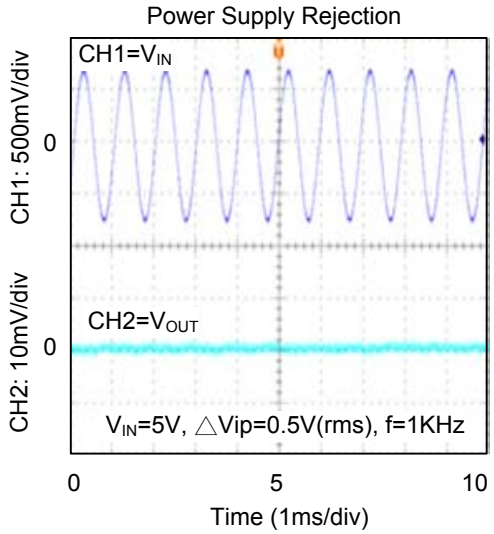
Dynamic Load Response



Dynamic Load Response



Power Supply Rejection



Power Supply Rejection