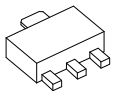
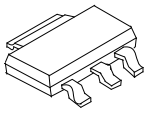
3-TERMINAL 300mA POSITIVE VOLTAGE REGULATOR



SOT-89



SOT-223

■ DESCRIPTION

The UTC **78NXX** family is monolithic fixed voltage regulator integrated circuit. They are suitable for applications requiring supply current up to 300mA.

■ FEATURES

* Output Current up to 300mA
* Fixed Output Voltage of 5V, 6V, 8V
* Thermal Overload Shutdown Protection
* Short Circuit Current Limiting

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
78NXXL-AB3-R	78NXXG-AB3-R	SOT-89	O	G	I	Tape Reel
78NXXL-AA3-R	78NXXG-AA3-R	SOT-223	O	G	I	Tape Reel

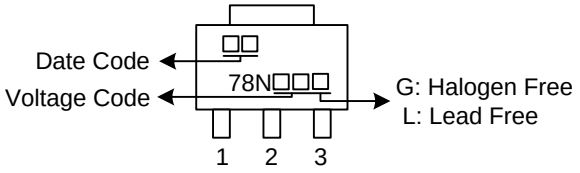
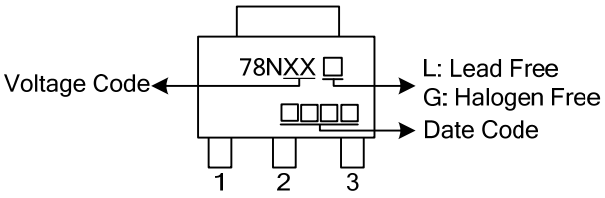
Note: XX: Output Voltage, refer to Marking Information

78NXXL-AB3-R

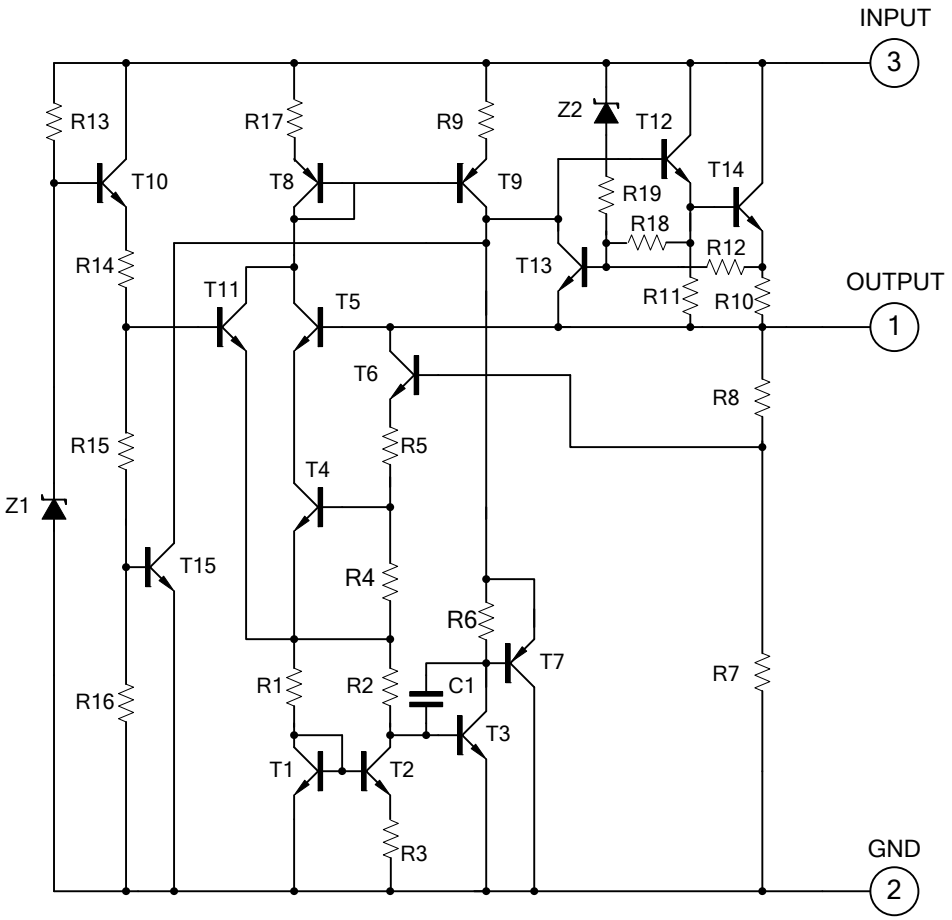
(1)Packing Type
(2)Package Type
(3)Halogen Free
(4)Output Voltage Code

(1) R: Tape Reel
(2) AB3: SOT-89
(3) G: Halogen Free, L: Lead Free
(4) xx: Refer to Marking Information

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	05:5.0V 06:6.0V 08:8.0V	
SOT-223		

■ BLOCK CIRCUIT



■ ABSOLUTE MAXIMUM RATING (Operating temperature range applies, unless otherwise specified.)

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	30	V
Output Current		I_{OUT}	300	mA
Power Dissipation	SOT-89	P_D	550	mW
	SOT-223		750	
Operating Temperature (Note 2)		T_{OPR}	-40~+150	°C
Storage Temperature		T_{STG}	-55~+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. It is guarantee by design, not 100% be tested.

■ ELECTRICAL CHARACTERISTICS

(0°C <T_J<125°C, C1=0.33uF, C_O=0.1uF, unless otherwise specified) (Note 1)

For 78N05 (V_{IN}=10V, I_{OUT}=40mA)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	T_J=25°C	4.80	5.0	5.20	V
		7V≦V_{IN}≦V_{MAX} I_{OUT}=1mA~300mA (Note 2)	4.75		5.25	V
Load Regulation	ΔV_{OUT}	T_J=25°C, I_{OUT}=1mA ~ 300mA		11	60	mV
		T_J=25°C, I_{OUT}=1mA ~ 40mA		5.0	30	mV
Line Regulation	ΔV_{OUT}	7V≦V_{IN}≦20V,T_J=25°C		8	150	mV
		8V≦V_{IN}≦20V,T_J=25°C		6	100	mV
Quiescent Current	I_Q			2.0	5.5	mA
Quiescent Current Change	ΔI_Q	8V≦V_{IN}≦20V			1.5	mA
		1mA≦V_{IN}≦40mA			0.1	mA
Output Noise Voltage	e_N	10Hz≦f≦100kHz		40		uV
Temperature Coefficient of V_{OUT}	$\Delta V_O/\Delta T$	I_{OUT}=5mA		-0.65		mV/°C
Ripple Rejection	RR	8V≦V_{IN}≦20V, f=120Hz, T_J=25°C	41	80		dB
Dropout Voltage	V_D	T_J=25°C		1.7		V

For 78N06 (V_{IN}=12V, I_{OUT}=40mA)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	T_J=25°C	5.76	6.0	6.24	V
		8.5V≦V_{IN}≦V_{MAX}, I_{OUT}=1mA ~ 300mA (Note 2)	5.7		6.3	V
Load Regulation	ΔV_{OUT}	T_J=25°C,I_{OUT}=1mA ~ 300mA		12.8	80	mV
		T_J=25°C,I_{OUT}=1mA ~ 40mA		5.8	40	mV
Line Regulation	ΔV_{OUT}	8.5V≦V_{IN}≦20V,T_J=25°C		64	175	mV
		9V≦V_{IN}≦20V,T_J=25°C		54	125	mV
Quiescent Current	I_Q			2.0	5.5	mA
Quiescent Current Change	ΔI_Q	9V≦V_{IN}≦20V			1.5	mA
		1mA≦V_{IN}≦40mA			0.1	mA
Output Noise Voltage	e_N	10Hz≦f≦100kHz		49		uV
Temperature Coefficient of V_{OUT}	$\Delta V_O/\Delta T$	I_{OUT}=5mA		0.75		mV/°C
Ripple Rejection	RR	10V≦V_{IN}≦20V,f=120Hz,T_J=25°C	40	46		dB
Dropout Voltage	V_D	T_J=25°C		1.7		V

■ ELECTRICAL CHARACTERISTICS (Cont.)

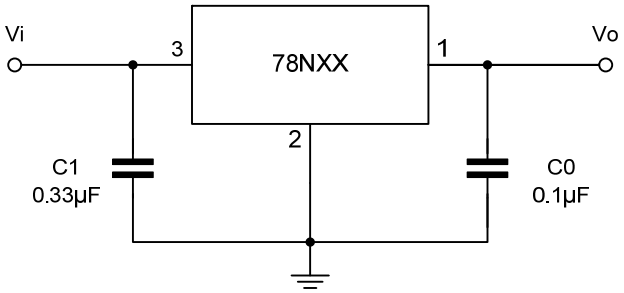
For 78N08 (V_{IN}=14V, I_{OUT}=40mA)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	T_J=25°C	7.68	8.0	8.32	V
		10.5V≦V_{IN}≦V_{MAX}, I_{OUT}=1mA ~ 300mA (Note 2)	7.60		8.40	V
Load Regulation	ΔV_{OUT}	T_J=25°C,I_{OUT}=1mA ~ 300mA		15	80	mV
		T_J=25°C,I_{OUT}=1mA ~ 40mA		8.0	40	mV
Line Regulation	ΔV_{OUT}	10.5V≦V_{IN}≦23V, T_J=25°C		10	175	mV
		11V≦V_{IN}≦23V, T_J=25°C		8	125	mV
Quiescent Current	I_Q			2.0	5.5	mA
Quiescent Current Change	ΔI_Q	11V≦V_{IN}≦23V			1.5	mA
		1mA≦V_{IN}≦40mA			0.1	mA
Output Noise Voltage	e_N	10Hz≦f≦100kHz		49		uV
Temperature Coefficient of V_{OUT}	$\Delta V_O/\Delta T$	I_{OUT}=5mA		0.75		mV/°C
Ripple Rejection	RR	11V≦V_{IN}≦23V,f=120Hz,T_J=25°C	39	70		dB
Dropout Voltage	V_D	T_J=25°C		1.7		V

Notes: 1. The Maximum steady state usable output current are dependent on input voltage, heat sinking, lead length of the package and copper pattern of PCB. The data above represent pulse test conditions with junction temperatures specified at the initiation of test.

2. Power dissipation<0.5W

■ TYPICAL APPLICATION CIRCUIT



Note 1. To specify an output voltage, substitute voltage value for "XX".
2. Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

■ TYPICAL CHARACTERISTICS

Fig.1 Ambient Temperature vs. Power Dissipation

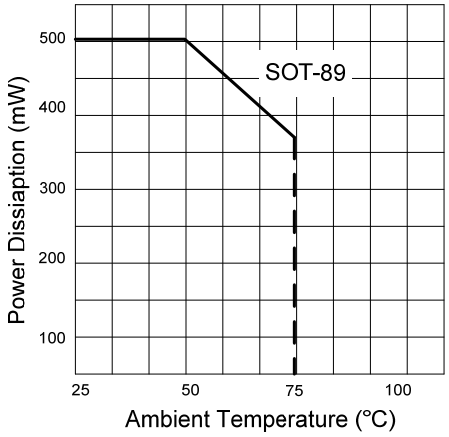


Fig.2 78N05 Output Voltage vs.Ambient Temperature

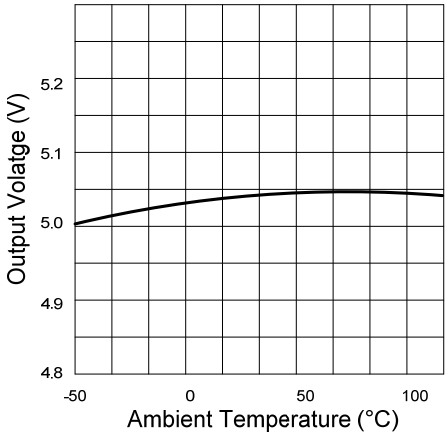


Fig.3 78N08 Output Volatge vs. Ambient Temperature

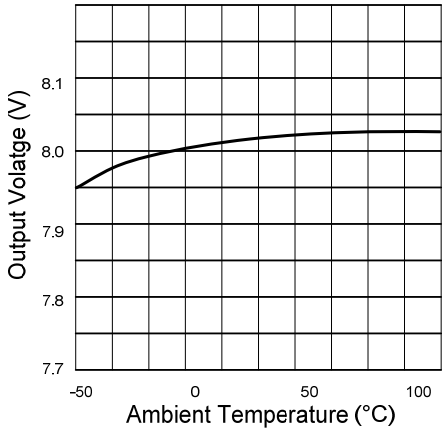


Fig.4 Output Characteristics (I_{OUT}=0mA,T_J=25℃)

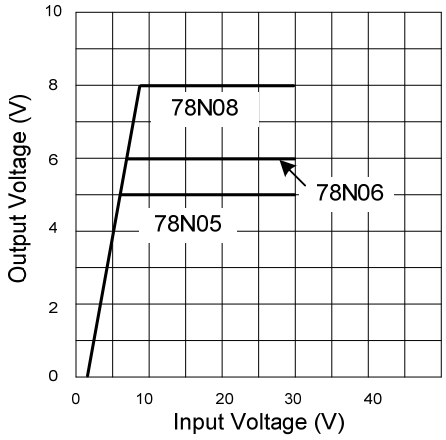


Fig.5 78N05 Dropout Characteristics (T_J=25°C)

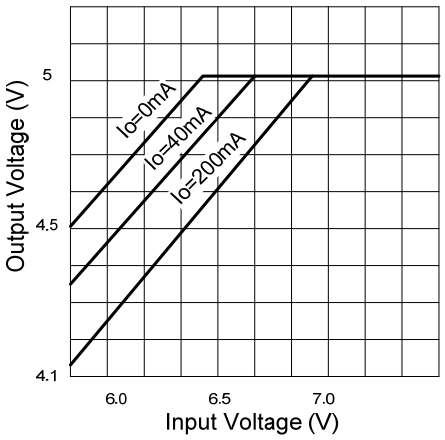
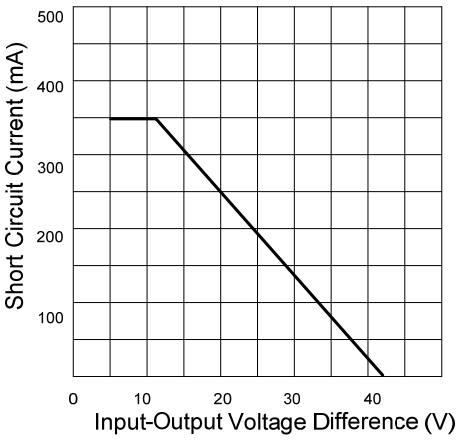


Fig.6 Short Circuit Output Current (T_J=25°C)



■ TYPICAL CHARACTERISTICS(Cont.)

Fig.7 78N05 Quiescent Current vs. Input Voltage (I_{OUT}=0mA,T_J=25°C)

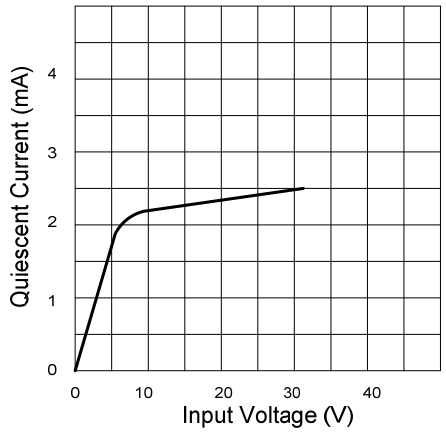


Fig.8 Peak Output Current vs Dropout Voltage Difference