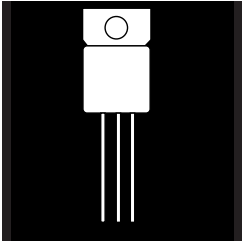


(COTS) COMMERCIAL OFF-THE-SHELF POSITIVE
FIXED VOLTAGE REGULATORS IN TO-257 PACK-



Three Terminal, Fixed Voltage, 1.5 Amp
Precision Positive Regulators In Hermetic
JEDEC TO-257AA Package

FEATURES

- Isolated Hermetic Package, JEDEC TO-257AA Outline
- Output Voltages: 5V, 12V, 15V
- Output Voltages Set Internally ±2%
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Standard Off-The-Shelf

DESCRIPTION

These three terminal positive regulators are supplied in a hermetically sealed metal package whose outline is similar to the industry standard TO-220 plastic package. All protective features are designed into the circuit including thermal shutdown, current limiting and safe-area control. With heat sinking, they can deliver over 1.5 amps of output current. These units feature internally trimmed output voltages to +/- 2% of nominal voltage. Standard voltages are 5V, 12V, and 15V. However, other voltages are available up to 24 volts. These units are ideally suited for Military applications where a hermetically sealed package is required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input Voltage	35 V
Operating Junction Temperature Range	- 55°C to + 150°C
Storage Temperature Range	- 65°C to + 150°C
Typical Power/Thermal Characteristics:	
Rated Power @ 25° C	T_C 17.5W
	T_A 3 W
Thermal Resistance	
	θ_{JC} 4.2°C/W
	θ_{JA} 42°C/W

COM7800T Series

ELECTRICAL CHARACTERISTICS 5 Volt $V_{IN} = 10V, I_O = 500mA, -55^{\circ}C, T_A = 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit	
Output Voltage	V_{OUT}	$T_A = 25^{\circ}C$		4.9	5.1	V
		$V_{IN} = 7.5V$ to $20V$	•	4.8	5.2	V
Line Regulation (Ntte 1)	V_{RLINE}	$V_{IN} = 7.5V$ to $20V$	•		5	mV
			•		12	mV
		$V_{IN} = 8.0V$ to $12V$	•		4	mV
			•		10	mV
Load Regulation (Ntte 1)	V_{RLOAD}	$I_B = 5mA$ to 1.5 Amp	•		12	mV
			•		25	mV
		$I_B = 250mA$ to 750 mA	•		6	mV
			•		15	mV
Standby Current Drain	I_{SCD}		•		6	mA
			•		6.5	mA
Standby Current Drain Change With Line	$D_{I_{SCD}}^+$ (Line)	$V_{IN} = 7.5V$ to $20V$	•		0.8	mA
Standby Current Drain Change With Load	$D_{I_{SCD}}^-$ (Load)	$I_B = 5mA$ to $1000mA$	•		0.5	mA
Dropout Voltage	V_{DO}	$T_A = 25^{\circ}C, DV_{OUT} = 100mV, I_O = 1.0A$			2.5	V
Peak Output Current	I_{PK}	$T_A = 25^{\circ}C$		1.5	3.3	A
Short Circuit Current (Ntte 2)	I_{SC}	$V_{IN} = 35V$	•		1.2	A
			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	$f = 120$ Hz, $DV_{IN} = 10V$ (Ntte 3)	•	66		dB
			•	60		dB
Output Noise Voltage (Ntte 3)	N_O	$T_A = 25^{\circ}C, f = 10$ Hz to $100kHz$			40	$\mu V/V$ R.M.S
Long Term Stability (Ntte 3)	$\frac{DV_{OUT}}{Dt}$	$T_A = 25^{\circ}C, t = 1000$ hrs.			75	mV

ELECTRICAL CHARACTERISTICS 1.2 Volt $V_{IN} = 19V, I_O = 500mA, -55^{\circ}C, T_A = 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit	
Output Voltage	V_{OUT}	$T_A = 25^{\circ}C$		11.76	12.24	V
		$V_{IN} = 14.5V$ to $27V$	•	11.6	12.4	V
Line Regulation (Ntte 1)	V_{RLINE}	$V_{IN} = 14.5V$ to $27V$	•		18	mV
			•		50	mV
		$V_{IN} = 16V$ to $22V$	•		9	mV
			•		30	mV
Load Regulation (Ntte 1)	V_{RLOAD}	$I_B = 5mA$ to 1.5 Amp	•		32	mV
			•		60	mV
		$I_B = 250mA$ to 750 mA	•		20	mV
			•		40	mV
Standby Current Drain	I_{SCD}		•		6.0	mA
			•		6.5	mA
Standby Current Drain Change With Line	$D_{I_{SCD}}^+$ (Line)	$V_{IN} = 15V$ to $30V$	•		0.8	mA
Standby Current Drain Change With Load	$D_{I_{SCD}}^-$ (Load)	$I_B = 5mA$ to $1000mA$	•		0.5	mA
Dropout Voltage	V_{DO}	$DV_{OUT} = 100mV, I_O = 1.0A$	•		2.5	V
Peak Output Current	I_{PK}	$T_A = 25^{\circ}C$		1.5	3.3	A
Short Circuit Current (Ntte 2)	I_{SC}	$V_{IN} = 35V$	•		1.2	A
			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	$f = 120$ Hz, $DV_{IN} = 10V$ (Ntte 3)	•	61		dB
			•	54		dB
Output Noise Voltage (Ntte 3)	N_O	$T_A = 25^{\circ}C, f = 10$ Hz to $100kHz$			40	$\mu V/V$ R.M.S
Long Term Stability (Ntte 3)	$\frac{DV_{OUT}}{Dt}$	$T_A = 25^{\circ}C, t = 1000$ hrs.			120	mV

Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to $V_{IN} = 35V$.
3. If not tested, shall be guaranteed to the specified limits.

The • denotes the specifications which apply over the full operating temperature range.

ELECTRICAL CHARACTERISTICS 15 V_ot V_N = 23V, I_o = 500mA, -55°C T_A 125°C (unless otherwise specified)

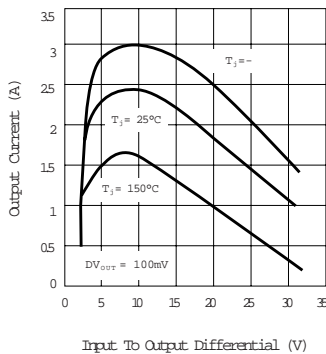
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Output Voltage	V _{OUT}	T _A = 25°C	14.7	15.3	V
		V _N = 18.5V to 30V	• 14.5	15.5	V
Line Regulation (Note 1)	V _{RLINE}	V _N = 17.5V to 30V	•	20	mV
			•	50	mV
		V _N = 20V to 26V	•	15	mV
Load Regulation (Note 1)	V _{RLOAD}	I _b = 5mA to 1.5 Amp	•	35	mV
		I _b = 5mA to 1.0 Amp	•	75	mV
		I _b = 250mA to 750 mA	•	21	mV
Standby Current Drain	I _{SCD}		•	6.0	mA
			•	6.5	mA
Standby Current Drain Change With Line	D I _{SCD} (Line)	V _N = 18.5V to 30V	•	0.8	mA
Standby Current Drain Change With Load	D I _{SCD} (Load)	I _b = 5mA to 1000mA	•	0.5	mA
Dropout Voltage	V _{DO}	T _A = 25°C, DV _{OUT} = 100mV, I _o = 1.0A		2.5	V
Peak Output Current	I _b (pk)	T _A = 25°C	1.5	3.3	A
Short Circuit Current (Note 2)	I _{SC}	V _N = 35V	•	1.2	A
			•	2.8	A
Ripple Rejection	DV _N	f = 120 Hz, DV _N = 10V	54		dB
	DV _{OUT}	(Note 3)	• 52		dB
Output Noise Voltage (Note 3)	N _o	T _A = 25°C, f = 10 Hz to 100kHz		40	µV/V R.M.S
Long Term Stability (Note 3)	DV _{OUT} Dt	T _A = 25°C, t = 1000 hrs.		150	mV

Notes:

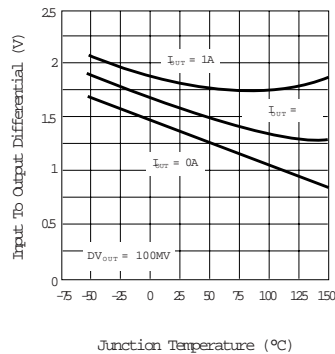
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_N = 35V.
3. If not tested, shall be guaranteed to the specified limits.
The • denotes the specifications which apply over the full operating temperature range.

TYPICAL PERFORMANCE CHARACTERISTICS

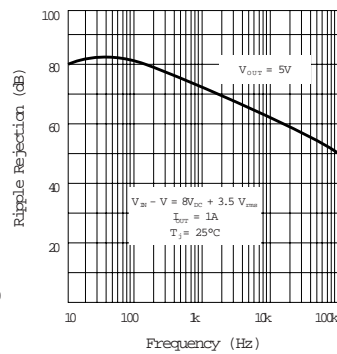
PEAK OUTPUT CURRENT



DROPOUT VOLTAGE

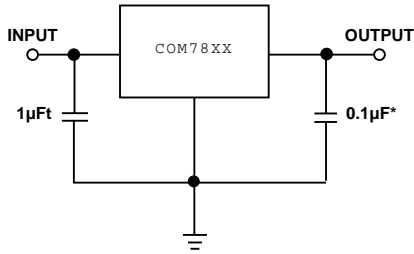


RIPPLE REJECTION



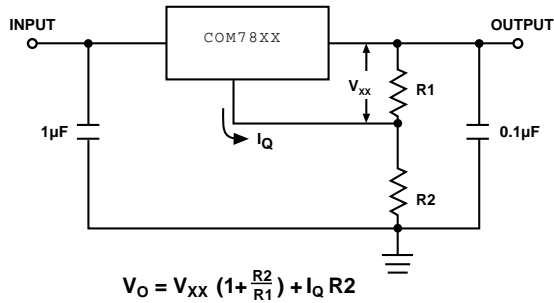
TYPICAL APPLICATIONS

Fixed Output Regulator



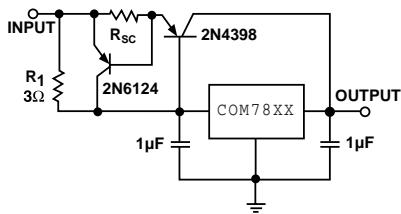
*Increasing value of output capacitor improves system transient response.
Required only if regulator is located an appreciable distance from power supply filter.

Circuit For Increasing Output Voltage

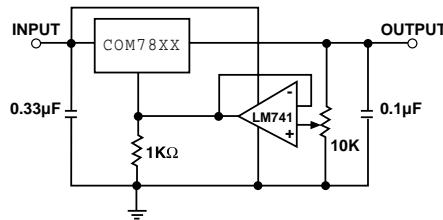


$$V_o = V_{xx} \left(1 + \frac{R_2}{R_1}\right) + I_q R_2$$

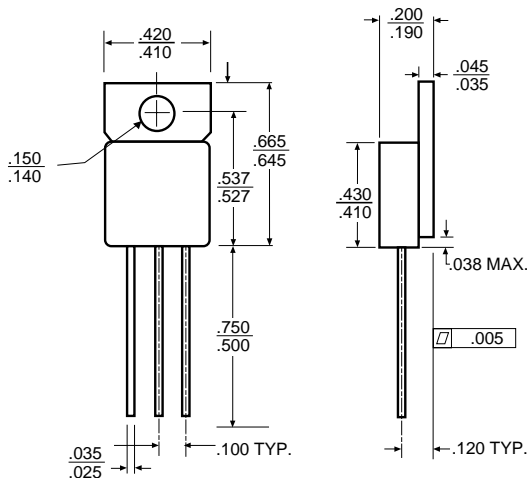
High Output Current,
Short Circuit Protected



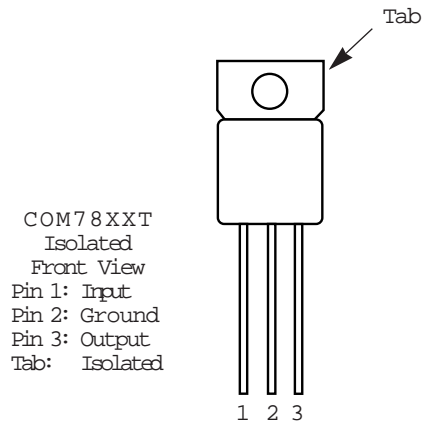
Adjustable Output Regulator,
7 To 30 Volts



MECHANICAL OUTLINE
TO-257AA



PIN CONNECTION



Note:

- Case is metal/hemetically sealed glass feedthroughs
- Isolated Tab