

April 13, 1998

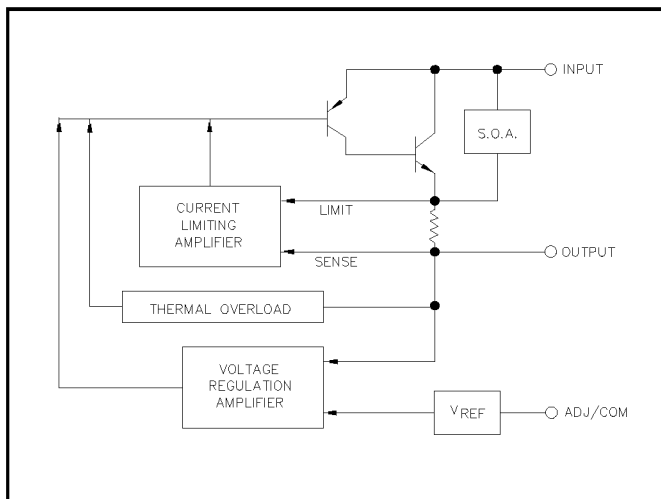
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## DESCRIPTION

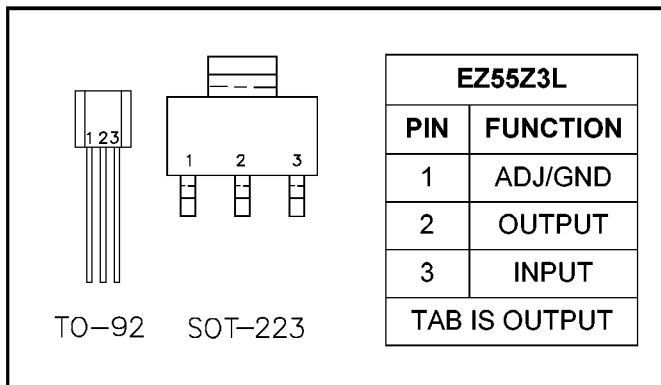
The EZ55Z3L voltage regulators are monolithic integrated circuits designed for use in applications requiring a well regulated positive output voltage with low input-output differential voltage requirements.

Outstanding features include full power usage up to 250mA of load current, internal current limiting and thermal shutdown. Safe area protection on the die is also included, providing protection of the series pass transistor under most operating conditions. TO-92 and SOT-223 packages are available for cost effective applications.

## BLOCK DIAGRAM



## PIN CONFIGURATIONS



## FEATURES

- External capacitor not required for stability
- Low dropout performance
- Fixed models @ 3.3V, 5V, 9V, 12V, 24V
- Adjustable output down to 1.25V
- Line regulation typically 0.015%/V
- Load regulation typically 0.1%
- TO-92 or SOT-223 packages

## ORDERING INFORMATION

DEVICE <sup>(1)(2)</sup>	PACKAGE	V <sub>OUT</sub> VOLTS
EZ55Z3L - SX	SOT-223	See Note (1)
EZ55Z3L - ZX	TO-92	See Note (1)

Notes:

(1) Where X denotes voltage options. Available voltages are: 3.3V, 5V, 9V, 12V and 24V. Add "ADJ" for adjustable version (1.25 to 24V).

(2) Add suffix "TR" for tape and reel (SOT-223, TO-92). Add suffix "TA" for ammo pack (TO-92).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Units
Operating Input Voltage	V <sub>IN</sub>	V <sub>O</sub> + 10	V
Power Dissipation <sup>(1)</sup>	P <sub>D</sub>	2.5	W
Thermal Resistance Junction to Case SOT-223 TO-92	θ <sub>JC</sub>	4 83	°C/W
Thermal Resistance Junction to Ambient SOT-223 TO-92	θ <sub>JA</sub>	156 200	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec	T <sub>LEAD</sub>	260	°C

Note:

(1) Specifications are applicable for power dissipation of 2.5 Watts and are only achievable over a limited range of V<sub>IN</sub> - V<sub>OUT</sub>.

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**ELECTRICAL CHARACTERISTICS**

 Unless otherwise specified,  $V_{IN} - V_{OUT} = 1.45V$  to  $10V$  and  $I_o = 10mA$  to  $250mA$ 

Parameter	Symbol	Test Conditions <sup>(1)</sup>			Test Limits			Units
		$V_{IN}$	$I_o$	$T_J$ <sup>(6)</sup>	Min	Typ	Max	
Output Voltage <sup>(2)</sup>	$V_O$	$V_O + 3V$	10mA	25°C	0.97  $V_O$	$V_O$	1.03  $V_O$	V
Fixed Voltage				O.T.	0.96  $V_O$	$V_O$	1.04  $V_O$	
Reference Voltage <sup>(2)</sup>	$V_{REF}$	$V_O + 3V$	10mA	25°C	1.213	1.250	1.288	V
Adj Voltage				O.T.	1.200	1.250	1.300	
Line Regulation <sup>(2)</sup>	$REG_{(LINE)}$		10mA	25°C		0.015	0.2	%
				O.T.		0.035	0.2	
Load Regulation <sup>(2)</sup>	$REG_{(LOAD)}$	3V		25°C		0.1	0.3	%
				O.T.		0.2	0.4	
Dropout Voltage $\Delta V_{OUT}, \Delta V_{REF} = 1\%$	$V_D$			O.T.		1.3	1.5	V
Current Surge Limit	$I_S$			O.T.		0.5		A
Quiescent Current	$I_Q$	10V		O.T.		10	15	mA
Thermal Regulation <sup>(3)</sup>	$REG_{(THERM)}$			25°C		0.002	0.01	%/W
Adjust Pin Current	$I_{ADJ}$			25°C		55		$\mu A$
				O.T.			120	
Adjust Pin Current Change	$\Delta I_{ADJ}$			O.T.		0.2	5	$\mu A$
Temperature Stability	$T_S$	5V	250mA	O.T.		0.5		%
Minimum Load Current	$I_O$	10V		O.T.		5	10	mA
RMS Output Noise <sup>(4)</sup>	$V_N$			25°C		0.003		% $V_O$
Ripple Rejection Ratio <sup>(5)</sup>	$R_A$	5V	250mA	O.T.	60	72		dB

**NOTES:** Nominal output voltages are specified under Ordering Information

 (1) Specifications are applicable for power dissipation of 2.5 Watts and are only achievable over a limited range of  $V_{IN} - V_{OUT}$ .

(2) Low duty cycle pulse testing with Kelvin connections required. Changes in output voltage due to heating effects are covered under the specification for thermal regulation.

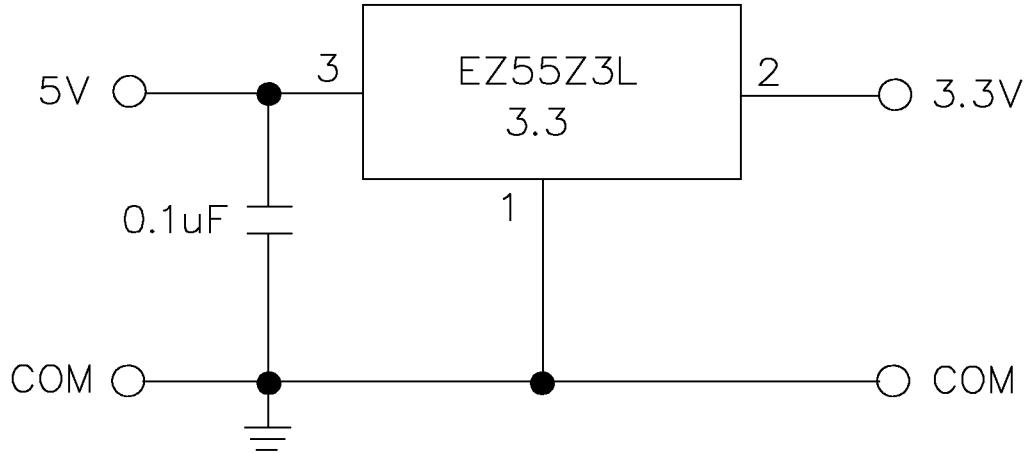
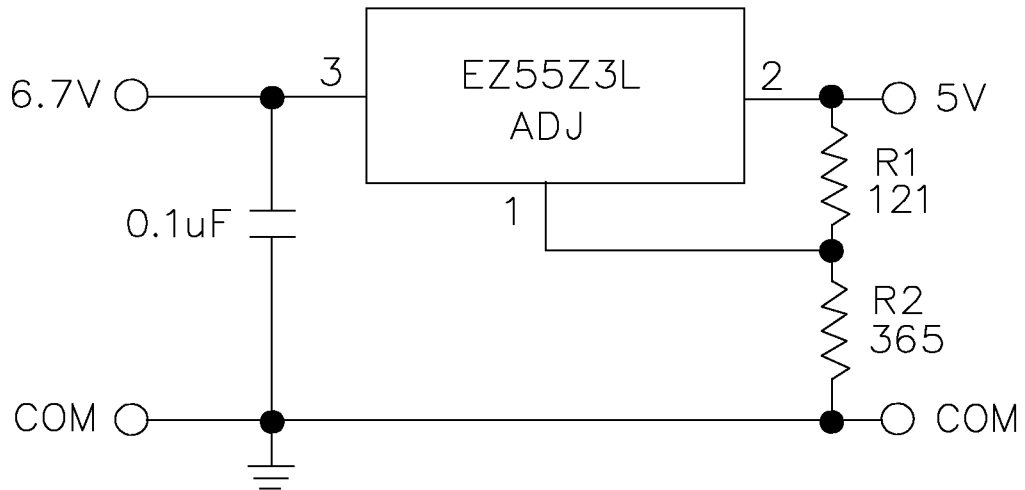
(3) 30ms pulse.

(4) Bandwidth of 10Hz to 10kHz

 (5) 120Hz input ripple, 1 dB less for each volt increase above 3.3V Min.;  $C_{OUT}$  &  $C_{ADJ}$  (for ADJ) = 25 $\mu F$ .

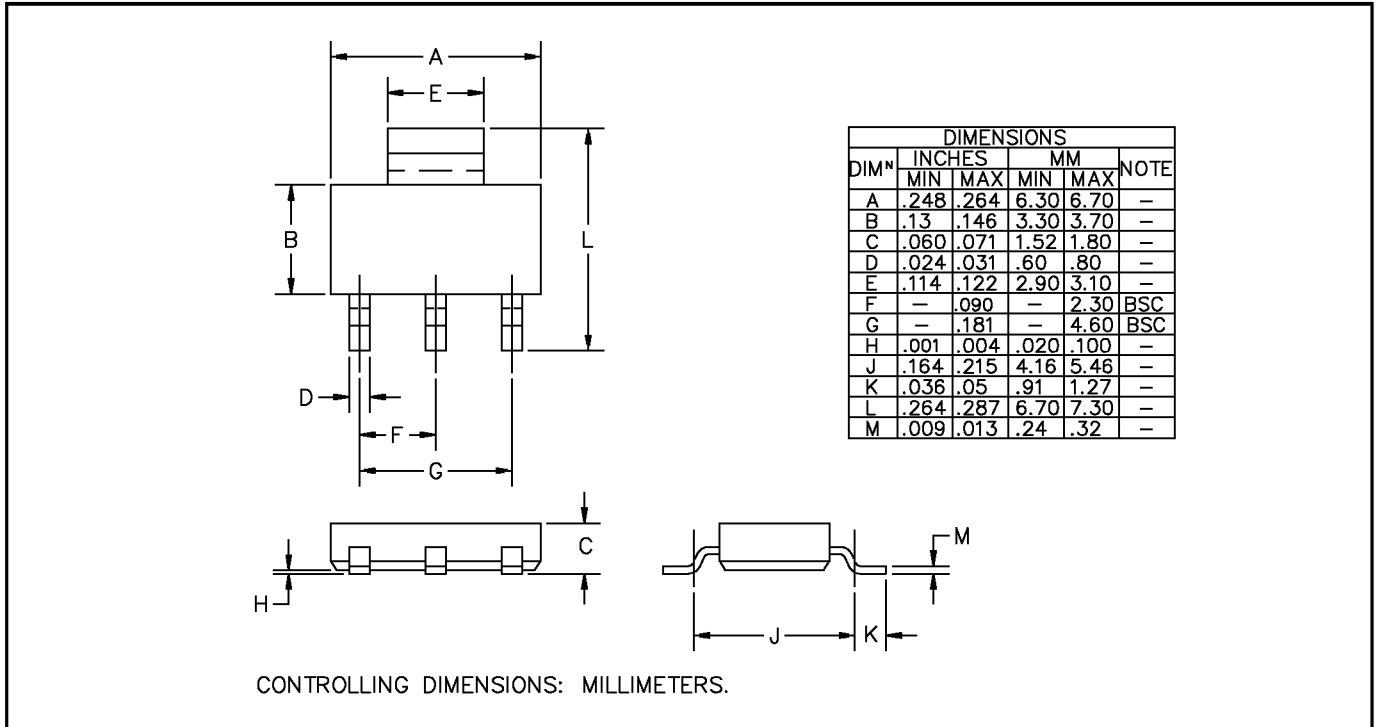
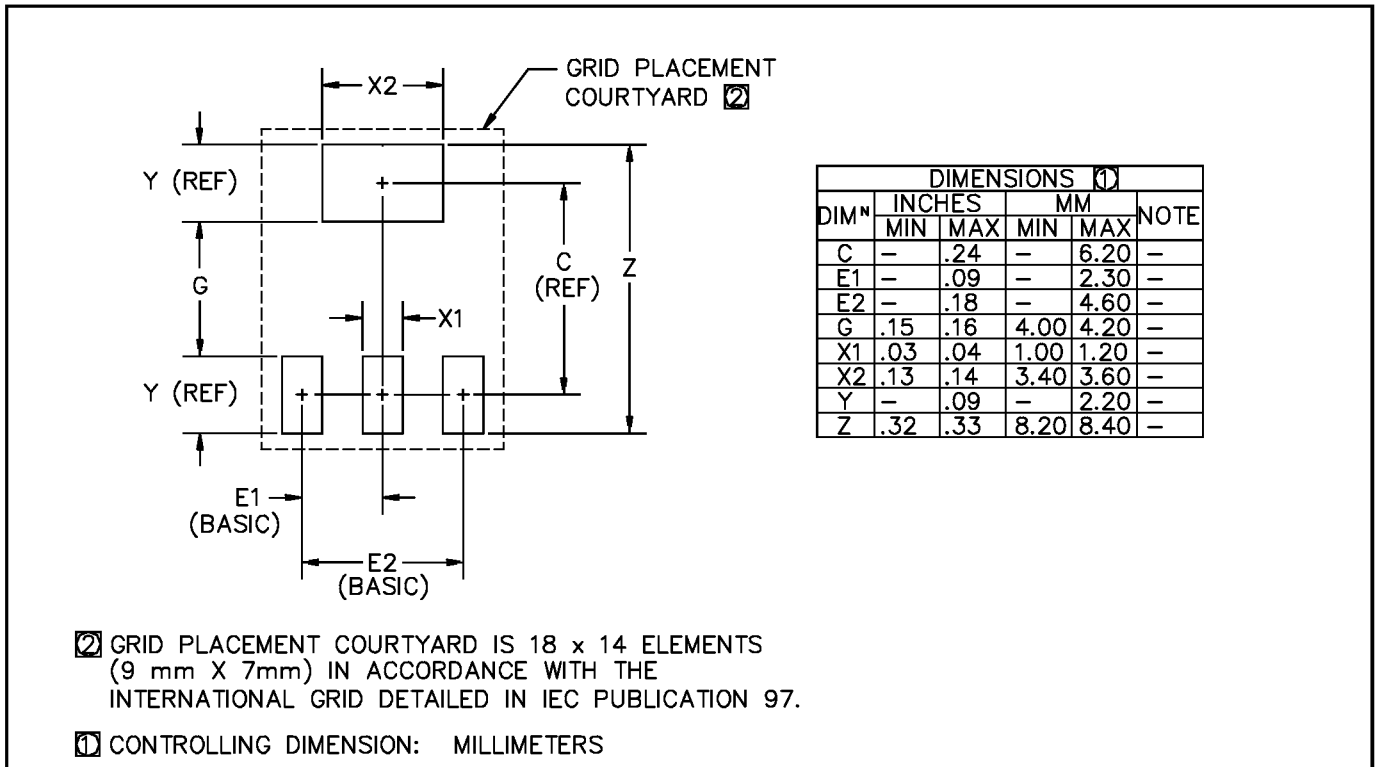
(6) Over Temp. (O.T.) = over specified operating junction temperature range.

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**TYPICAL APPLICATIONS**
**FIXED VOLTAGE REGULATOR**

**ADJUSTABLE VOLTAGE REGULATOR**


$$V_{OUT} = V_{REF} \left( 1 + \frac{R2}{R1} \right)$$

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**DEVICE OUTLINE SOT-223**

**LAND PATTERN SOT-223**


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**DEVICE OUTLINE TO-92**
