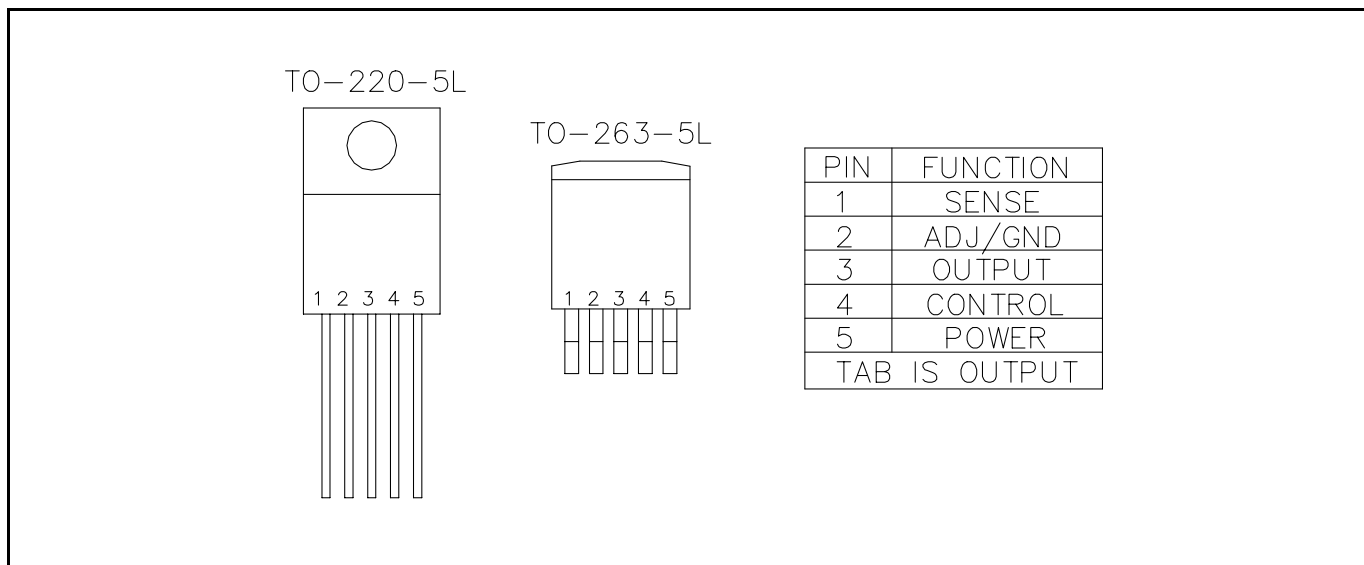


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PIN CONFIGURATION



PIN DESCRIPTION

Pin	Pin Name	Pin Function
1	SENSE	This pin is the positive side of the reference voltage for this device. With this pin it is possible to Kelvin sense the output voltage at the load.
2	ADJUST / GROUND	This pin is the negative side of the reference voltage for the device. Transient response can be improved by adding a small bypass capacitor from the adjust pin to ground. This pin is the bottom end of the internal resistor feedback chain for fixed output voltage parts, and should be connected to ground.
3	OUTPUT	This is the power output of the device, and is electrically connected to the TAB.
4	CONTROL	This pin is the supply pin for the control circuitry for the device. The current flow into this pin will be approximately 1% of the output current. For the device to regulate, the voltage at this pin must be between 1.0V and 1.3V greater than the output voltage (see dropout specifications).
5	POWER	This is the collector input to the power device of the EZ158X. The output load current is supplied through this pin. For the device to regulate, the voltage on this pin must be between 0.1V and 0.7V greater than the output voltage, depending upon load current (see dropout specifications).

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ELECTRICAL CHARACTERISTICS

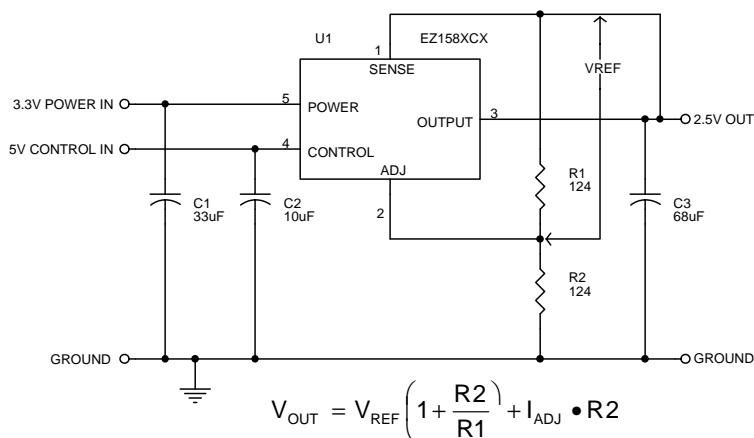
		Test Conditions ⁽¹⁾				Test Limits				
Parameter	Symbol	V _{CNTL} Volts	V _{PWR} Volts	Amps	T _J ⁽⁶⁾	Min	Typ	Max	Units	
Reference Voltage	V _{REF}	2.75	2.00	0.01	25°C	1.243	1.250	1.257	V	
EZ1583 EZ1582 EZ1581 EZ1580		2.7 - 12	2.05 - 5.5	0.01 - 1.5 0.01 - 3.0 0.01 - 5.0 0.01 - 7.0	O.T.	1.237	1.250	1.263		
Line Regulation	REG _(LINE)	2.5 - 12	1.75 - 5.5	0.01	O.T.		1.0	3.0		mV
Load Regulation EZ1583 EZ1582 EZ1581 EZ1580	REG _(LOAD)	2.75	2.1	0.01 - 1.5 0.01 - 3.0 0.01 - 5.0 0.01 - 7.0	O.T.		1.0	5.0		mV
Minimum Load Current ⁽²⁾	I _O	5	3.3		O.T.		5.0	10		mA
Control Pin Current ⁽³⁾ EZ1583 EZ1582 EZ1581 EZ1580	I _C	2.75	2.05	1.5 3.0 5.0 7.0	O.T.		6.0 30 33 60	120	mA	
Adjust Pin Current	I _{ADJ}	2.75	2.05	0.01	O.T.		50	120	μA	
Current Limit EZ1583 EZ1582 EZ1581 EZ1580	I _{CL}	2.75	2.05		O.T.	1.6 3.1 5.1 7.1			A	
Ripple Rejection ⁽⁴⁾ EZ1583 EZ1582 EZ1581 EZ1580	R _A	3.75	3.75	0.75 1.5 2.5 3.5	25°C	60	80		dB	
Thermal Regulation ⁽⁵⁾	REG _(THERMAL)						0.002	0.02	%/W	
Dropout Voltage ⁽⁷⁾ Minimum V _{CNTL} EZ1583 EZ1582 EZ1581 EZ1580	V _C -V _O		2.05	1.5 3.0 5.0 7.0	O.T.		1.00 1.05 1.10 1.15	1.15 1.18 1.25 1.30	V	
Dropout Voltage ⁽⁷⁾ Minimum V _{POWER} EZ1583 EZ1582 EZ1581 EZ1580	V _P -V _O	2.75							V	
				1.5	25°C O.T.		0.40 0.50	0.50 0.60		
				3.0	25°C O.T.		0.40 0.50	0.50 0.60		
				5.0	25°C O.T.		0.40 0.50	0.50 0.60		
				7.0	25°C O.T.		0.54 0.70	0.62 0.80		

- NOTES**
- (1) Unless otherwise specified, V_{OUT} = V_{SENSE}, V_{ADJ} = 0V.
 - (2) Required to maintain regulation. Voltage set resistors R1, R2 are usually utilized for minimum load current.
 - (3) Current used to drive the output section; minimum value equals the standby current of the device.
 - (4) V_C = V_P = 3.75V Avg; V_{RIPPLE} = 1V_{PK-PK}.
 - (5) 30ms.
 - (6) Over Temp (O.T.) = over specified operating junction temperature range.
 - (7) Minimum input/output voltage required to maintain 1% regulation.

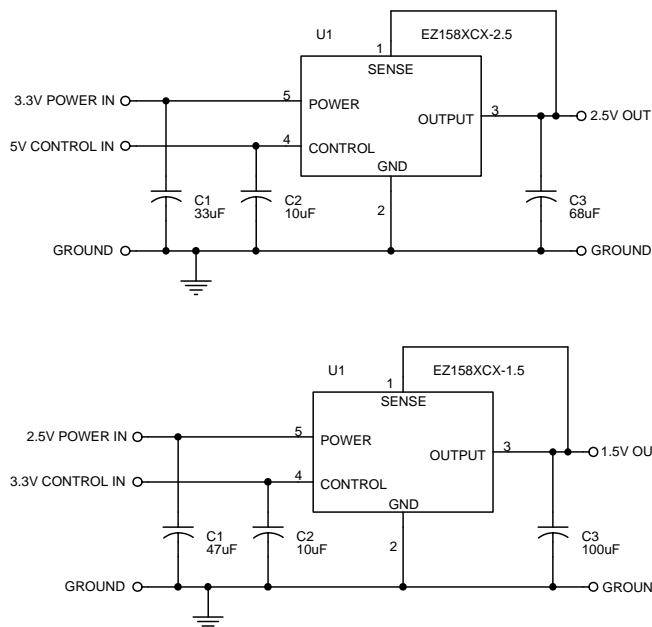
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TYPICAL APPLICATIONS⁽¹⁾⁽²⁾

Adjustable Output Parts⁽³⁾



Fixed Output Parts



NOTES:

- (1) Capacitor values are for reference only. Good quality, low ESR tantalum or aluminum electrolytic capacitors should be used. Increasing the value of the output capacitor will improve the overall transient response.
- (2) If the same voltage is input to both POWER and CONTROL, then the dropout voltage will become 1.3V maximum.
- (3) A small (~0.033μF) capacitor can be used to bypass the ADJUST pin to improve transient response, if needed.

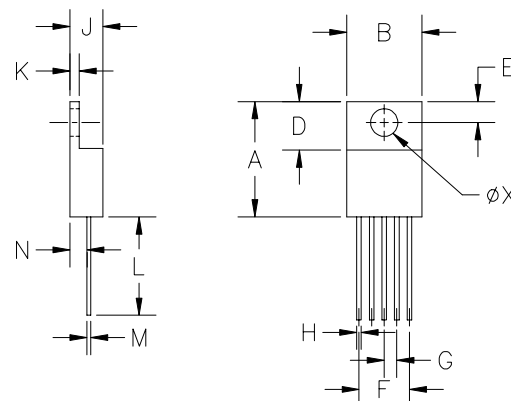
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APPLICATION INFORMATION

The EZ158X is a low dropout regulator designed to power the next generation of low voltage, split voltage plane processors, such as the Pentium® Processor P55C, the IBM PowerPC™ 603EV and 604EV and the AMD5_K86™ and K6 Processors.

The dropout voltage is minimized by utilizing a separate input voltage, V_{CONTROL} , which should exceed V_{OUT} by at least 1.3V. The 2.5V power for the load (microprocessor core) can be derived from a 3.3V system supply. Since the efficiency of a linear regulator is the ratio of the output to the input voltage, heat dissipation is reduced by using a 3.3 input, thereby lowering heatsink and cooling fan costs. For a load of 7A at 2.5V, the regulator would dissipate 17.5W when converting from 5V, but only 5.6W from a 3.3V input. Remote Kelvin sensing of the output voltage can be achieved by connecting the sense pin to the output at the load. Remote sensing will reduce errors associated with resistive trace losses between regulator and processor.

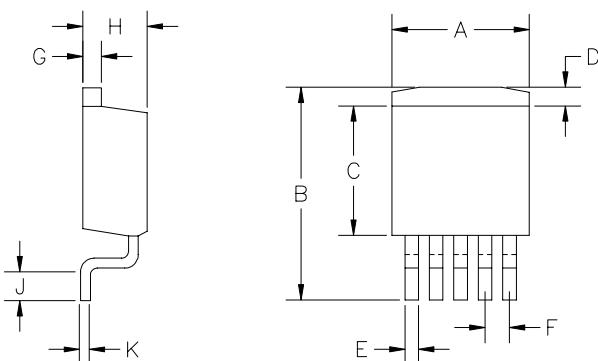
DEVICE OUTLINE - TO-220, 5 PIN



DIM ^N	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.560	.650	14.22	16.51	—
B	.380	.420	9.65	10.67	—
D	.230	.260	5.84	6.60	—
E	.100	.135	2.54	3.43	—
F	.263	.273	6.68	6.94	—
G	.062	.072	1.57	1.83	—
H	.025	.040	.63	1.02	—
J	.140	.190	3.55	4.83	—
K	.045	.055	1.14	1.40	—
L	.540	.560	13.72	14.22	—
M	.014	.022	.35	.56	—
N	.080	.120	2.03	3.05	—
ØX	.139	.161	3.53	4.09	—

JEDEC TO-220

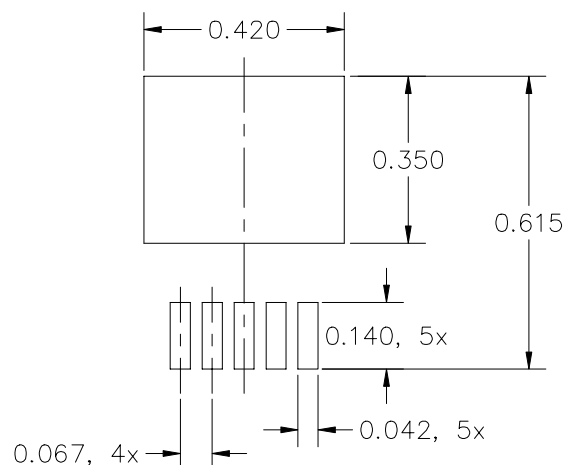
DEVICE OUTLINE - TO-263, 5 PIN



DIM ^N	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.380	.405	9.65	10.29	—
B	.575	.625	14.60	15.88	—
C	.325	.380	8.25	9.66	—
D	—	.055	—	1.40	—
E	.020	.039	.50	.99	—
F	.060	.072	1.52	1.83	—
G	.045	.055	1.14	1.40	—
H	.160	.190	4.06	4.83	—
J	.090	.110	2.28	2.80	—
K	.018	.029	1.457	1.736	—

JEDEC TO-263

MINIMUM LAND PATTERN - TO-263, 5 PIN



NOTE: ALL DIMENSIONS ARE IN INCHES