Elektronische Bauelemente

S3ULM317

Adjustable Voltage Regulator

RoHS Compliant Product

A suffix of "-C" specifies halogen free

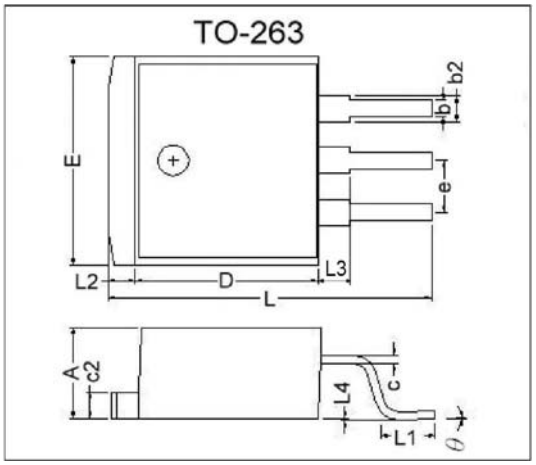
DESCRIPTION

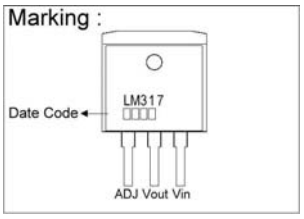
The S3ULM317 is an adjustable 3-termial positive voltage regulator, designed to supply more than 1.5A of output current with voltage adjustable from 1.3 to 37V.

FEATURES

- Output current up to 1.5A.
- Output voltage adjustable from 1.3V to 37V.
- Internal short circuit protection.
- Internal over temperature protection.
- Safe-Area compensation for output transistor.

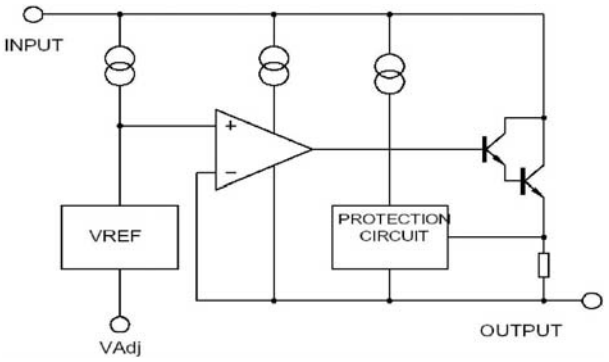
PACKAGE DIMENSIONS





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
L4	0.00	0.30	D	8.6	9.0
c	0.36	0.5	e	2.54 REF.	
L3	1.50 REF		L	14.6	15.8
L1	2.29	2.79	θ	0°	8°
E	9.80	10.4	L2	1.27 REF	

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS at Ta = 25°C

Parameter	Symbol	Ratings	Unit
Input-Output Voltage Difference	Vi-Vo	40	V
Load Temperature	T_{LEAD}	230	°C
Power Dissipation	P_D	Internal limited	
Operating, Storage Temperature Range	T_{OPR}, T_{STG}	0~125, -65 ~ 150	°C

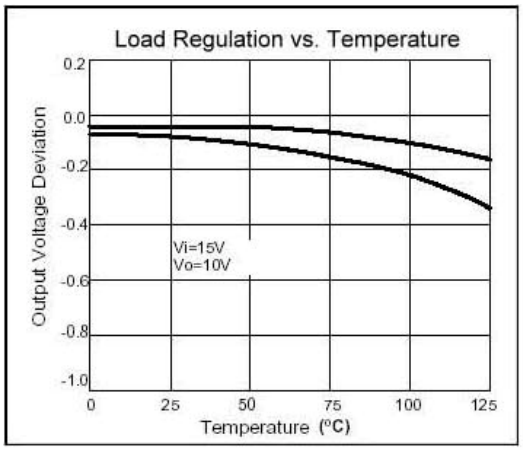
ELECTRICAL CHARACTERISTICS

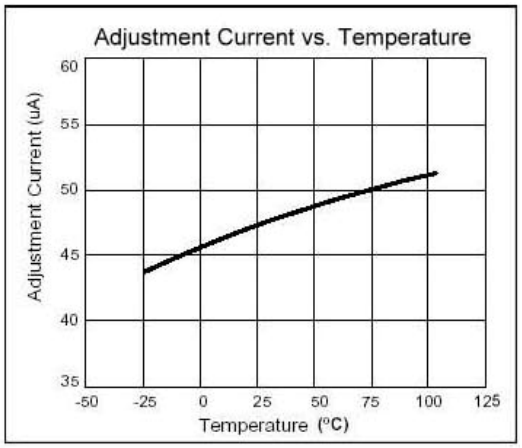
(V_I-V_O=5V, 0 °C < T_J <125 °C, I_O=500mA, I_{MAX}=1.5A, P_{MAX}=20W, unless otherwise specified)

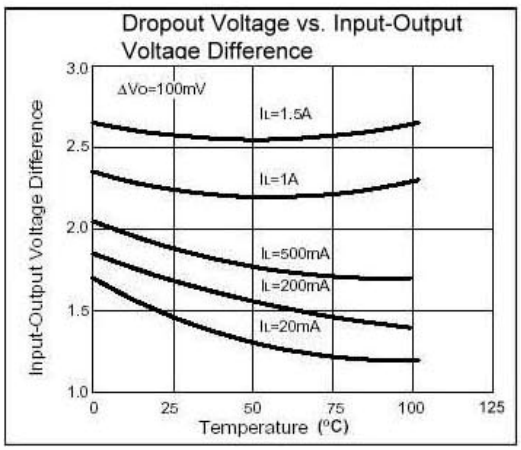
Parameter	Symbol	Test Conditions		Min.	Typ.	Max	Unit
Line Regulation	ΔV_O	T_A=25°C, 3V≦V_I-V_O=40V		-	0.01	0.04	%V
		T_A=0-125°C, 3V≦V_I-V_O≦40V		-	0.02	0.07	%V
Load Regulation	ΔV_O	T_A=25°C	V_O≦6V	-	18	25	mV
		10 mA≦I_O≦I_{MAX}	V_O≧5V	-	0.4	0.5	%/V_O
		10 mA≦I_O≦I_{MAX}	V_O≦5V	-	40	70	mV
			V_O≧6V	-	0.8	1.5	%V_O
Adjustable Pin Current	I_{ADJ}			-	46	100	uA
Adjustable Pin Current Change	ΔI_{ADJ}	2.5V≦V_I-V_O≦40V, 10 mA≦I_O≦I_{MAX},P_D≦P_{MAX}		-	2.0	5	uA
Reference Voltage		3V≦V_I-V_O≦40V, 10 mA≦I_O≦I_{MAX},P_D≦P_{MAX}		1.225	1.25	1.275	V
Temperature Stability	STT			-	0.7	-	%/V_O
Minimum Load Current for Regulation	$I_{L(MIN)}$	V_I-V_O=40V		-	3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	V_I-V_O≦15V, P_D<P_{MAX}		1.5	2.2	-	A
		V_I-V_O=40V, P_D<P_{MAX}, T_J=25°C		0.15	0.4	-	
RMS Noise vs.% of Vout	eN	T_A=25°C,10 HZ≦f≦10 KHz		-	0.003	0.01	%/V_O
Ripple Rejection	RR	V_O=10V, f=120Hz,		-	60	-	dB
		V_O=10V, f=120Hz, C_{ADJ}=10uF		66	75	-	
Long-term Stability,T_J=T_{HIGH}	ST	T_A=25°C, 1000hr		-	0.3	1	%
Junction to Case Thermal Resistance	RθJC			-	5	-	°C/W

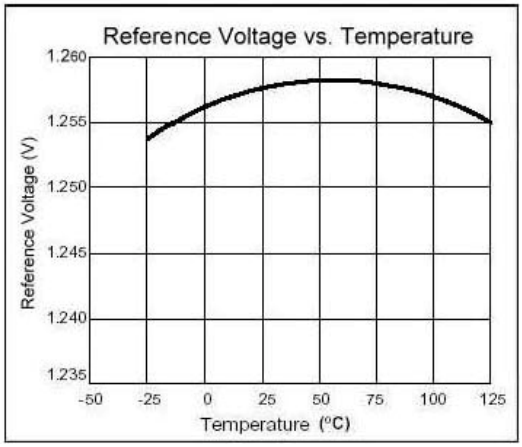
*Note: Testing with low duty pulse should be used to avoid heating effect.

CHARACTERISTIC CURVES









APPLICATION CIRCUIT

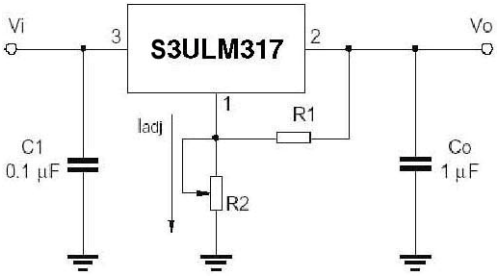


Fig. 1 Programmable voltage regulator
VO=1.25V*(1+R2/R1)+IADJ*R2
C1 is required when regulator is located an appreciated distance from power supply.
Co is needed to improve transient response.

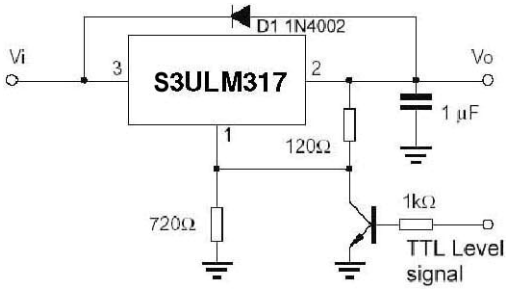


Fig. 2 Regulator with On-off control.

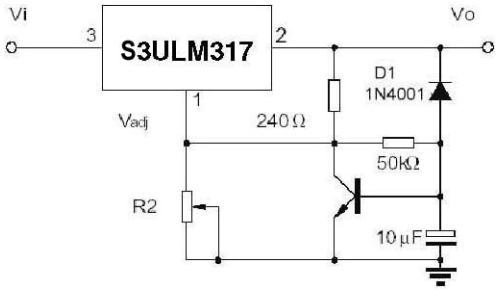


Fig. 3 Soft start application.

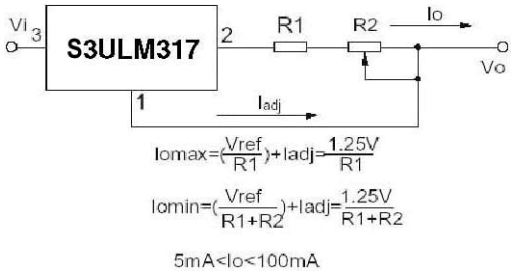


Fig. 4 Constant current application.