



FEATURES

- Adjustable or fixed output
- Output current of 1A
- Low dropout - 1.3V typ. at 1A output current
- 0.04% line regulation
- 0.2 % load regulation
- 100% thermal limit burn-in
- Fast transient response
- S1117MMK can operate using MLCCs in the capacitance range of 2µF to 10µF.

DESCRIPTION

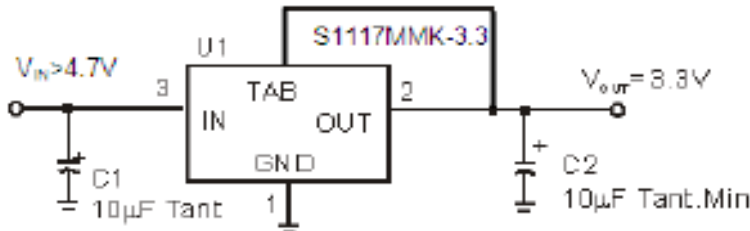
The S1117MMK series of positive adjustable and fixed regulators is designed to provide 1A with high efficiency. All the internal circuitry is designed to operate down to 1.4V input-to-output differential. On-chip trimming adjusts the reference voltage to 1%. The typical current limit value of 1.5A allows the stress on both the regulator and the power source circuitry to be minimized under overload conditions.

APPLICATIONS

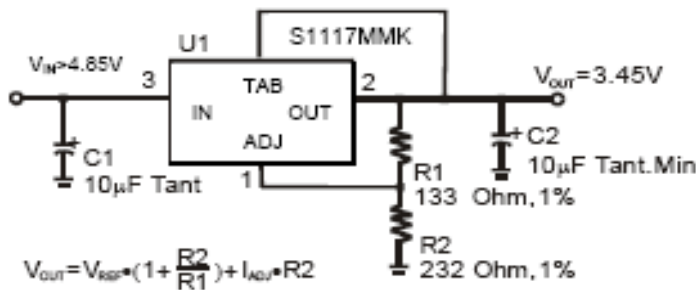
- High efficiency linear regulators
- Post regulators for switching supplies
- Adjustable power supply

TYPICAL APPLICATION DATA

Fixed Voltage Regulator



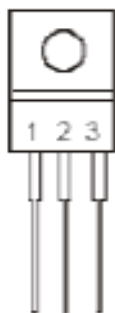
Adjustable Voltage Regulator



Notes:

1. C1 is needed if the device is far from filter capacitors
2. C2 minimum value required for the stability

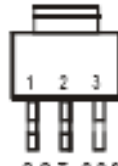
PACKAGE INFORMATION



TO-220



TO-263



SOT-223

PIN	FUNCTION
1	ADJ/GND
2	OUTPUT
3	INPUT

The tab is the output.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Maximum	Units
P_D	Power dissipation	Internally limited	W
V_{IN}	Input voltage	20	V
T_J	Operating junction temperature range	-40 to 125	°C
T_{STG}	Storage temperature	-65 to 150	°C
T_{LEAD}	Lead temperature (soldering, 10 sec)	300	°C
V_{ESD}	Minimum ESD rating (HBM)	3	kV

DEVICE SELECTION GUIDE

Device	Output Voltage
S1117MMK	Adj
S1117MMK -1.2	1.2V
S1117MMK -1.5	1.5V
S1117MMK -1.8	1.8V
S1117MMK -2.5	2.5V
S1117MMK -2.85	2.85V
S1117MMK -3.0	3.0V
S1117MMK -3.3	3.3V
S1117MMK -3.5	3.5V
S1117MMK -5.0	5.0V

Other fixed versions are available $V_{OUT} = 1.5V$ to $5.0V$

ELECTRICAL CHARACTERISTICS

The electrical characteristics at $I_{LOAD} = 0$ mA and $T_J = +25^\circ\text{C}$, unless otherwise specified.

Parameter	Device	Test Conditions	Min	Typ	Max	Units
Reference voltage, (Note 1)	S1117MMK	$V_{IN} = 5V, I_{LOAD} = 10$ mA	1.232	1.250	1.268	V
		$1.5V \leq V_{IN} - V_{OUT} \leq 10V$ $I_{LOAD} = 10$ mA to 1A	*	1.225	1.275	
Output voltage (Note 1)	All fixed versions	$V_{IN} = V_{OUT} + 1.5V$, Varied from nominal V_{OUT}	-1.5		+1.5	%
		$1.5V \leq V_{IN} - V_{OUT} \leq 10V$, $I_{LOAD} = 0$ mA to 1A,	-2		+2	
	$V_{OUT} = 1.2V$ Varied from nominal V_{OUT}	-3		+2		
Accuracy of output voltage at wafer testing	All	$V_{IN} = V_{OUT} + 1.5V$ $I_{LOAD} = 10$ mA	-0.6%	0	+0.6%	%
Line regulation	All	$I_{LOAD} = 10$ mA, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$	*	0.04	0.20	%
Load regulation, (Note 1)	All	$V_{IN} = V_{OUT} + 1.5V$ $I_{LOAD} = 10$ mA to 1A	*	0.2	0.40	
Minimum load current	S1117MMK	$V_{IN} = 5V, V_{ADJ} = 0V$	*	2	7	mA
GND pin current	All fixed versions	$V_{IN} = V_{OUT} + 1.5V$ $I_{LOAD} = 10$ mA to 1A	*	3.5	10	mA
ADJ pin current	S1117MMK	$1.5V \leq V_{IN} - V_{OUT} \leq 10V$ $I_{LOAD} = 10$ mA	*	35	60	μA
Current limit	All	$V_{IN} - V_{OUT} = 1.5V$	*	1	1.5	A
Ripple rejection, (Note 2)	All	$V_{IN} - V_{OUT} = 2.5$ V $I_{LOAD} = 1A$		60		dB
Dropout voltage, (Note 1, 3)	All	$I_{LOAD} = 1A$	*	1.20	1.40	V
Temperature coefficient	All	$V_{IN} - V_{OUT} = 1.5V, I_{LOAD} = 10$ mA	*		0.015	%/°C

Notes:

- * denotes "apply over the full temperature range" – $-40^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$
- 1. Low duty pulse testing with Kelvin connections is required
- 2. 120Hz Input ripple ($C_{ADJ} = 25\mu\text{F}$ for the Adj version)
- 3. $\Delta V_{OUT}, \Delta V_{REF} = 1\%$

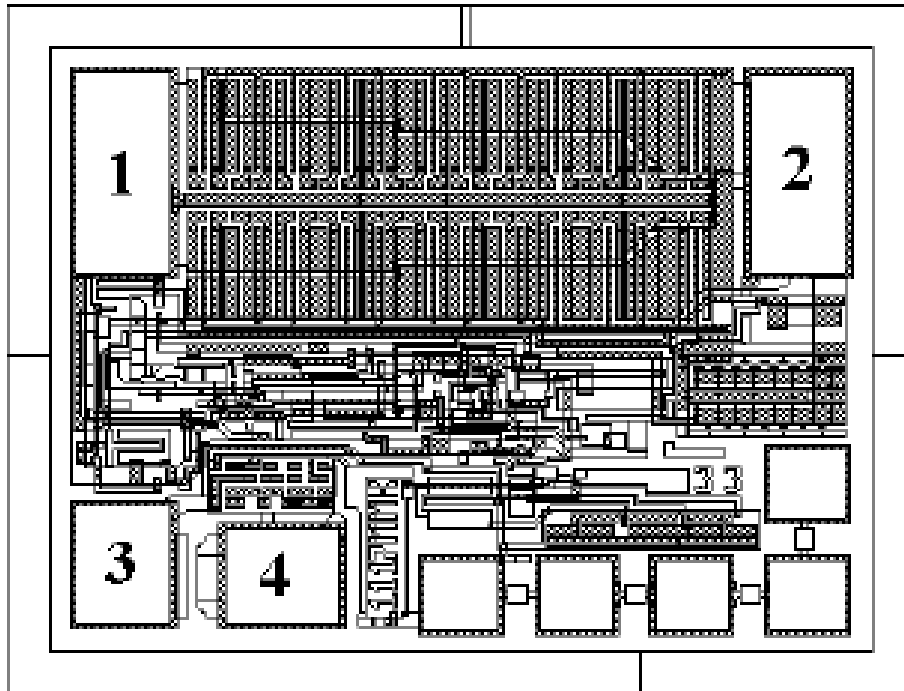
1A Low Dropout positive voltage regulator



VSP MIKRON

S1117MMK-XX

PAD LOCATION



Chip size: 0.86 mm x 0.85 mm

PAD NAME AND COORDINATES

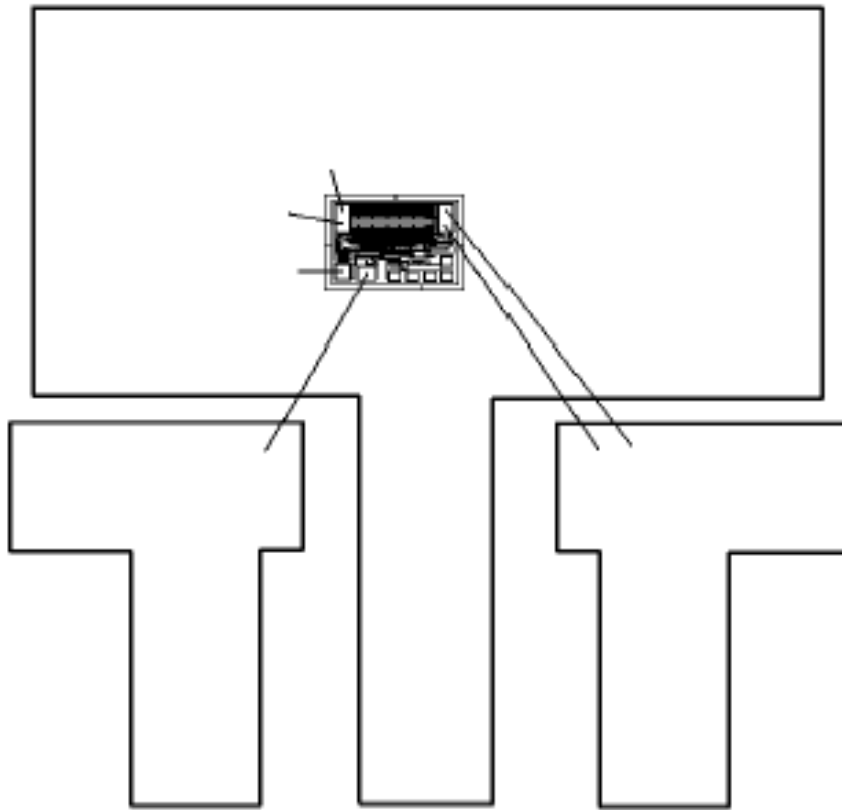
Pad	Name	Pad opening size, (μm)	Pad center coordinates (μm)	
			X	Y
1	Output (Double bond pad)	90 x 190	110	490
2	Input (Double bond pad)	90 x 190	750	490
3	Output	90 x 110	110	120
4	ADJ (for S1117MMK) GND (for S1117MMK-XX)	110 x 90	260	110



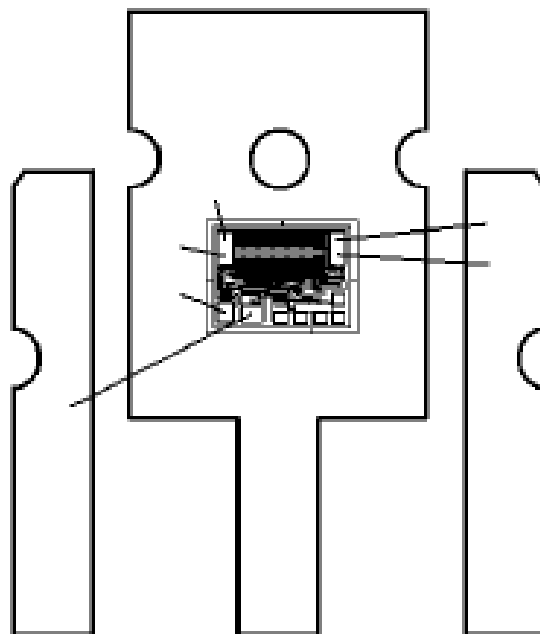
VSP MIKRON

S1117MMK-XX

ASSEMBLY DRAWING



SOT-23



TO-220

TO-263

TO-252