

Description

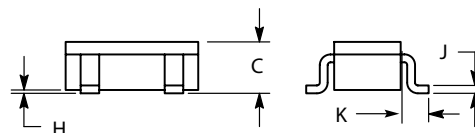
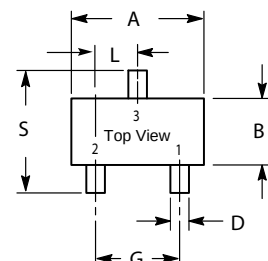
The SN2133 series of positive, linear regulators feature low quiescent current (30 μ A typ.) with low dropout voltage, making them ideal for battery applications. These rugged devices have both Thermal Shutdown, and Current Fold-back to prevent device failure under the "Worst" of operating conditions. The SN2133 is stable with an output capacitance of 2.2 μ F or greater.

Features

- * High Accurate $\pm 1.5\%$
- * Over-Temperature Shutdown
- * Factory Pre-set Output Voltage
- * Very Low Dropout Voltage
- * Low Temperature Coefficient
- * Short Circuit Current Fold-back
- * Guaranteed 300mA output
- * Current Limiting

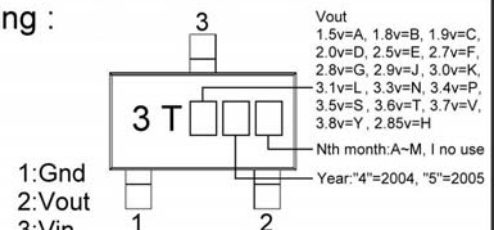
Applications

- * PC Peripherals
- * Wireless Devices
- * Portable Electronics
- * Battery Powered Widgets
- * Electronic Scales
- * Instrumentation
- * Cordless Phones

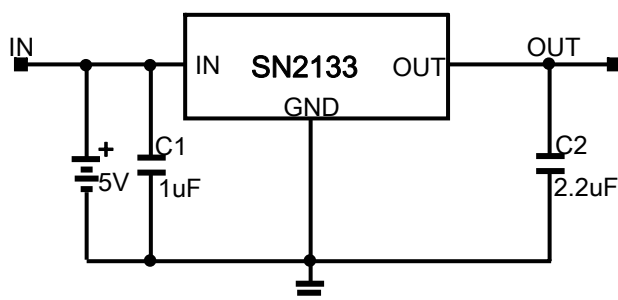


SC-59		
Dim	Min	Max
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		

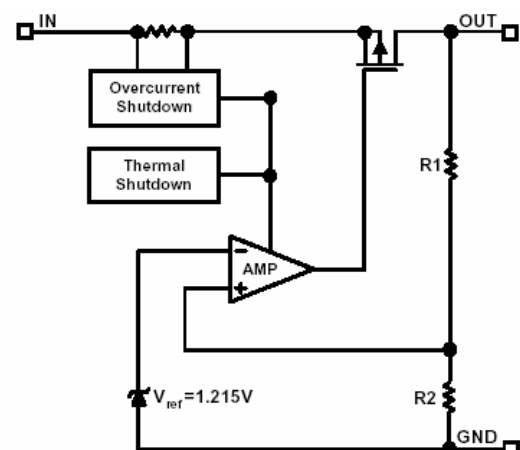
Marking :



Typical Application Circuit



Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Input Voltage	V_{IN}	8	V
Output Current	I_{OUT}	$P_D/(V_{IN}-V_O)$	mA
Output Voltage	V_{OUT}	1.5~3.8	V
Operating Ambient Temperature	T_{opr}	-40~+85	°C
Junction Temperature	T_j	-40~+125	°C
Max. Junction Temperature	$T_j \text{ Max.}$	150	°C
Thermal Resistance	θ_{jc}	110	W/°C
	θ_{ja}	325	W/°C
Power Dissipation ($\Delta T=100^\circ\text{C}$)	P_D	300	mW
EDS Classification		B	

Electrical Characteristics $T_a=25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Voltage	$V_{OUT(E)}^1$	-1.5%	$V_{OUT(E)}^2$	1.5%	V	$V_{IN}=V_{OUT(T)}+1V, I_o=1mA$
Output Current	I_o	300	—	—	mA	$V_{IN}=V_{OUT(T)}+2V, V_{OUT} \geq V_{OUT(E)}*0.96$
Current Limit	I_{LIM}	300	450	—	mA	$V_o > 1.2V$
Load Regulation	REG_{LOAD}	-1	0.2	1	%	$V_{IN}=V_{OUT(T)}+2V, I_o=1mA \text{ to } 300mA$
Dropout Voltage	$V_{DROPOUT}$	—	—	1300	mV	$1.3V \leq V_{OUT(T)} \leq 2.0V$ $I_o=300mA$
		—	—	400		$2.0V < V_{OUT(T)} \leq 2.8V$ $V_o=V_{OUT(E)}-2\%$
		—	—	300		$2.8V < V_{OUT(T)}$
Quiescent Current	I_Q	—	30	50	µA	$V_{IN}=V_{OUT(T)}+1V$
Line Regulation	REG_{LINE}	-0.2	—	0.2	%	$1.3V \leq V_{OUT(T)} \leq 1.4V$ $I_o=1mA$
		-0.15	—	0.15		$1.4V < V_{OUT(T)} \leq 2.0V$ $V_{IN}=V_{OUT(T)}+1$
		-0.1	0.02	0.1		$2.0V < V_{OUT(T)} < 4.0V$ to $V_{OUT(T)}+2$
		-0.4	0.2	0.4		$4.0V < V_{OUT(T)}$
Input Voltage	V_{IN}	Note ³	—	7	V	
Over Temperature Shutdown	O_{TS}	—	150	—	°C	
Over Temperature Hysteresis	O_{TH}	—	30	—	°C	
Output Voltage Temperature Coefficient	T_C	—	30	—	ppm/°C	
Short Circuit Current ⁴	I_{SC}	—	150	300	mA	$V_{IN}=V_{OUT(T)}+1V, V_{OUT}=0V$
	PSRR	—	50	—	dB	$f=1kHz$ $I_o=100mA$ $C_o=2.2\mu F$
		—	20	—		$f=10kHz$
		—	15	—		$f=100kHz$
Output Voltage Noise	eN	—	30	—	µVrms	$C_o=2.2\mu F$ $f=10Hz \sim 100kHz$ $I_o=10mA$

Note 1: $V_{OUT(E)}$ = Effective Output Voltage (i.e. the output voltage when " $V_{OUT(T)} + 1.0V$ " is provided at the V_{IN} pin while maintaining a certain I_{OUT} value).

2: $V_{OUT(T)}$ = Specified Output Voltage

3: $V_{IN(MIN)} = V_{OUT} + V_{DROPOUT}$

4: To prevent the Short Circuit Current protection feature from being prematurely activated, the input voltage must be applied before a current source load is applied.

Ordering Information(contd.)

Part Number	Marking	Output Voltage	Part Number	Marking	Output Voltage
SN2133-15	3TAXX	1.5V	SN2133-18	3TBXX	1.8V
SN2133-19	3TCXX	1.9V	SN2133-20	3TDXX	2.0V
SN2133-25	3TEXX	2.5V	SN2133-27	3TFXX	2.7V
SN2133-28	3TGXX	2.8V	SN2133-2H	3THXX	2.85V
SN2133-29	3TJXX	2.9V	SN2133-30	3TKXX	3.0V
SN2133-31	3TLXX	3.1V	SN2133-33	3TNXX	3.3V
SN2133-34	3TPXX	3.4V	SN2133-35	3TSXX	3.5V
SN2133-36	3TTXX	3.6V	SN2133-37	3TVXX	3.7V
SN2133-38	3TYXX	3.8V			

Characteristics Curve

