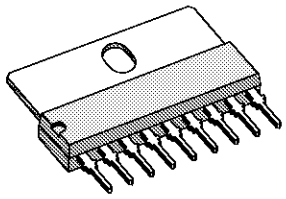
SGS-THOMSON MICROELECTRONICS

TDA8133

5.1V +8V REGULATOR WITH DISABLE AND RESET

ADVANCE DATA

- OUTPUT CURRENTS UP TO 0.75A
- FIXED PRECISION OUTPUT 1 VOLTAGE 5.1V ± 2%
- FIXED PRECISION OUTPUT 2 VOLTAGE 8V ± 2%
- OUTPUT 1 WITH RESET FACILITY
- OUTPUT 2 WITH DISABLE BY TTL INPUT
- SHORT CIRCUIT PROTECTION AT BOTH OUTPUTS
- THERMAL PROTECTION
- LOW DROP OUTPUT VOLTAGE



SIP9
(Plastic Package)

ORDER CODE : TDA8133

DESCRIPTION

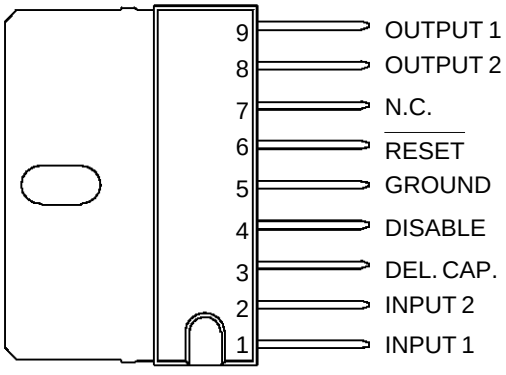
The TDA8133 is a monolithic dual positive voltage regulator designed to provide fixed precision output voltages of 5.1V and 8V at currents up to 0.75A.

An internal reset circuit generates a reset pulse when the output 1 decrease below the regulated voltage value.

Output 2 can be disabled by TTL input.

Short circuit and thermal protections are included in all the versions.

PIN CONNECTIONS



Tab. connected to Pin 5

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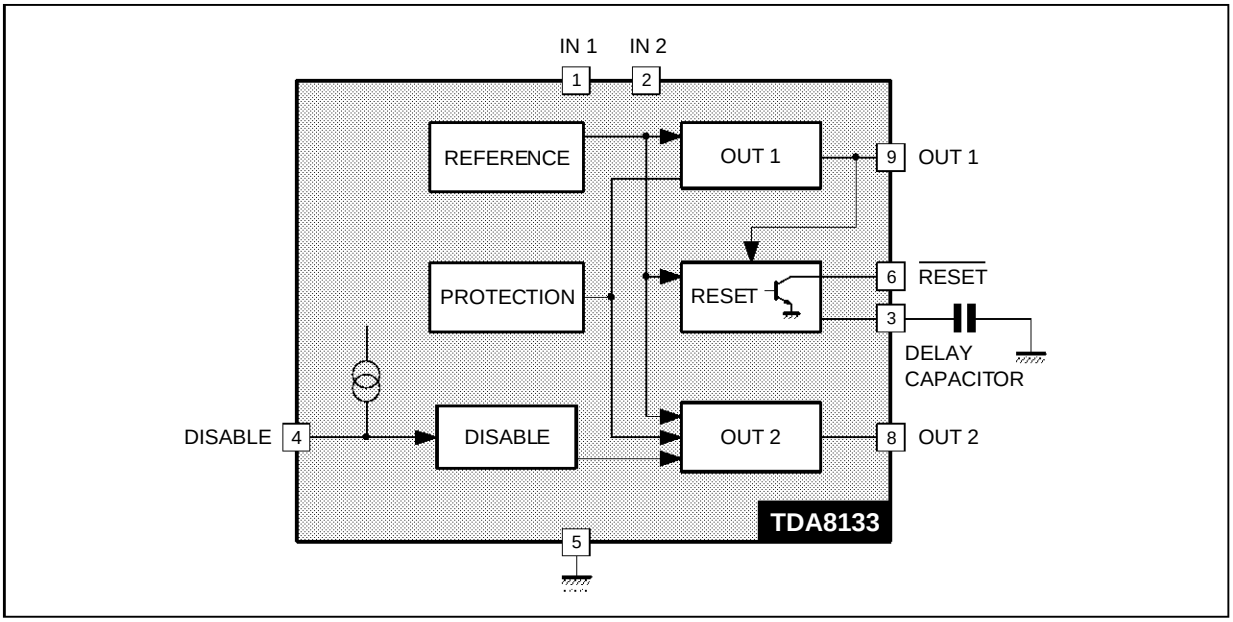
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{IN}	DC Input Voltage Pin 1	20	V
V_{DIS}	Disable Input Voltage	20	V
V_{RST}	Output Voltage at Pin 6	20	V
$I_{O1, 2}$	Output Currents	Internally Limited	
P_t	Power Dissipation	Internally Limited	
T_{stg}	Storage Temperature	-65 to +150	^oC
T_j	Junction Temperature	0 to +150	^oC

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THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ (j-c)}$	Maximum Thermal Resistance Junction-case	8	$^oC/W$
$R_{th\ (j-a)}$	Maximum Thermal Resistance Junction-ambient	60	$^oC/W$
T_j	Maximum Recommended Junction Temperature	130	^oC

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ELECTRICAL CHRACTERISTICS (V_{IN1} = 7V, V_{IN2} = 10V, T_j = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{O1}	Output Voltage	I_{O1} = 10mA	5	5.1	5.2	V
V_{O2}	Output Voltage	I_{O2} = 10mA	7.84	8	8.16	V
V_{O1}	Output Voltage	7V < V_{IN1} < 14V 10V < V_{IN2} < 14V 5mA < $I_{O1,2}$ < 750mA	4.9		5.3	V
V_{O2}	Output Voltage		7.7		8.3	V
$V_{IO1,2}$	Dropout Voltage	$I_{O1,2}$ = 750mA			1.4	V
$V_{O1,2LI}$	Line Regulation	7V < V_{IN1} < 14V 10V < V_{IN2} < 14V $I_{O1,2}$ = 200mA			50 80	mV mV
$V_{O1,2LO}$	Load Regulation	5mA < I_{O1} < 0.6A 5mA < I_{O2} < 0.6A			100 160	mV mV
I_Q	Quiescent Current	I_{O1} = 10mA Output 2 Disabled			2	mA
V_{O1RST}	Reset Thrseshold Voltage	K = V_{O1}	K - 0.4	K - 0.25	K - 0.1	V
V_{RTH}	Reset Thrseshold Hysteresis	See circuit description	20	50	75	mV
t_{RD}	Reset Pulse Delay	C_e = 100nF See circuit description		25		ms
V_{RL}	Saturation Voltage in Reset Condition	I_5 = 5mA			0.4	V
I_{RH}	Leakage Current in Normal Condition at Pin 6	V_5 = 10V			10	µA
$K_{O1,2}$	Output Voltage Thermal Drift	T_j = 0 to 125°C $K_O = \frac{\Delta V_O \cdot 10^6}{\Delta T \cdot V_O}$		100		ppm/°C
$I_{O1,2SC}$	Short Circuit Output Current	V_{IN1} = 7V, V_{IN2} = 10V $V_{IN1,2}$ = 16V (see Note)			1.6 1	A A
V_{DISH}	Disable Voltage High (out 2 active)		2			V
V_{DISL}	Disable Voltage Low (out 2 disabled)				0.8	V
I_{DIS}	Disable Bias Current	0V < V_{DIS} < 7V	-100		2	µA
T_{jsd}	Junction Temperature for Thermal Shut Down			145		°C

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Note : Safe permanent short-circuit is only guaranteed for input voltages up to 16V.

CIRCUIT DESCRIPTION

The TDA8133 is a dual voltage regulator with Reset and Disable.

The two regulation parts are supplied from one voltage reference circuit trimmed by zener zap during EWS test.

Since the supply voltage of this last is connected at Pin 1 (V_{IN1}), the regulator 2 will not work if Pin 1 is not supplied.

The outputs stage have been realized in darlington configuration with a drop typical 1.2V.

The disable circuit, switch-off the output 2 if a voltage lower than 0.8V is applied at Pin 4.

The Reset circuit checks the voltage at the output 1. If this one goes below V_{OUT} - 0.25V (4.85V typ.), the comparator "a" (see Figure 1) discharges rapidly the capacitor C_e and the reset output goes at once Low. When the voltage at the out1 rises above V_{OUT} - 0.2V (4.9V typ.), the voltage V_{Ce} increases linearly to 2.5V corresponding to a delay td following the law : $t_1 = \frac{C_e \cdot 2.5V}{10\mu A}$ (see Figure 2), then the reset output goes high again. To avoid gliches in the reset output, the second comparator "b" has a large hysteresis (1.9V).

Figure 1

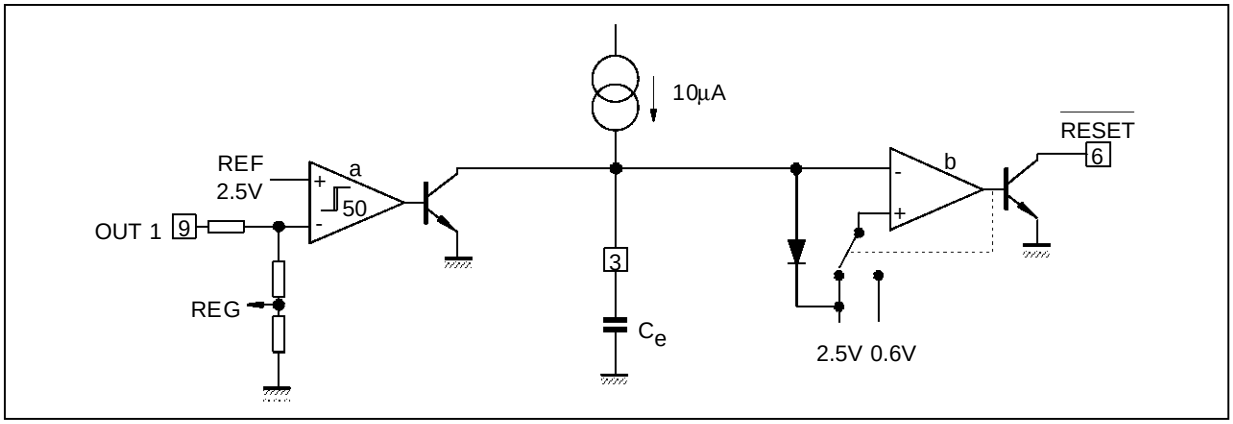
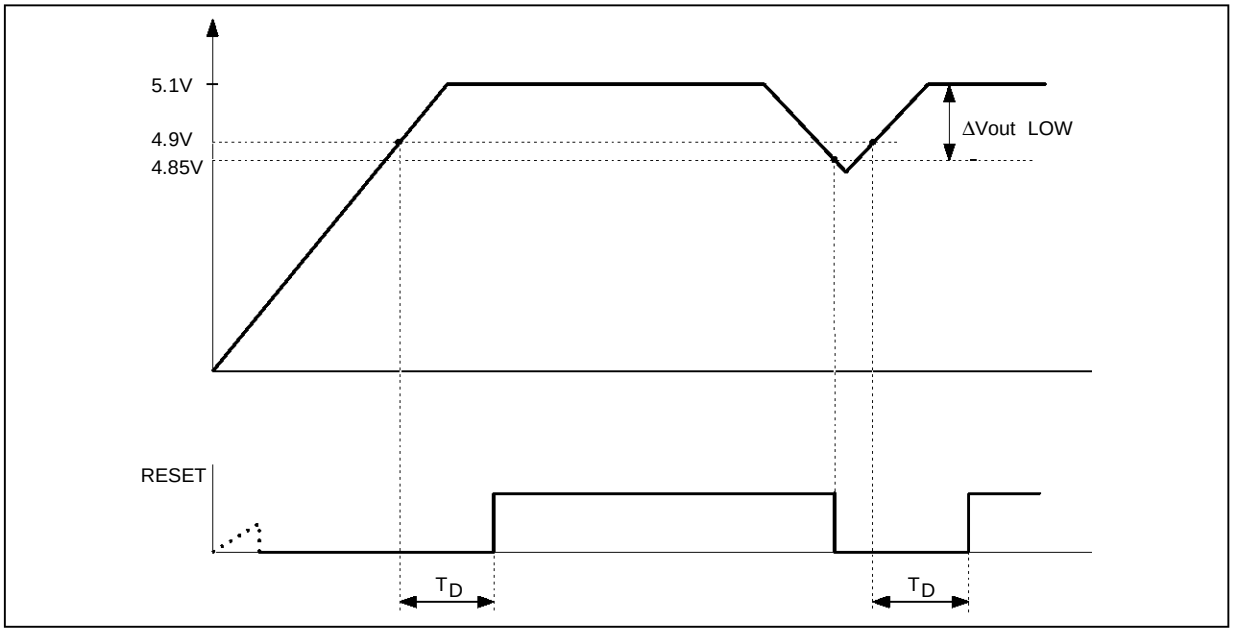
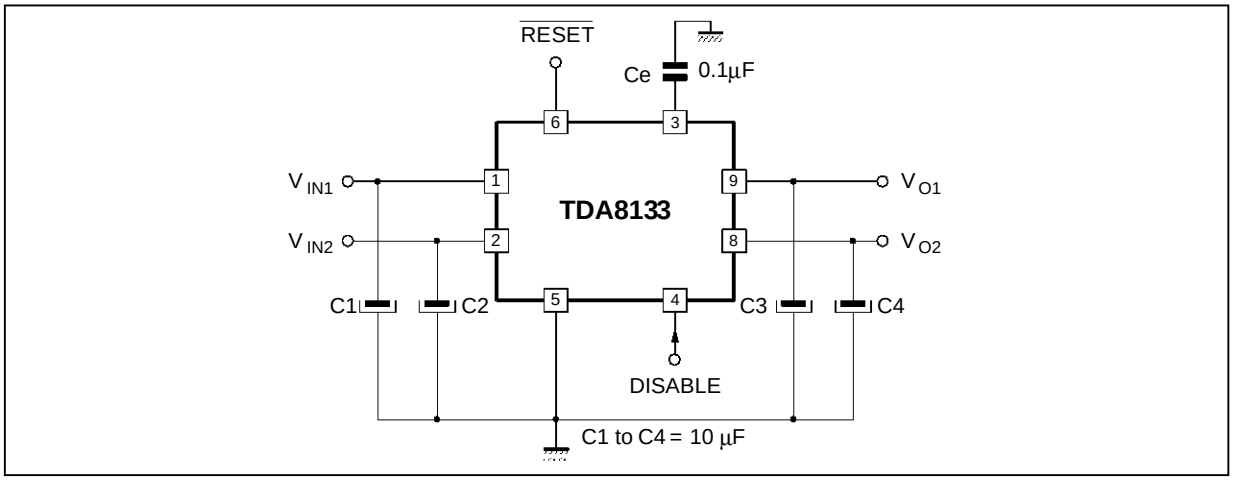


Figure 2

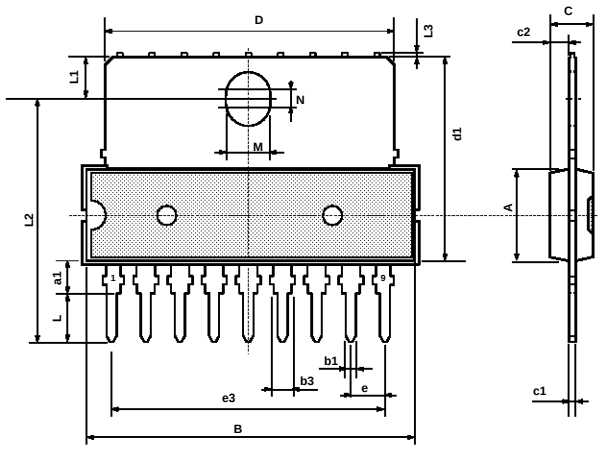


TYPICAL APPLICATION



PACKAGE MECHANICAL DATA

9 PINS - PLASTIC SIP



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Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			7.1			0.280
a1	2.7		3	0.106		0.118
B			24.8			0.976
b1		0.5			0.020	
b3	0.85		1.6	0.033		0.063
C		3.3			0.130	
c1		0.43			0.017	
c2		1.32			0.052	
D			21.2			0.835
d1		14.5			0.571	
e		2.54			0.100	
e3		20.32			0.800	
L	3.1			0.122		
L1		3			0.118	
L2		17.6			0.693	
L3			0.25			0.010
M		3.2			0.126	
N		1			0.039	

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