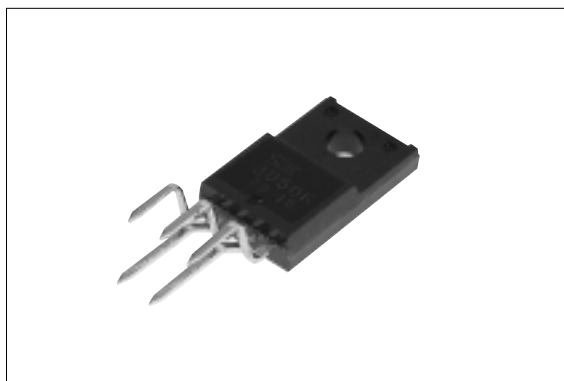


SI-3000R Series

5-Terminal, Full-Mold, Low Dropout Voltage Dropper Type with Reset Function

■Features

- Reset signal output (As the output rises it sends a reset signal to the microcomputer to secure normal operation of the system. As the output drops a reset signal is also sent out to protect the system.)
- Reset signal detection output voltage level V_{0th} is 92% of output voltage in the standard specification. Models with different setting values for different needs are scheduled to be added to the series.
- Delay time for reset signal can be set freely by external capacitor.
- Compact full-mold package (equivalent to TO220)
- Output current: 1.5A
- Low dropout voltage : $V_{DIF} \leq 1V$ (at $I_o = 1.5A$)
Applicable to battery driven equipment with built-in microcomputer.
- Built-in dropping type overcurrent, overvoltage, thermal protection circuits
- Low circuit current $I_D = \text{typ.} 1.5mA (I_o = 0A)$



■Applications

- Microcomputer-controlled equipment
- Battery-driven micro-computer-controlled equipment

■Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
		SI-3050R	
DC Input Voltage	V_{IN}	35	V
Voltage of Rest Signal Output Terminal	V_{RST}	V_{IN}	V
DC Output Current	I_o	1.5*1	A
Power Dissipation	P_{D1}	18(With infinite heatsink)	W
	P_{D2}	1.5(Without heatsink, stand-alone operation)	W
Junction Temperature	T_j	-30 to +125	$^\circ\text{C}$
Ambient Operating Temperature	T_{OP}	-30 to +100	$^\circ\text{C}$
Storage Temperature	T_{stg}	-30 to +125	$^\circ\text{C}$
Thermal Resistance (junction to case)	$R_{th(j-c)}$	5.5	$^\circ\text{C/W}$
Thermal Resistance (junction to ambient air)	$R_{th(j-a)}$	66.7(Without heatsink, stand-alone operation)	$^\circ\text{C/W}$

■Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter		Symbol	Ratings			Unit
			SI-3050R			
			min.	typ.	max.	
Input Voltage		V _{IN}	6 ^{*2}		30 ^{*1}	V
Output Voltage		V _O	4.80	5.00	5.20	V
		Conditions	V _{IN} =8V, I _O =1.0A			
Dropout Voltage		V _{DIF}			0.5	V
		Conditions	I _O ≤1.0A			
					1.0	
		Conditions	I _O ≤1.5A			
Line Regulation		ΔV _{OLINE}			30	mV
		Conditions	V _{IN} =6 to 15V, I _O =1.0A			
Load Regulation		ΔV _{OLOAD}			100	mV
		Conditions	V _{IN} =8V, I _O =0 to 1.5A			
Ripple Rejection		R _{REJ}		54		dB
		Conditions	V _{IN} =8V, f=100 to 120Hz			
Quiescent Circuit Current		I _q		1.5	5.0	mA
		Conditions	V _{IN} =8V, I _O =0A			
Overcurrent Protection Starting Current (Dropping Type)		I _{S1}	1.6			A
		Conditions	V _{IN} =8V			
Limited Current at Overcurrent Protection Operation		I _{S2}	1.6			A
		Conditions	V _{IN} =8V			
DLY Terminal	Threshold	V _{DLYth}	2.7	2.9	3.1	V
	Source	I _{DLY}	25	35	45	μA
Reset Threshold Voltage Level (V _{oth} : Threshold Output Voltage)		V _{oth} /V _O	90	92	94	%
Reset Threshold Voltage Hysteresis		ΔV _{oth}	50	100	150	mV
V _{RST} Terminal ^{*4}	H-level Output Voltage	V _{RSTH}	V _{CC} −1			V
	L-level Output Voltage	V _{RSTL}			0.8	V
	Sink Current at H level	I _{RSTH}			−20	μA
	Source Current at L level	I _{RSTL}	−16			mA

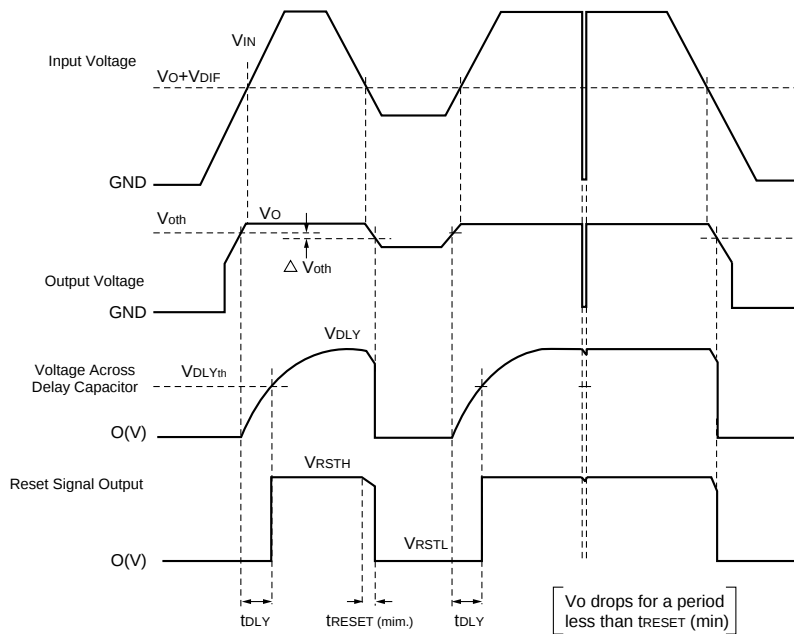
*1: V_{IN(max)} and I_{O(max)} are restricted by the relation P_{D(max)}=(V_{IN}-V_O)•I_O=18(W).

*2: Refer to the dropout voltage.(Refer to Setting Dc Input Voltage on page 7.)

*3: I_{S1} is specified at -5(%) drop point of output voltage V_O on the condition that V_{IN}=8V, I_O=1.0A.

*4: Reset signal output terminal V_{RST} is an open-collector output. Use a pull-up resistor when connecting it to a logic circuit.

Reset Signal Output Timing Chart



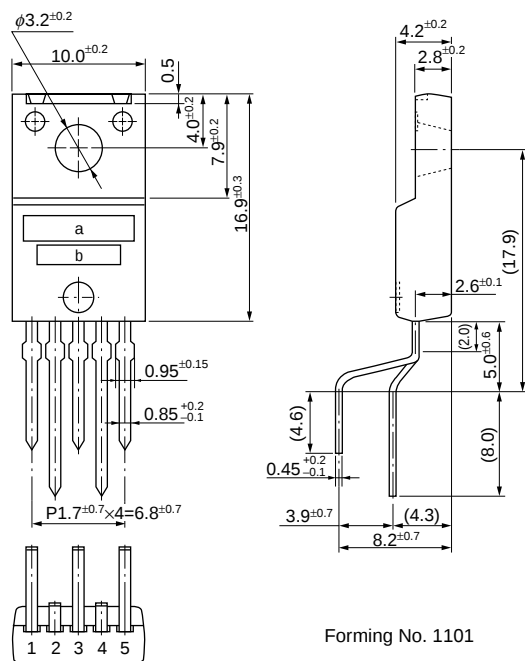
The delay time t_{DLY} of the reset signal can be calculated from the following formula:

$$t_{DLY} = \frac{V_{DLYth}}{I_{DLY}} \times C_{DLY}$$

* I_{DLY} is the current flowing from the t_{DLY} terminal shown in the standard connection circuit diagram.

External Dimensions

(unit:mm)



- a. Part Number
- b. Lot Number

Pin Arrangement

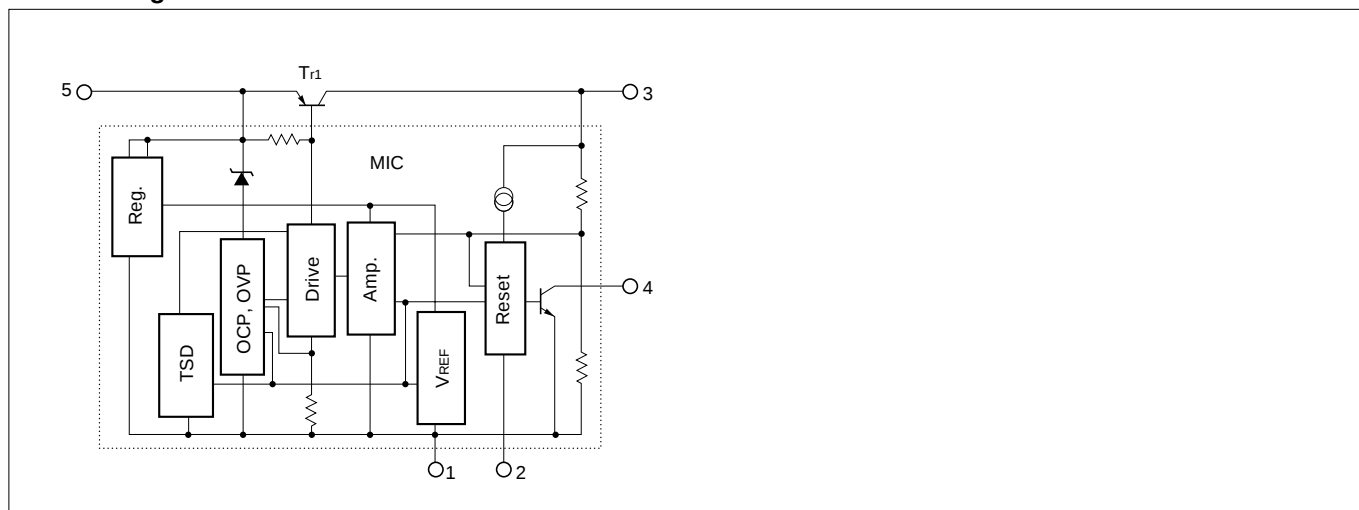
- ① GND
- ② DELAY
- ③ V_O
- ④ Rest Signal output
- ⑤ V_{IN}

Plastic Mold Package Type

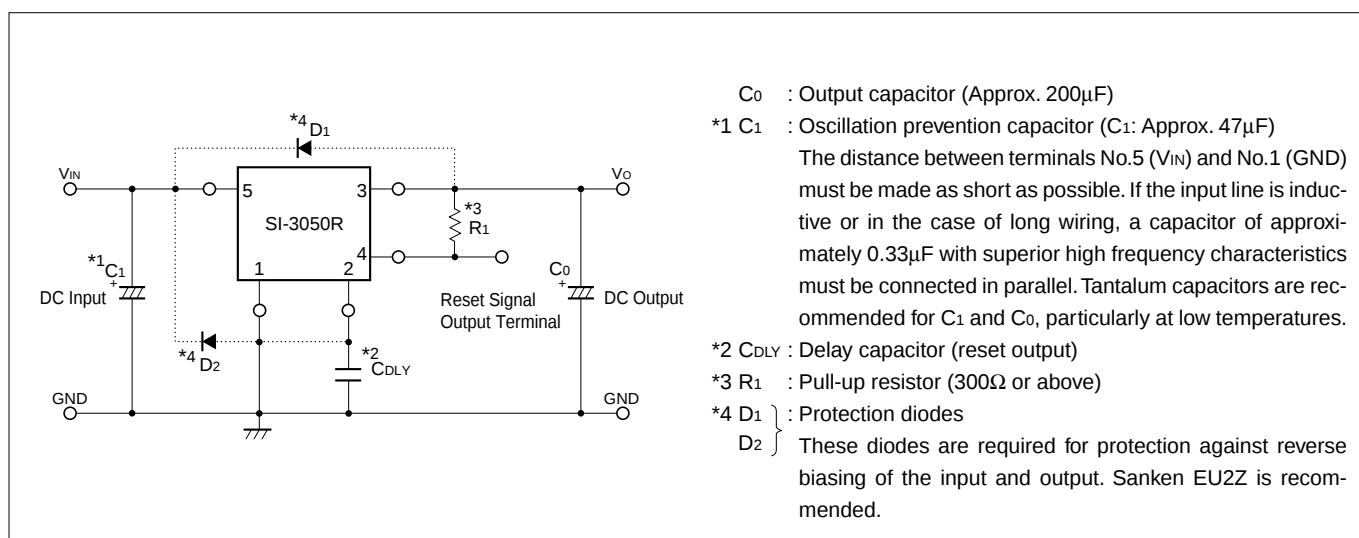
Flammability: UL94V-0

Weight: Approx. 2.3g

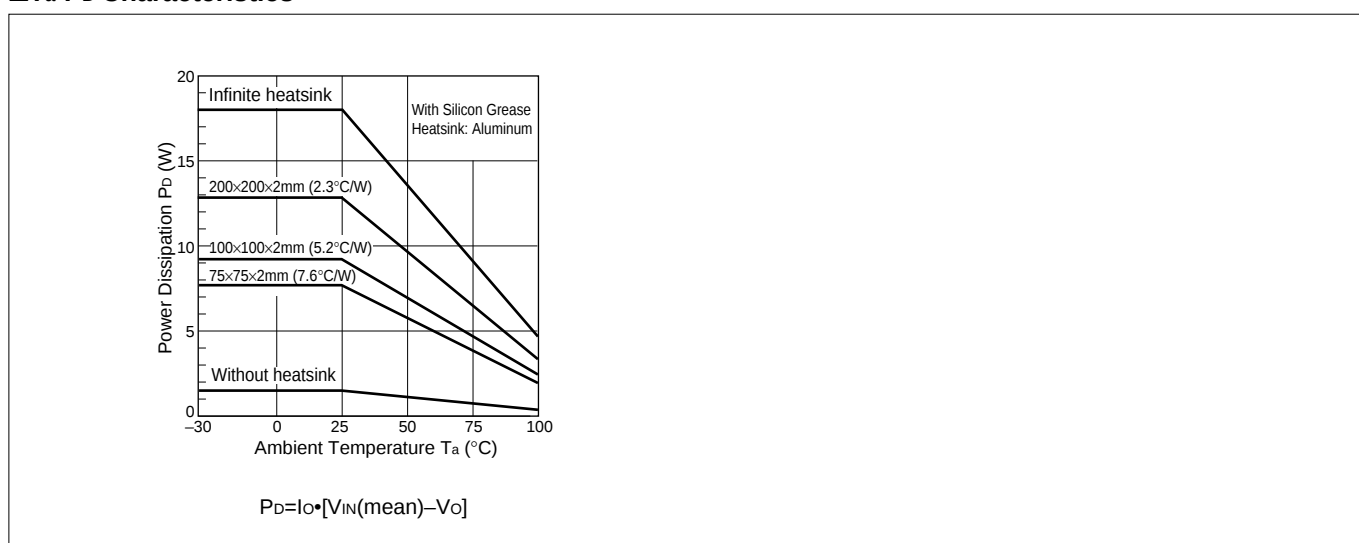
■Block Diagram



■Standard External Circuit



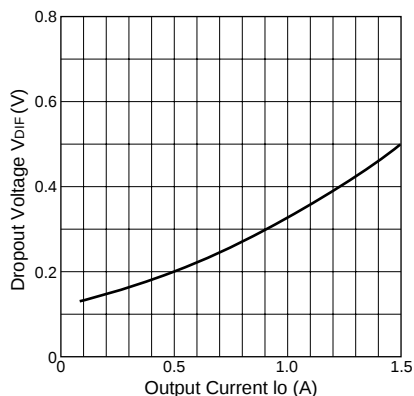
■ T_a - P_D Characteristics



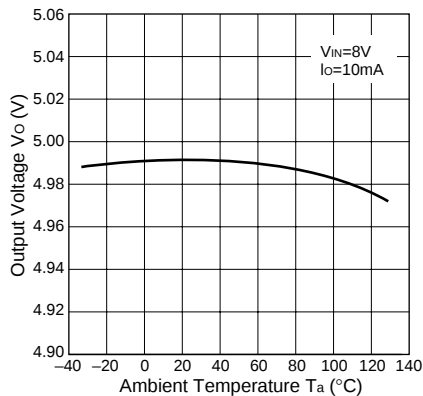
Typical Characteristics

($T_a=25^\circ\text{C}$)

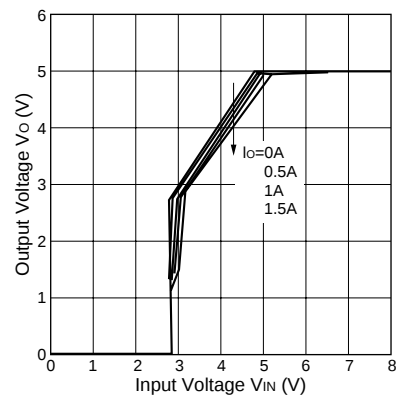
I_o vs. V_{DIF} Characteristics



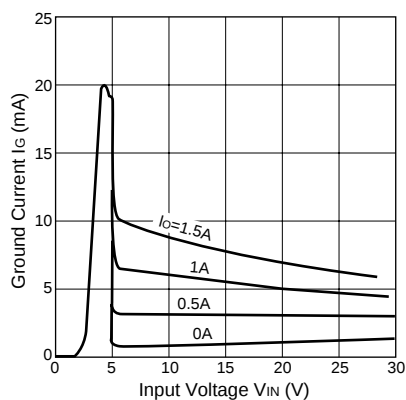
Temperature Coefficient of Output Voltage



Output Voltage



Circuit Current



Overcurrent Protection Characteristics

