

SI-3000R Series

5-Terminal, Multi-Function, 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_{Oth} 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 adjusted 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

($T_a = 25^\circ C$)

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	°C
Ambient Operating Temperature	T_{OP}	-30 to +105	°C
Storage Temperature	T_{stg}	-30 to +125	°C
Thermal Resistance (junction to case)	$R_{th(j-c)}$	5.5	°C/W
Thermal Resistance (junction to ambient air)	$R_{th(j-a)}$	66.7(Without heatsink, stand-alone operation)	°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 (Drooping 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	Threshold	V _{DLYth}	2.7	2.9	3.1	V
Terminal	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

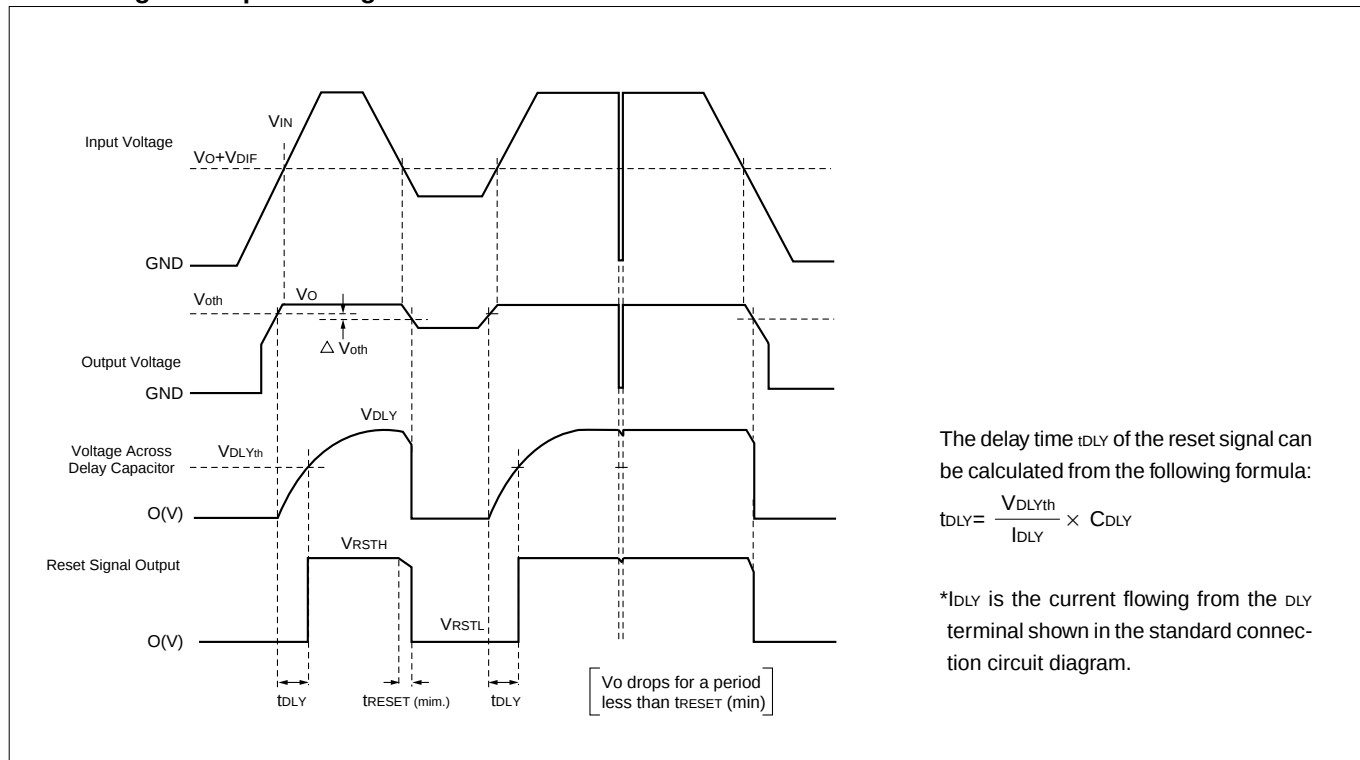
*1: V_{IN(max)} and I_{O(max)} are restricted by the relation P_{D(max)}=(V_{IN}-V_O)•I_O=18(W).

*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.

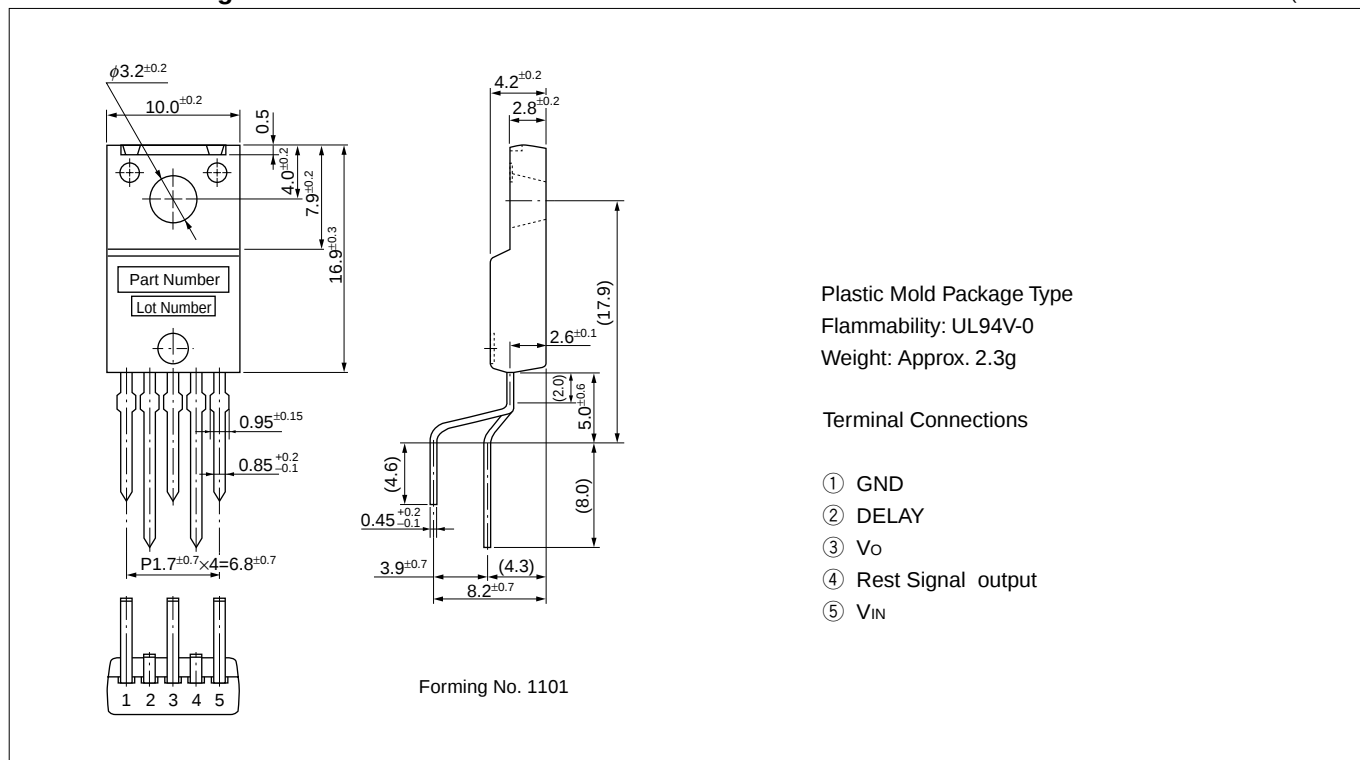
*4: Reset signal output terminal V_{RST} is an open-collector output. Use a pull-up resistor when connecting it to a logic circuit.

Reset Signal Output Timing Chart

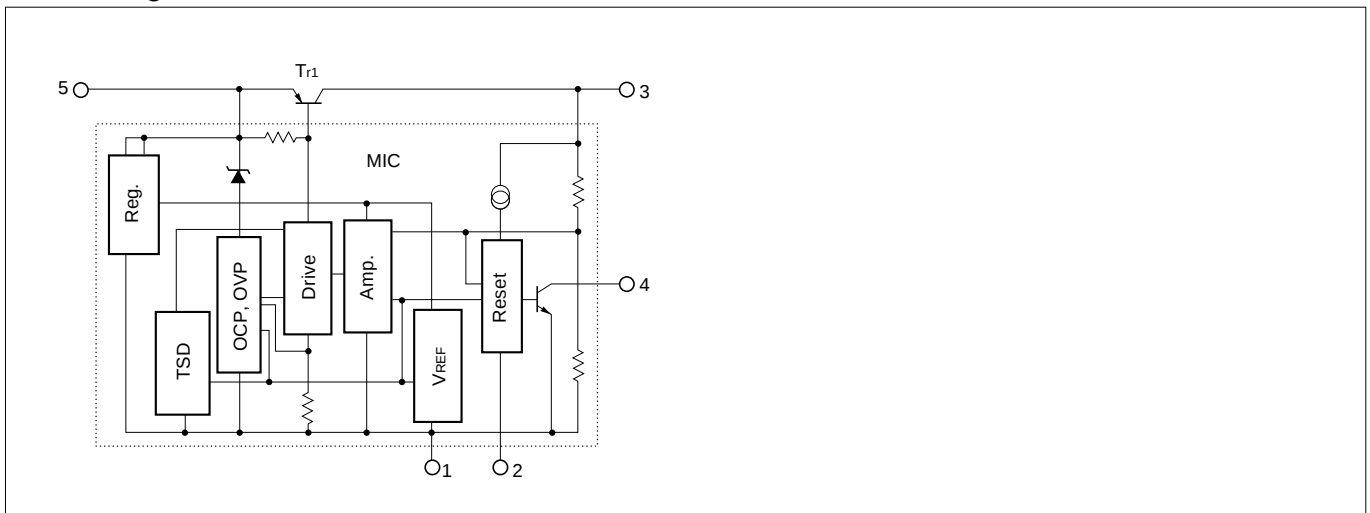


Outline Drawing

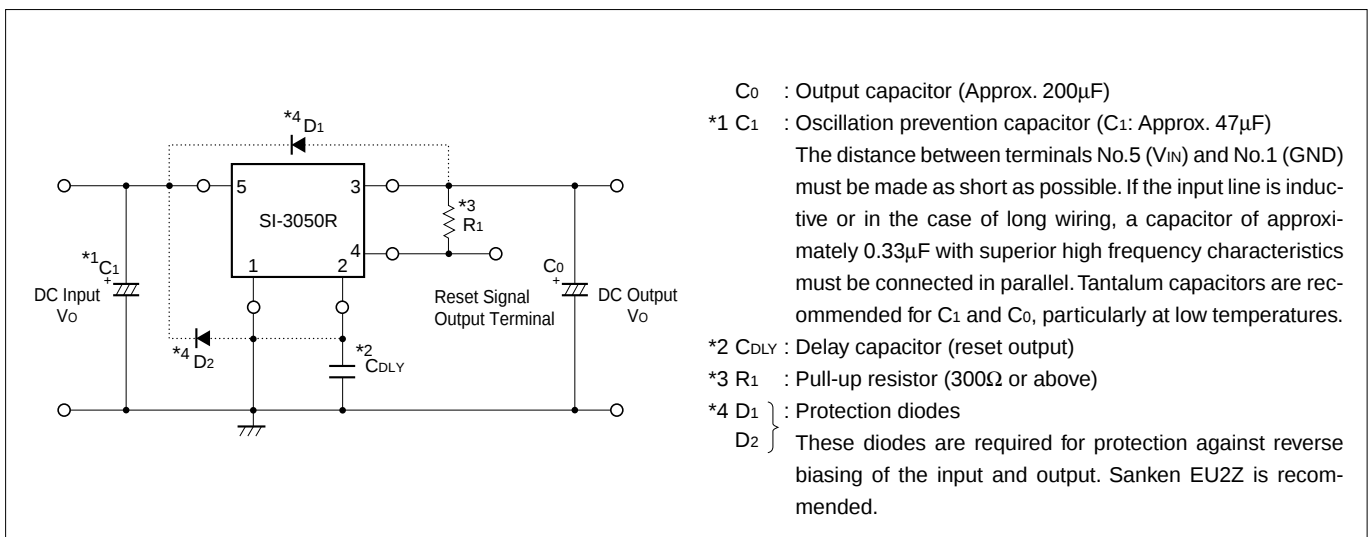
(unit:mm)



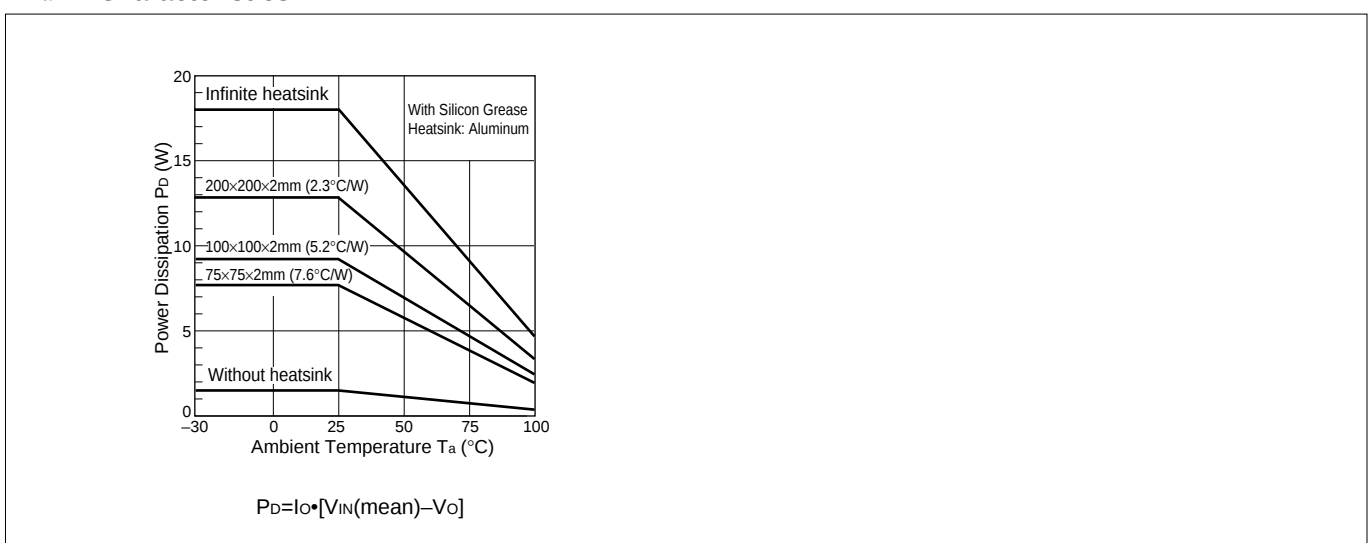
■Block Diagram



■Standard External Circuit



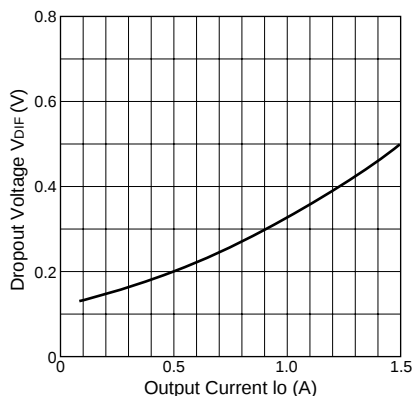
■ T_a - P_D Characteristics



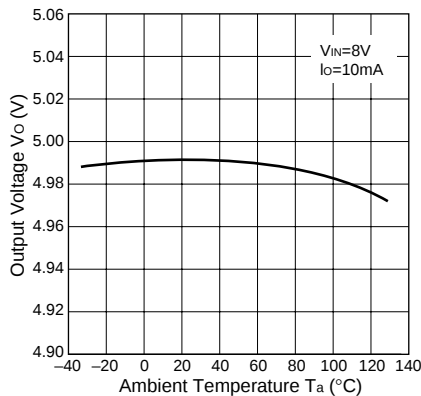
Typical Characteristics

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

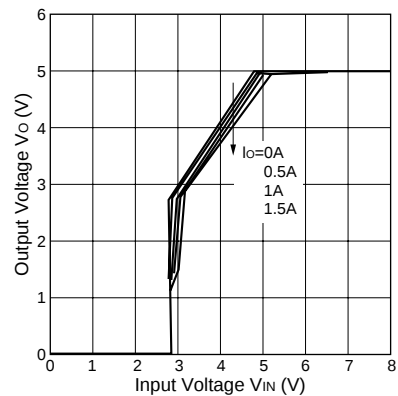
I_o vs. V_{DIF} Characteristics



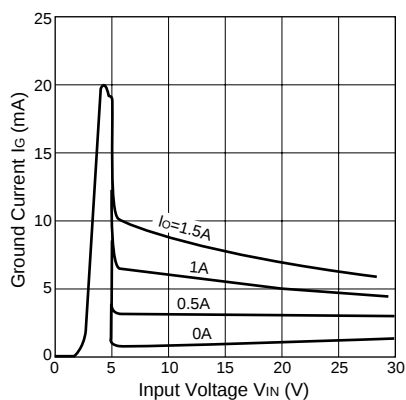
Temperature Coefficient of Output Voltage



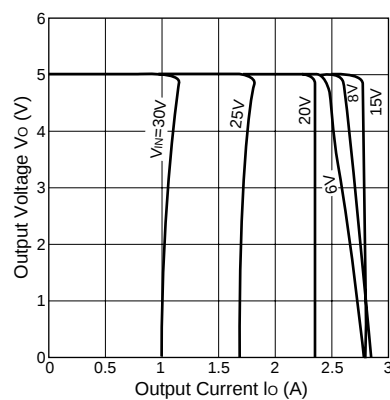
Rise Characteristics



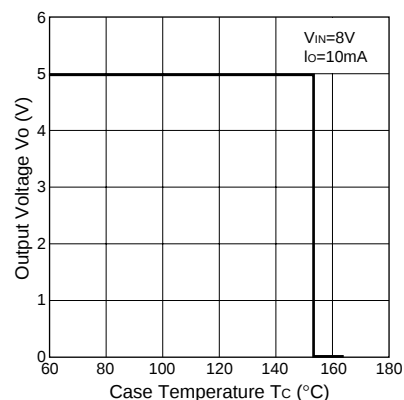
Circuit Current



Overcurrent Protection Characteristics



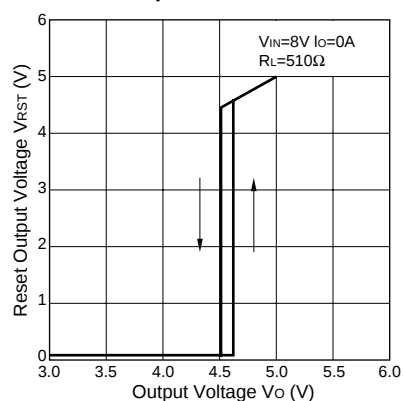
Thermal Protection Characteristics



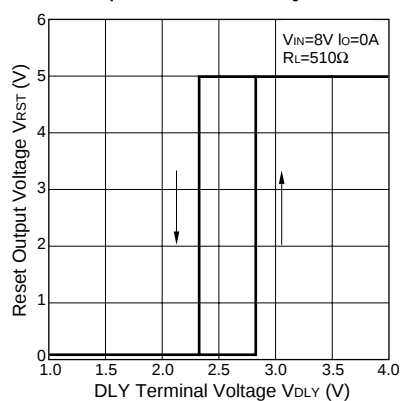
Note on Thermal Protection:

The thermal protection circuit is intended for protection against heat during instantaneous short-circuiting. Its operation is not guaranteed for short-circuiting over extended periods of time.

Reset Output vs. V_o Characteristics



Reset Output vs. DLY Terminal Voltage Characteristics



Reset Signal Delay Time t_{DLY} (sec)

