3-terminal Dropper Type Regulator SI-3003S

Features

- 3-terminal IC regulator with 0.8A output current
- Voltage accuracy of ±2%
- Low Dropout voltage ≦0.5V at I_O≦0.5A, ≦1V at I_O≦0.8A
- Built-in constant current type overcurrent, overvoltage and thermal protection circuits
- TO-220 equivalent full-mold package

Absolute Maximum Ratings

(Ta=25ºC)

Parameter	Symbol	Ratings	Unit	Conditions
DC input voltage	V_{IN}	35	V	
Output current	I_O	0.8 *2	A	
Power Dissipation	P_{D1}	22	W	With infinite heatsink
	P_{D2}	1.8	W	Stand-alone without heatsink
Junction temperature	Tj	–40 to +150	ºC	
Operating temperature	T_{OP}	–40 to +100	ºC	
Storage temperature	Tstg	–40 to +150	ºC	
Junction to case thermal resistance	θ_{j-c}	5.5	°C/W	
Junction to ambient-air thermal resistance	θ_{j-a}	66.7	°C/W	Stand-alone without heatsink

Electrical Characteristics

(Tj=25ºC, V_{IN}=14V, I_O=0.5A unless otherwise specified)

Parameter	Symbol	Ratings min	Ratings typ	Ratings max	Unit	Conditions
Input voltage	V_{IN}	6*2		30*1	V	
Output voltage	V_O	4.90	5.00	5.10	V	
Dropout voltage	V_{DIF}			0.5	V	I_O≦0.5A
				1.0	V	I_O≦0.8A
Line regulation	$\Delta V_{O\ LINE}$			30	mV	V_{IN}=8 to 16V
Load regulation	$\Delta V_{O\ LOAD}$			100	mV	I_O=0 to 0.5A
Ripple rejection	R_{REJ}		54		dB	f=100 to 120Hz
Quiescent circuit current	Iq		3	10	mA	I_O=0A
Overcurrent protection starting current	I_{S1}	0.9*3			A	

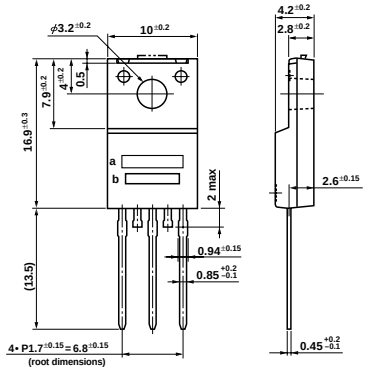
Notes:

*1. Since P_D(max) = (V_{IN}–V_O) • I_O=22(W), V_{IN}(max) and I_O(max) may be limited depending on operating conditions. Refer to the Ta—P_D curve to compute the corresponding values.

*2. Refer to the dropout voltage.

*3. IS1 rating shall be the point at which the output voltage V_O (V_{IN}=14V, I_O=0.5A) drops to –5%.

External Dimensions (unit: mm)

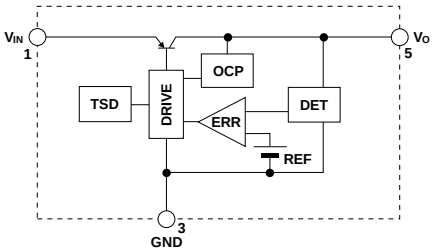


Terminal connections
1. V_{IN}
2. (NC)
3. GND
4. (NC)
5. V_O

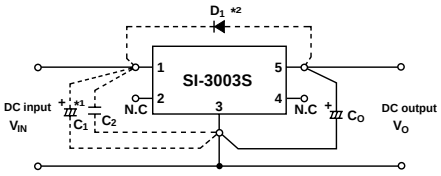
a: Type No.
b: Lot No.

(Forming No. 1115)

Equivalent Circuit Diagram



Standard Circuit Diagram

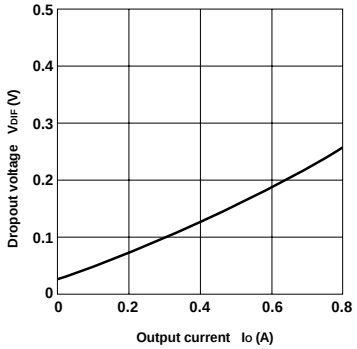


Co : Output capacitor (47 to 100μF, 50V)

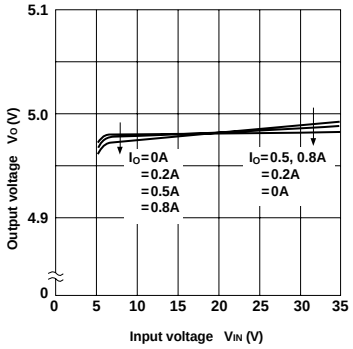
*1 C_1,C_2: Anti-oscillation capacitors (C_1: approx. 47μF, C_2: approx. 0.33μF). These are required for inductive input lines or long wiring. Tantalum capacitors are recommended for C_1 and Co, especially at low temperatures.

*2 D_1 : Protection diode. Required as protection against reverse biasing between input and output. (Recommended diode: Sanken EU2Z.)

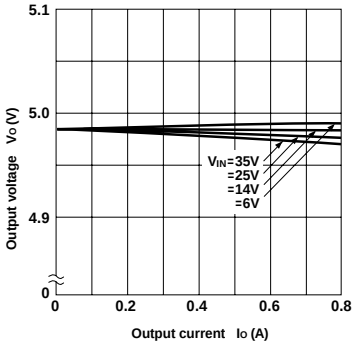
■ I_O vs V_{DIF} Characteristics



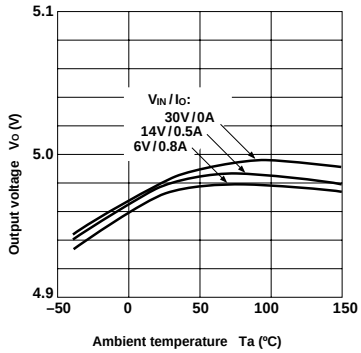
■ Line Regulation



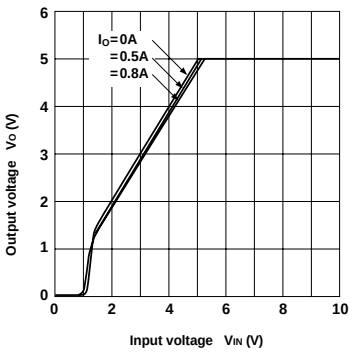
■ Load Regulation



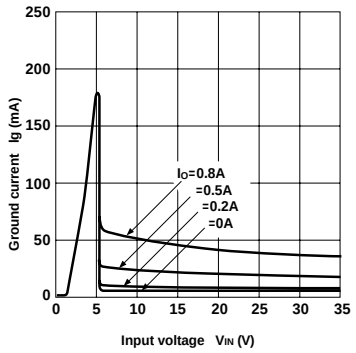
■ Output Voltage Temperature Characteristics



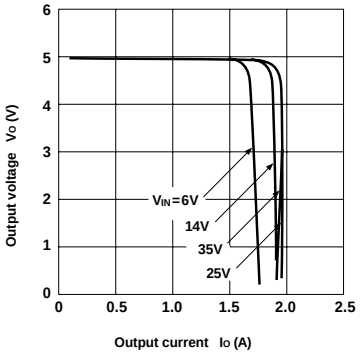
■ Rise Characteristics



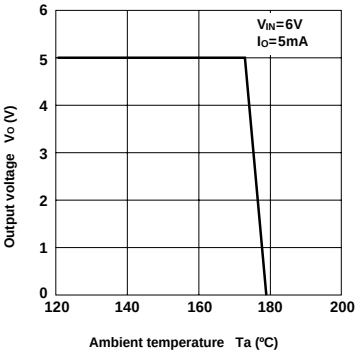
■ Circuit Current



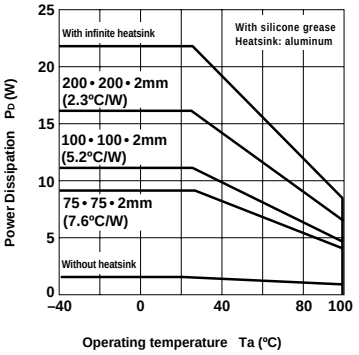
■ Overcurrent Protection Characteristics



■ Thermal Protection Characteristics



■ Ta—P_D Characteristics



Note on Thermal Protection Characteristics:
The thermal protection circuit is intended for protection against heat during instantaneous short-circuiting. Its operation, including reliability, is not guaranteed for short-circuiting over an extended period of time.