

# SI-3000KF Series Low Current Consumption, Low Dropout Voltage

## Features

- Compact full-mold package (equivalent to TO220)
- Output current: 1.0A
- Low dropout voltage:  $V_{DIF} \leq 0.5V$  (at  $I_o = 1.0A$ )
- High ripple rejection: 75dB
- Low circuit current at output OFF:  $I_q (OFF) \leq 1\mu A$
- Built-in overcurrent and thermal protection circuits

## Applications

- Secondary stabilized power supply (local power supply)

## Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		SI-3010KF		
Input Voltage Range	$V_{IN}$	2.4 <sup>2</sup> to 27 <sup>1</sup>		V
Output Current Range	$I_o$	0 to 1.0 <sup>1</sup>		A
Output Voltage Variable Range	$V_{O}ADJ$	1.1 to 16		V
Operating Ambient Temperature	$T_{op}$	-30 to +85		°C
Operating Junction Temperature	$T_j$	-20 to +100		°C

\*1:  $V_{IN}$  (max) and  $I_o$  (max) are restricted by the relationship  $P_D$  (max) =  $(V_{IN} - V_o) \times I_o = 16.6W$ .

\*2: Refer to the Dropout Voltage parameter.

## Electrical Characteristics

Parameter	Symbol	Ratings			Unit	
		SI-3010KF				
		min.	typ.	max.		
Reference Voltage	$V_{ADJ}$	0.98	1.00	1.02	V	
	Conditions	$V_{IN}=7V, I_o=0.01A, V_C=2V, V_o=5A$				
Line Regulation	$\Delta V_{OLINE}$			30	mV	
	Conditions	$V_{IN}=6$ to $15V, I_o=0.01A, V_C=2V, V_o=5A$				
Load Regulation	$\Delta V_{OLOAD}$			75	mV	
	Conditions	$V_{IN}=7V, I_o=0$ to $1A, V_C=2V, V_o=5A$				
Dropout Voltage	$V_{DIF}$			0.3	V	
	Conditions	$I_o=0.5A, V_C=2V, V_o=5V$				
	Conditions	$I_o=1.0A, V_C=2V, V_o=5V$				
Quiescent Circuit Current	$I_q$			600	$\mu A$	
	Conditions	$V_{IN}=7V, I_o=0A, V_C=2V$				
Circuit Current at Output OFF	$I_q (OFF)$			1	$\mu A$	
	Conditions	$V_{IN}=7V, V_C=0V$				
Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$		$\pm 0.5$		mV/°C	
	Conditions	$V_{IN}=7V, I_o=0.01A, V_C=2V, T_j=0$ to $100^\circ C, V_o=2.5V$				
Ripple Rejection	$R_{REJ}$		75		dB	
	Conditions	$V_{IN}=7V, I_o=0.1A, V_C=2V, f=100$ to $120Hz, V_o=5V$				
Overcurrent Protection Starting Current <sup>3</sup>	$I_{S1}$	1.1			A	
	Conditions	$V_{IN}=7V, V_C=2V$				
V <sub>C</sub> Terminal	Control Voltage (Output ON) <sup>4</sup>	$V_C, I_H$	2		V	
		Conditions	$V_{IN}=7V$			
	Control Voltage (Output OFF)	$V_C, I_L$			0.8	V
		Conditions	$V_{IN}=7V$			
	Control Current (Output ON)	$I_C, I_H$			40	$\mu A$
		Conditions	$V_{IN}=7V, V_C=2V$			
Control Current (Output OFF)	$I_C, I_L$	-5	0		$\mu A$	
	Conditions	$V_{IN}=7V, V_C=0V$				
Input Overvoltage Shutdown Voltage	$V_{OVP}$	33			V	
	Conditions	$I_o=0.01A$				

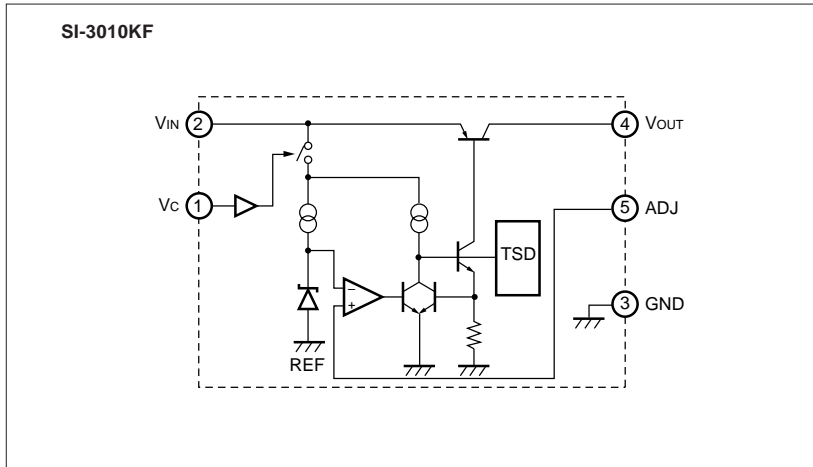
\*3:  $I_{S1}$  is specified at the 5% drop point of output voltage  $V_o$  on the condition that  $V_{IN}$  = overcurrent protection starting current,  $I_o = 10$  mA.

\*4: Output is OFF when the output control terminal  $V_C$  is open. Each input level is equivalent to LS-TTL level. Therefore, the device can be driven directly by LS-TTLs.

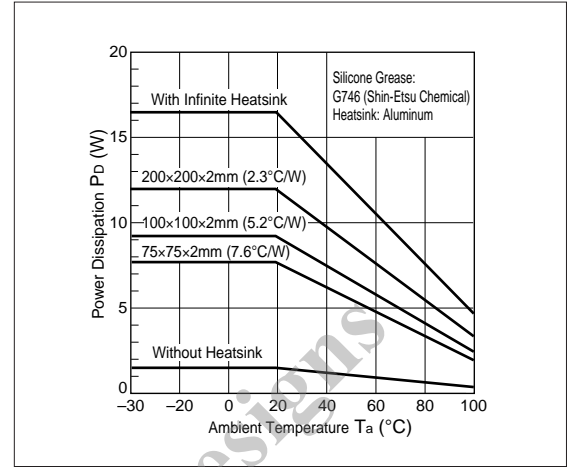
\*5: SI-3000KF cannot be used in the following applications because the built-in foldback-type overcurrent protection may cause errors during start-up stage.

(1) Constant current load (2) Positive and negative power supply (3) Series-connected power supply (4)  $V_o$  adjustment by raising ground voltage

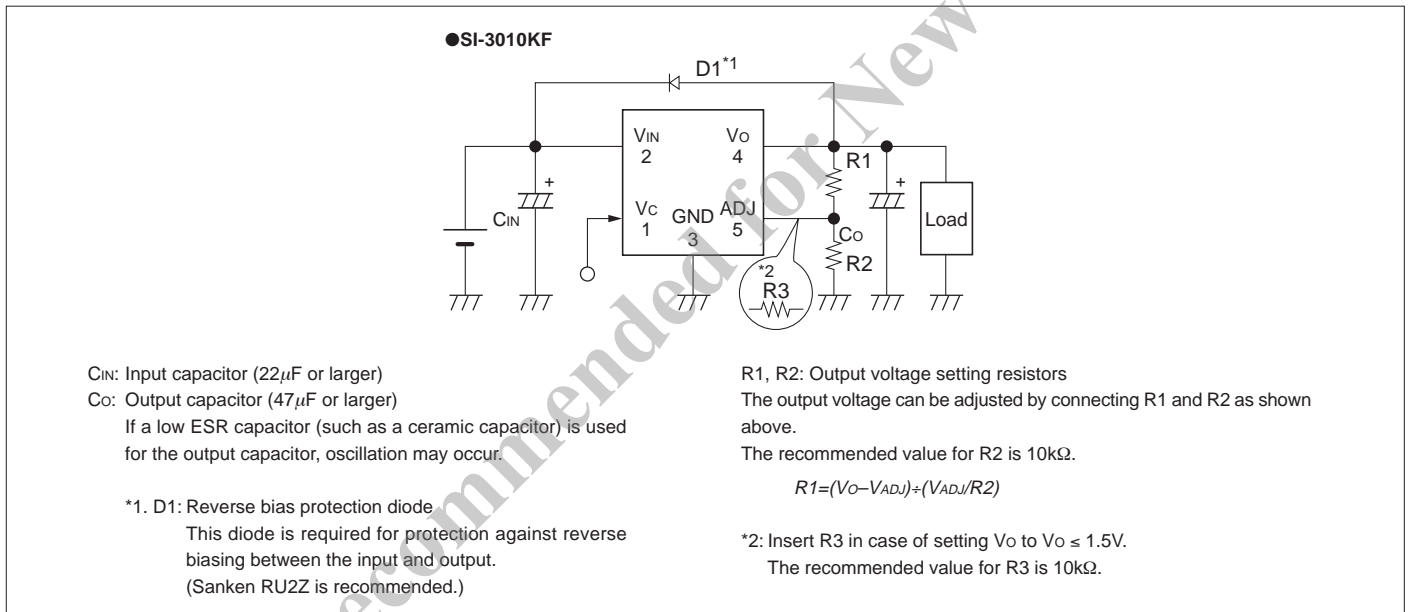
■Block Diagram



■Ta-Pd Characteristics



■Typical Connection Diagram



■External Dimensions (TO220F-5)

(Unit : mm)

