

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8004AS

## 5V LOW DROPOUT REGULATOR WITH RESET TIMER

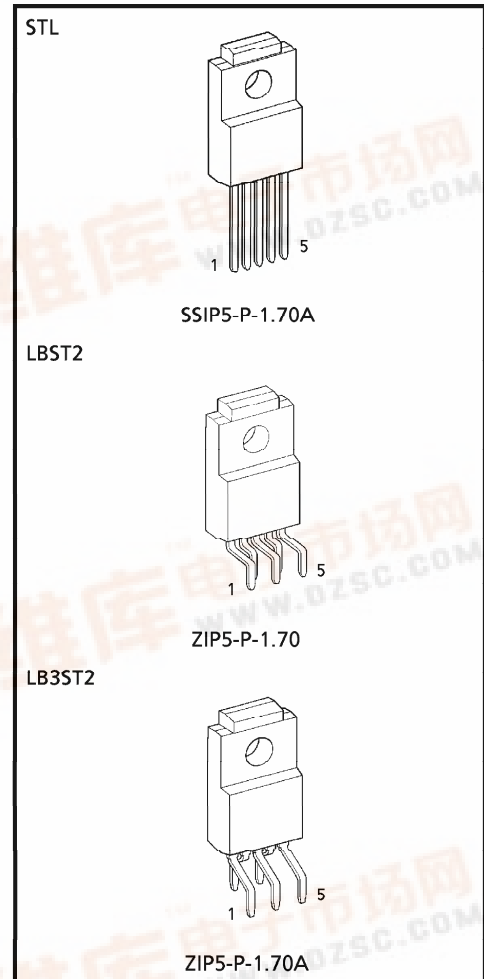
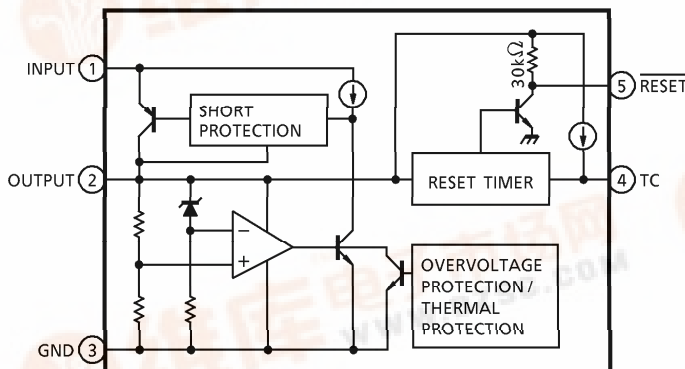
The TA8004AS is a 5V regulator which handles 400mA Max. of output current.

This IC generates a reset signal to reset the system when power is supplied or the 5V output voltage lowers to 85% or less of normal output voltage due to the external disturbances.

### FEATURES

- Maximum Output Current : 400mA (Max.)
- Low Input-Output Dropout Voltage : 0.6V (Max.)
- Multi Protection
  - Power supply reverse connection
  - Function for over voltage
  - Thermal protection
  - Short protection
- Internal Power ON Reset Timer
- TO-220 (IS) 5 Pin Package

### BLOCK DIAGRAM



<b>Weight</b>	
SSIP5-P-1.70A	: 2.2g (Typ.)
ZIP5-P-1.70	: 2.2g (Typ.)
ZIP5-P-1.70A	: 2.2g (Typ.)

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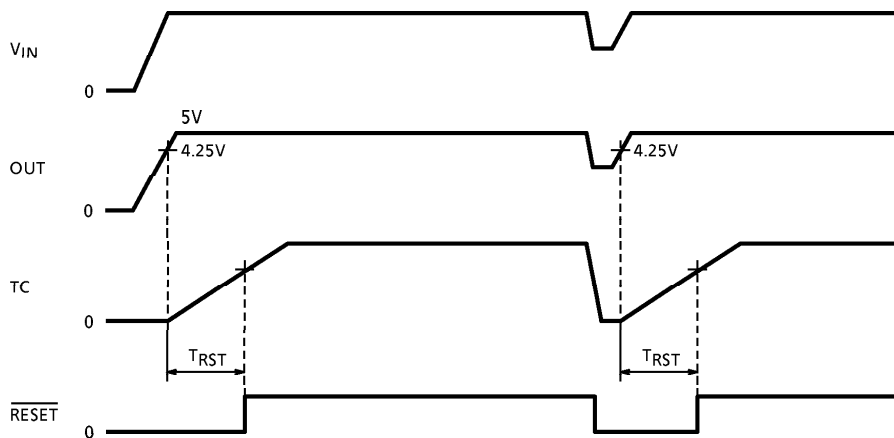
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**PIN DESCRIPTIONS**

PIN No.	SYMBOL	DESCRIPTION
1	IN	Power supply terminal.
2	OUT	The 5V output terminal with maximum output current 400mA.
3	GND	Ground terminal.
4	TC	Terminal to set the reset timer. A capacitor is connected between this terminal and GND.
5	$\overline{\text{RESET}}$	Collector output of an NPN transistor with built-in pull-up resistor. This pin is put at LOW level at output voltage below 85% of a prescribed level and after output voltage becomes above 85% of a prescribed level, a reset signal for the time set at the TC terminal.

**TIMING CHART**

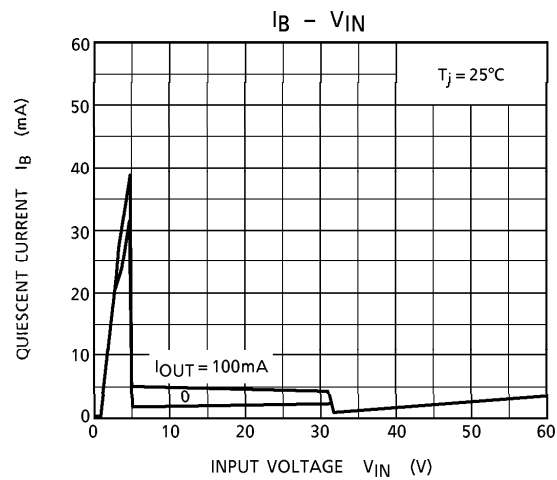
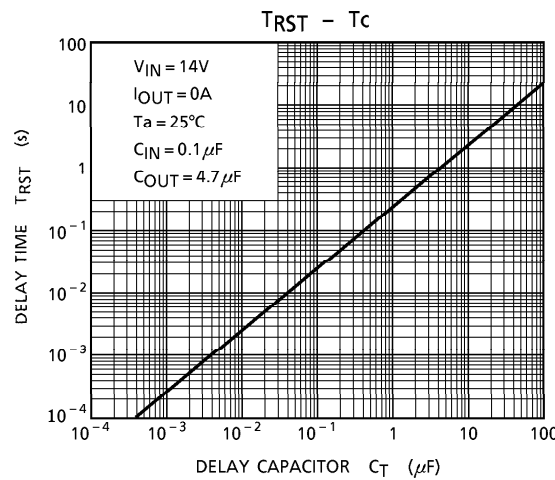
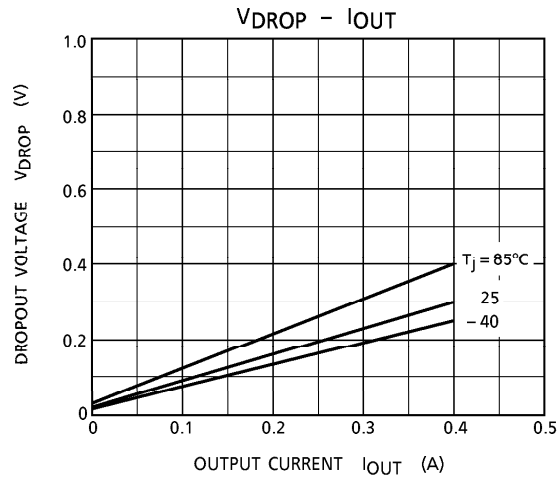
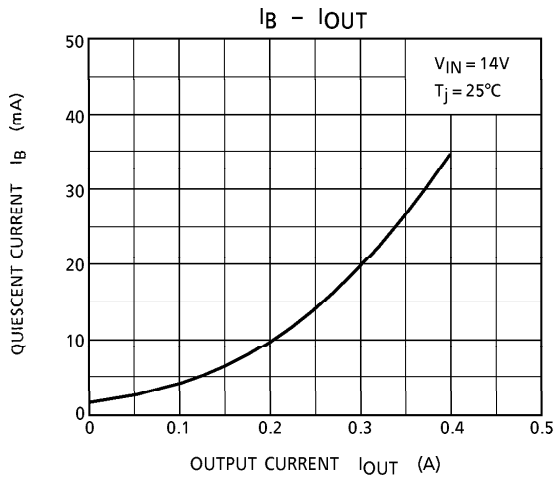
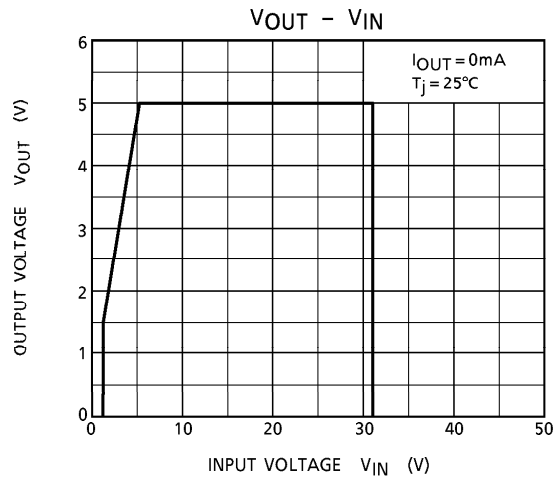
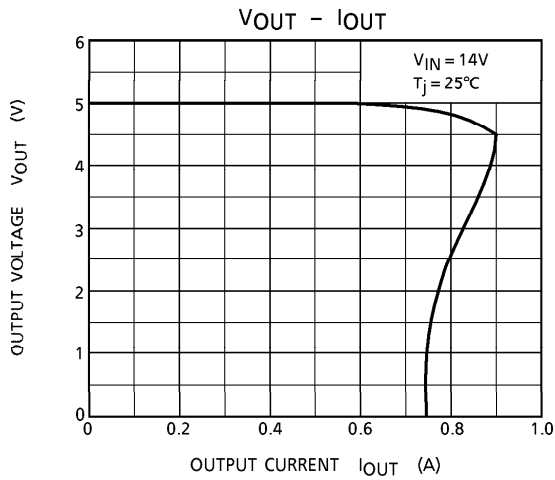


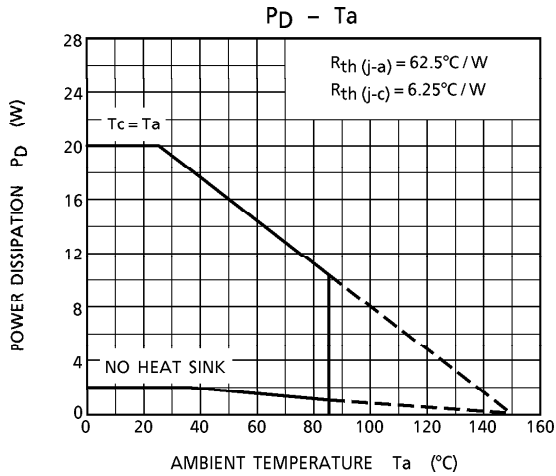
**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Input Voltage	$V_{IN}$	- 20~60	V
Power Dissipation	$P_D$	(Ta = 25°C)	2
		(Tc = 25°C)	20
Operating Temperature	$T_{opr}$	- 40~85	°C
Storage Temperature	$T_{stg}$	- 55~150	°C
Soldering Temperature·Time	$T_{sol}$	260 (10s)	°C
Thermal Resistance	$R_{th(j-c)}$	6.25	°C/W
	$R_{th(j-a)}$	62.5	

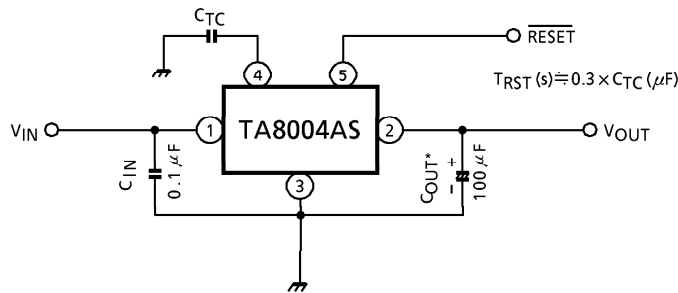
**ELECTRICAL CHARACTERISTICS** (Unless otherwise specified,  $V_{IN} = 14V$ ,  $I_{OUT} = 10mA$ ,  $T_j = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	OUT	—	$5.35V \leq V_{IN} \leq 26V$ $I_{OUT} = 10mA$	4.8	5.0	5.2	V
				$5.35V \leq V_{IN} \leq 26V$ $I_{OUT} = 10mA$ $-40^\circ C \leq T_a \leq 85^\circ C$	4.5	5.0	5.5	
Line Regulation	Reg-Line	OUT	—	$10V \leq V_{IN} \leq 17V$ $I_{OUT} = 200mA$	—	4	50	mV
				$7V \leq V_{IN} \leq 26V$ $I_{OUT} = 200mA$	—	10	70	
Load Regulation	Reg-Load	OUT	—	$10mA \leq I_{OUT} \leq 200mA$	—	35	150	mV
Quiescent Current	$I_B$	GND	—	$6V \leq V_{IN} \leq 26V$ , $I_{OUT} = 0$	—	1.7	3	mA
				$V_{IN} = 14V$ , $I_{OUT} = 200mA$	—	10	—	
Dropout Voltage	$V_{DROP}$	IN / OUT	—	$I_{OUT} = 50mA$	—	0.08	0.2	V
				$I_{OUT} = 400mA$	—	0.3	0.6	
Max. Operating Input Voltage	$V_{IN}$	IN	—	—	29	32	—	V
Reset Voltage (H)	$V_{RST (H)}$	RST	—	—	4.5	5	5.5	V
Reset Voltage (L)	$V_{RST (L)}$	RST	—	$I_{SINK} = 2.5mA$	—	0.15	0.4	V
Delay Time	$T_{RST}$	RST	—	—	—	$0.3 \times C_{TC} (\mu F)$	—	s
TC Threshold	$V_{TH}$	TC	—	—	—	$V_{out} \times 60\%$	—	V
Delay Current	$I_{TC}$	TC	—	—	5	12	25	$\mu A$
$V_{OUT}$ Threshold	$V_{TH}$	OUT	—	—	—	$V_{out} \times 85\%$	—	V





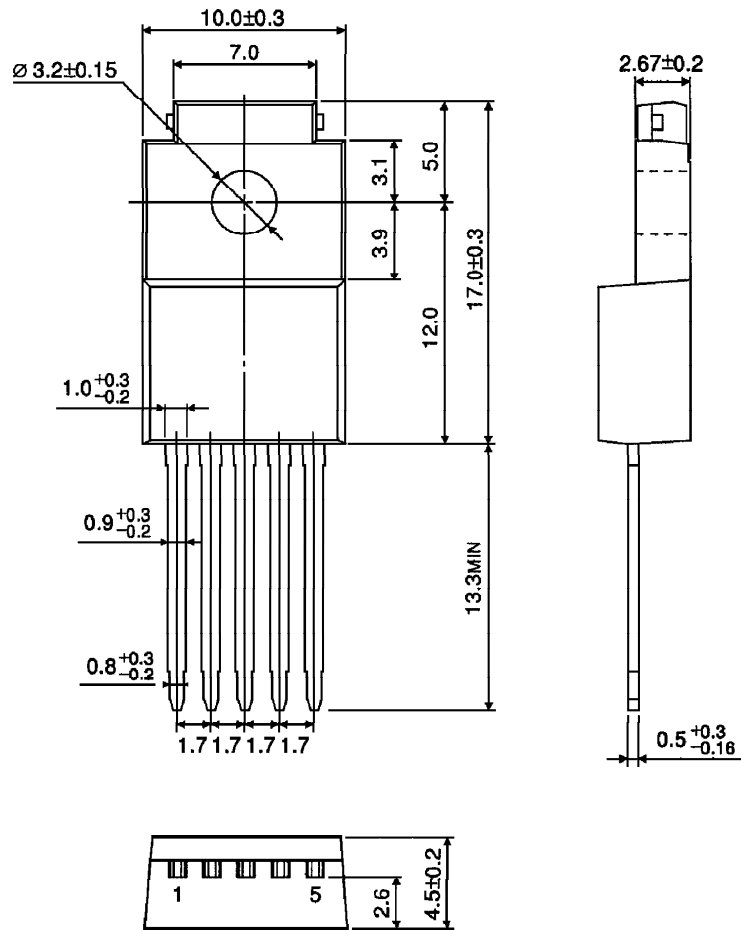
**APPLICATION CIRCUIT**



- \* Capacitor  $C_{OUT}$  must be guaranteed to operate of the temperature range that the regulator should be operated correctly.  
 100 $\mu\text{F}$  is a suitable value to suppress the oscillation phenomenon at the output terminal.

OUTLINE DRAWING  
SSIP5-P-1.70A (STL)

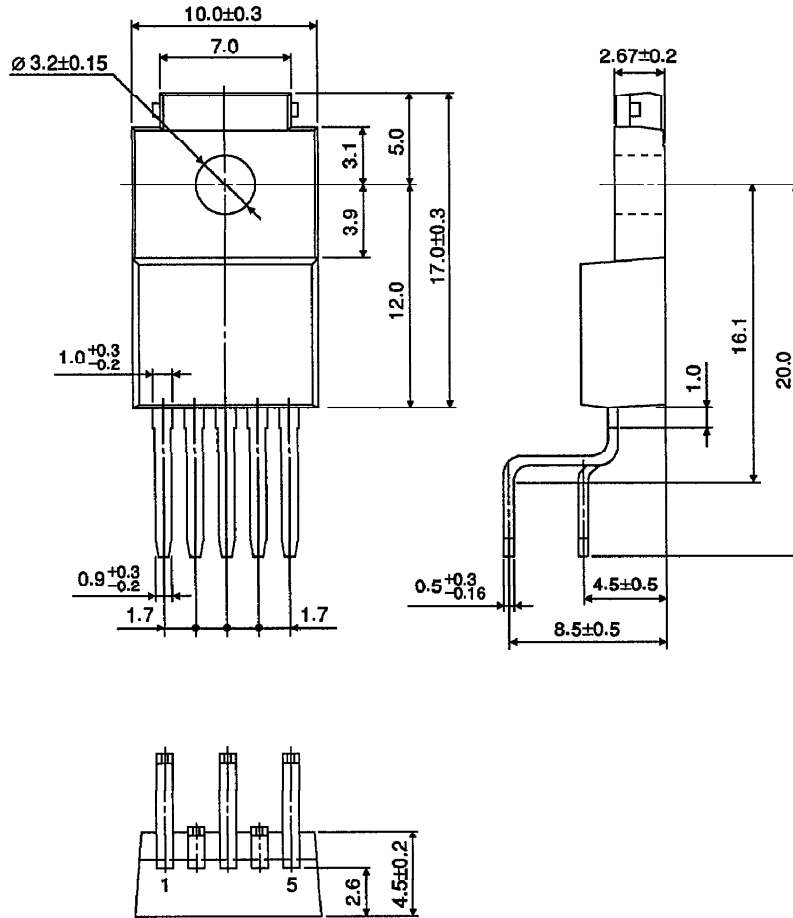
Unit : mm



Weight : 2.2g (Typ.)

OUTLINE DRAWING  
ZIP5-P-1.70 (LBST2)

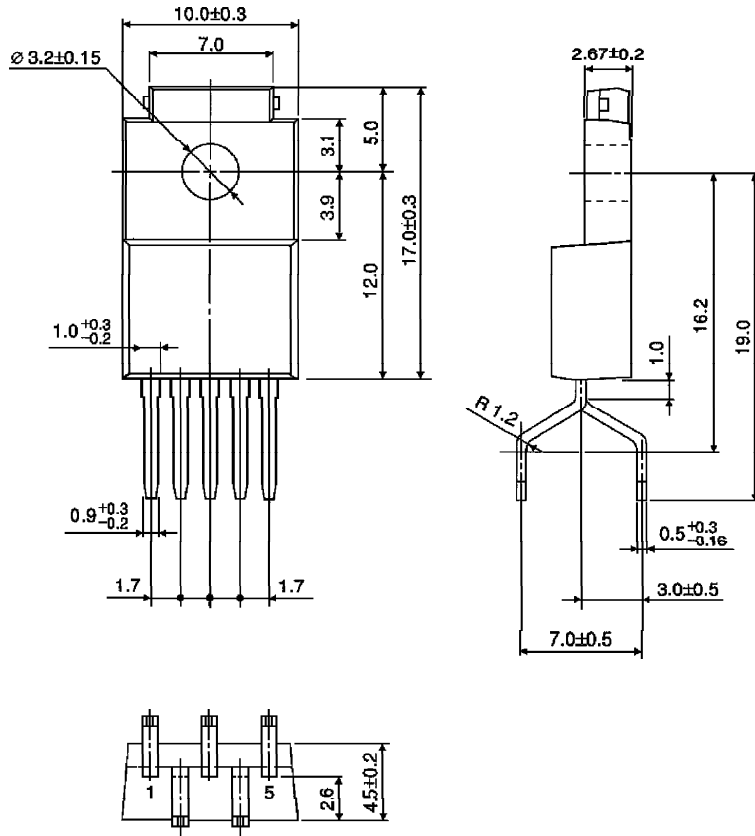
Unit : mm



Weight : 2.2g (Typ.)

OUTLINE DRAWING  
ZIP5-P-1.70A (LB3ST2)

Unit : mm



Weight : 2.2g (Typ.)