

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

**TA7805SB, TA78057SB, TA7806SB, TA7807SB, TA7808SB, TA7809SB,
TA7810SB, TA7812SB, TA7815SB, TA7818SB, TA7820SB, TA7824SB**

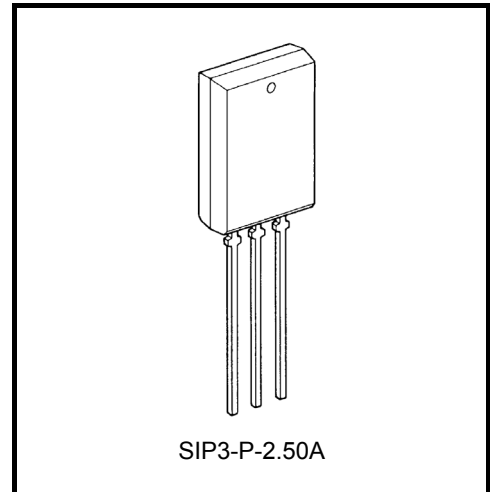
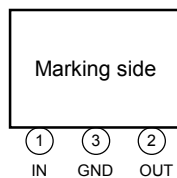
Three-Terminal Positive Voltage Regulators

5 V, 5.7 V, 6 V, 7 V, 8 V, 9 V, 10 V, 12 V, 15 V, 18 V, 20 V, 24 V

Features

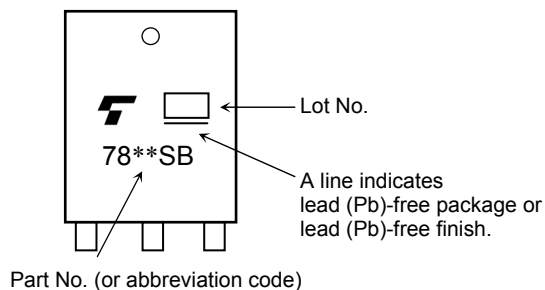
- Suitable for CMOS, TTL, the power supply of other digital ICs
- Internal thermal overload protection
- Internal short circuit current limiting
- Maximum output current of 1 A
- Package in the plastic case TPL (P_D: 1.8 W)

Pin Assignment



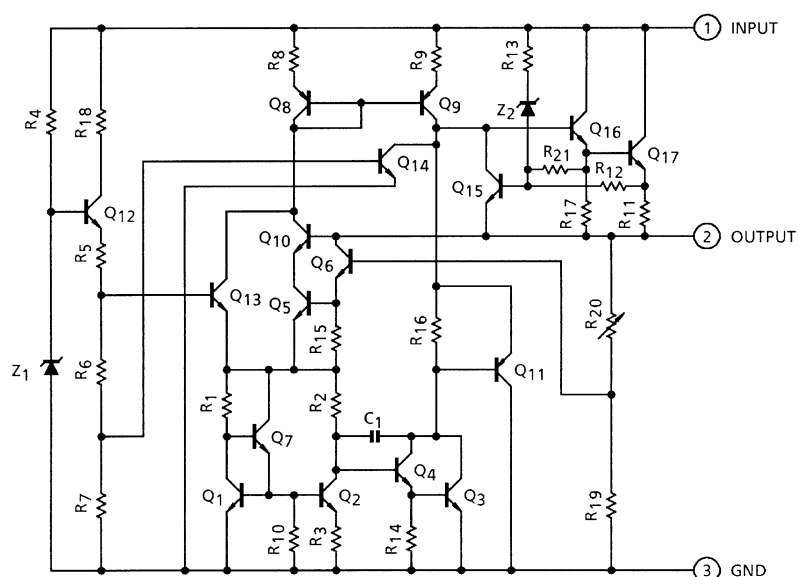
Weight: 1.5 g (Typ.)

Marking



Note 1: The “* *” in the each product number is replaces with the output voltage of each product.

Equivalent Circuit



Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Input voltage	TA7805SB	V _{IN}	35	V
	TA78057SB			
	TA7806SB			
	TA7807SB			
	TA7808SB			
	TA7809SB			
	TA7810SB			
	TA7812SB			
	TA7815SB			
	TA7818SB			
	TA7820SB		40	
	TA7824SB			
Power dissipation	(Ta = 25°C)	P _D	1.8	W
Operating temperature		T _{opr}	−30~85	°C
Storage temperature		T _{stg}	−55~150	°C
Junction temperature		T _j	150	°C
Thermal resistance		R _{th (j-a)}	69.4	°C/W

Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

TA7805SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 10\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	4.8	5.0	5.2	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	$7.0\text{ V} \leq V_{IN} \leq 25\text{ V}$	—	3	mV
				$8.0\text{ V} \leq V_{IN} \leq 12\text{ V}$	—	1	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	15	mV
				$250\text{ mA} \leq I_{OUT} \leq 750\text{ mA}$	—	5	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $7.0\text{ V} \leq V_{IN} \leq 20\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	4.75	—	5.25	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.2	8.0	mA
Quiescent current change	ΔI_B	1	$7.0\text{ V} \leq V_{IN} \leq 25\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.3	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	50	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $8.0\text{ V} \leq V_{IN} \leq 18\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	62	78	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.6	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-0.6	—	$\text{mV}/^\circ\text{C}$

TA78057SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 10.7\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	5.47	5.7	5.93	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	$7.7\text{ V} \leq V_{IN} \leq 25\text{ V}$	—	4	mV
				$8.7\text{ V} \leq V_{IN} \leq 12.7\text{ V}$	—	2	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	15	mV
				$250\text{ mA} \leq I_{OUT} \leq 750\text{ mA}$	—	5	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $7.7\text{ V} \leq V_{IN} \leq 20.7\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	5.42	—	5.98	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$7.7\text{ V} \leq V_{IN} \leq 25\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.3	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	55	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $8.8\text{ V} \leq V_{IN} \leq 18.8\text{ V}$, $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	62	77	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.5	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-0.7	—	$\text{mV}/^\circ\text{C}$

TA7806SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 11\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	5.75	6.0	6.25	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	$8.0\text{ V} \leq V_{IN} \leq 25\text{ V}$	—	4	mV
				$9\text{ V} \leq V_{IN} \leq 13\text{ V}$	—	2	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	15	mV
				$250\text{ mA} \leq I_{OUT} \leq 750\text{ mA}$	—	5	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $8\text{ V} \leq V_{IN} \leq 21\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	5.7	—	6.3	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$8.0\text{ V} \leq V_{IN} \leq 25\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.3	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	55	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $9\text{ V} \leq V_{IN} \leq 19\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	61	77	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.5	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-0.7	—	$\text{mV}/^\circ\text{C}$

TA7807SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 12\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	6.72	7.0	7.28	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	$9\text{ V} \leq V_{IN} \leq 25\text{ V}$	—	5	mV
				$10\text{ V} \leq V_{IN} \leq 14\text{ V}$	—	2	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	15	mV
				$250\text{ mA} \leq I_{OUT} \leq 750\text{ mA}$	—	5	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $9\text{ V} \leq V_{IN} \leq 22\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	6.65	—	7.35	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$9\text{ V} \leq V_{IN} \leq 25\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.3	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	60	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $10\text{ V} \leq V_{IN} \leq 20\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	59	75	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.3	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-0.8	—	$\text{mV}/^\circ\text{C}$

TA7808SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 14\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	7.7	8.0	8.3	V
Line regulation	Reg.line	1	$T_J = 25^\circ\text{C}$	—	6	160	mV
			$10.5\text{ V} \leq V_{IN} \leq 25\text{ V}$	—	2	80	
Load regulation	Reg.load	1	$T_J = 25^\circ\text{C}$	—	12	160	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	80	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$	7.6	—	8.4	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$10.5\text{ V} \leq V_{IN} \leq 25\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	70	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $11.5\text{ V} \leq V_{IN} \leq 21.5\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	58	74	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.1	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-1.0	—	$\text{mV}/^\circ\text{C}$

TA7809SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 15\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	8.64	9.0	9.36	V
Line regulation	Reg.line	1	$T_J = 25^\circ\text{C}$	—	7	180	mV
			$11.5\text{ V} \leq V_{IN} \leq 26\text{ V}$	—	2.5	90	
Load regulation	Reg.load	1	$T_J = 25^\circ\text{C}$	—	12	180	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	90	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$	8.55	—	9.45	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$11.5\text{ V} \leq V_{IN} \leq 26\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	75	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $12.5\text{ V} \leq V_{IN} \leq 22.5\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	56	72	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	1.0	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-1.1	—	$\text{mV}/^\circ\text{C}$

TA7810SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 16\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	9.6	10.0	10.4	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	8	200	mV
			$12.5\text{ V} \leq V_{IN} \leq 27\text{ V}$	—	2.5	100	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	200	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	100	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $12.5\text{ V} \leq V_{IN} \leq 25\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	9.5	—	10.5	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$12.5\text{ V} \leq V_{IN} \leq 27\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	80	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $13.5\text{ V} \leq V_{IN} \leq 23.5\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	55	72	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.9	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-1.3	—	$\text{mV}/^\circ\text{C}$

TA7812SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 19\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	11.5	12.0	12.5	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	10	240	mV
			$14.5\text{ V} \leq V_{IN} \leq 30\text{ V}$	—	3	120	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	240	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	120	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $14.5\text{ V} \leq V_{IN} \leq 27\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	11.4	—	12.6	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.3	8.0	mA
Quiescent current change	ΔI_B	1	$14.5\text{ V} \leq V_{IN} \leq 30\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	90	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $15\text{ V} \leq V_{IN} \leq 25\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	55	71	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.7	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-1.6	—	$\text{mV}/^\circ\text{C}$

TA7815SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 23\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	14.4	15.0	15.6	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	11	300	mV
			$17.5\text{ V} \leq V_{IN} \leq 30\text{ V}$	—	3	150	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	300	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	150	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $17.5\text{ V} \leq V_{IN} \leq 30\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	14.25	—	15.75	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.4	8.0	mA
Quiescent current change	ΔI_B	1	$17.5\text{ V} \leq V_{IN} \leq 30\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	110	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $18.5\text{ V} \leq V_{IN} \leq 28.5\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	54	70	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.5	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-2.0	—	$\text{mV}/^\circ\text{C}$

TA7818SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 27\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	17.3	18.0	18.7	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	13	360	mV
			$21\text{ V} \leq V_{IN} \leq 33\text{ V}$	—	4	180	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	360	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	180	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $21\text{ V} \leq V_{IN} \leq 33\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	17.1	—	18.9	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.5	8.0	mA
Quiescent current change	ΔI_B	1	$21\text{ V} \leq V_{IN} \leq 33\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	125	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $22\text{ V} \leq V_{IN} \leq 32\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	52	68	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.4	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-2.5	—	$\text{mV}/^\circ\text{C}$

TA7820SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 29\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

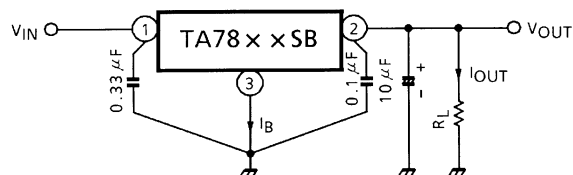
Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	19.2	20.0	20.8	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	15	400	mV
			$23\text{ V} \leq V_{IN} \leq 35\text{ V}$	—	5	200	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	400	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	200	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $23\text{ V} \leq V_{IN} \leq 35\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	19.0	—	21.0	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.6	8.0	mA
Quiescent current change	ΔI_B	1	$23\text{ V} \leq V_{IN} \leq 35\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	135	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $24\text{ V} \leq V_{IN} \leq 34\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	50	66	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.4	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-3.0	—	$\text{mV}/^\circ\text{C}$

TA7824SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = 33\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$)

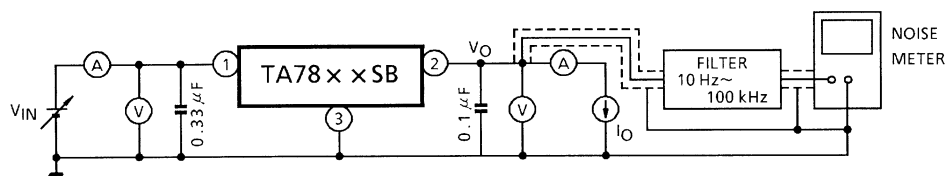
Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 100\text{ mA}$	23.0	24.0	25.0	V
Line regulation	Reg-line	1	$T_J = 25^\circ\text{C}$	—	18	480	mV
			$27\text{ V} \leq V_{IN} \leq 38\text{ V}$	—	6	240	
Load regulation	Reg-load	1	$T_J = 25^\circ\text{C}$	—	12	480	mV
			$5\text{ mA} \leq I_{OUT} \leq 1.4\text{ A}$	—	4	240	
Output voltage	V_{OUT}	1	$T_J = 25^\circ\text{C}$ $27\text{ V} \leq V_{IN} \leq 38\text{ V}$ $5.0\text{ mA} \leq I_{OUT} \leq 1.0\text{ A}$	22.8	—	25.2	V
Quiescent current	I_B	1	$T_J = 25^\circ\text{C}$, $I_{OUT} = 5\text{ mA}$	—	4.6	8.0	mA
Quiescent current change	ΔI_B	1	$27\text{ V} \leq V_{IN} \leq 38\text{ V}$, $I_{OUT} = 5\text{ mA}$, $T_J = 25^\circ\text{C}$	—	—	1.0	mA
Output noise voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$ $I_{OUT} = 50\text{ mA}$	—	150	—	μV_{rms}
Ripple rejection	R.R.	3	$f = 120\text{ Hz}$, $28\text{ V} \leq V_{IN} \leq 38\text{ V}$ $I_{OUT} = 50\text{ mA}$, $T_J = 25^\circ\text{C}$	50	66	—	dB
Dropout voltage	V_D	1	$I_{OUT} = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$	—	2.0	—	V
Short circuit current limit	I_{SC}	1	$T_J = 25^\circ\text{C}$	—	0.3	—	A
Average temperature coefficient of output voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	-3.5	—	$\text{mV}/^\circ\text{C}$

Test Circuit 1/Standard Application Circuit



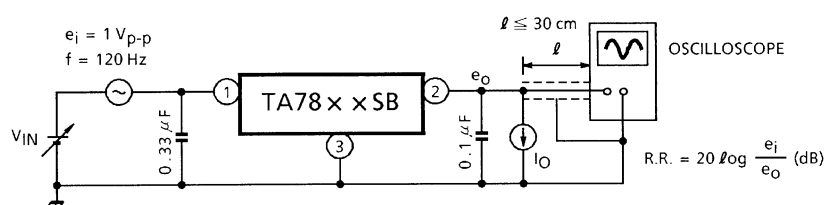
Test Circuit 2

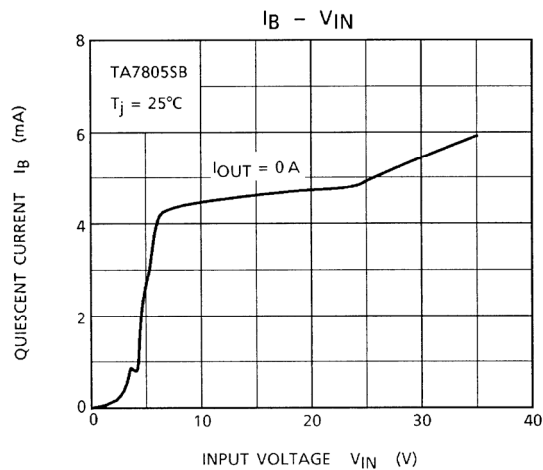
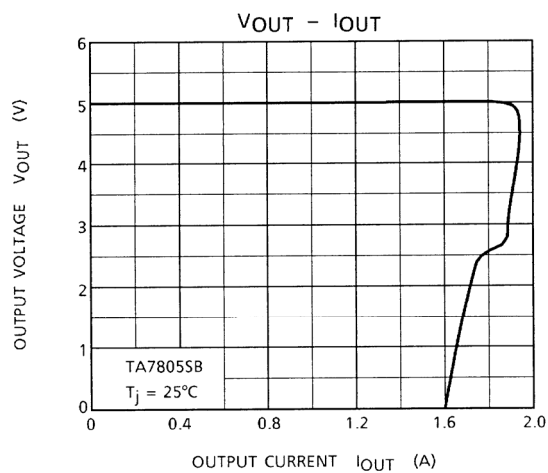
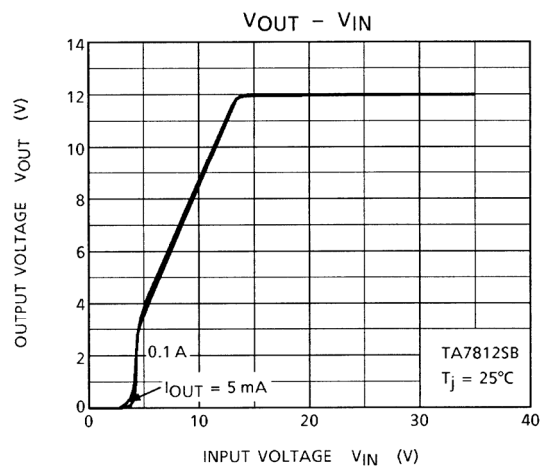
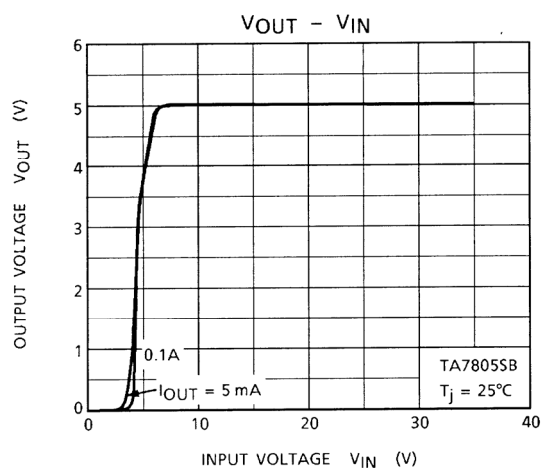
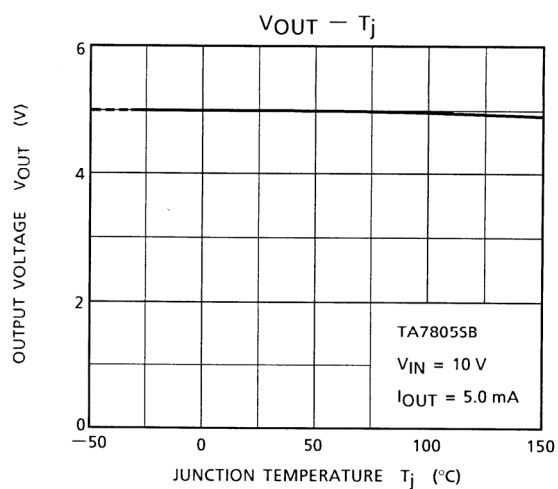
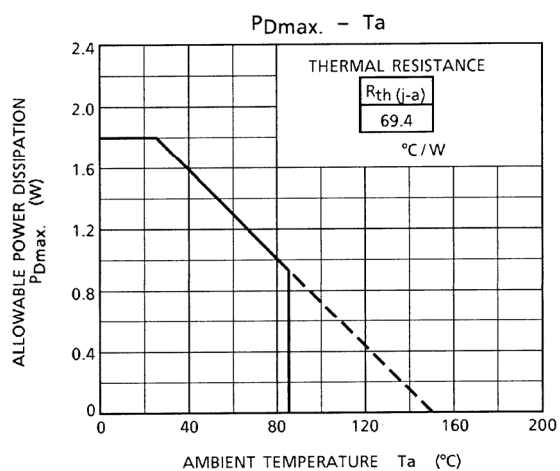
V_{NO}

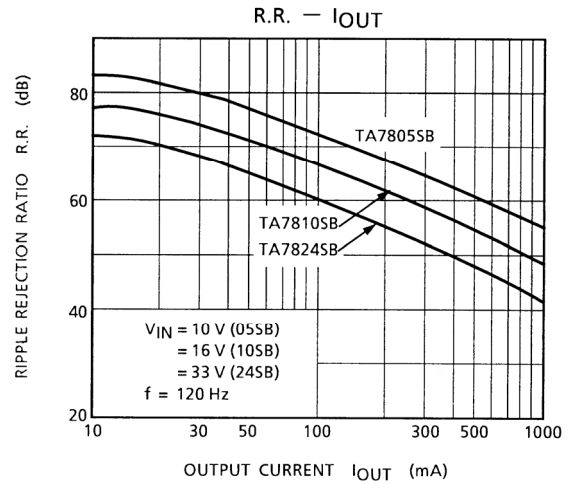
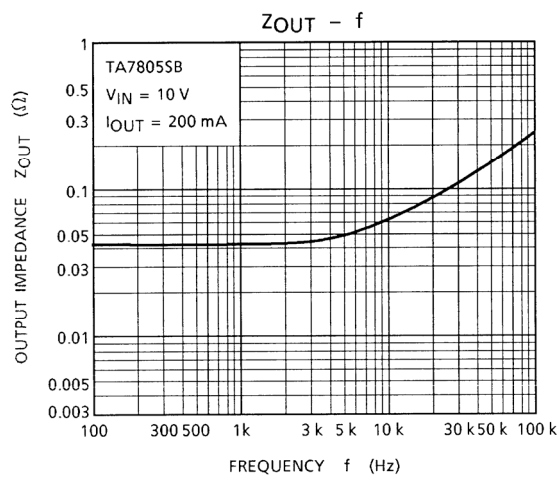
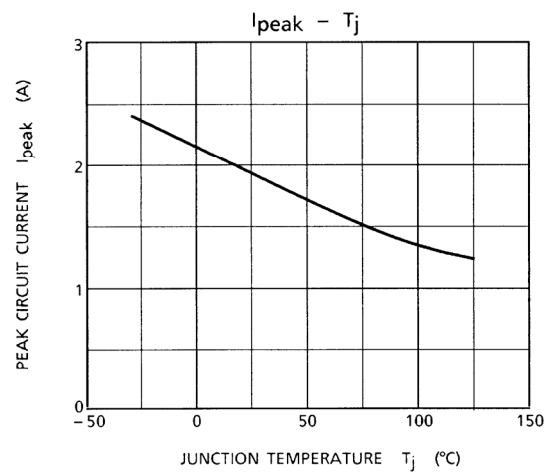
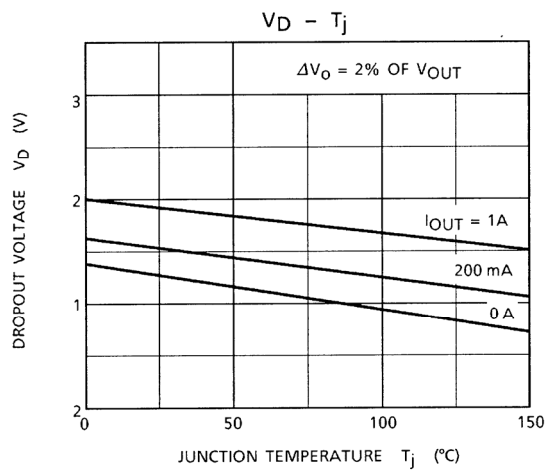
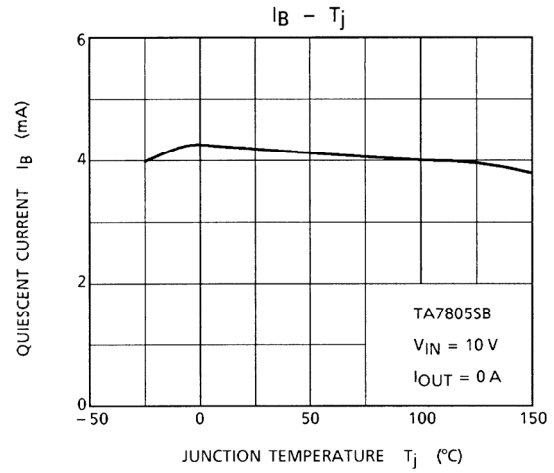
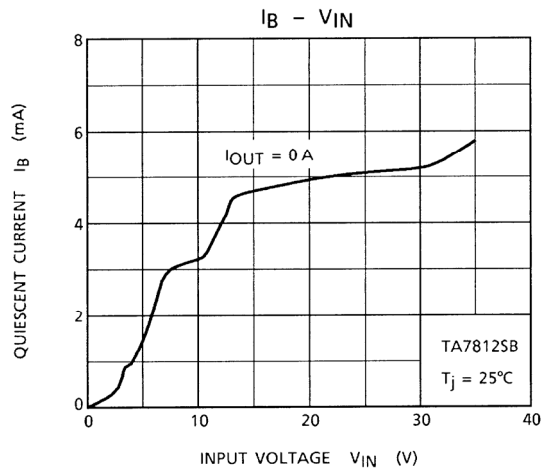


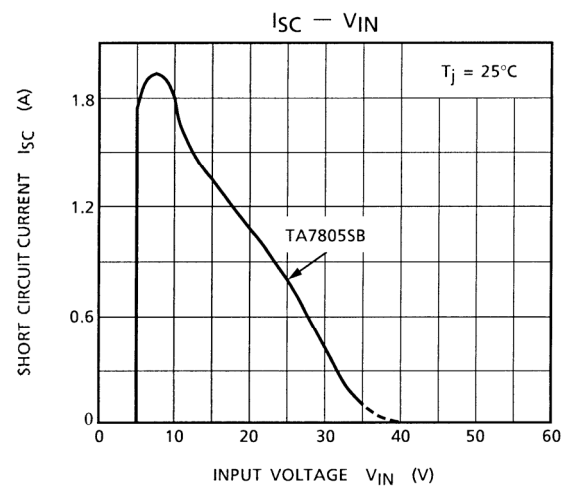
Test Circuit 3

R.R.









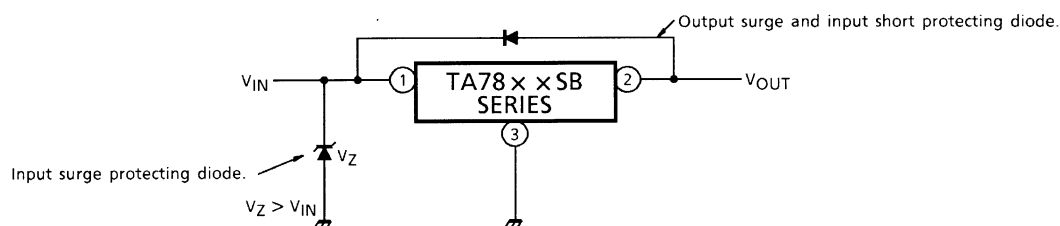
Precautions on Application

- (1) In regard to GND, be careful not to apply a negative voltage to the input/output terminal.
- (2) If a surge voltage exceeding the absolute maximum rating is applied to the input terminal or if a voltage in excess of the input terminal voltage is applied to the output terminal, the circuit may be destroyed.

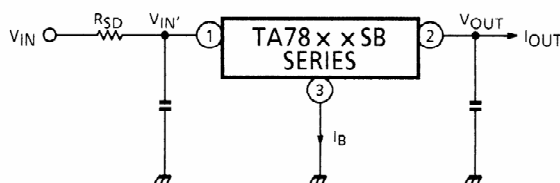
Particular care is necessary in the case of the latter.

Circuit destruction may also occur if the input terminal shorts to GND in a state of normal operation, causing the output terminal voltage to exceed the input voltage (GND potential) and the electrical charge of the chemical capacitor connected to the output terminal to flow into the input side.

Where these risks exist, take steps such as connecting zener and general silicon diodes to the circuit, as shown in the figure below.



- (3) When the input voltage is too high, the power dissipation of the three-terminal regulator, which is a series regulator, increases, causing the junction temperature to rise. In such a case, it is recommended to reduce the power dissipation, and hence the junction temperature, by inserting a power-limiting resistor R_{SD} in the input terminal.



The power dissipation P_D of the IC is expressed in the following equation.

$$P_D = (V_{IN'} - V_{OUT}) \cdot I_{OUT} + V_{IN'} \cdot I_B$$

Reducing $V_{IN'}$ below the lowest voltage necessary for the IC will cause ripple, deterioration in output regulation and, in certain circumstances, parasitic oscillation.

To determine the resistance value of R_{SD} , design with a margin, referring to the following equation.

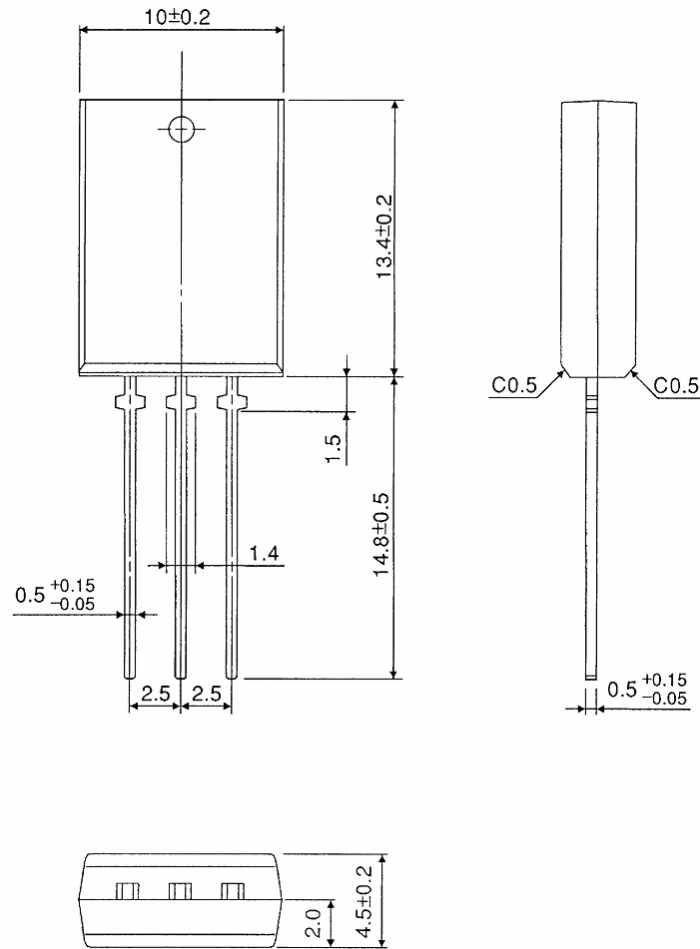
$$R_{SD} < \frac{V_{IN} - V_{IN'}}{I_{OUT} + I_B}$$

- (4) Be sure to connect a capacitor near the input terminal and output terminal between both terminals and GND. The capacitances should be determined experimentally because they depend on PCB patterns. In particular, adequate investigation should be made to ensure there is no problem even in high or low temperatures

Package Dimensions

SIP3-P-2.50A

Unit : mm



Weight: 1.5 g (typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN

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