

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA79005SB, TA79006SB, TA79007SB, TA79008SB, TA79009SB, TA79010SB, TA79012SB, TA79015SB, TA79018SB, TA79020SB, TA79024SB

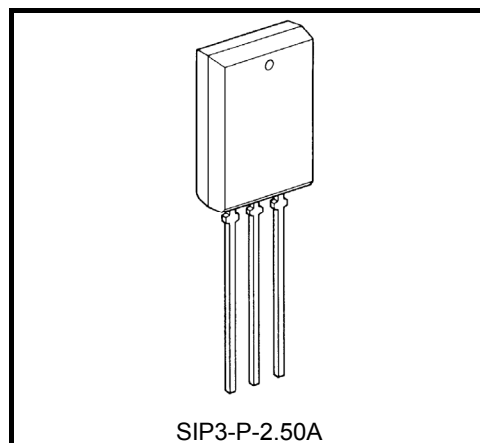
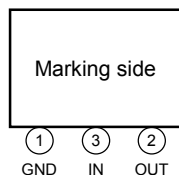
Output Current of 1A, Three-Terminal Negative Voltage Regulators

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

Features

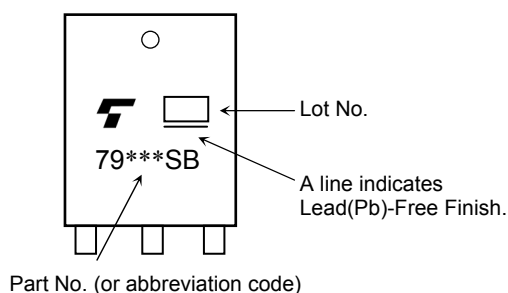
- Suitable for CMOS, TTL, and the and the power supply of other digital ICs
- Internal overheating protection
- Internal overcurrent protection
- Maximum output current of 1 A
- Package in the plastic case TPL ($P_D = 1.8 \text{ W}$)

Pin Assignment



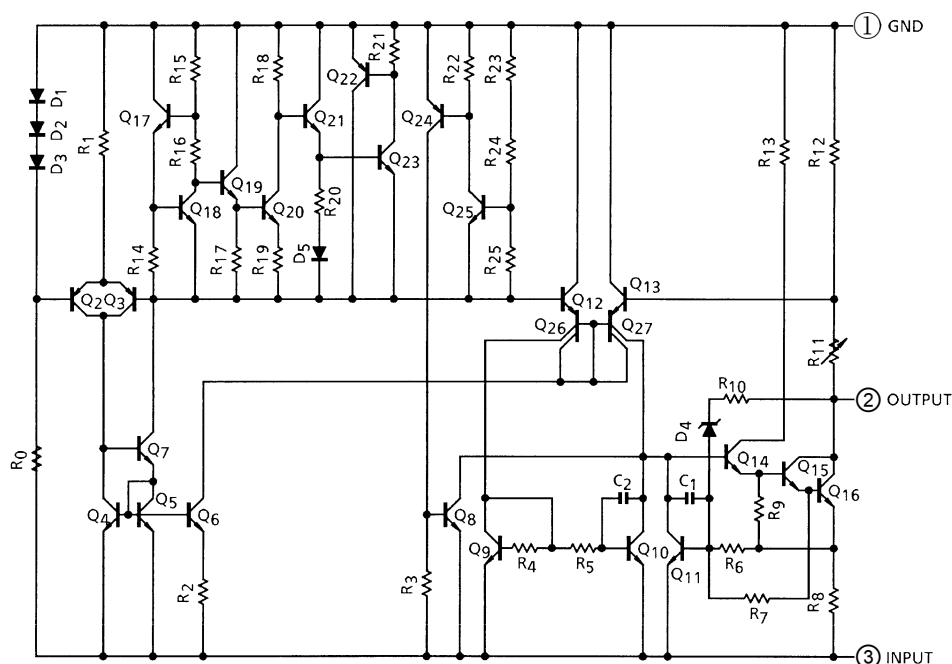
Weight: 1.5 g (typ.)

Marking



The product(s) in this document ("Product") contain functions intended to protect the Product from temporary small overloads such as minor short-term overcurrent or overheating. The protective functions do not necessarily protect Product under all circumstances. When incorporating Product into your system, please design the system (1) to avoid such overloads upon the Product, and (2) to shut down or otherwise relieve the Product of such overload conditions immediately upon occurrence. For details, please refer to the notes appearing below in this document and other documents referenced in this document.

Equivalent Circuit



Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Input voltage	TA79005SB	V _{IN}	-35	V
	TA79006SB			
	TA79007SB			
	TA79008SB			
	TA79009SB			
	TA79010SB			
	TA79012SB			
	TA79015SB			
	TA79018SB		-40	
	TA79020SB			
	TA79024SB			
Output current		I _{OUT}	1	A
Power dissipation	(Ta = 25°C)	P _D	1.8	W
Operating temperature		T _{opr}	-30 to 85	°C
Storage temperature		T _{stg}	-55 to 150	°C
Junction temperature		T _j	150	°C
Thermal resistance		R _{th (j-a)}	69.4	°C/W

Note: 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).

TA79005SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -10\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-5.2	-5.0	-4.8	V	
Line regulation		Reg-line	1	T _j = 25°C	-12 V ≤ V _{IN} ≤ -8 V	—	7	50	mV
					-25 V ≤ V _{IN} ≤ -7 V	—	35	100	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	11	100	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	4	50	
Output voltage		V _{OUT}	1	T _j = 25°C	-20 V ≤ V _{IN} ≤ -7 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-5.25	—	-4.75	V
Quiescent current		I _B	1	T _j = 25°C	—	4.3	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-25 V ≤ V _{IN} ≤ -7 V	—	—	1.3	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	40	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	63	70	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	0.6	—	mV/°C	

TA79006SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -11\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C		-6.25	-6.0	-5.75	V
Line regulation		Reg-line	1	T _j = 25°C	-13 V ≤ V _{IN} ≤ -9 V	—	9	60	mV
					-25 V ≤ V _{IN} ≤ -8 V	—	43	120	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	13	120	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	5	60	
Output voltage		V _{OUT}	1	T _j = 25°C	-21 V ≤ V _{IN} ≤ -8 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-6.3	—	-5.7	V
Quiescent current		I _B	1	T _j = 25°C		—	4.3	8.0	mA
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-25 V ≤ V _{IN} ≤ -8 V	—	—	1.3	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz		—	45	—	μV _{rms}
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C		61	68	—	dB
Short circuit current limit		I _{SC}	1	T _j = 25°C		—	1.9	—	A
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A		—	2.0	—	V
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA		—	0.7	—	mV/°C

TA79007SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -12\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-7.28	-7.0	-6.72	V	
Line regulation		Reg-line	1	T _j = 25°C	-15 V ≤ V _{IN} ≤ -10 V	—	10	70	mV
					-25 V ≤ V _{IN} ≤ -9 V	—	45	140	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	20	140	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	7	70	
Output voltage		V _{OUT}	1	T _j = 25°C	-22 V ≤ V _{IN} ≤ -9 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-7.35	—	-6.65	V
Quiescent current		I _B	1	T _j = 25°C	—	4.3	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-25 V ≤ V _{IN} ≤ -9 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	49	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	60	67	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	0.9	—	mV/°C	

TA79008SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -14\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-8.3	-8.0	-7.7	V	
Line regulation		Reg-line	1	T _j = 25°C	-17 V ≤ V _{IN} ≤ -11 V	—	11	80	mV
					-25 V ≤ V _{IN} ≤ -10.5 V	—	47	160	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	26	160	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	9	80	
Output voltage		V _{OUT}	1	T _j = 25°C	-23 V ≤ V _{IN} ≤ -10.5 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-8.4	—	-7.6	V
Quiescent current		I _B	1	T _j = 25°C	—	4.3	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-25 V ≤ V _{IN} ≤ -10.5 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz		—	52	—	μV _{rms}
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C		59	66	—	dB
Short circuit current limit		I _{SC}	1	T _j = 25°C		—	1.9	—	A
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A		—	2.0	—	V
Average temperature coefficient of output voltage		T _{CV} O	1	I _{OUT} = 5.0 mA		—	1.0	—	mV/°C

TA79009SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -15\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-9.3	-9.0	-8.7	V	
Line regulation		Reg-line	1	T _j = 25°C	-19 V ≤ V _{IN} ≤ -13 V	—	11	82	mV
					-26 V ≤ V _{IN} ≤ -11.5 V	—	48	162	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	33	162	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	11	82	
Output voltage		V _{OUT}	1	T _j = 25°C	-24 V ≤ V _{IN} ≤ -11.5 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-9.4	—	-8.6	V
Quiescent current		I _B	1	T _j = 25°C	—	4.3	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-26.5 V ≤ V _{IN} ≤ -13 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	60	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	57	64	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	1.1	—	mV/°C	

TA79010SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -16\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-10.4	-10.0	-9.6	V	
Line regulation		Reg-line	1	T _j = 25°C	-20 V ≤ V _{IN} ≤ -14 V	—	12	90	mV
					-27 V ≤ V _{IN} ≤ -12.5 V	—	50	180	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	40	180	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	13	90	
Output voltage		V _{OUT}	1	T _j = 25°C	-25 V ≤ V _{IN} ≤ -12.5 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-10.5	—	-9.5	V
Quiescent current		I _B	1	T _j = 25°C	—	4.4	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-27.5 V ≤ V _{IN} ≤ -14 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	65	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	57	63	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	1.3	—	mV/°C	

TA79012SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -19\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-12.5	-12.0	-11.5	V	
Line regulation		Reg-line	1	T _j = 25°C	-22 V ≤ V _{IN} ≤ -16 V	—	13	120	mV
					-30 V ≤ V _{IN} ≤ -14.5 V	—	55	240	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	46	240	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	17	120	
Output voltage		V _{OUT}	1	T _j = 25°C	-27 V ≤ V _{IN} ≤ -14.5 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-12.6	—	-11.4	V
Quiescent current		I _B	1	T _j = 25°C	—	4.4	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-30 V ≤ V _{IN} ≤ -14.5 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	75	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	54	61	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	1.6	—	mV/°C	

TA79015SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -23\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C		-15.6	-15.0	-14.4	V
Line regulation		Reg-line	1	T _j = 25°C	-26 V ≤ V _{IN} ≤ -20 V	—	14	150	mV
					-30 V ≤ V _{IN} ≤ -17.5 V	—	57	300	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	68	300	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	25	150	
Output voltage		V _{OUT}	1	T _j = 25°C	-30 V ≤ V _{IN} ≤ -17.5 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-15.75	—	-14.25	V
Quiescent current		I _B	1	T _j = 25°C		—	4.4	8.0	mA
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-30 V ≤ V _{IN} ≤ -17.5 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz		—	90	—	μV _{rms}
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C		53	60	—	dB
Short circuit current limit		I _{SC}	1	T _j = 25°C		—	1.9	—	A
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A		—	2.0	—	V
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA		—	2.0	—	mV/°C

TA79018SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -27\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-18.7	-18.0	-17.3	V	
Line regulation		Reg-line	1	T _j = 25°C	-30 V ≤ V _{IN} ≤ -24 V	—	25	180	
					-33 V ≤ V _{IN} ≤ -21 V	—	80		360
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	110	360	
					250 mA ≤ I _{OUT} ≤ 750 mA	—	55		180
Output voltage		V _{OUT}	1	T _j = 25°C	-33 V ≤ V _{IN} ≤ -21 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-18.85	—	-17.15	V
Quiescent current		I _B	1	T _j = 25°C	—	4.5	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-33 V ≤ V _{IN} ≤ -21 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	110	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	52	59	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	2.5	—	mV/°C	

TA79020SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -30\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-20.8	-20.0	-19.2	V	
Line regulation		Reg-line	1	T _j = 25°C	-32 V ≤ V _{IN} ≤ -26 V	—	28	180	mV
					-35 V ≤ V _{IN} ≤ -24 V	—	104	360	
Load regulation		Reg-load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	130	360	mV
					250 mA ≤ I _{OUT} ≤ 750 mA	—	70	180	
Output voltage		V _{OUT}	1	T _j = 25°C	-35 V ≤ V _{IN} ≤ -24 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-21.0	—	-19.0	V
Quiescent current		I _B	1	T _j = 25°C	—	4.6	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-36.5 V ≤ V _{IN} ≤ -25 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	140	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	50	57	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	3.0	—	mV/°C	

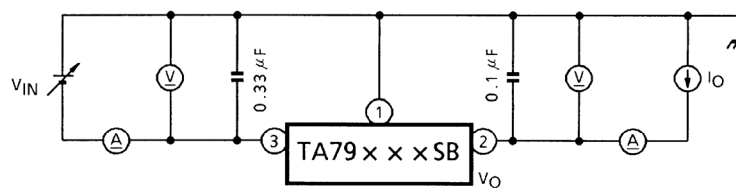
TA79024SB
Electrical Characteristics

 (Unless otherwise specified, $V_{IN} = -33\text{ V}$, $I_{OUT} = 500\text{ mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit	
Output voltage		V _{OUT}	1	T _j = 25°C	-25.0	-24.0	-23.0	V	
Line regulation		Reg.line	1	T _j = 25°C	-36 V ≤ V _{IN} ≤ -30 V	—	31	mV	
					-38 V ≤ V _{IN} ≤ -27 V	—	118		480
Load regulation		Reg.load	1	T _j = 25°C	5 mA ≤ I _{OUT} ≤ 1.5 A	—	150	mV	
					250 mA ≤ I _{OUT} ≤ 750 mA	—	85		240
Output voltage		V _{OUT}	1	T _j = 25°C	-38 V ≤ V _{IN} ≤ -27 V, 5 mA ≤ I _{OUT} ≤ 1.0 A	-25.2	—	-22.8	V
Quiescent current		I _B	1	T _j = 25°C	—	4.6	8.0	mA	
Quiescent current change	Line	ΔI _B	1	T _j = 25°C	-38 V ≤ V _{IN} ≤ -27 V	—	—	1.0	mA
	Load		1		5 mA ≤ I _{OUT} ≤ 1.0 A	—	—	0.5	
Output noise voltage		V _{NO}	2	T _a = 25°C, I _{OUT} = 20 mA, 10 Hz ≤ f ≤ 100 kHz	—	170	—	μV _{rms}	
Ripple rejection		R.R.	3	f = 120 Hz, I _{OUT} = 20 mA, T _j = 25°C	49	56	—	dB	
Short circuit current limit		I _{SC}	1	T _j = 25°C	—	1.9	—	A	
Dropout voltage		V _D	1	T _j = 25°C, I _{OUT} = 1.0 A	—	2.0	—	V	
Average temperature coefficient of output voltage		T _{CV0}	1	I _{OUT} = 5.0 mA	—	3.5	—	mV/°C	

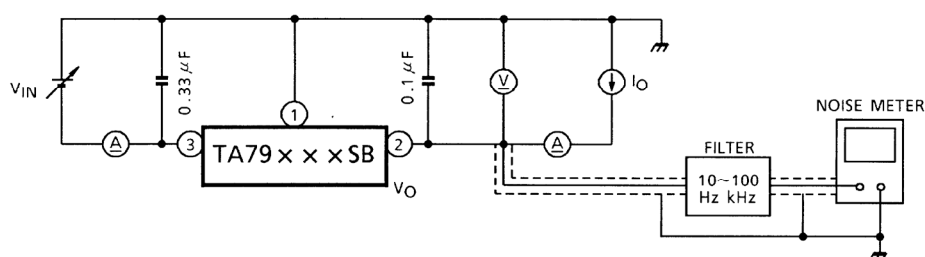
Test Circuit 1

V_{OUT} , Reg·line, Reg·load, I_B , ΔI_B , V_D , T_{CVO}



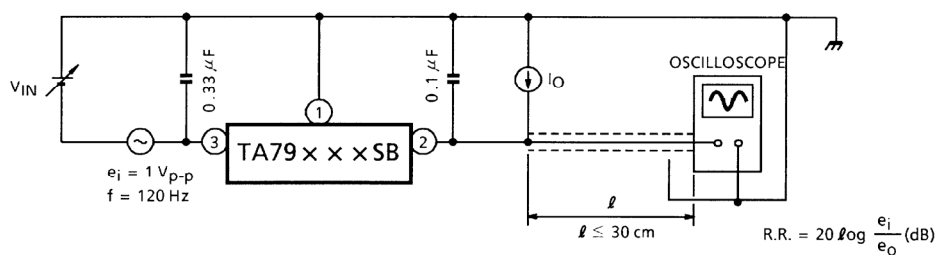
Test Circuit 2

V_{NO}



Test Circuit 3

R.R.



Usage Precautions

- Low voltage

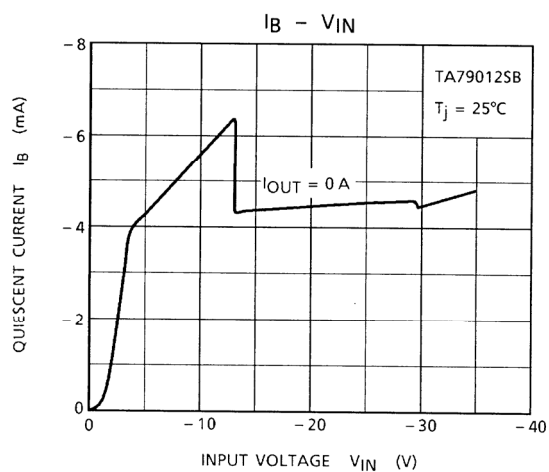
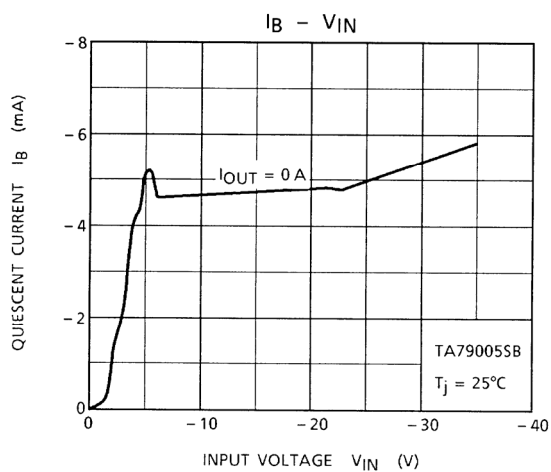
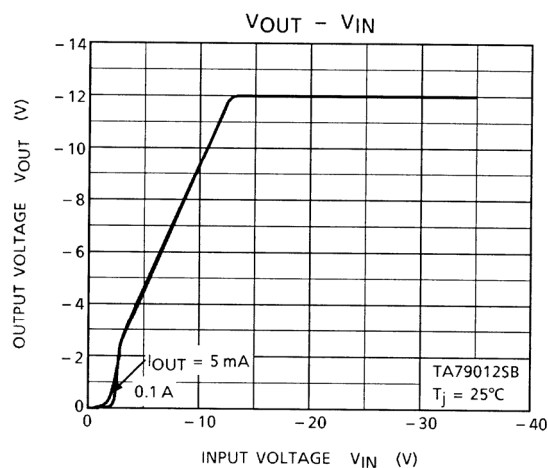
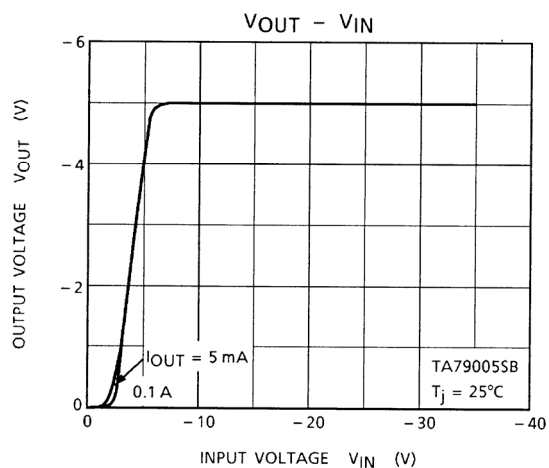
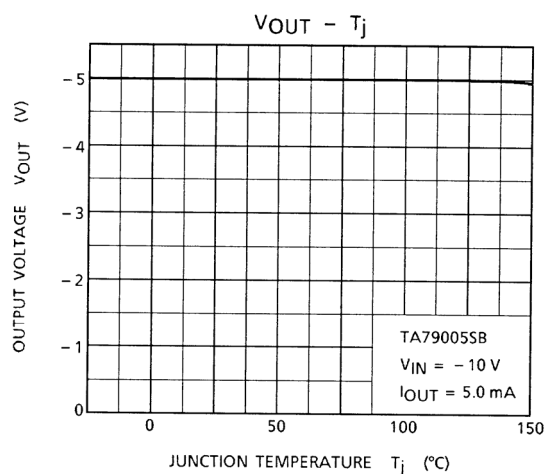
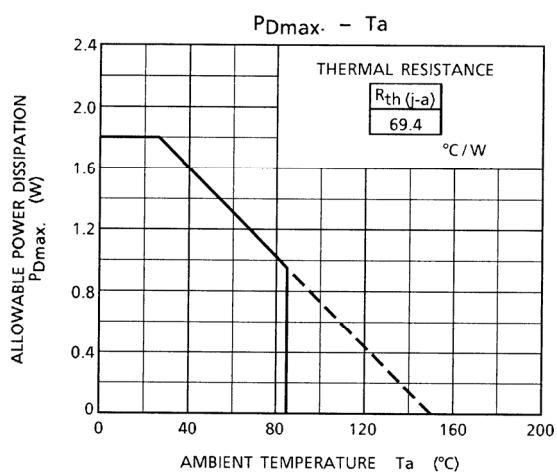
Do not apply voltage to the Product that is lower than the minimum operating voltage, or the Product's protective functions will not operate properly and the Product may be permanently damaged.

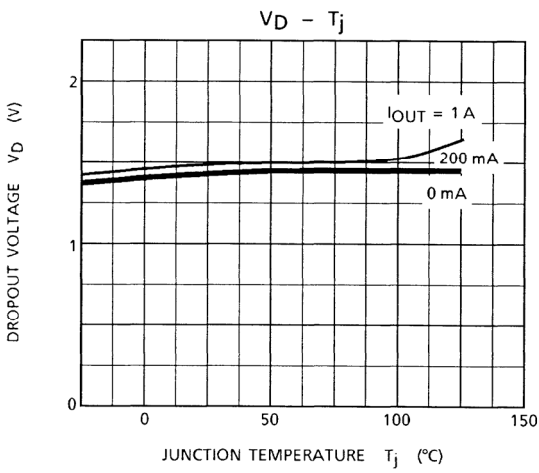
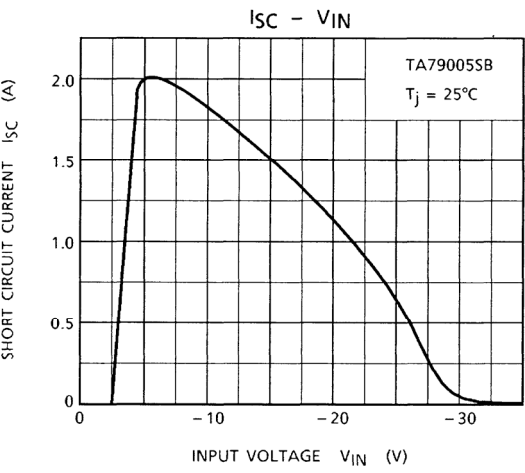
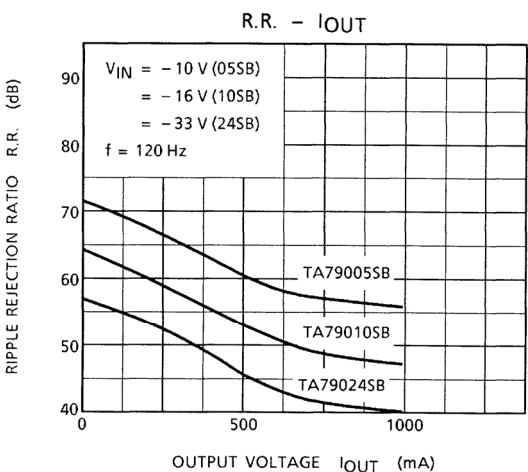
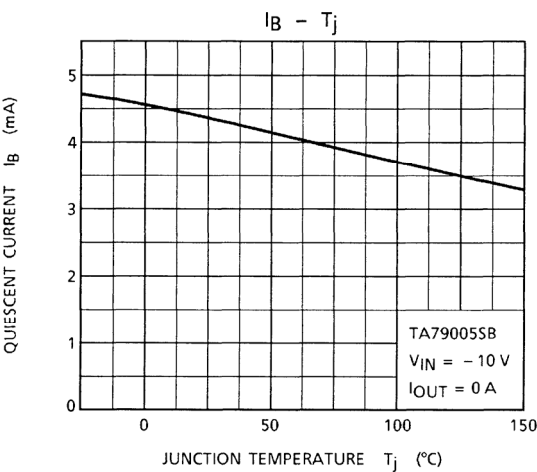
- Overcurrent Protection

The overcurrent protection circuits in the Product are designed to temporarily protect Product from minor overcurrent of brief duration. When the overcurrent protective function in the Product activates, immediately cease application of overcurrent to Product. Improper usage of Product, such as application of current to Product exceeding the absolute maximum ratings, could cause the overcurrent protection circuit not to operate properly and/or damage Product permanently even before the protection circuit starts to operate.

- Overheating Protection

The thermal shutdown circuits in the Product are designed to temporarily protect Product from minor overheating of brief duration. When the overheating protective function in the Product activates, immediately correct the overheating situation. Improper usage of Product, such as the application of heat to Product exceeding the absolute maximum ratings, could cause the overheating protection circuit not to operate properly and/or damage Product permanently even before the protection circuit starts to operate.

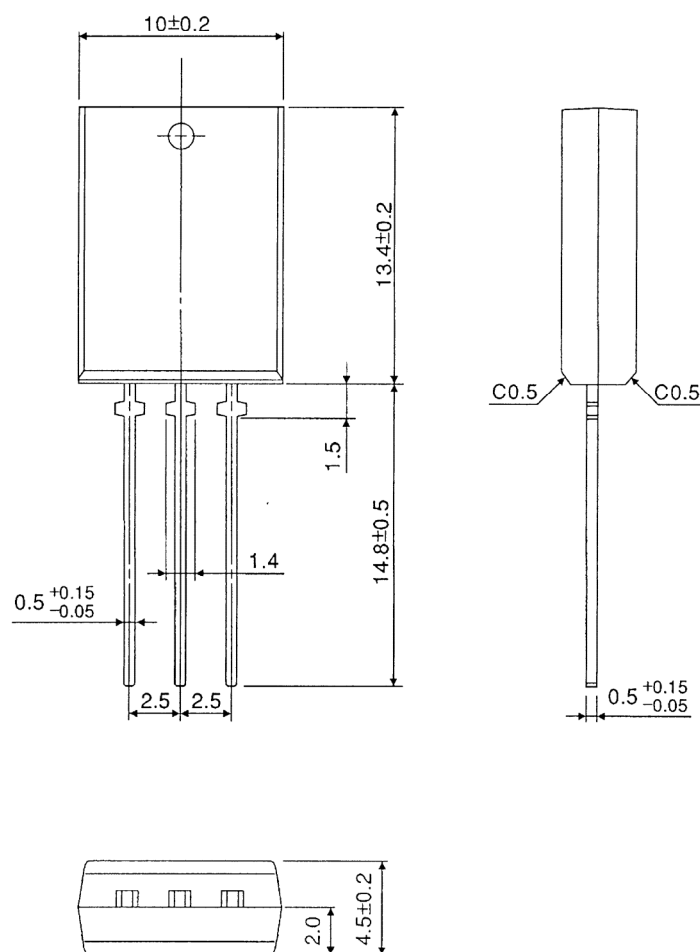




Package Dimensions

SIP3-P-2.50A

Unit : mm



Weight : 1.5 g (Typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc.
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