

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

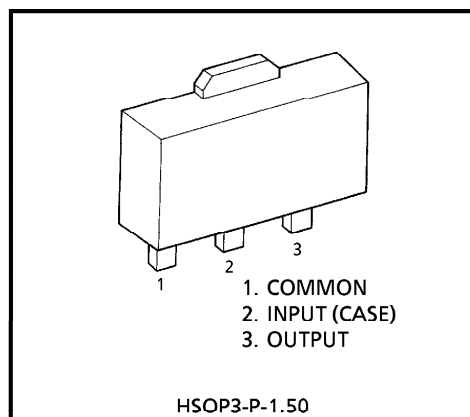
TA79L05F, TA79L06F, TA79L08F, TA79L09F, TA79L10F
TA79L12F, TA79L15F, TA79L18F, TA79L20F, TA79L24F

3-TERMINAL NEGATIVE VOLTAGE REGULATORS

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

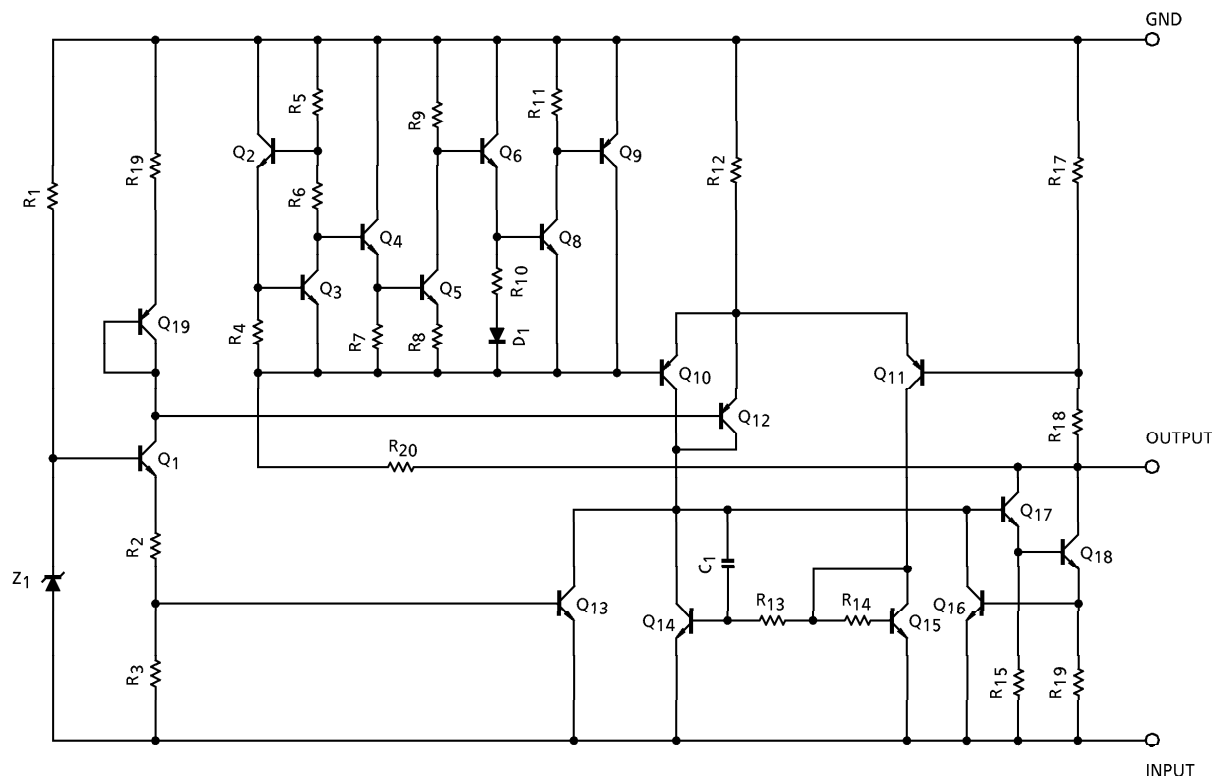
FEATURES

- Best suited to a power supply for TTL and C²MOS
- Built-in over current protective circuit
- Built-in thermal protective circuit
- Max. output current 150mA ($T_j = 25^\circ\text{C}$)
- Packaged in POWER MINI. (SOT-89)



Weight : 0.05g (Typ.)

EQUIVALENT CIRCUIT



961001EBA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	TA79L05F	V _{IN}	- 35	V
	TA79L06F			
	TA79L08F			
	TA79L09F			
	TA79L10F			
	TA79L12F			
	TA79L15F			
	TA79L18F			
	TA79L20F			
	TA79L24F			
Power Dissipation	(Ta = 25°C)	P _D	500	mW
Operating Temperature		T _{opr}	- 30~75	°C
Storage Temperature		T _{stg}	- 55~150	°C
Operating Junction Temperature		T _j	- 30~150	°C
Thermal Resistance		R _{th (j-a)}	250	°C / W

TYPE NO.	MARKING
TA79L05F	AJ
TA79L06F	BJ
TA79L08F	CJ
TA79L09F	DJ
TA79L10F	EJ
TA79L12F	FJ
TA79L15F	GJ
TA79L18F	HJ
TA79L20F	IJ
TA79L24F	JJ

961001EBA2'

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TA79L05F

ELECTRICAL CHARACTERISTICS(V_{IN} = -10V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	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	-20V ≤ V _{IN} ≤ -7.0V	—	55	mV
				-20V ≤ V _{IN} ≤ -8.0V	—	45	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	11	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	5.0	
Output Voltage	V _{OUT}	1	T _j = 25°C	-20V ≤ V _{IN} ≤ -7.0V	-5.25	—	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	-4.75	
				1.0mA ≤ I _{OUT} ≤ 70mA	-5.25	—	
Quiescent Current	I _B	1	T _j = 25°C	—	3.1	6.0	mA
			T _j = 125°C	—	—	5.5	
Quiescent Current Change	ΔI _B	1	-20V ≤ V _{IN} ≤ -8.0V	—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA	—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz	—	40	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—	—	12	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	-18V ≤ V _{IN} ≤ -8.0V T _j = 25°C, f = 120Hz	41	49	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C	—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA	—	0.6	—	mV / °C

TA79L06F

ELECTRICAL CHARACTERISTICS(V_{IN} = -11V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	1	T _j = 25°C	-6.24	-6.0	-5.76	V
Line Regulation	Reg.Line	1	T _j = 25°C	-21V ≤ V _{IN} ≤ -8.1V	—	50	mV
				-21V ≤ V _{IN} ≤ -9.0V	—	45	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	12	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	5.5	
Output Voltage	V _{OUT}	1	T _j = 25°C	-21V ≤ V _{IN} ≤ -8.1V	-6.3	—	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	—	
				1.0mA ≤ I _{OUT} ≤ 70mA	-6.3	—	
Quiescent Current	I _B	1	T _j = 25°C	—	3.1	6.0	mA
			T _j = 125°C	—	—	5.5	
Quiescent Current Change	ΔI _B	1	-20V ≤ V _{IN} ≤ -9.0V	—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA	—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz	—	40	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—	—	14	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	-19V ≤ V _{IN} ≤ -9.0V T _j = 25°C, f = 120Hz	39	47	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C	—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA	—	0.7	—	mV / °C

TA79L08F

ELECTRICAL CHARACTERISTICS(V_{IN} = -14V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	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	-23V ≤ V _{IN} ≤ -10.5V	—	20	mV
				-23V ≤ V _{IN} ≤ -11V	—	12	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	15	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	7.0	
Output Voltage	V _{OUT}	1	T _j = 25°C	-23V ≤ V _{IN} ≤ -10.5V	-8.4	—	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	-7.6	
				1.0mA ≤ I _{OUT} ≤ 70mA	-8.4	—	
Quiescent Current	I _B	1	T _j = 25°C	—	3.1	6.5	mA
			T _j = 125°C	—	—	6.0	
Quiescent Current Change	ΔI _B	1	-23V ≤ V _{IN} ≤ -11V	—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA	—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz	—	60	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—	—	20	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	-23V ≤ V _{IN} ≤ -12V T _j = 25°C, f = 120Hz	37	45	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C	—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA	—	0.8	—	mV / °C

TA79L09F

ELECTRICAL CHARACTERISTICS(V_{IN} = -15V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR- CUI	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	1	T _j = 25°C		-9.36	-9.0	-8.64	V
Line Regulation	Reg.Line	1	T _j = 25°C	-24V ≤ V _{IN} ≤ -11.4V	—	80	200	mV
				-24V ≤ V _{IN} ≤ -12V	—	20	160	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	17	175	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	8.0	80	
Output Voltage	V _{OUT}	1	T _j = 25°C	-24V ≤ V _{IN} ≤ -11.4V	-9.45	—	-8.55	V
				1.0mA ≤ I _{OUT} ≤ 40mA				
				1.0mA ≤ I _{OUT} ≤ 70mA	-9.45	—	-8.55	
Quiescent Current	I _B	1	T _j = 25°C	—	3.2	6.5	mA	
			T _j = 125°C	—	—	6.0		
Quiescent Current Change	ΔI _B	1	-24V ≤ V _{IN} ≤ -12V		—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA		—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz		—	65	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—		—	21	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	-24V ≤ V _{IN} ≤ -12V T _j = 25°C, f = 120Hz		36	44	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C		—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA		—	0.85	—	mV / °C

TA79L10F

ELECTRICAL CHARACTERISTICS(V_{IN} = -16V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	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	- 25V ≤ V _{IN} ≤ - 12.5V	—	80	mV	
			- 25V ≤ V _{IN} ≤ - 13V	—	30	170		
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	18	mV	
				1.0mA ≤ I _{OUT} ≤ 40mA	—	8.5		90
Output Voltage	V _{OUT}	1	T _j = 25°C	- 25V ≤ V _{IN} ≤ - 12.5V	- 10.5	—	- 9.5	V
				1.0mA ≤ I _{OUT} ≤ 40mA				
				1.0mA ≤ I _{OUT} ≤ 70mA	- 10.5	—	- 9.5	
Quiescent Current	I _B	1	T _j = 25°C	—	3.2	6.5	mA	
			T _j = 125°C	—	—	6.0		
Quiescent Current Change	ΔI _B	1	- 25V ≤ V _{IN} ≤ - 13V	—	—	1.5	mA	
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA	—	—	0.1		
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz	—	70	—	μV _{rms}	
Long Term Stability	ΔV _{OUT} / Δt	1	—	—	22	—	mV / 1.0kh	
Ripple Rejection Ratio	R.R.	3	- 24V ≤ V _{IN} ≤ - 13V T _j = 25°C, f = 120Hz	36	43	—	dB	
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA	—	0.9	—	mV / °C	

TA79L12F

ELECTRICAL CHARACTERISTICS(V_{IN} = -19V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	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	- 27V ≤ V _{IN} ≤ - 14.5V	—	120	250	mV
				- 27V ≤ V _{IN} ≤ - 16V	—	100	200	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	20	225	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	10	105	
Output Voltage	V _{OUT}	1	T _j = 25°C	- 27V ≤ V _{IN} ≤ - 14.5V	- 12.6	—	- 11.4	V
				1.0mA ≤ I _{OUT} ≤ 40mA				
				1.0mA ≤ I _{OUT} ≤ 70mA	- 12.6	—	- 11.4	
Quiescent Current	I _B	1	T _j = 25°C		—	3.2	6.5	mA
			T _j = 125°C		—	—	6.0	
Quiescent Current Change	ΔI _B	1	- 27V ≤ V _{IN} ≤ - 16V		—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA		—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz		—	80	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—		—	24	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	- 25V ≤ V _{IN} ≤ - 15V T _j = 25°C, f = 120Hz		37	42	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C		—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA		—	1.0	—	mV / °C

TA79L15F

ELECTRICAL CHARACTERISTICS(V_{IN} = -23V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	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	- 30V ≤ V _{IN} ≤ - 17.5V	—	130	300	mV
				- 30V ≤ V _{IN} ≤ - 20V	—	110	250	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	25	280	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	12	130	
Output Voltage	V _{OUT}	1	T _j = 25°C	- 30V ≤ V _{IN} ≤ - 17.5V	- 15.75	—	- 14.25	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	—	—	
				1.0mA ≤ I _{OUT} ≤ 70mA	- 15.75	—	- 14.25	
Quiescent Current	I _B	1	T _j = 25°C	—	3.3	6.5	mA	
			T _j = 125°C	—	—	6.0		
Quiescent Current Change	ΔI _{BI}	1	- 30V ≤ V _{IN} ≤ - 20V		—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA		—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz		—	90	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—		—	30	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	- 28.5V ≤ V _{IN} ≤ - 18.5V T _j = 25°C, f = 120Hz		34	39	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C		—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA		—	1.3	—	mV / °C

TA79L18F

ELECTRICAL CHARACTERISTICS(V_{IN} = -27V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	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	- 33V ≤ V _{IN} ≤ - 20.7V	—	32	325	mV
				- 33V ≤ V _{IN} ≤ - 21V	—	27	275	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	30	335	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	15	155	
Output Voltage	V _{OUT}	1	T _j = 25°C	- 33V ≤ V _{IN} ≤ - 20.9V	- 18.9	—	- 17.1	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	—	—	
				1.0mA ≤ I _{OUT} ≤ 70mA	- 18.9	—	- 17.1	
Quiescent Current	I _B	1	T _j = 25°C	—	3.3	6.5	mA	
			T _j = 125°C	—	—	6.0		
Quiescent Current Change	ΔI _B	1	- 33V ≤ V _{IN} ≤ - 21V		—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA		—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz		—	150	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—		—	45	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	- 33V ≤ V _{IN} ≤ - 23V T _j = 25°C, f = 120Hz		33	48	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C		—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA		—	1.5	—	mV / °C

TA79L20F

ELECTRICAL CHARACTERISTICS(V_{IN} = -29V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	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	-35V ≤ V _{IN} ≤ -23.5V	—	33	mV
				-35V ≤ V _{IN} ≤ -24V	—	28	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	33	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	17	
Output Voltage	V _{OUT}	1	T _j = 25°C	-35V ≤ V _{IN} ≤ -23.5V	-21.0	—	V
				1.0mA ≤ I _{OUT} ≤ 40mA	—	—	
				1.0mA ≤ I _{OUT} ≤ 70mA	-21.0	—	
Quiescent Current	I _B	1	T _j = 25°C	—	3.3	6.5	mA
			T _j = 125°C	—	—	6.0	
Quiescent Current Change	ΔI _B	1	-35V ≤ V _{IN} ≤ 24V	—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA	—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz	—	170	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—	—	49	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	-35V ≤ V _{IN} ≤ -27V T _j = 25°C, f = 120Hz	31	37	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C	—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA	—	1.7	—	mV / °C

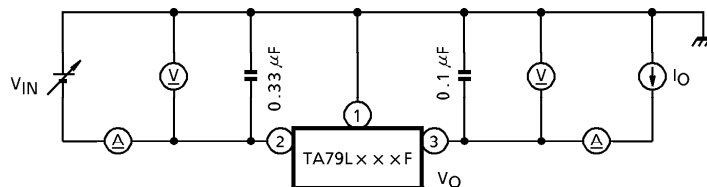
TA79L24F

ELECTRICAL CHARACTERISTICS(V_{IN} = -33V, I_{OUT} = 40mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, 0°C ≤ T_j ≤ 125°C, unless otherwise specified)

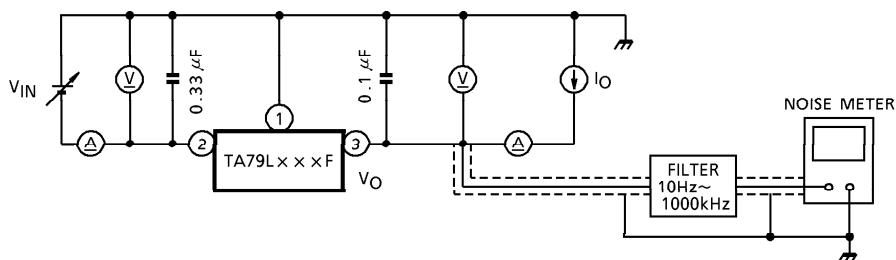
CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	1	T _j = 25°C		- 25.0	- 24.0	- 23.0	V
Line Regulation	Reg.Line	1	T _j = 25°C	- 38V ≤ V _{IN} ≤ - 27V	—	35	350	mV
				- 38V ≤ V _{IN} ≤ - 28V	—	30	300	
Load Regulation	Reg.Load	1	T _j = 25°C	1.0mA ≤ I _{OUT} ≤ 100mA	—	40	440	mV
				1.0mA ≤ I _{OUT} ≤ 40mA	—	20	200	
Output Voltage	V _{OUT}	1	T _j = 25°C	- 38V ≤ V _{IN} ≤ - 27V	- 25.2	—	- 22.8	V
				1.0mA ≤ I _{OUT} ≤ 40mA				
				1.0mA ≤ I _{OUT} ≤ 70mA	- 25.2	—	- 22.8	
Quiescent Current	I _B	1	T _j = 25°C	—	3.5	6.5	mA	
			T _j = 125°C	—	—	6.0		
Quiescent Current Change	ΔI _B	1	- 38V ≤ V _{IN} ≤ - 28V		—	—	1.5	mA
	ΔI _{BO}	1	1.0mA ≤ I _{OUT} ≤ 40mA		—	—	0.1	
Output Noise Voltage	V _{NO}	2	T _a = 25°C, 10Hz ≤ f ≤ 100kHz		—	200	—	μV _{rms}
Long Term Stability	ΔV _{OUT} / Δt	1	—		—	56	—	mV / 1.0kh
Ripple Rejection Ratio	R.R.	3	- 35V ≤ V _{IN} ≤ - 29V T _j = 25°C, f = 120Hz		31	47	—	dB
Dropout Voltage	V _{IN} -V _{OUT}	1	T _j = 25°C		—	1.7	—	V
Average Temperature Coefficient of Output Voltage	T _{CVO}	1	I _{OUT} = 5mA		—	2.0	—	mV / °C

TEST CIRCUIT

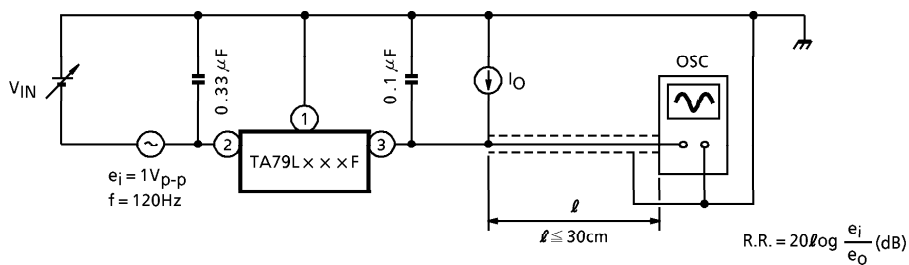
1. V_{OUT} , Reg.line, Reg.load, I_B , ΔI_B , $\Delta V_{OUT} / \Delta t$, $|V_{IN} - V_{OUT}|$, T_{CVO}

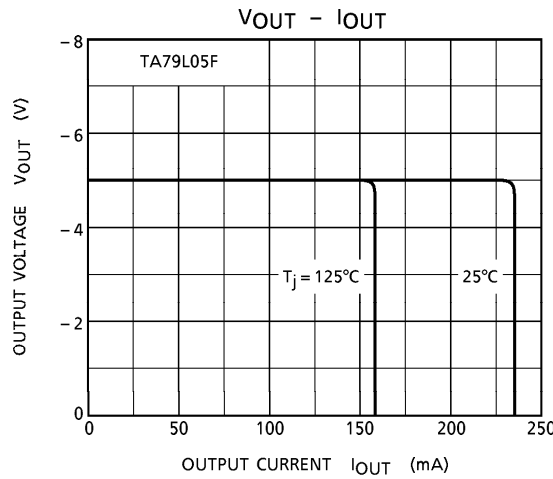
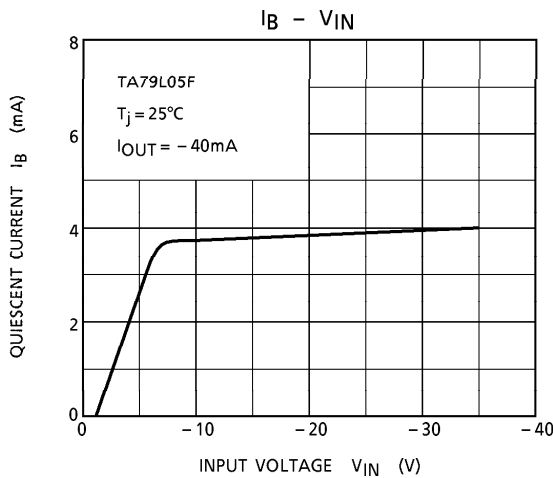
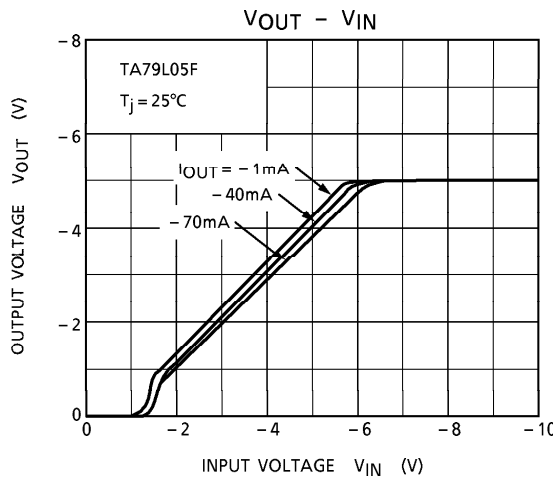
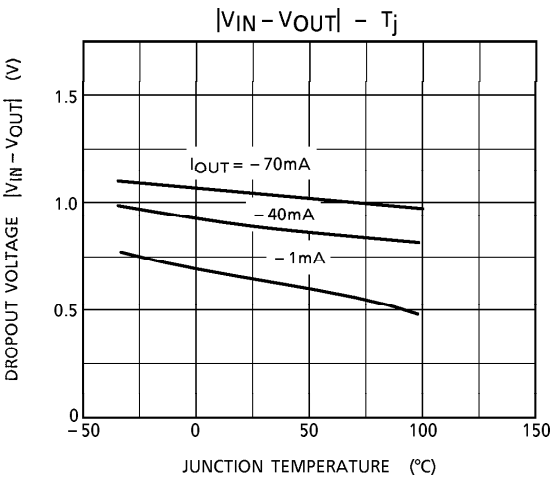
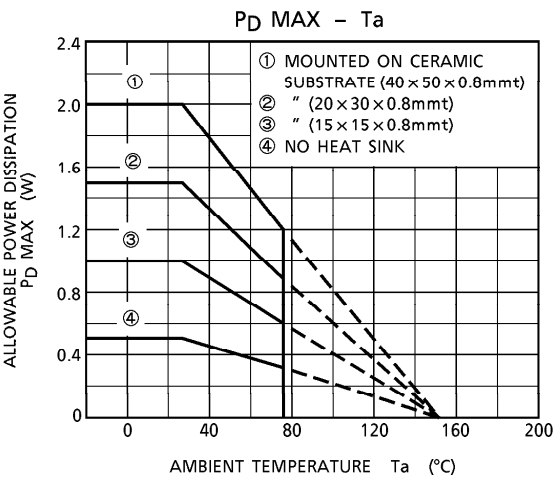


2. V_{NO}



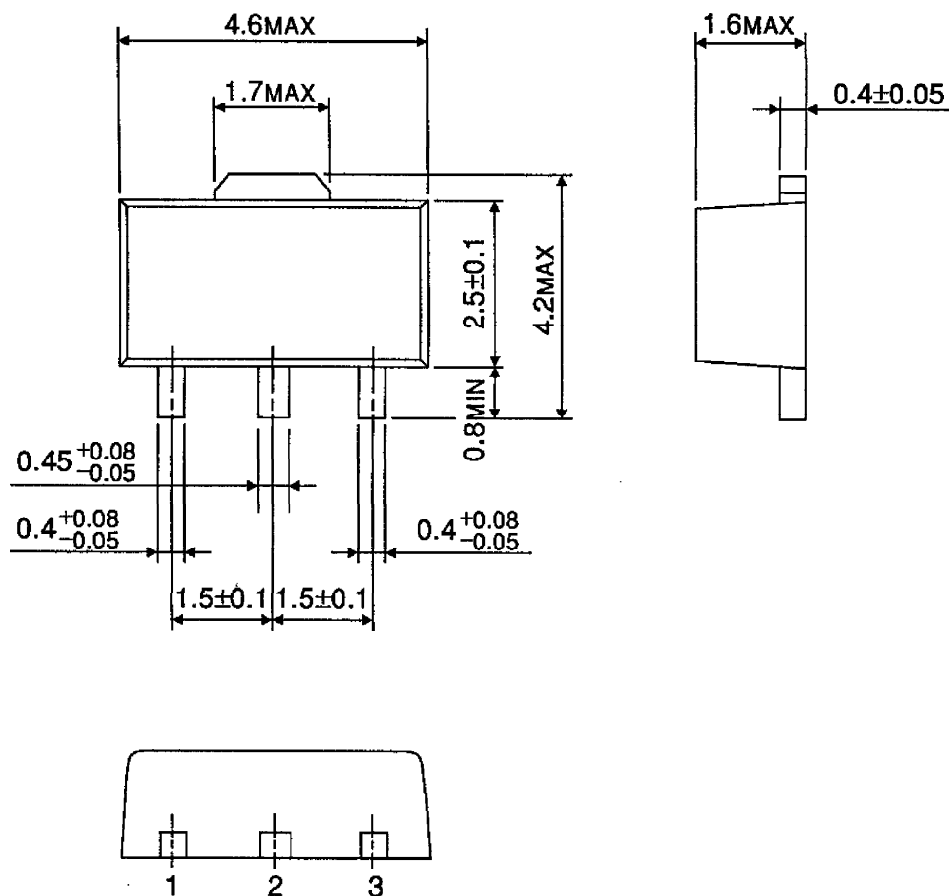
3. R.R.





OUTLINE DRAWING
HSOP3-P-1.50

Unit : mm



Weight : 0.05g (Typ.)