

TOSHIBA

TA79L05,06,08,09,10,12,15,18,20,24F

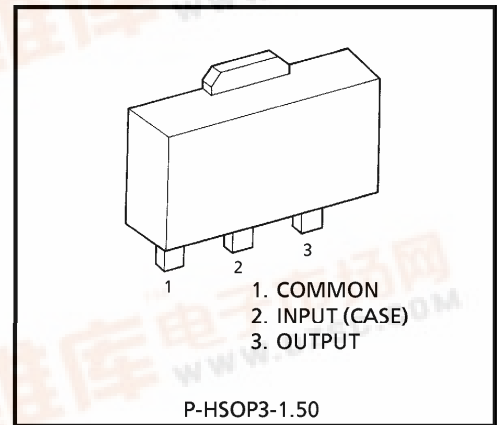
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC
TA79L05F, TA79L06F, TA79L08F, TA79L09F, TA79L10F
TA79L12F, TA79L15F, TA79L18F, TA79L20F, TA79L24F

3-TERMINAL NEGATIVE VOLTAGE REGULATORS

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

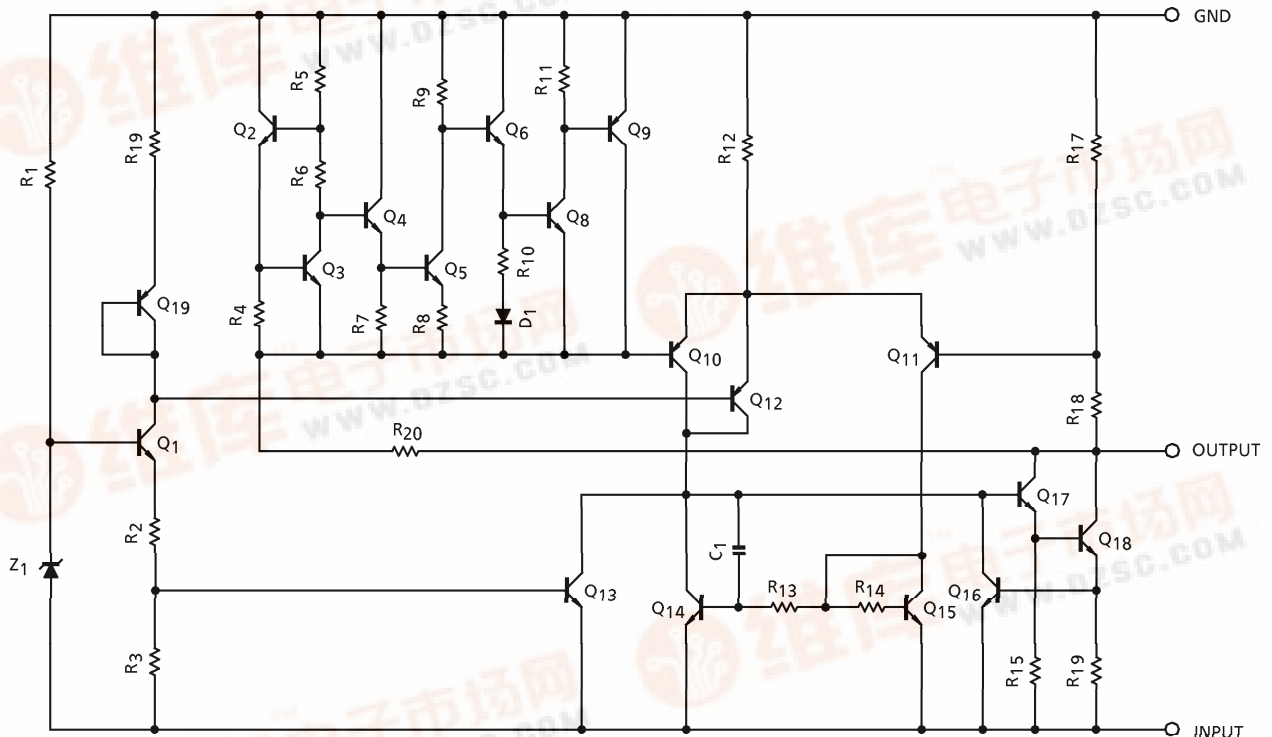
FEATURES

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



Weight : 0.05 g (Typ.)

EQUIVALENT CIRCUIT



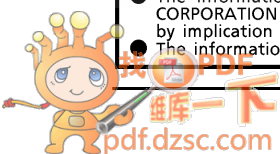
980910EBA2

● 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.

● The products described in this document are subject to the foreign exchange and foreign trade laws.

● The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

● The information contained herein is subject to change without notice.



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	TA79L05F	V _{IN}	- 35	V
	TA79L06F			
	TA79L08F			
	TA79L09F			
	TA79L10F			
	TA79L12F			
	TA79L15F			
	TA79L18F			
	TA79L20F		- 40	
	TA79L24F			
Power Dissipation	(Ta = 25°C)	P _D	500	mW
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)}	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

TA79L05F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -10\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-5.2	-5.0	-4.8	V	
Line Regulation	Reg·line	1	$T_j = 25^\circ\text{C}$	$-20\text{ V} \leq V_{IN} \leq -7.0\text{ V}$	—	55	150	mV
				$-20\text{ V} \leq V_{IN} \leq -8.0\text{ V}$	—	45	100	
Load Regulation	Reg·load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	11	100	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	5.0	50	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-20\text{ V} \leq V_{IN} \leq -7.0\text{ V}$	-5.25	—	-4.75	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-5.25	—	-4.75	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.1	6.0	mA	
			$T_j = 125^\circ\text{C}$	—	—	5.5		
Quiescent Current Change	ΔI_{BI}	1	$-20\text{ V} \leq V_{IN} \leq -8.0\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	40	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	12	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-18\text{ V} \leq V_{IN} \leq -8.0\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	41	49	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	0.6	—	mV / °C	

TA79L06F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -11\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-6.24	-6.0	-5.76	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-21\text{ V} \leq V_{IN} \leq -8.1\text{ V}$	—	50	150	mV
				$-21\text{ V} \leq V_{IN} \leq -9.0\text{ V}$	—	45	110	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	12	120	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	5.5	60	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-21\text{ V} \leq V_{IN} \leq -8.1\text{ V}$	-6.3	—	-5.7	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-6.3	—	-5.7	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.1	6.0	mA	
			$T_j = 125^\circ\text{C}$	—	—	5.5		
Quiescent Current Change	ΔI_{BI}	1	$-20\text{ V} \leq V_{IN} \leq -9.0\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	40	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	14	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-19\text{ V} \leq V_{IN} \leq -9.0\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	39	47	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	0.7	—	mV / °C	

TA79L08F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -14\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-8.3	-8.0	-7.7	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-23\text{ V} \leq V_{IN} \leq -10.5\text{ V}$	—	20	175	mV
				$-23\text{ V} \leq V_{IN} \leq -11\text{ V}$	—	12	125	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	15	155	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	7.0	75	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-23\text{ V} \leq V_{IN} \leq -10.5\text{ V}$	-8.4	—	-7.6	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-8.4	—	-7.6	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.1	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_B	1	$-23\text{ V} \leq V_{IN} \leq -11\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	60	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	20	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-23\text{ V} \leq V_{IN} \leq -12\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	37	45	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	0.8	—	mV / °C	

TA79L09F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -15\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-9.36	-9.0	-8.64	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-24\text{ V} \leq V_{IN} \leq -11.4\text{ V}$	—	80	200	mV
				$-24\text{ V} \leq V_{IN} \leq -12\text{ V}$	—	20	160	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	17	175	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	8.0	80	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-24\text{ V} \leq V_{IN} \leq -11.4\text{ V}$	-9.45	—	-8.55	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-9.45	—	-8.55	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-9.45	—	-8.55	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.2	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_{BI}	1	$-24\text{ V} \leq V_{IN} \leq -12\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	65	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	21	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-24\text{ V} \leq V_{IN} \leq -12\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	36	44	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	0.85	—	mV / °C	

TA79L10F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -16\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-10.4	-10.0	-9.6	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-25\text{ V} \leq V_{IN} \leq -12.5\text{ V}$	—	80	230	mV
				$-25\text{ V} \leq V_{IN} \leq -13\text{ V}$	—	30	170	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	18	190	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	8.5	90	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-25\text{ V} \leq V_{IN} \leq -12.5\text{ V}$	-10.5	—	-9.5	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-10.5	—	-9.5	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.2	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_B	1	$-25\text{ V} \leq V_{IN} \leq -13\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	70	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	22	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-24\text{ V} \leq V_{IN} \leq -13\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	36	43	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	0.9	—	mV / °C	

TA79L12F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -19\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-12.5	-12.0	-11.5	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-27\text{ V} \leq V_{IN} \leq -14.5\text{ V}$	—	120	250	mV
				$-27\text{ V} \leq V_{IN} \leq -16\text{ V}$	—	100	200	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	20	225	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	10	105	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-27\text{ V} \leq V_{IN} \leq -14.5\text{ V}$	-12.6	—	-11.4	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-12.6	—	-11.4	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.2	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_{BI}	1	$-27\text{ V} \leq V_{IN} \leq -16\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	80	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	24	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-25\text{ V} \leq V_{IN} \leq -15\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	37	42	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	1.0	—	mV / °C	

TA79L15F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -23\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-15.6	-15.0	-14.4	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-30\text{ V} \leq V_{IN} \leq -17.5\text{ V}$	—	130	300	mV
				$-30\text{ V} \leq V_{IN} \leq -20\text{ V}$	—	110	250	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	25	280	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	12	130	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-30\text{ V} \leq V_{IN} \leq -17.5\text{ V}$	-15.75	—	-14.25	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-15.75	—	-14.25	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-15.75	—	-14.25	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.3	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_B	1	$-30\text{ V} \leq V_{IN} \leq -20\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	90	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	30	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-28.5\text{ V} \leq V_{IN} \leq -18.5\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	34	39	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	1.3	—	mV / °C	

TA79L18F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -27\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-18.7	-18.0	-17.3	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-33\text{ V} \leq V_{IN} \leq -20.7\text{ V}$	—	32	325	mV
				$-33\text{ V} \leq V_{IN} \leq -21\text{ V}$	—	27	275	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	30	335	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	15	155	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-33\text{ V} \leq V_{IN} \leq -20.9\text{ V}$	-18.9	—	-17.1	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-18.9	—	-17.1	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.3	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_B	1	$-33\text{ V} \leq V_{IN} \leq -21\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	150	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	45	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-33\text{ V} \leq V_{IN} \leq -23\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	33	48	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	1.5	—	mV / °C	

TA79L20F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -29\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\text{ }\mu\text{F}$, $C_{OUT} = 0.1\text{ }\mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-20.8	-20.0	-19.2	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-35\text{ V} \leq V_{IN} \leq -23.5\text{ V}$	—	33	330	mV
				$-35\text{ V} \leq V_{IN} \leq -24\text{ V}$	—	28	285	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	33	370	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	17	170	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-35\text{ V} \leq V_{IN} \leq -23.5\text{ V}$	-21.0	—	-19.0	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—	
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-21.0	—	-19.0	
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.3	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_{BI}	1	$-35\text{ V} \leq V_{IN} \leq -24\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	170	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	49	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-35\text{ V} \leq V_{IN} \leq -27\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	31	37	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	1.7	—	mV / °C	

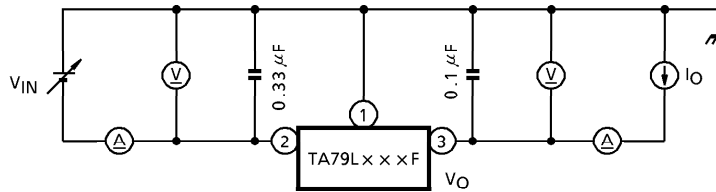
TA79L24F

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{IN} = -33\text{ V}$, $I_{OUT} = 40\text{ mA}$, $C_{IN} = 0.33\ \mu\text{F}$, $C_{OUT} = 0.1\ \mu\text{F}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$)

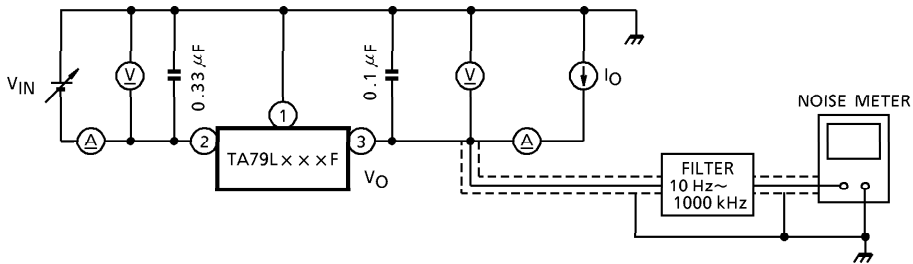
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	-25.0	-24.0	-23.0	V	
Line Regulation	Reg·Line	1	$T_j = 25^\circ\text{C}$	$-38\text{ V} \leq V_{IN} \leq -27\text{ V}$	—	35	350	mV
				$-38\text{ V} \leq V_{IN} \leq -28\text{ V}$	—	30	300	
Load Regulation	Reg·Load	1	$T_j = 25^\circ\text{C}$	$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$	—	40	440	mV
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	20	200	
Output Voltage	V_{OUT}	1	$T_j = 25^\circ\text{C}$	$-38\text{ V} \leq V_{IN} \leq -27\text{ V}$	-25.2	—	-22.8	V
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$				
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$				
Quiescent Current	I_B	1	$T_j = 25^\circ\text{C}$	—	3.5	6.5	mA	
			$T_j = 125^\circ\text{C}$	—	—	6.0		
Quiescent Current Change	ΔI_B	1	$-38\text{ V} \leq V_{IN} \leq -28\text{ V}$, $T_j = 25^\circ\text{C}$	—	—	1.5	mA	
	ΔI_{BO}	1	$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$, $T_j = 25^\circ\text{C}$	—	—	0.1		
Output Noise Voltage	V_{NO}	2	$T_a = 25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	200	—	μV_{rms}	
Long Term Stability	$\Delta V_{OUT} / \Delta t$	1	—	—	56	—	mV / kh	
Ripple Rejection Ratio	R.R.	3	$-35\text{ V} \leq V_{IN} \leq -29\text{ V}$ $T_j = 25^\circ\text{C}$, $f = 120\text{ Hz}$	31	47	—	dB	
Dropout Voltage	V_D	1	$T_j = 25^\circ\text{C}$	—	1.7	—	V	
Average Temperature Coefficient of Output Voltage	T_{CVO}	1	$I_{OUT} = 5\text{ mA}$	—	2.0	—	mV / °C	

TEST CIRCUIT

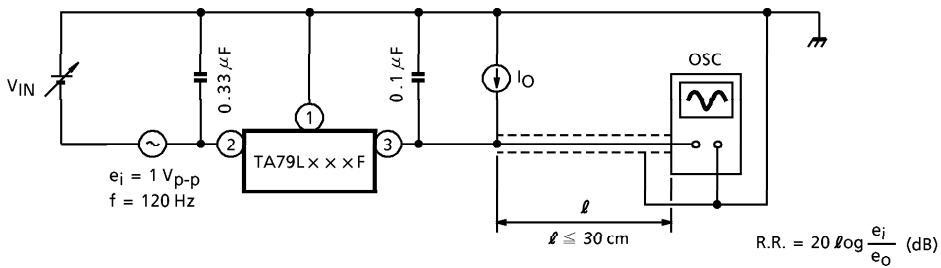
1. V_{OUT} , Reg.line, Reg.load, I_B , ΔI_B , $\Delta V_{OUT}/\Delta t$, V_D , T_{CVO}

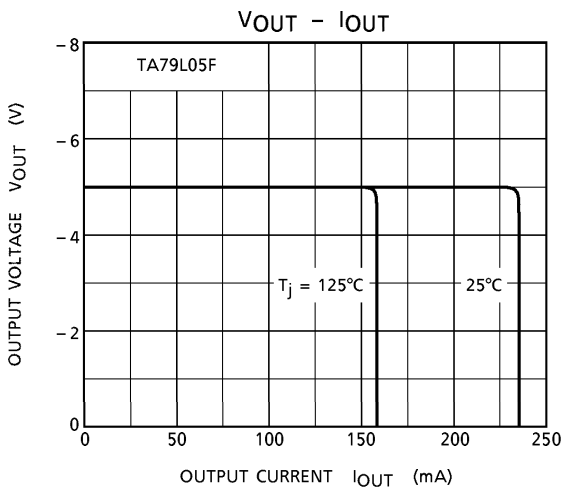
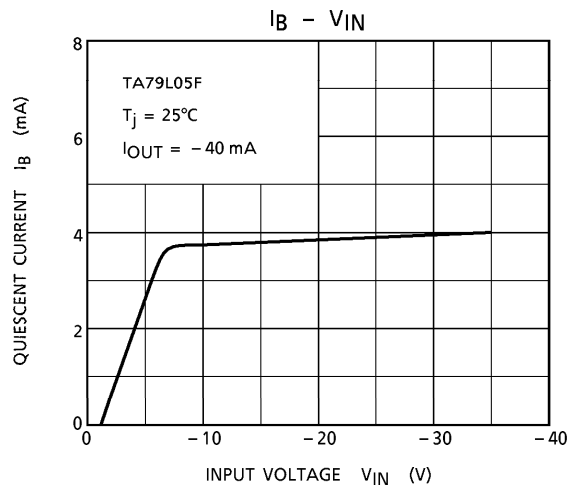
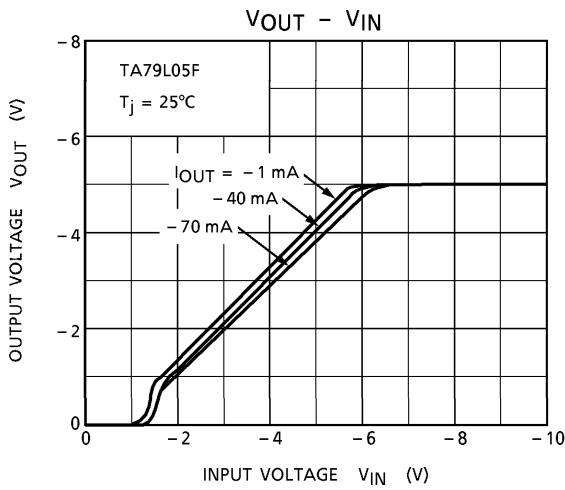
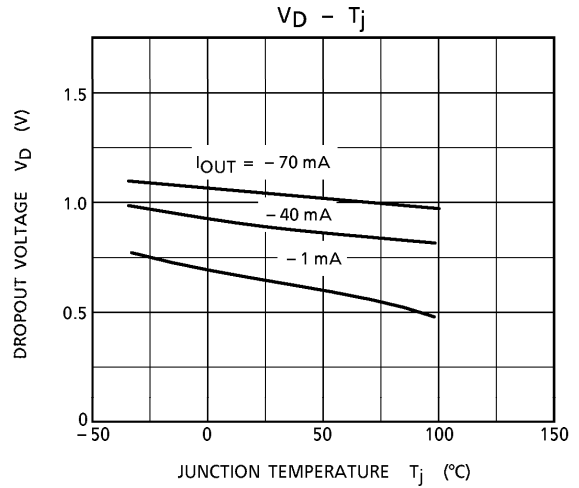
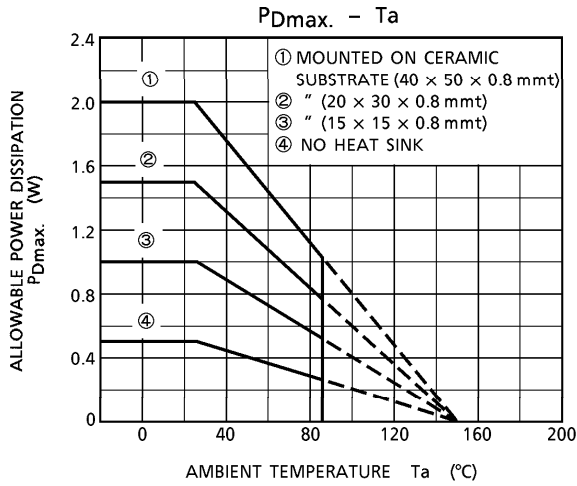


2. V_{NO}



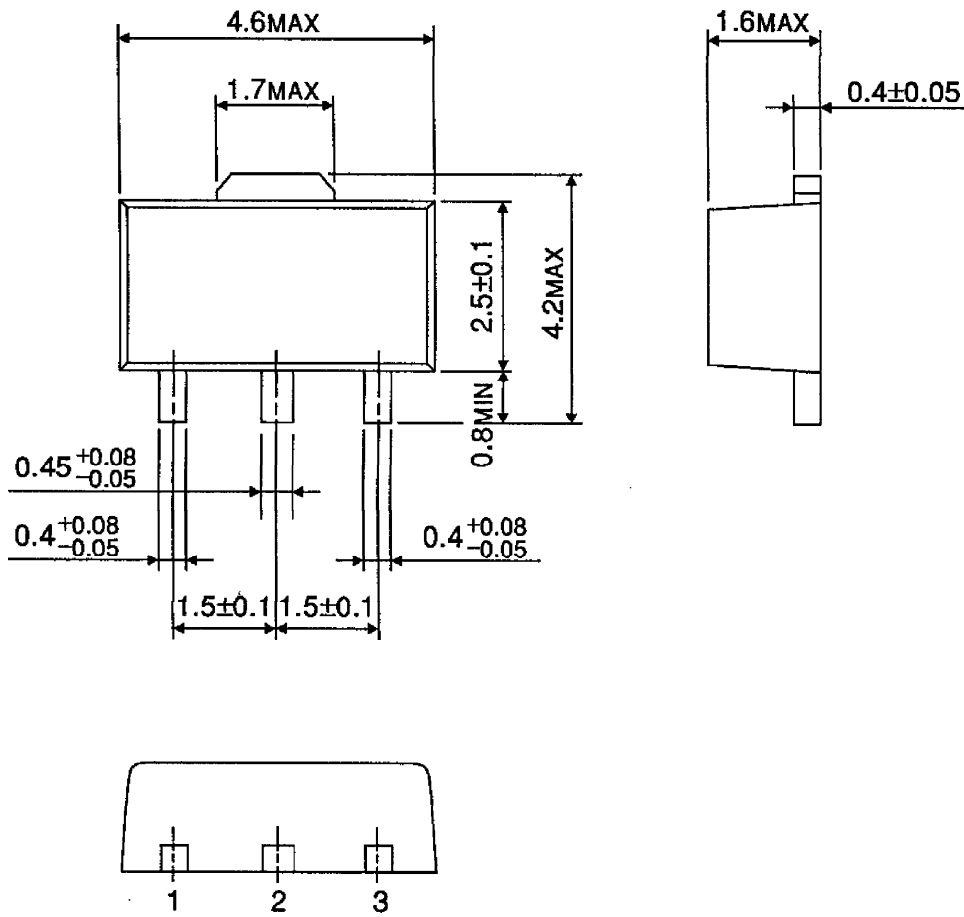
3. R.R.





PACKAGE DIMENSIONS
P-HSOP3-1.50

Unit : mm



Weight : 0.05 g (Typ.)