

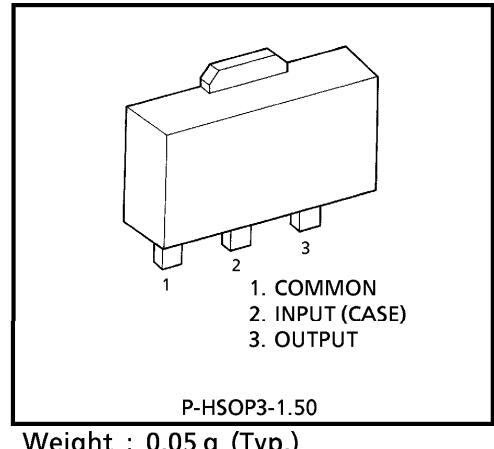
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC  
**TA79L05F, TA79L06F, TA79L08F, TA79L09F, TA79L10F  
 TA79L12F, TA79L15F, TA79L18F, TA79L20F, TA79L24F**

### 3-TERMINAL NEGATIVE VOLTAGE REGULATORS

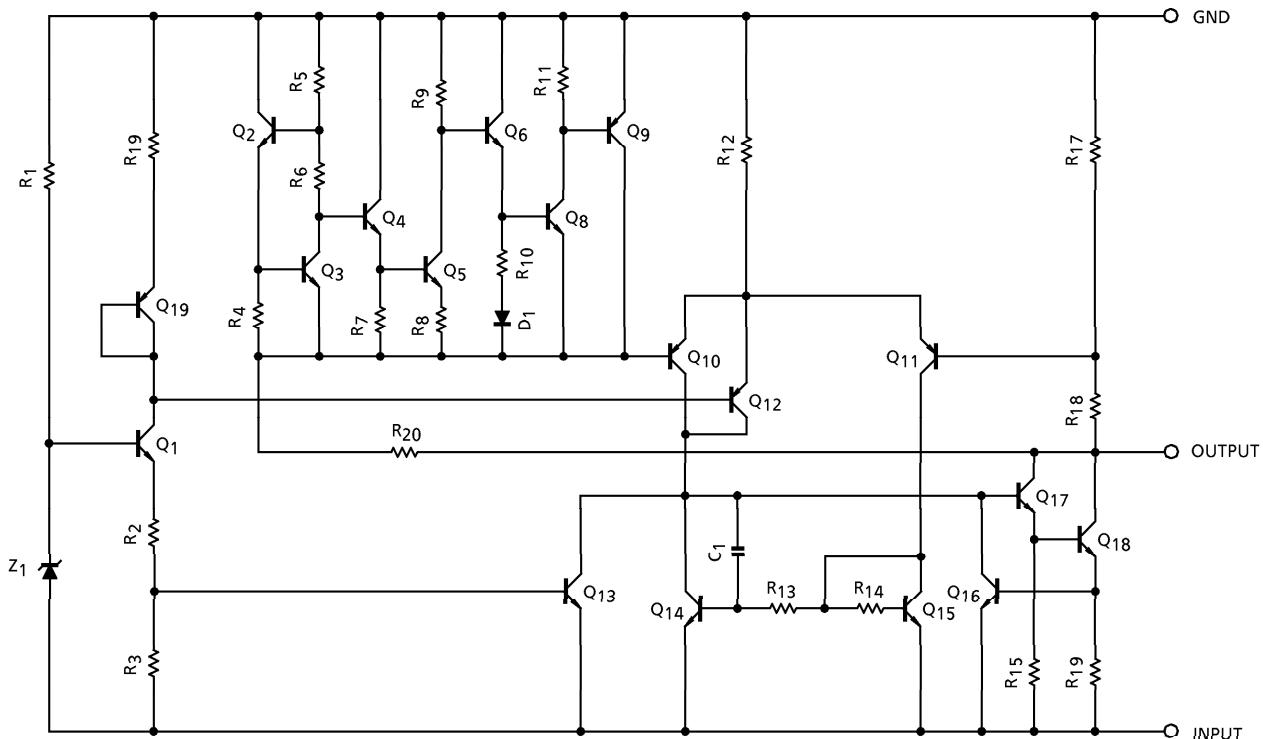
**5 V, 6 V, 8 V, 9 V, 10 V, 12 V, 15 V, 18 V, 20 V, 24 V**

#### FEATURES

- Best suited to a power supply for TTL and C<sup>2</sup>MOS
- Built-in over current protective circuit
- Built-in thermal protective circuit
- Max. output current 150 mA ( $T_j = 25^\circ\text{C}$ )
- Packaged in POWER MINI. (SOT-89)



#### EQUIVALENT CIRCUIT



980910EBA2

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MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT	
Input Voltage	TA79L05F	$V_{IN}$	– 35	V	
	TA79L06F				
	TA79L08F				
	TA79L09F				
	TA79L10F				
	TA79L12F		– 40		
	TA79L15F				
	TA79L18F				
	TA79L20F				
	TA79L24F				
Power Dissipation ( $T_a = 25^\circ\text{C}$ )	$P_D$		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 CIR-CUIT	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
				$-20\text{ V} \leq V_{IN} \leq -8.0\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$			
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-20\text{ V} \leq V_{IN} \leq -8.0\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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 / $^\circ\text{C}$

TA79L06F

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-21\text{ V} \leq V_{IN} \leq -9.0\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-6.3	—	-5.7
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-20\text{ V} \leq V_{IN} \leq -9.0\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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,  $V_{IN} = -14\text{ V}$ ,  $I_{OUT} = 40\text{ mA}$ ,  $C_{IN} = 0.33\text{ }\mu\text{F}$ ,  $C_{OUT} = 0.1\text{ }\mu\text{F}$ ,  $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-23\text{ V} \leq V_{IN} \leq -11\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-8.4	—	-7.6
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-23\text{ V} \leq V_{IN} \leq -11\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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
				$-24\text{ V} \leq V_{IN} \leq -12\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-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	$\Delta I_{BI}$	1	$-24\text{ V} \leq V_{IN} \leq -12\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
			$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$ , $T_j = 25^\circ\text{C}$	—	—	0.1	
Output Noise Voltage	$V_{NO}$	2	$T_a = 25^\circ\text{C}$ , $10\text{ Hz} \leq f \leq 100\text{ kHz}$	—	65	—	$\mu\text{V}_{rms}$
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 / $^\circ\text{C}$

TA79L10F

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-25\text{ V} \leq V_{IN} \leq -13\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-10.5	—	-9.5
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-25\text{ V} \leq V_{IN} \leq -13\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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,  $V_{IN} = -19\text{ V}$ ,  $I_{OUT} = 40\text{ mA}$ ,  $C_{IN} = 0.33\text{ }\mu\text{F}$ ,  $C_{OUT} = 0.1\text{ }\mu\text{F}$ ,  $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-27\text{ V} \leq V_{IN} \leq -16\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-12.6	—	-11.4
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-27\text{ V} \leq V_{IN} \leq -16\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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 / $^\circ\text{C}$

TA79L15F

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-30\text{ V} \leq V_{IN} \leq -20\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$			
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-30\text{ V} \leq V_{IN} \leq -20\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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,  $V_{IN} = -27\text{ V}$ ,  $I_{OUT} = 40\text{ mA}$ ,  $C_{IN} = 0.33\text{ }\mu\text{F}$ ,  $C_{OUT} = 0.1\text{ }\mu\text{F}$ ,  $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-33\text{ V} \leq V_{IN} \leq -21\text{ V}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	—	—
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-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	$\Delta I_{BI}$	1	$-33\text{ V} \leq V_{IN} \leq -21\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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 / $^\circ\text{C}$

TA79L20F

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-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
				$-35 \text{ V} \leq V_{IN} \leq -24 \text{ V}$	—	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
				$1.0 \text{ mA} \leq I_{OUT} \leq 40 \text{ mA}$	—	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
				$1.0 \text{ mA} \leq I_{OUT} \leq 40 \text{ mA}$	-21.0	—	-19.0
				$1.0 \text{ mA} \leq I_{OUT} \leq 70 \text{ mA}$	-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	$\Delta I_{BI}$	1	$-35 \text{ V} \leq V_{IN} \leq -24 \text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{\text{rms}}$
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 / $^\circ\text{C}$

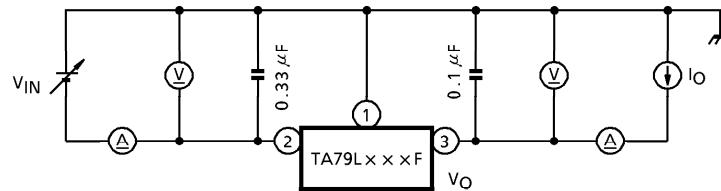
TA79L24F

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

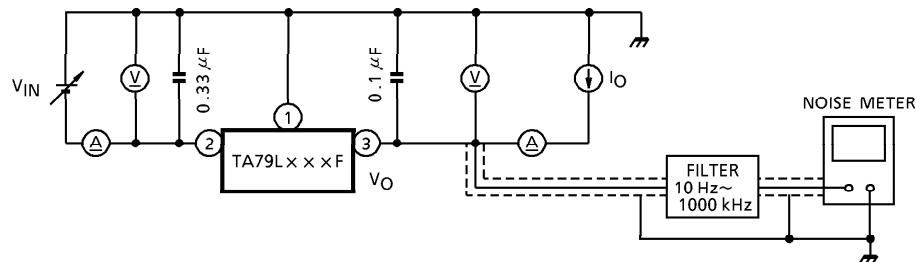
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	1	$T_j = 25^\circ\text{C}$	-25.0	-24.0	-23.0	V
Line Regulation	Reg-Line	1	$T_j = 25^\circ\text{C}$	$-38\text{ V} \leq V_{IN} \leq -27\text{ V}$	—	35	350
				$-38\text{ V} \leq V_{IN} \leq -28\text{ V}$	—	30	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	—	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
				$1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$	-25.2	—	-22.8
				$1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$	-25.2	—	-22.8
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	$\Delta I_{BI}$	1	$-38\text{ V} \leq V_{IN} \leq -28\text{ V}$ , $T_j = 25^\circ\text{C}$	—	—	1.5	mA
	$\Delta I_{BO}$	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	—	$\mu\text{V}_{rms}$
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 / $^\circ\text{C}$

**TEST CIRCUIT**

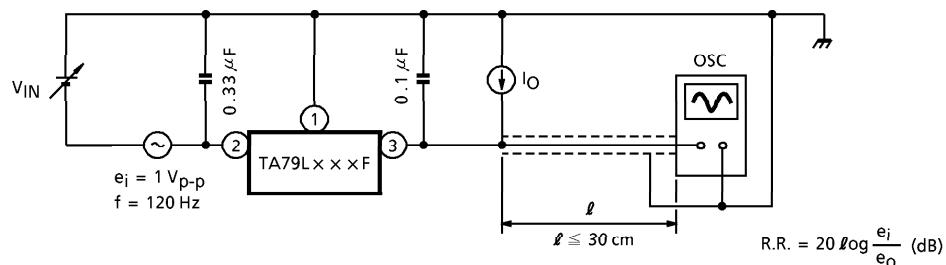
1.  $V_{OUT}$ , Reg.line, Reg.load,  $I_B$ ,  $\Delta I_B$ ,  $\Delta V_{OUT}/\Delta t$ ,  $V_D$ ,  $T_{CVO}$

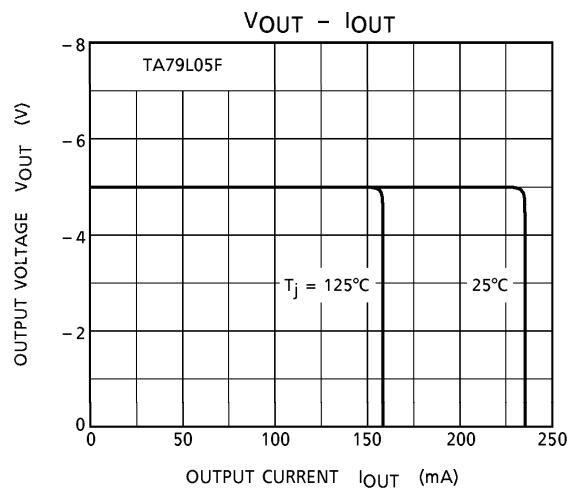
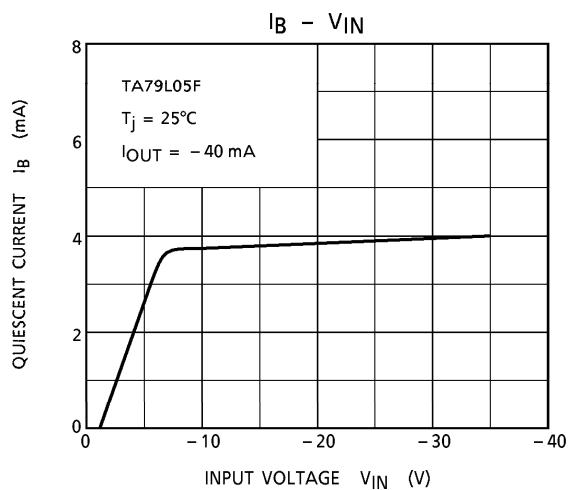
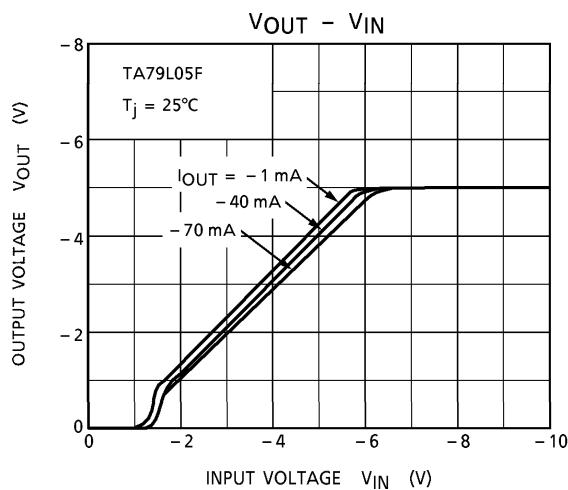
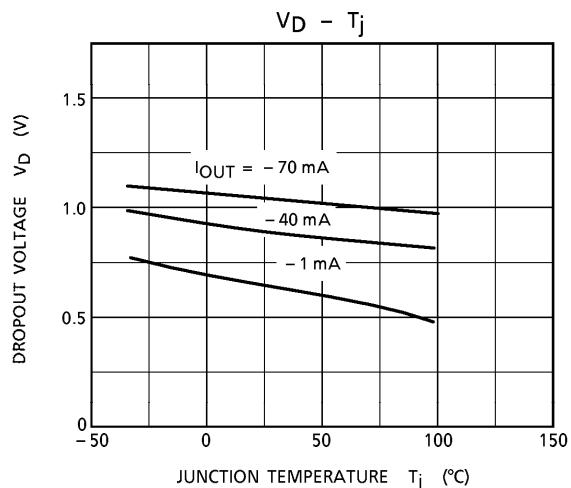
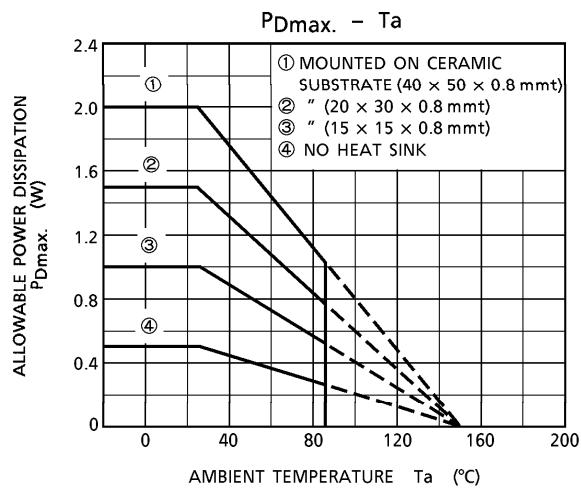


2.  $V_{NO}$



3. R.R.

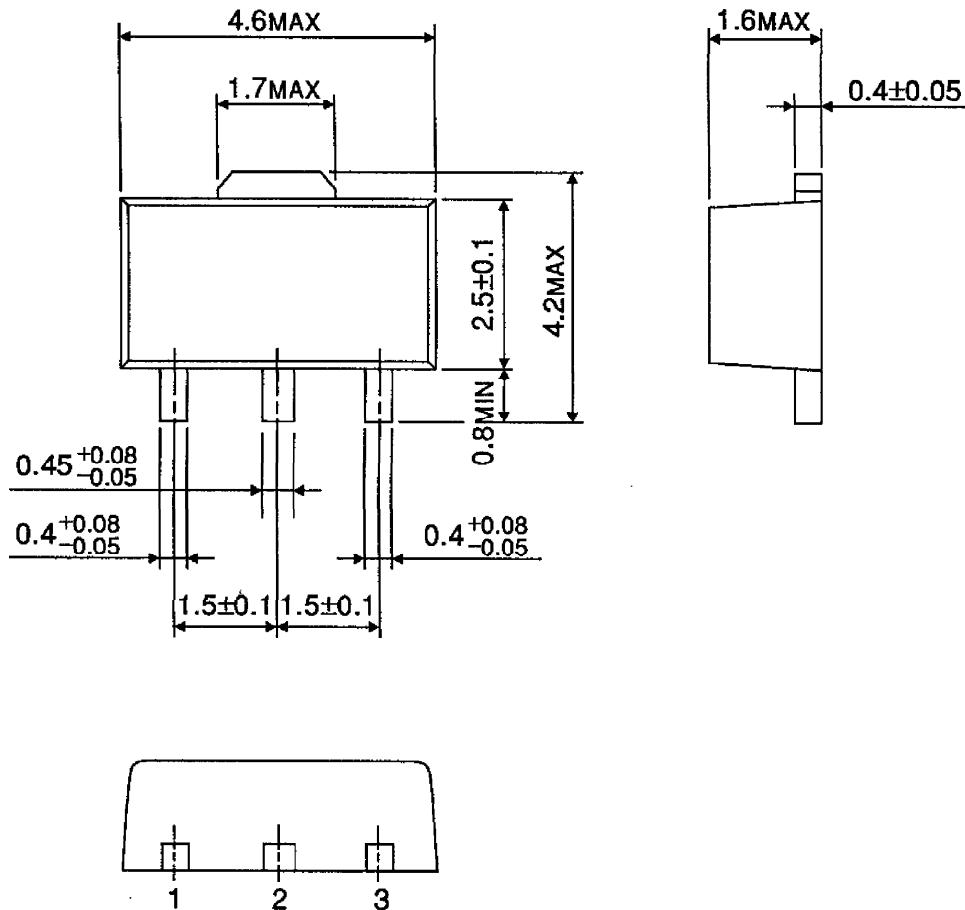




**PACKAGE DIMENSIONS**

P-HSOP3-1.50

Unit : mm



Weight : 0.05 g (Typ.)