

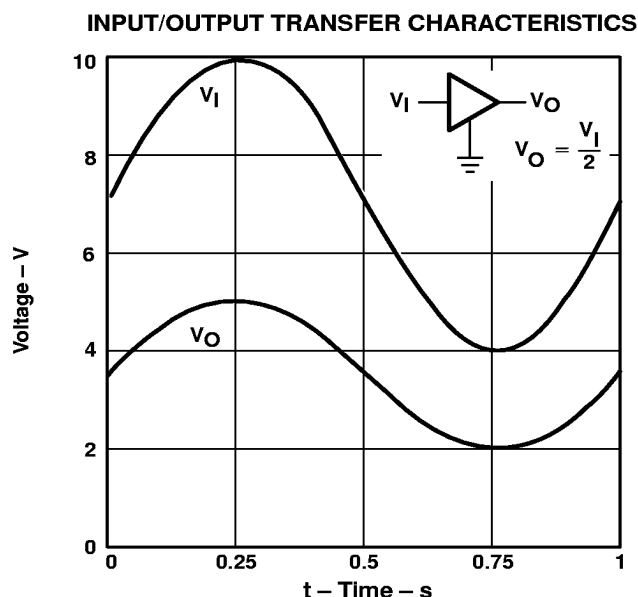
- **1/2 V_I Virtual Ground for Analog Systems**
- **Self-Contained 3-terminal TO-226AA Package**
- **Micropower Operation . . . 170 μ A Typ, $V_I = 5$ V**
- **Wide V_I Range . . . 4 V to 40 V**
- **High Output-Current Capability**
 - Source . . . 20 mA Typ
 - Sink . . . 20 mA Typ
- **Excellent Output Regulation**
 - -45μ V Typ at $I_O = 0$ to -10 mA
 - $+15 \mu$ V Typ at $I_O = 0$ to $+10$ mA
- **Low-Impedance Output . . . 0.0075 Ω Typ**
- **Noise Reduction Pin (D, JG, and P Packages Only)**

description

In signal-conditioning applications utilizing a single power source, a reference voltage equal to one-half the supply voltage is required for termination of all analog signal grounds. Texas Instruments introduces a precision virtual ground whose output voltage is always equal to one-half the input voltage, the TLE2426 "rail splitter."

The unique combination of a high-performance, micropower operational amplifier and a precision-trimmed divider on a single silicon chip results in a precise V_O/V_I ratio of 0.5 while sinking and sourcing current. The TLE2426 provides a low-impedance output with 20 mA of sink and source capability while drawing less than 280 μ A of supply current over the full input range of 4 V to 40 V. A designer need not pay the price in terms of board space for a conventional signal ground consisting of resistors, capacitors, operational amplifiers, and voltage references. The performance and precision of the TLE2426 is available in an easy-to-use, space saving, 3-terminal LP package. For increased performance, the optional 8-pin packages provide a noise-reduction pin. With the addition of an external capacitor (C_{NR}), peak-to-peak noise is reduced while line ripple rejection is improved.

Initial output tolerance for a single 5-V or 12-V system is better than 1% with 3.6% over the full 40-V input range. Ripple rejection exceeds 12 bits of accuracy. Whether the application is for a data acquisition front end, analog signal termination, or simply a precision voltage reference, the TLE2426 eliminates a major source of system error.



AVAILABLE OPTIONS

PACKAGED DEVICES					CHIP FORM (Y)
T_A	SMALL OUTLINE (D)	CERAMIC DIP (JG)	PLASTIC (LP)	PLASTIC DIP (P)	
0°C to 70°C	TLE2426CD	—	TLE2426CLP	TLE2426CP	TLE2426Y
-40°C to 85°C	TLE2426ID	—	TLE2426ILP	TLE2426IP	
-55°C to 125°C	TLE2426MD	TLE2426MJG	TLE2426MLP	TLE2426MP	

The D and LP packages are available taped and reeled in the commercial temperature range only. Add R suffix to the device type (e. g., TLC2426CDR). Chips are tested at 25°C.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA Information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

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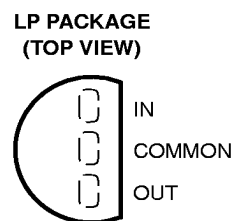
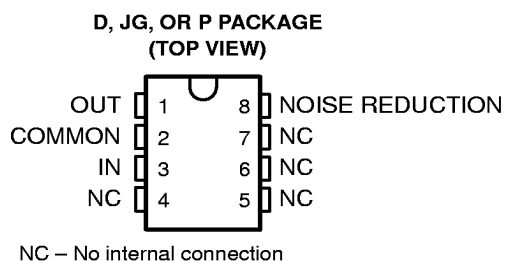
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TLE2426, TLE2426Y THE "RAIL SPLITTER" PRECISION VIRTUAL GROUND

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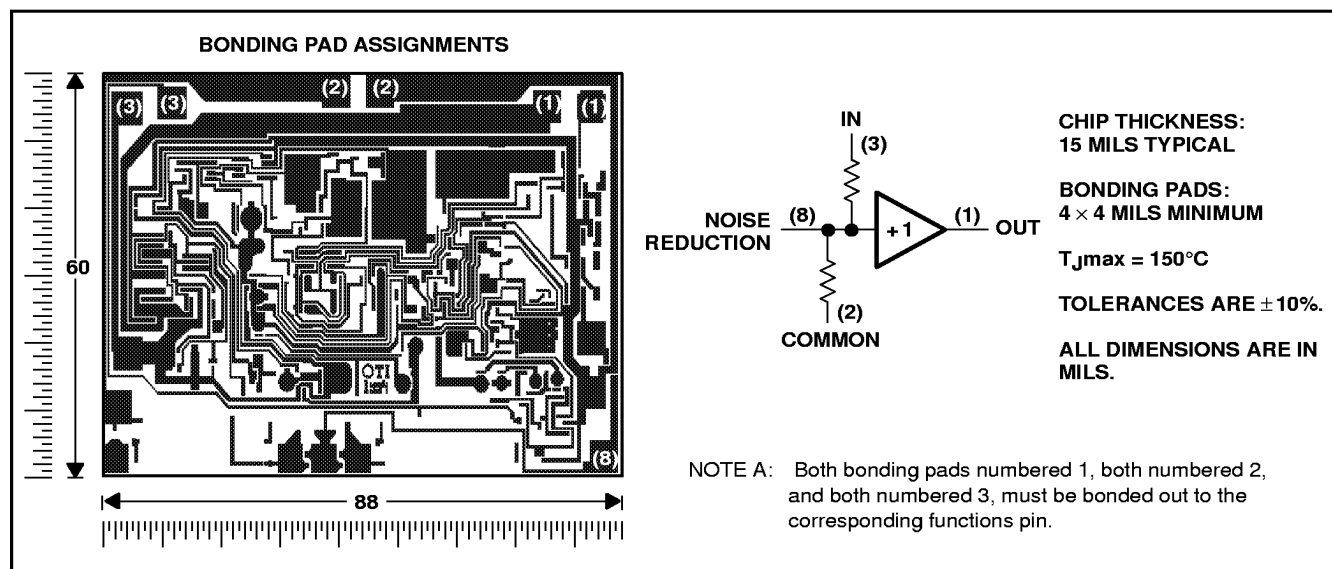
description (continued)

The C-suffix devices are characterized for operation from 0°C to 70°C. The I suffix devices are characterized for operation from –40°C to 85°C. The M suffix devices are characterized over the full military temperature range of –55°C to 125°C.



TLE2426Y chip information

This chip, properly assembled, displays characteristics similar to the TLE2426C. Thermal compression or ultrasonic bonding may be used on the doped aluminum bonding pads. The chips may be mounted with conductive epoxy or a gold-silicon preform.



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absolute maximum ratings over operating free-air temperature (unless otherwise noted)†

Continuous input voltage, V_I	40 V
Continuous filter trap voltage	40 V
Output current, I_O	± 80 mA
Duration of short-circuit current at (or below) 25°C (see Note 1)	unlimited
Continuous total power dissipation	See Dissipation Rating Table
Operating free-air temperature range, T_A : C suffix	0°C to 70°C
I suffix	–40°C to 85°C
M suffix	–55°C to 125°C
Storage temperature range, T_{stg}	–65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or P package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: JG or LP package	300°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The output may be shorted to either supply. Temperature and/or supply voltages must be limited to ensure that the maximum dissipation rating is not exceeded.

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING	$T_A = 85^\circ\text{C}$ POWER RATING	$T_A = 125^\circ\text{C}$ POWER RATING
D	725 mW	5.8 mW/°C	464 mW	377 mW	145 mW
JG	1050 mW	8.4 mW/°C	672 mW	546 mW	210 mW
LP	775 mW	6.2 mW/°C	496 mW	403 mW	155 mW
P	1000 mW	8.0 mW/°C	640 mW	520 mW	200 mW

recommended operating conditions

	C SUFFIX		I SUFFIX		M SUFFIX		UNIT
	MIN	MAX	MIN	MAX	MIN	MAX	
Input voltage, V_I	4	40	4	40	4	40	V
Operating free-air temperature, T_A	0	70	–40	85	–55	125	°C



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electrical characteristics at specified free-air temperature, $V_I = 5\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		$T_A^\dagger$	TLE2426C			UNIT
				MIN	TYP	MAX	
Output voltage	$V_I = 4\text{ V}$		25°C	1.98	2	2.02	V
	$V_I = 5\text{ V}$			2.48	2.5	2.52	
	$V_I = 40\text{ V}$			19.8	20	20.2	
	$V_I = 5\text{ V}$		Full range	2.475		2.525	
Temperature coefficient of output voltage			Full range		25		ppm/°C
Supply current	No load	$V_I = 5\text{ V}$	25°C		170	300	µA
		$V_I = 4\text{ to }40\text{ V}$	Full range			400	
Output voltage regulation (sourcing current) ‡	$I_O = 0\text{ to }-10\text{ mA}$		25°C		-45	±160	µV
			Full range			±250	
	$I_O = 0\text{ to }-20\text{ mA}$		25°C		-150	±450	
Output voltage regulation (sinking current) ‡	$I_O = 0\text{ to }10\text{ mA}$		25°C		15	±160	µV
			Full range			±250	
	$I_O = 0\text{ to }20\text{ mA}$		25°C		65	±235	
Output impedance			25°C		7.5	22.5	mΩ
Noise-reduction impedance			25°C		110		kΩ
Short-circuit current	Sinking current,	$V_O = 5\text{ V}$	25°C		26		mA
	Sourcing current,	$V_O = 0$			-47		
Output noise voltage, rms	$f = 10\text{ Hz to }10\text{ kHz}$	$C_{NR} = 0$	25°C		120		µV
		$C_{NR} = 1\text{ µF}$			30		
Output voltage current step response	$V_O\text{ to }0.1\%, I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		290		µs
		$C_L = 100\text{ pF}$			275		
	$V_O\text{ to }0.01\%, I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		400		
		$C_L = 100\text{ pF}$			390		
Step response	$V_I = 0\text{ to }5\text{ V}, V_O\text{ to }0.1\%$	$C_L = 100\text{ pF}$	25°C		20		µs
	$V_I = 0\text{ to }5\text{ V}, V_O\text{ to }0.01\%$				160		

† Full range is 0°C to 70°C.

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



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electrical characteristics at specified free-air temperature, $V_I = 12\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		$T_A^\dagger$	TLE2426C			UNIT
				MIN	TYP	MAX	
Output voltage	$V_I = 4\text{ V}$		25°C	1.98	2	2.02	V
	$V_I = 12\text{ V}$			5.95	6	6.05	
	$V_I = 40\text{ V}$			19.8	20	20.2	
	$V_I = 12\text{ V}$		Full range	5.945		6.055	
Temperature coefficient of output voltage			Full range		35		ppm/°C
Supply current	No load	$V_I = 12\text{ V}$	25°C		195	300	μA
		$V_I = 4\text{ to }40\text{ V}$	Full range			400	
Output voltage regulation (sourcing current) ‡	$I_O = 0\text{ to }-10\text{ mA}$		25°C		-45	± 160	μV
			Full range			± 250	
	$I_O = 0\text{ to }-20\text{ mA}$		25°C		-150	± 450	
Output voltage regulation (sinking current) ‡	$I_O = 0\text{ to }10\text{ mA}$		25°C		15	± 160	μV
			Full range			± 250	
	$I_O = 0\text{ to }20\text{ mA}$		25°C		65	± 235	
Output impedance			25°C		7.5	22.5	m Ω
Noise-reduction impedance			25°C		110		k Ω
Short-circuit current	Sinking current,	$V_O = 12\text{ V}$	25°C		31		mA
	Sourcing current,	$V_O = 0$			-70		
Output noise voltage, rms	$f = 10\text{ Hz to }10\text{ kHz}$	$C_{NR} = 0$	25°C		120		μV
		$C_{NR} = 1\text{ }\mu\text{F}$			30		
Output voltage current step response	$V_O\text{ to }0.1\%, I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		290		μs
		$C_L = 100\text{ pF}$			275		
	$V_O\text{ to }0.01\%, I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		400		
		$C_L = 100\text{ pF}$			390		
Step response	$V_I = 0\text{ to }12\text{ V}, V_O\text{ to }0.1\%$	$C_L = 100\text{ pF}$	25°C		20		μs
	$V_I = 0\text{ to }12\text{ V}, V_O\text{ to }0.01\%$				120		

† Full range is 0°C to 70°C.

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



TLE2426, TLE2426Y
THE “RAIL SPLITTER”
PRECISION VIRTUAL GROUND
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electrical characteristics at specified free-air temperature, $V_I = 5\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		T _A [†]	TLE2426I			UNIT
				MIN	TYP	MAX	
Output voltage	V _I = 4 V		25°C	1.98	2	2.02	V
	V _I = 5 V			2.48	2.5	2.52	
	V _I = 40 V			19.8	20	20.2	
	V _I = 5 V		Full range		2.47	2.53	
Temperature coefficient of output voltage			Full range	25			ppm/°C
Supply current	No load	V _I = 5 V	25°C	170	300		μA
		V _I = 4 to 40 V	Full range	400			
Output voltage regulation (sourcing current) [‡]	I _O = 0 to −10 mA		25°C	−45	±160		μV
			Full range	±250			
	I _O = 0 to −20 mA		25°C	−150	±450		
Output voltage regulation (sinking current) [‡]	I _O = 0 to 10 mA		25°C	15	±160		μV
	I _O = 0 to 8 mA		Full range	±250			
	I _O = 0 to 20 mA		25°C	65	±235		
Output impedance			25°C	7.5	22.5		mΩ
Noise-reduction impedance			25°C	110			kΩ
Short-circuit current	Sinking current,	V _O = 5 V	25°C	26			mA
	Sourcing current,	V _O = 0		−47			
Output noise voltage, rms	f = 10 Hz to 10 kHz	C _{NR} = 0	25°C	120			μV
		C _{NR} = 1 μF		30			
Output voltage current step response	V _O to 0.1%, I _O = ±10 mA	C _L = 0	25°C	290			μs
		C _L = 100 pF		275			
	V _O to 0.01%, I _O = ±10 mA	C _L = 0	25°C	400			
		C _L = 100 pF		390			
Step response	V _I = 0 to 5 V, V _O to 0.1%	C _L = 100 pF	25°C	20			μs
	V _I = 0 to 5 V, V _O to 0.01%			160			

† Full range is -40°C to 85°C.

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



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electrical characteristics at specified free-air temperature, $V_I = 12\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		$T_A^\dagger$	TLE2426I			UNIT
				MIN	TYP	MAX	
Output voltage	$V_I = 4\text{ V}$		25°C	1.98	2	2.02	V
	$V_I = 12\text{ V}$			5.95	6	6.05	
	$V_I = 40\text{ V}$			19.8	20	20.2	
	$V_I = 12\text{ V}$		Full range	5.935		6.065	
Temperature coefficient of output voltage			Full range		35		ppm/ $^\circ\text{C}$
Supply current	No load	$V_I = 12\text{ V}$	25°C		195	300	μA
		$V_I = 4\text{ to }40\text{ V}$	Full range			400	
Output voltage regulation (sourcing current) ‡	$I_O = 0\text{ to }-10\text{ mA}$		25°C		-45	± 160	μV
			Full range			± 250	
	$I_O = 0\text{ to }-20\text{ mA}$		25°C		-150	± 450	
Output voltage regulation (sinking current) ‡	$I_O = 0\text{ to }10\text{ mA}$		25°C		15	± 160	μV
	$I_O = 0\text{ to }8\text{ mA}$		Full range			± 250	
	$I_O = 0\text{ to }20\text{ mA}$		25°C		65	± 235	
Output impedance			25°C		7.5	22.5	$\text{m}\Omega$
Noise-reduction impedance			25°C		110		$\text{k}\Omega$
Short-circuit current	Sinking current,	$V_O = 12\text{ V}$	25°C		31		mA
	Sourcing current,	$V_O = 0$			-70		
Output noise voltage, rms	$f = 10\text{ Hz to }10\text{ kHz}$	$\text{CNR} = 0$	25°C		120		μV
		$\text{CNR} = 1\text{ }\mu\text{F}$			30		
Output voltage current step response	$V_O\text{ to }0.1\%,\ I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		290		μs
		$C_L = 100\text{ pF}$			275		
	$V_O\text{ to }0.01\%,\ I_O = \pm 10\text{ mA}$	$C_L = 0$	25°C		400		
		$C_L = 100\text{ pF}$			390		
Step response	$V_I = 0\text{ to }12\text{ V},\ V_O\text{ to }0.1\%$	$C_L = 100\text{ pF}$	25°C		20		μs
	$V_I = 0\text{ to }12\text{ V},\ V_O\text{ to }0.01\%$				120		

† Full range is -40°C to 85°C .

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



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TLE2426, TLE2426Y
THE “RAIL SPLITTER”
PRECISION VIRTUAL GROUND

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electrical characteristics at specified free-air temperature, $V_I = 5\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		T _A [†]	TLE2426M			UNIT
				MIN	TYP	MAX	
Output voltage	V _I = 4 V		25°C	1.98	2	2.02	V
	V _I = 5 V			2.48	2.5	2.52	
	V _I = 40 V			19.8	20	20.2	
	V _I = 5 V		Full range	2.465	2.535		
Temperature coefficient of output voltage			Full range	25			ppm/°C
Supply current	No load	V _I = 5 V	25°C	170	300	μA	
		V _I = 4 to 40 V	Full range	400			
Output voltage regulation (sourcing current) [‡]	I _O = 0 to −10 mA		25°C	−45	±160	μV	
			Full range	±250			
	I _O = 0 to −20 mA		25°C	−150	±450		
Output voltage regulation (sinking current) [‡]	I _O = 0 to 10 mA		25°C	15	±160	μV	
	I _O = 0 to 3 mA		Full range	±250			
	I _O = 0 to 20 mA		25°C	65	±235		
Output impedance			25°C	7.5	22.5	mΩ	
Noise-reduction impedance			25°C	110		kΩ	
Short-circuit current	Sinking current, V _O = 5 V		25°C	26		mA	
	Sourcing current, V _O = 0			−47			
Output noise voltage, rms	f = 10 Hz to 10 kHz	CNR = 0	25°C	120		μV	
		CNR = 1 μF		30			
Output voltage current step response	V _O to 0.1%, I _O = ±10 mA	C _L = 0	25°C	290		μs	
		C _L = 100 pF		275			
	V _O to 0.01%, I _O = ±10 mA	C _L = 0	25°C	400			
		C _L = 100 pF		390			
Step response	V _I = 0 to 5 V, V _O to 0.1%	C _L = 100 pF	25°C	20		μs	
	V _I = 0 to 5 V, V _O to 0.01%			120			

† Full range is -55°C to 125°C.

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



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electrical characteristics at specified free-air temperature, $V_I = 12\text{ V}$, $I_O = 0$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS		T _A [†]	TLE2426M			UNIT
				MIN	TYP	MAX	
Output voltage	V _I = 4 V		25°C	1.98	2	2.02	V
	V _I = 12 V			5.95	6	6.05	
	V _I = 40 V			19.8	20	20.2	
	V _I = 12 V		Full range	5.925		6.075	
Temperature coefficient of output voltage			Full range	35			ppm/°C
Supply current	No load	V _I = 12 V	25°C	195	250	μA	
		V _I = 4 to 40 V	Full range	350			
Output voltage regulation (sourcing current) [‡]	I _O = 0 to −10 mA		25°C	−45	±160	μV	
			Full range	±250			
	I _O = 0 to −20 mA		25°C	−150	±450		
Output voltage regulation (sinking current) [‡]	I _O = 0 to 10 mA		25°C	15	±160	μV	
	I _O = 0 to 8 mA		Full range	±250			
	I _O = 0 to 20 mA		25°C	65	±235		
Output impedance			25°C	7.5	22.5	mΩ	
Noise-reduction impedance			25°C	110		kΩ	
Short-circuit current	Sinking current,	V _O = 12 V	25°C	31		mA	
	Sourcing current,	V _O = 0		−70			
Output noise voltage, rms	f = 10 Hz to 10 kHz	C _{NR} = 0	25°C	120		μV	
		C _{NR} = 1 μF		30			
Output voltage current step response	V _O to 0.1%, I _O = ±10 mA	C _L = 0	25°C	290		μs	
		C _L = 100 pF		275			
	V _O to 0.01%, I _O = ±10 mA	C _L = 0	25°C	400			
		C _L = 100 pF		390			
Step response	V _I = 0 to 12 V, V _O to 0.1%	C _L = 100 pF	25°C	12		μs	
	V _I = 0 to 12 V, V _O to 0.01%			120			

† Full range is -55°C to 125°C.

‡ Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



TLE2426, TLE2426Y
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electrical characteristics at specified free-air temperature, $V_I = 5\text{ V}$, $I_O = 0$, $T_A = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	TLE2426Y			UNIT
		MIN	TYP	MAX	
Output voltage	$V_I = 5\text{ V}$		2.5		V
Supply current	No load		170		μA
Output voltage regulation (sourcing current) [†]	$I_O = 0$ to -10 mA		-45		μV
	$I_O = 0$ to -20 mA		-150		
Output voltage regulation (sinking current) [†]	$I_O = 0$ to 10 mA		15		μV
	$I_O = 0$ to 20 mA		65		
Output impedance			7.5		$\text{m}\Omega$
Noise-reduction impedance			110		$\text{k}\Omega$
Short-circuit current	Sinking current, $V_O = 5\text{ V}$		26		mA
	Sourcing current, $V_O = 0$		-47		
Output noise voltage, rms	$f = 10\text{ Hz}$ to 10 kHz	$\text{CNR} = 0$	120		μV
		$\text{CNR} = 1\text{ }\mu\text{F}$	30		
Output voltage current step response	V_O to 0.1%, $I_O = \pm 10\text{ mA}$	$\text{C}_L = 0$	290		μs
		$\text{C}_L = 100\text{ pF}$	275		
	V_O to 0.01%, $I_O = \pm 10\text{ mA}$	$\text{C}_L = 0$	400		
		$\text{C}_L = 100\text{ pF}$	390		
Step response	$V_I = 0$ to 5 V , V_O to 0.1%	$\text{C}_L = 100\text{ pF}$	20		μs
	$V_I = 0$ to 5 V , V_O to 0.01%		160		

[†] Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

electrical characteristics at specified free-air temperature, $V_I = 12\text{ V}$, $I_O = 0$, $T_A = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	TLE2426Y			UNIT
		MIN	TYP	MAX	
Output voltage	$V_I = 12\text{ V}$		6		V
Supply current	No load		195		μA
Output voltage regulation (sourcing current) [†]	$I_O = 0$ to -10 mA		-45		μV
	$I_O = 0$ to -20 mA		-150		
Output voltage regulation (sinking current) [†]	$I_O = 0$ to 3 mA		15		μV
	$I_O = 0$ to 20 mA		65		
Output impedance			7.5		$\text{m}\Omega$
Noise-reduction impedance			110		$\text{k}\Omega$
Short-circuit current	Sinking current, $V_O = 12\text{ V}$		31		mA
	Sourcing current, $V_O = 0$		-70		
Output noise voltage, rms	$f = 10\text{ Hz}$ to 10 kHz	$\text{CNR} = 0$	120		μV
		$\text{CNR} = 1\text{ }\mu\text{F}$	30		
Output voltage current, step response	V_O to 0.1%, $I_O = \pm 10\text{ mA}$	$\text{C}_L = 0$	290		μs
		$\text{C}_L = 100\text{ pF}$	275		
	V_O to 0.01%, $I_O = \pm 10\text{ mA}$	$\text{C}_L = 0$	400		
		$\text{C}_L = 100\text{ pF}$	390		
Step response	$V_I = 0$ to 12 V , V_O to 0.1%	$\text{C}_L = 100\text{ pF}$	12		μs
	$V_I = 0$ to 12 V , V_O to 0.01%		120		

[†] Sample tested. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.



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TYPICAL CHARACTERISTICS

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Output voltage	Distribution	1,2
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Output impedance	vs Frequency	8
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Ripple rejection	vs Frequency	13
Spectral noise voltage density	vs Frequency	14
Output voltage response to output current step	vs Time	15
Output voltage power-up response	vs Time	16
Output current	vs Load capacitance	17



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TYPICAL CHARACTERISTICS†

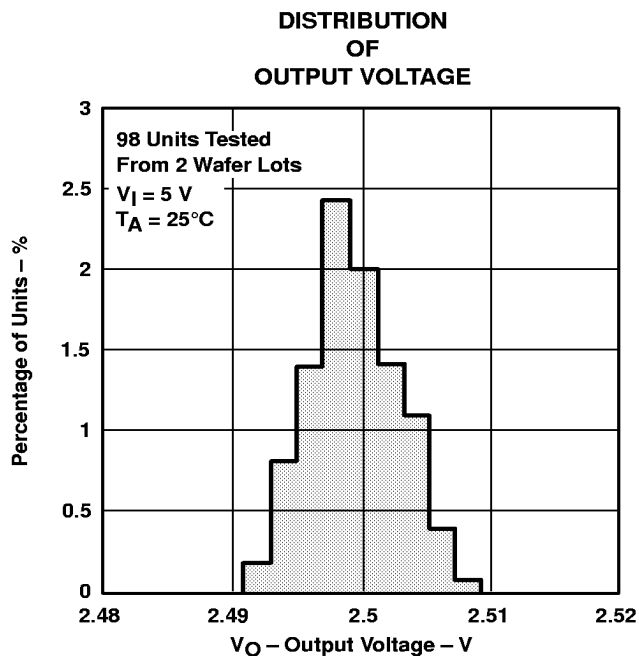


Figure 1

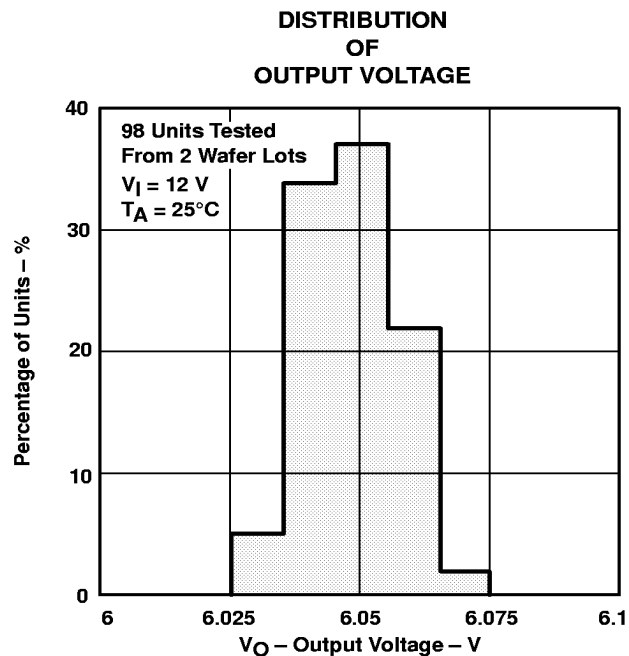


Figure 2

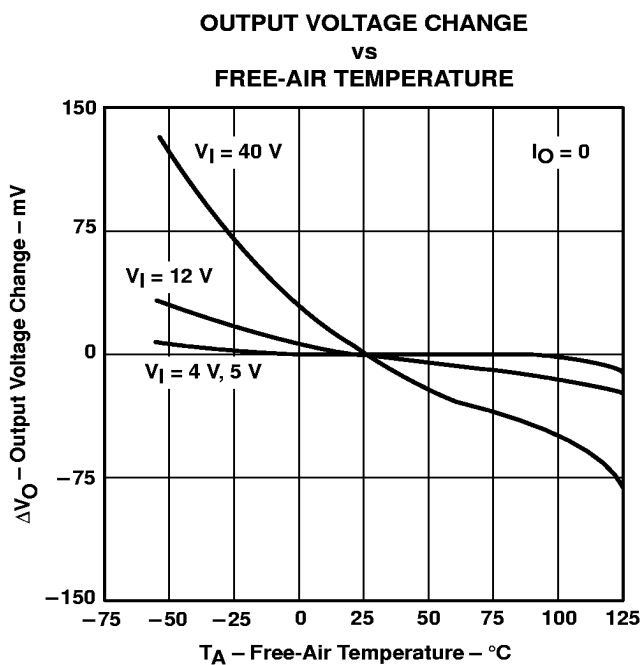


Figure 3

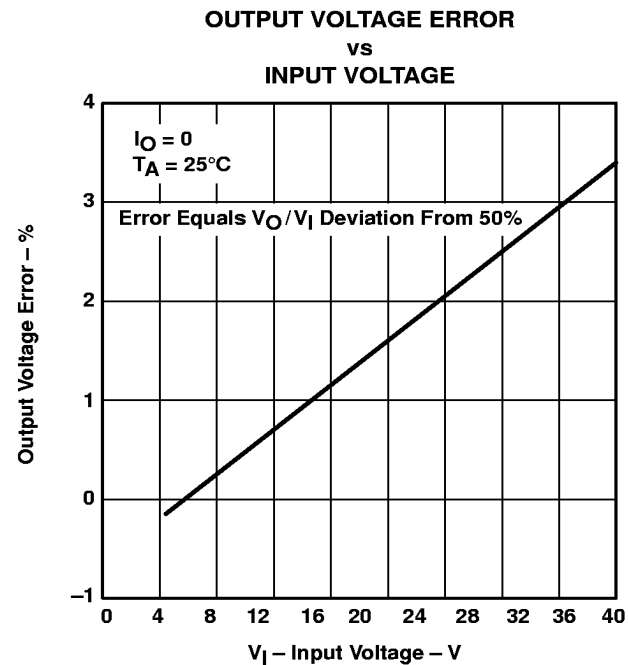


Figure 4

† Data at high and low temperatures are applicable within the rated operating free-air temperature ranges of the various devices.



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TYPICAL CHARACTERISTICS†

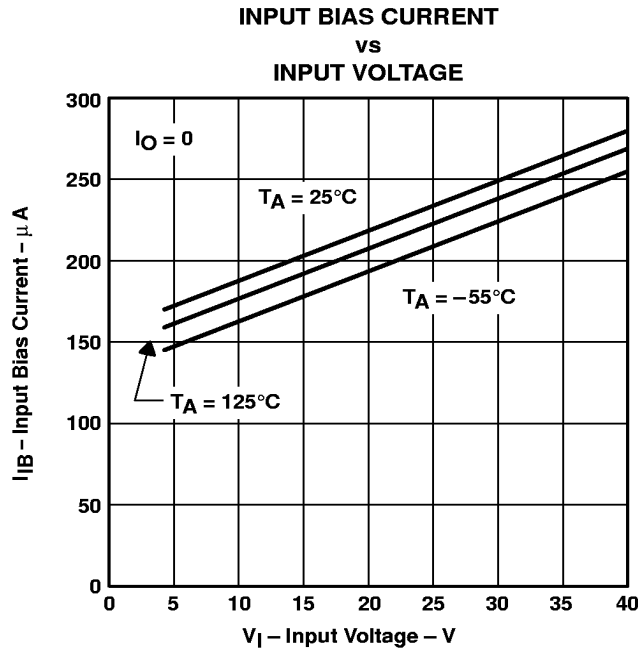


Figure 5

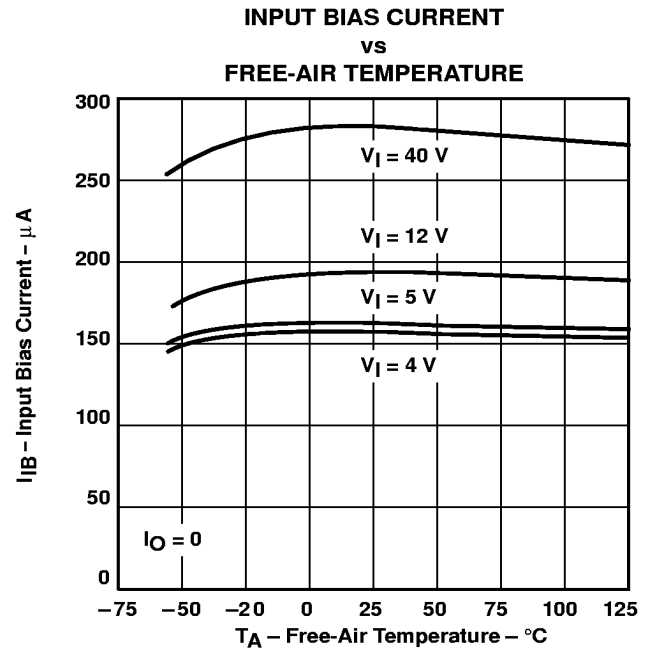


Figure 6

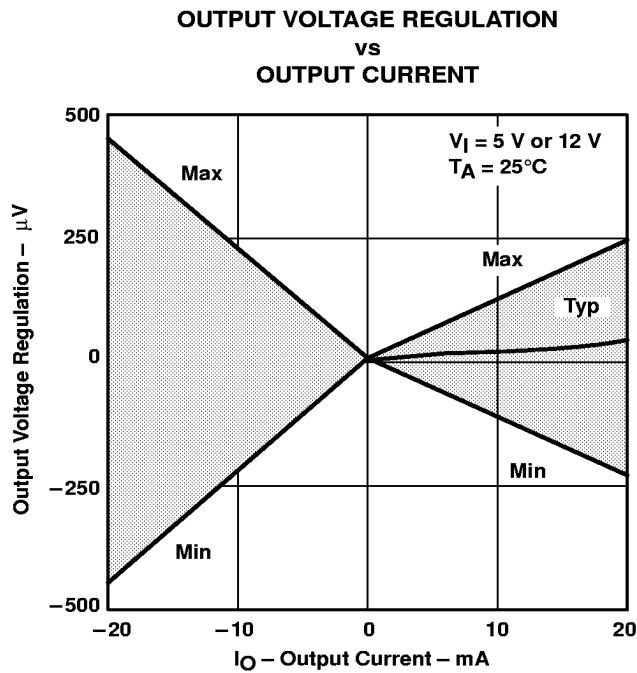


Figure 7

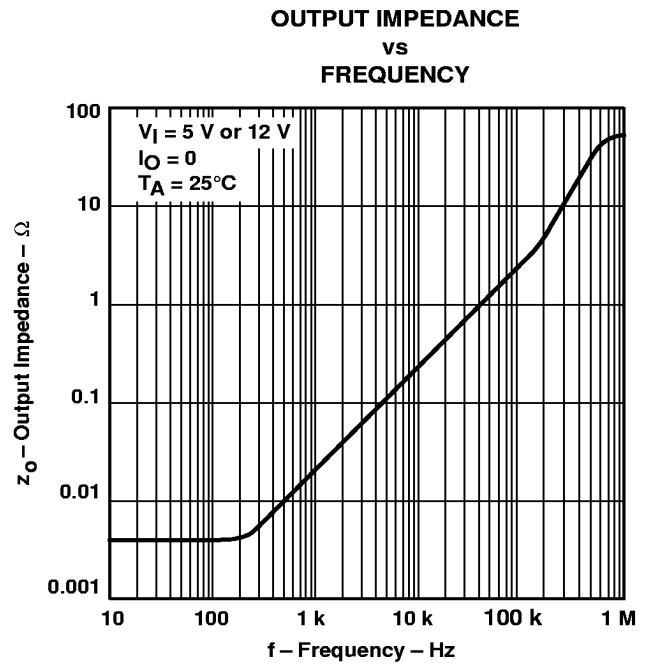


Figure 8

† Data at high and low temperatures are applicable within the rated operating free-air temperature ranges of the various devices.

TYPICAL CHARACTERISTICS†

**SHORT-CIRCUIT OUTPUT CURRENT
vs
INPUT VOLTAGE**

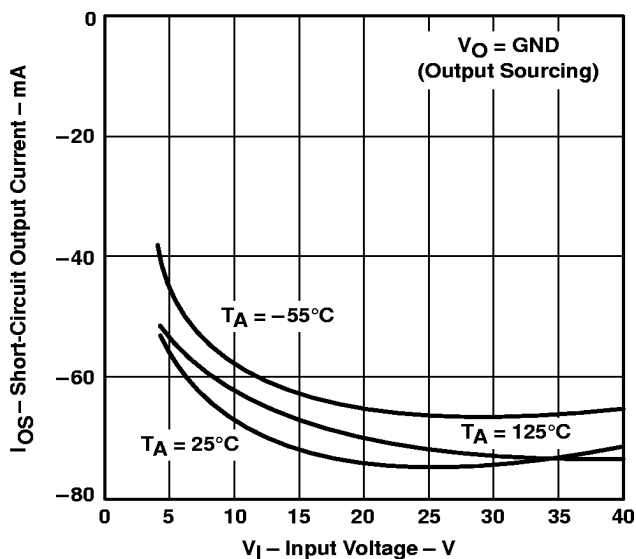


Figure 9

**SHORT-CIRCUIT OUTPUT CURRENT
vs
INPUT VOLTAGE**

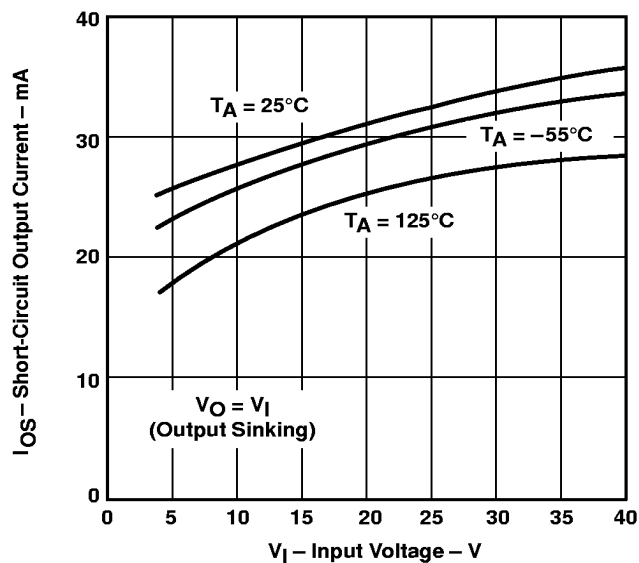


Figure 10

**SHORT-CIRCUIT OUTPUT CURRENT
vs
FREE-AIR TEMPERATURE**

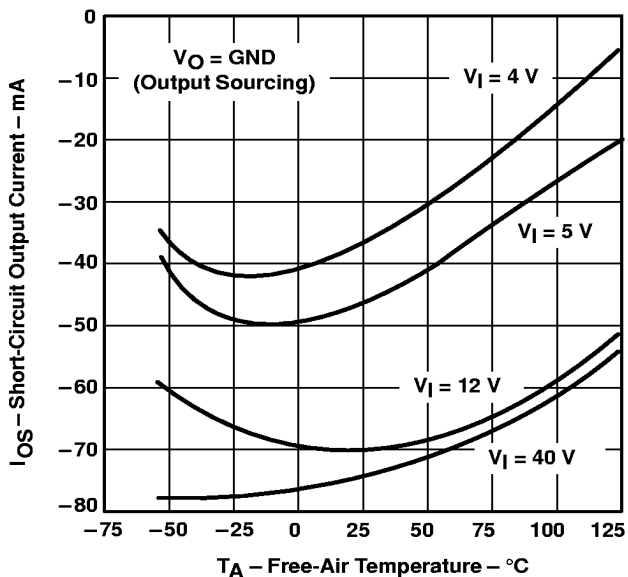


Figure 11

**SHORT-CIRCUIT OUTPUT CURRENT
vs
FREE-AIR TEMPERATURE**

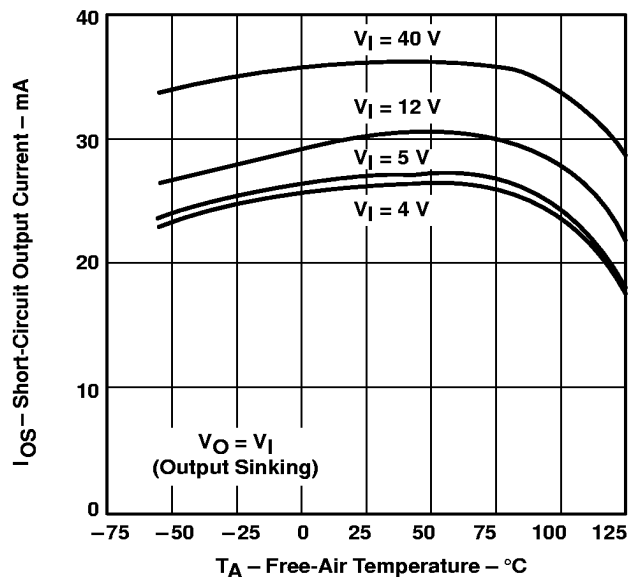


Figure 12

† Data at high and low temperatures are applicable within the rated operating free-air temperature ranges of the various devices.



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TYPICAL CHARACTERISTICS

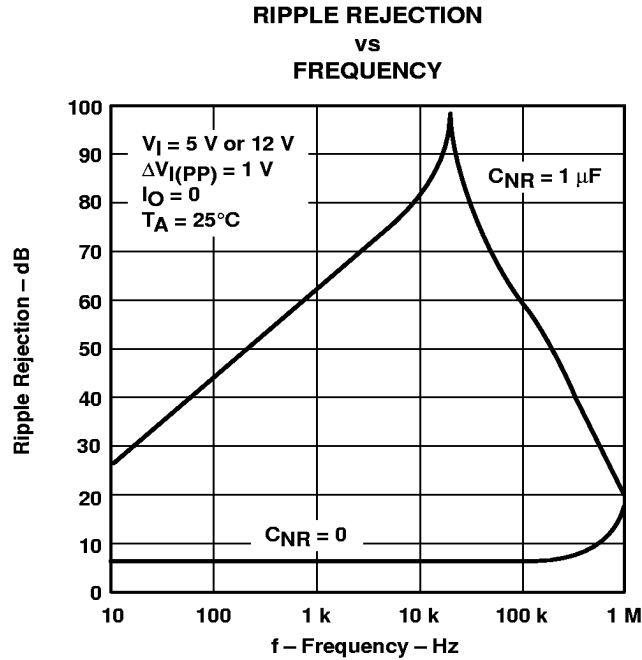


Figure 13

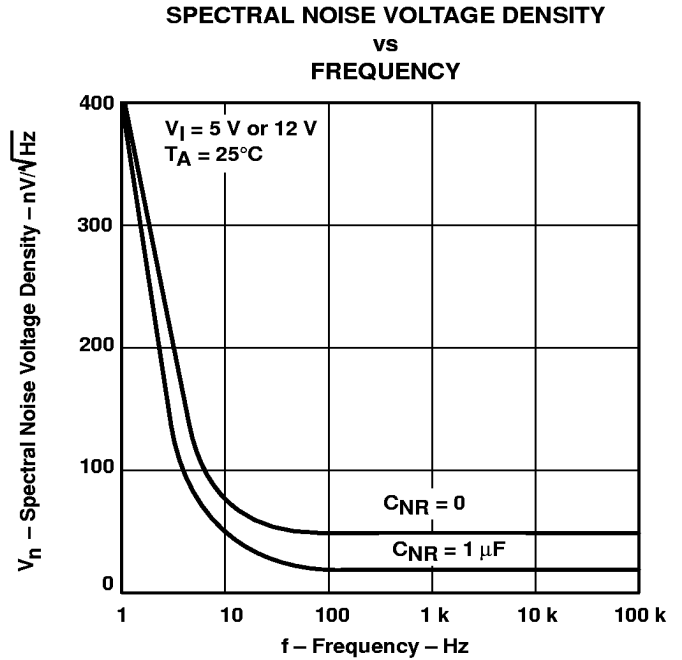


Figure 14

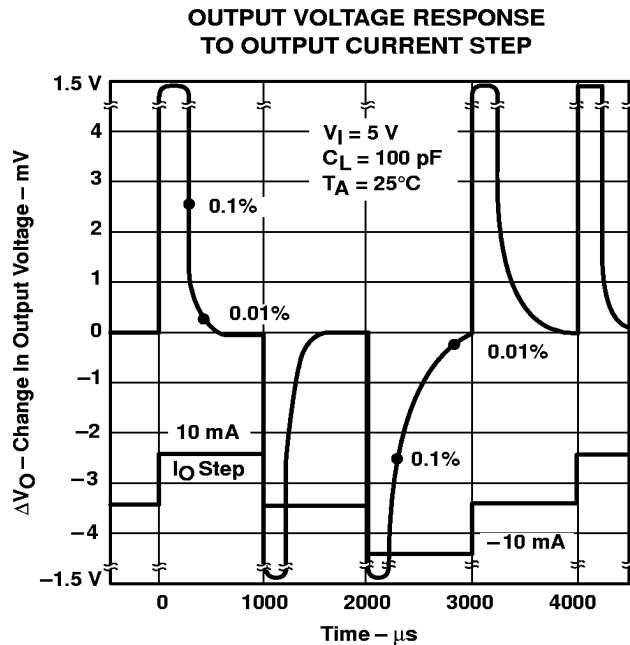


Figure 15

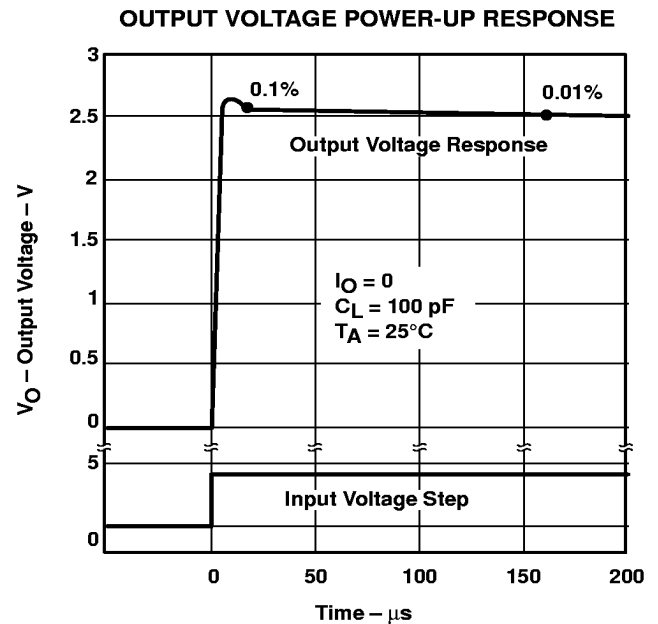


Figure 16

TYPICAL CHARACTERISTICS

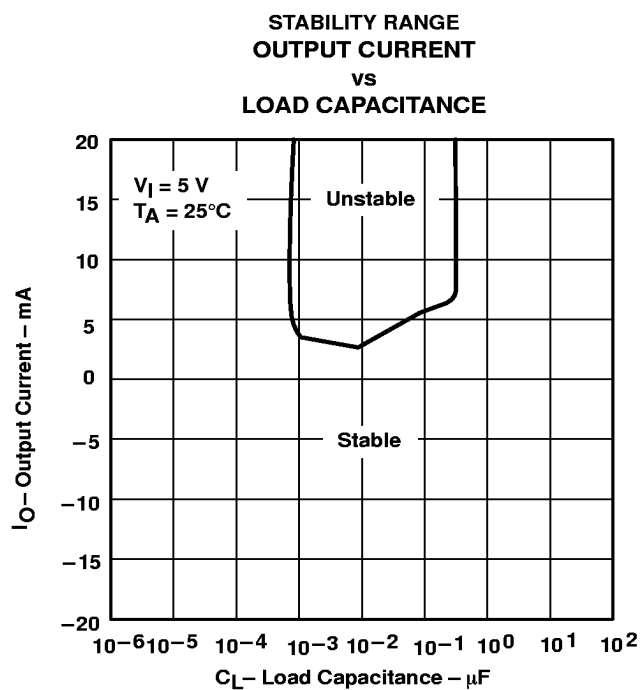


Figure 17

MACROMODEL INFORMATION

```
* TLE2426 OPERATIONAL AMPLIFIER "MACROMODEL" SUBCIRCUIT
* CREATED USING PARTS RELEASE 4.03 ON 08/21/90 AT 13:51
* REV (N/A) SUPPLY VOLTAGE: 5 V
* CONNECTIONS: FILTER
                  | INPUT
                  | | COMMON
                  | | | OUTPUT
*                  | | |
*                  | | |
*                  | | |
.SUBCKT TLE2426 1 3 4 5
```

```
C1 11 12 21.66E-12
C2 6 7 30.00E-12
C3 87 0 10.64E-9
CPSR 85 86 15.9E-9
DCM+ 81 82 DX
DCM- 83 81 DX
DC 5 53 DX
DE 54 5 DX
DLP 90 91 DX
DLN 92 90 DX
DP 4 3 DX
ECMR 84 99 (2,99) 1
EGND 99 0 POLY(2) (3,0) (4,0) 0 .5 .5
EPSR 85 0 POLY(1) (3,4) -16.22E-6 3.24E-6
ENSE 89 2 POLY(1) (88,0) 120E-61
FB 7 99 POLY(6) VB VC VE VLP VLN VPSR 0 74.8E6 -10E6 10E6 10E6 -10E6 74E6
GA 6 0 11 12 320.4E-6
GCM 0 6 10 99 1.013E-9
GPSR 85 86 (85,86) 100E-6
GRC1 4 11 (4,11) 3.204E-4
GRC2 4 12 (4,12) 3.204E-4
GRE1 13 10 (13,10) 1.038E-3
GRE2 14 10 (14,10) 1.038E-3
HLIM 90 0 VLIM 1K
HCMR 80 1 POLY(2) VCM+ VCM- 0 1E2 1E2
IRP 3 4 146E-6
IEE 3 10 DC 24.05E-6
IIO 2 0 .2E-9
I1 88 0 1E-21
Q1 11 89 13 QX
Q2 12 80 14 QX
R2 6 9 100.0E3
RCM 84 81 1K
REE 10 99 8.316E6
RN1 87 0 2.55E8
RN2 87 88 11.67E3
RO1 8 5 63
RO2 7 99 62
VCM+ 82 99 1.0
VCM- 83 99 -2.3
VB 9 0 DC 0
VC 3 53 DC 1.400
VE 54 4 DC 1.400
VLIM 7 8 DC 0
VLP 91 0 DC 30
VLN 0 92 DC 30
VPSR 0 86 DC 0
RFB 5 2 1K
RIN1 3 1 220K
RIN2 1 4 220K
.MODEL DX D(IS=800.OE-18)
.MODEL QX PNP(IS=800.OE-18 BF=480)
.ENDS
```



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TLE2426, TLE2426Y THE "RAIL SPLITTER" PRECISION VIRTUAL GROUND

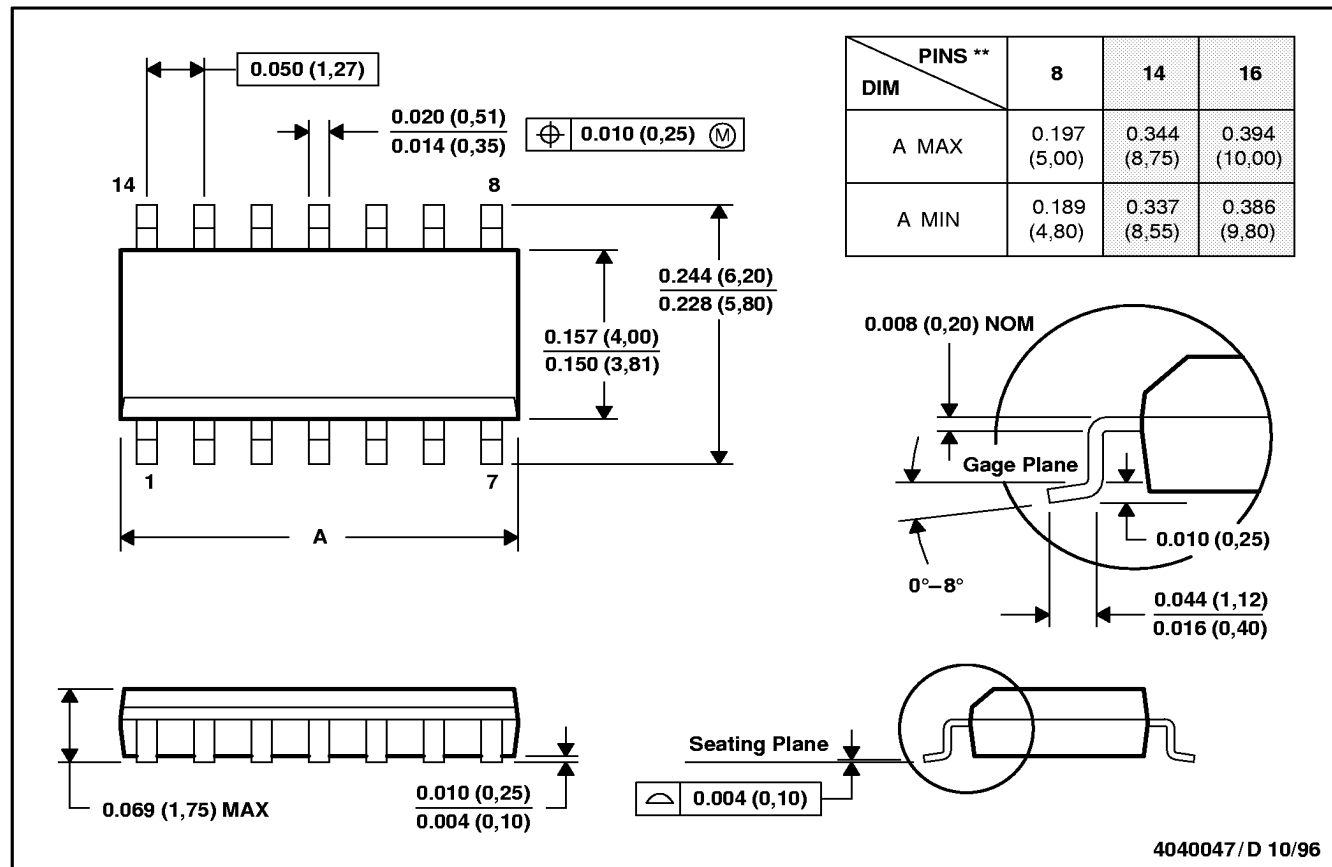
SLOS098C – AUGUST 1991 – REVISED JULY 1997

MECHANICAL INFORMATION

D (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14 PIN SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion, not to exceed 0.006 (0,15).
 - D. Falls within JEDEC MS-012

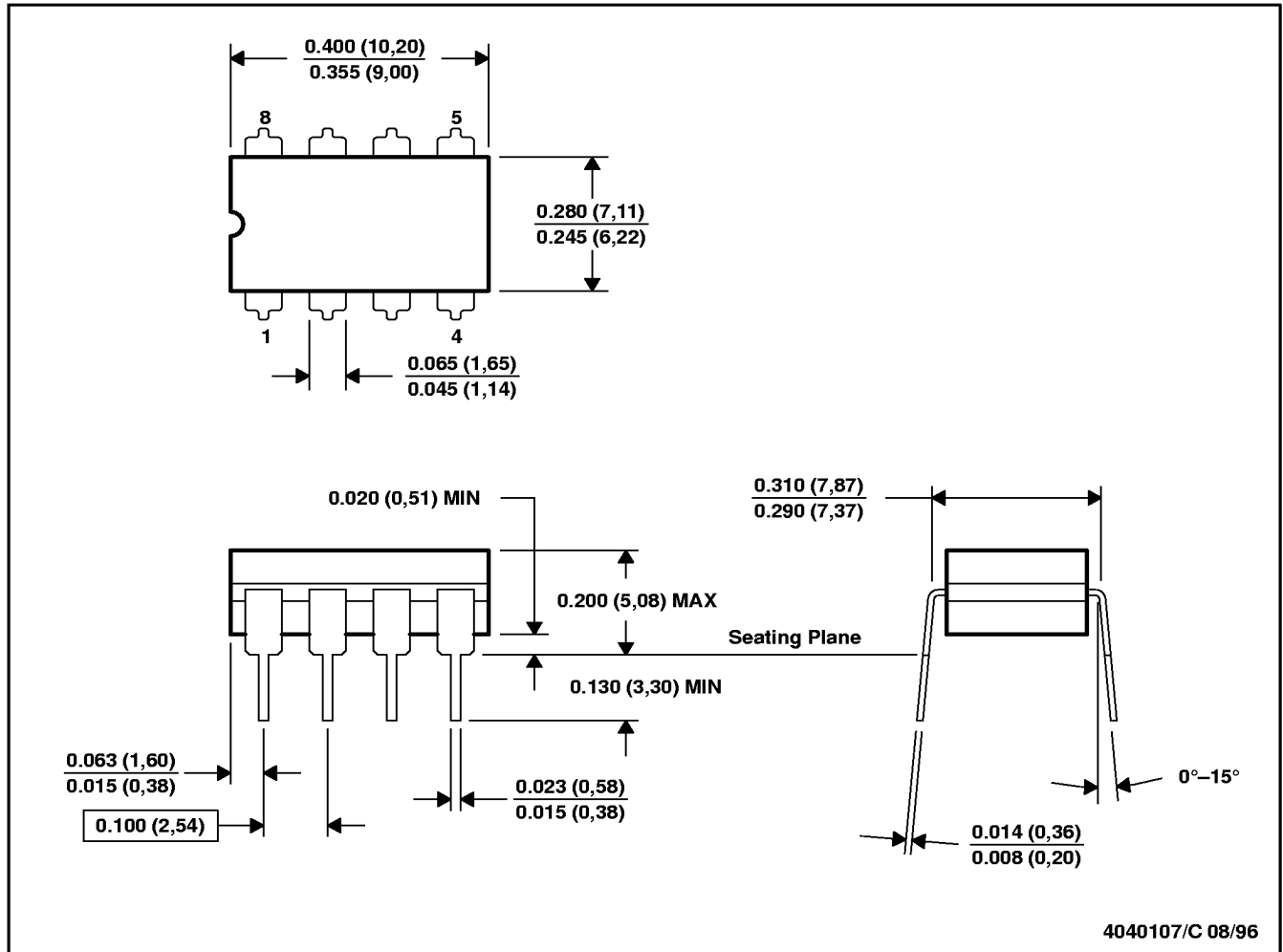


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MECHANICAL INFORMATION

JG (R-GDIP-T8)

CERAMIC DUAL-IN-LINE PACKAGE



- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. This package can be hermetically sealed with a ceramic lid using glass frit.
 D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 E. Falls within MIL-STD-1835 GDIP1-T8



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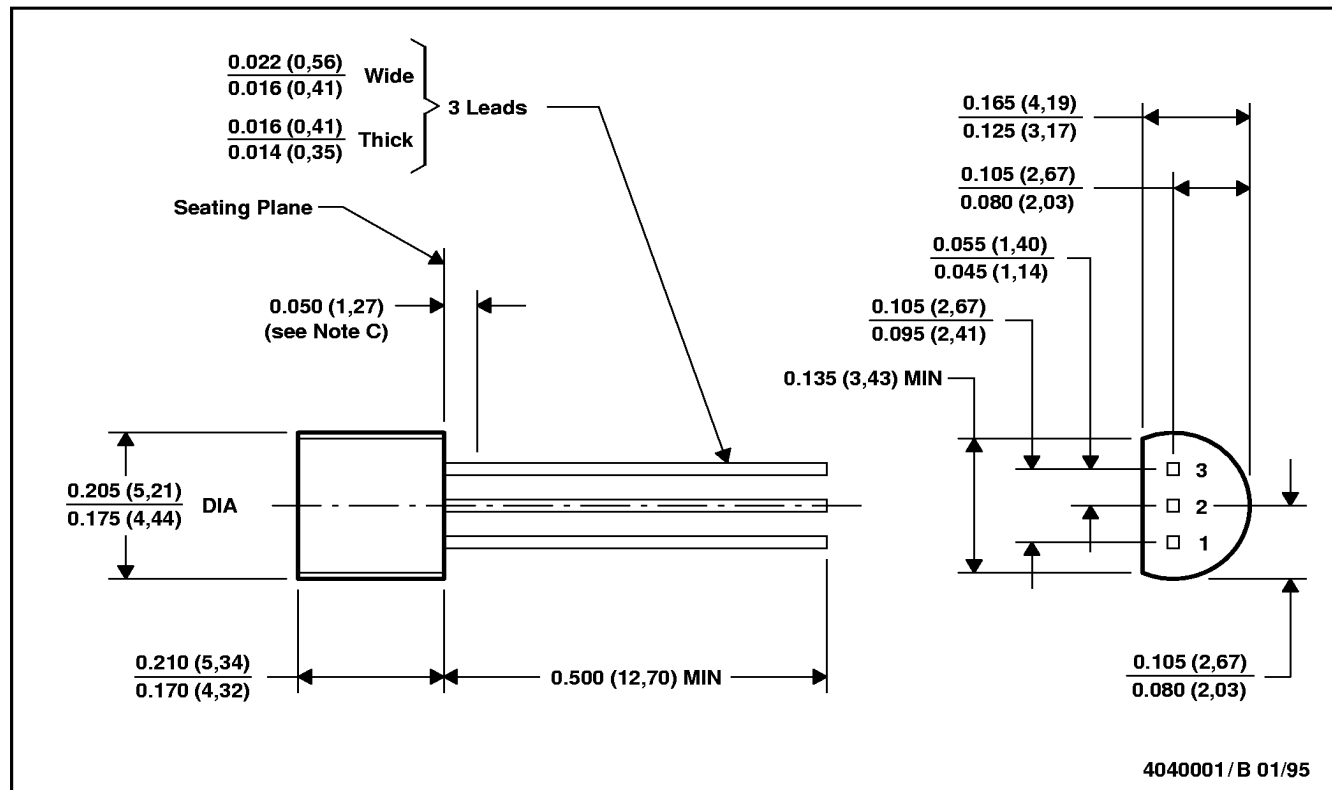
TLE2426, TLE2426Y
THE "RAIL SPLITTER"
PRECISION VIRTUAL GROUND

SLOS098C – AUGUST 1991 – REVISED JULY 1997

MECHANICAL INFORMATION

LP (O-PBCY-W3)

PLASTIC CYLINDRICAL PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Lead dimensions are not controlled within this area.
 - D. Falls within JEDEC TO-226AA (TO-226AA replaces TO-92)

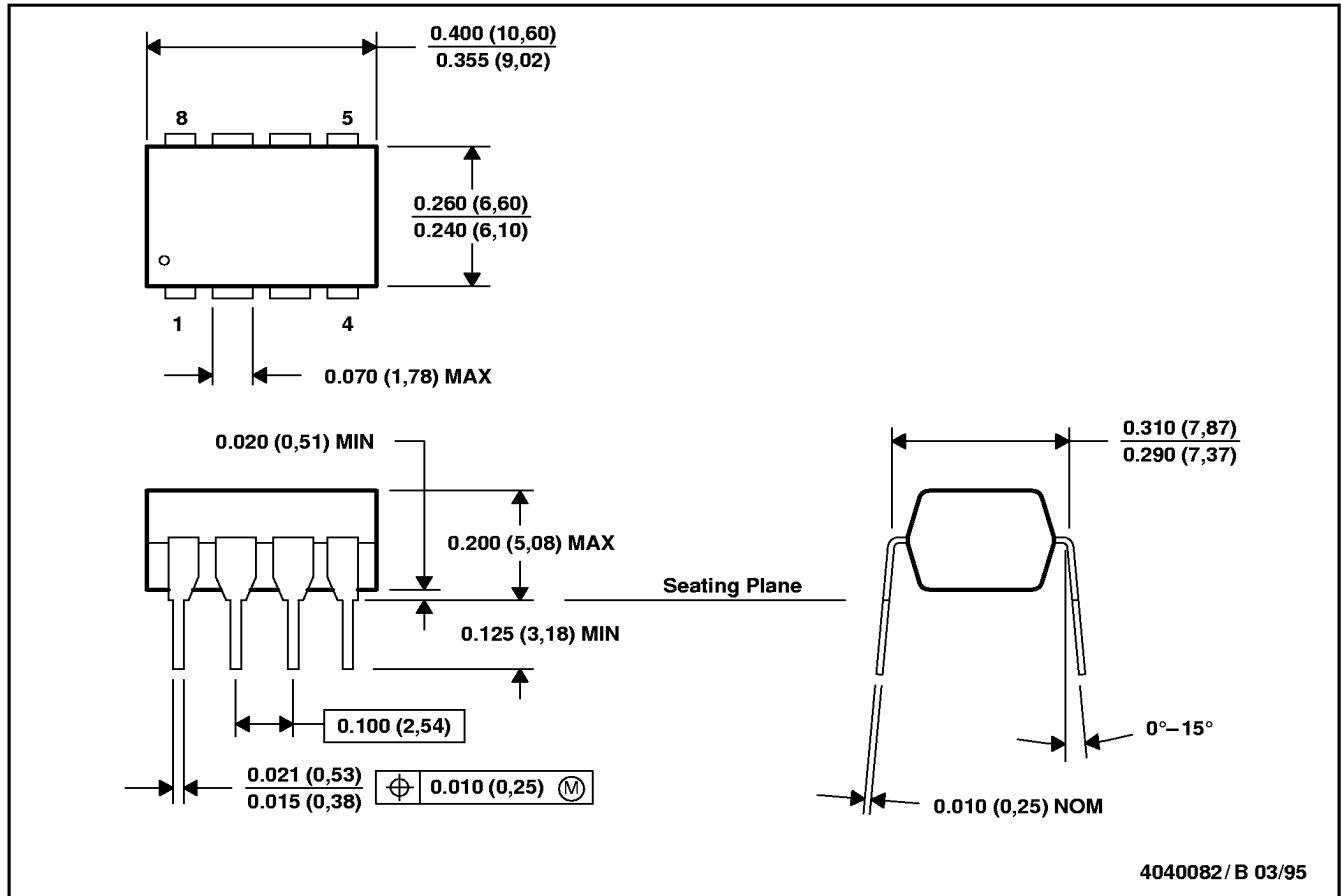


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MECHANICAL INFORMATION

P (R-PDIP-T8)

PLASTIC DUAL-IN-LINE PACKAGE



- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. Falls within JEDEC MS-001



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