

## 150-mA LOW-NOISE LOW-DROPOUT REGULATOR WITH SHUTDOWN

Check for Samples: [LP2985](#)

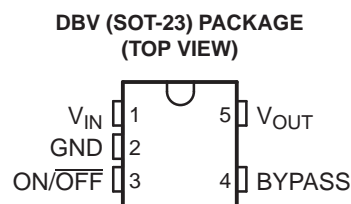
### FEATURES

- Output Tolerance of
  - 1% (A Grade)
  - 1.5% (Standard Grade)
- Ultra-Low Dropout, Typically
  - 280 mV at Full Load of 150 mA
  - 7 mV at 1 mA
- Wide  $V_{IN}$  Range: 16 V Max
- Low  $I_Q$ : 850  $\mu$ A at Full Load at 150 mA
- Shutdown Current: 0.01  $\mu$ A Typ
- Low Noise: 30  $\mu$ V<sub>RMS</sub> With 10-nF Bypass Capacitor
- Stable With Low-ESR Capacitors, Including Ceramic
- Overcurrent and Thermal Protection
- High Peak-Current Capability
- ESD Protection Exceeds JESD 22

- 2000-V Human-Body Model (A114-A)
- 200-V Machine Model (A115-A)

### PORTABLE APPLICATIONS

- Cellular Phones
- Palmtop and Laptop Computers
- Personal Digital Assistants (PDAs)
- Digital Cameras and Camcorders
- CD Players
- MP3 Players



### DESCRIPTION/ORDERING INFORMATION

The LP2985 family of fixed-output, low-dropout regulators offers exceptional, cost-effective performance for both portable and nonportable applications. Available in voltages of 1.8 V, 2.5 V, 2.8 V, 2.9 V, 3 V, 3.1 V, 3.3 V, 5 V, and 10 V, the family has an output tolerance of 1% for the A version (1.5% for the non-A version) and is capable of delivering 150-mA continuous load current. Standard regulator features, such as overcurrent and overtemperature protection, are included.

The LP2985 has a host of features that makes the regulator an ideal candidate for a variety of portable applications:

- Low dropout: A PNP pass element allows a typical dropout of 280 mV at 150-mA load current and 7 mV at 1-mA load.
- Low quiescent current: The use of a vertical PNP process allows for quiescent currents that are considerably lower than those associated with traditional lateral PNP regulators.
- Shutdown: A shutdown feature is available, allowing the regulator to consume only 0.01  $\mu$ A when the ON/OFF pin is pulled low.
- Low-ESR-capacitor friendly: The regulator is stable with low-ESR capacitors, allowing the use of small, inexpensive, ceramic capacitors in cost-sensitive applications.
- Low noise: A BYPASS pin allows for low-noise operation, with a typical output noise of 30  $\mu$ V<sub>RMS</sub>, with the use of a 10-nF bypass capacitor.
- Small packaging: For the most space-constrained needs, the regulator is available in the SOT-23 package.



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.

**ORDERING INFORMATION<sup>(1)</sup>**

T <sub>J</sub>	PART GRADE	V <sub>OUT</sub> (NOM)	PACKAGE <sup>(2)</sup>	ORDERABLE PART NUMBER	TOP-SIDE MARKING <sup>(3)</sup>	
-40°C to 125°C	A grade: 1% tolerance	1.8 V	SOT-23-5 – DBV	Reel of 3000	LP2985A-18DBVR	LPT_
				Reel of 250	LP2985A-18DBVT	
				Reel of 10000	LP2985A-18DBVJ	
		2.5 V		Reel of 3000	LP2985A-25DBVR	LPU_
				Reel of 250	LP2985A-25DBVT	
		2.8 V		Reel of 3000	LP2985A-28DBVR	LPJ_
				Reel of 250	LP2985A-28DBVT	
		2.9 V		Reel of 3000	LP2985A-29DBVR	LPZ_
				Reel of 250	LP2985A-29DBVT	
		3.0 V		Reel of 3000	LP2985A-30DBVR	LRA_
				Reel of 250	LP2985A-30DBVT	
		3.1 V		Reel of 3000	LP2985A-31DBVR	PREVIEW
				Reel of 250	LP2985A-31DBVT	
		3.3 V		Reel of 3000	LP2985A-33DBVR	LPK_
				Reel of 250	LP2985A-33DBVT	
		5.0 V		Reel of 3000	LP2985A-50DBVR	LRI_
				Reel of 250	LP2985A-50DBVT	
		10.0 V		Reel of 3000	LP2985A-10DBVR	LRD_
	Reel of 250		LP2985A-10DBVT			
	Standard grade: 1.5% tolerance	1.8 V	Reel of 3000	LP2985-18DBVR	LPH_	
			Reel of 250	LP2985-18DBVT		
		2.5 V	Reel of 3000	LP2985-25DBVR	LPL_	
			Reel of 250	LP2985-25DBVT		
		2.8 V	Reel of 3000	LP2985-28DBVR	LPG_	
			Reel of 250	LP2985-28DBVT		
		2.9 V	Reel of 3000	LP2985-29DBVR	LPM_	
			Reel of 250	LP2985-29DBVT		
		3.0 V	Reel of 3000	LP2985-30DBVR	LPN_	
			Reel of 250	LP2985-30DBVT		
		3.1 V	Reel of 3000	LP2985-31DBVR	PREVIEW	
			Reel of 250	LP2985-31DBVT		
		3.3 V	Reel of 3000	LP2985-33DBVR	LPF_	
			Reel of 250	LP2985-33DBVT		
		5.0 V	Reel of 3000	LP2985-50DBVR	LPS_	
			Reel of 250	LP2985-50DBVT		
		10.0 V	Reel of 3000	LP2985-10DBVR	LRC_	
Reel of 250			LP2985-10DBVT			

- (1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at [www.ti.com](http://www.ti.com).
- (2) Package drawings, thermal data, and symbolization are available at [www.ti.com/packaging](http://www.ti.com/packaging).
- (3) The actual top-side marking has one additional character that designates the wafer fab/assembly site.

FUNCTIONAL BLOCK DIAGRAM

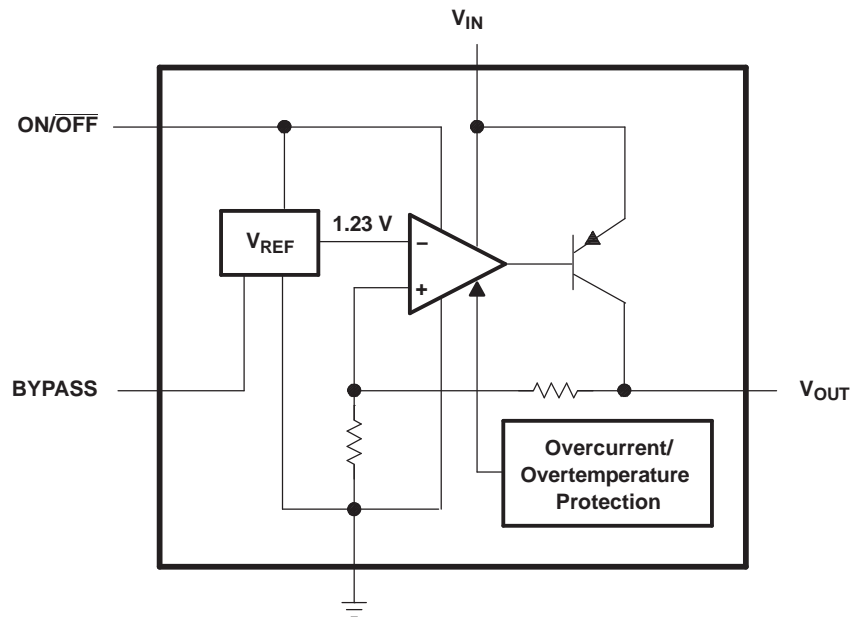
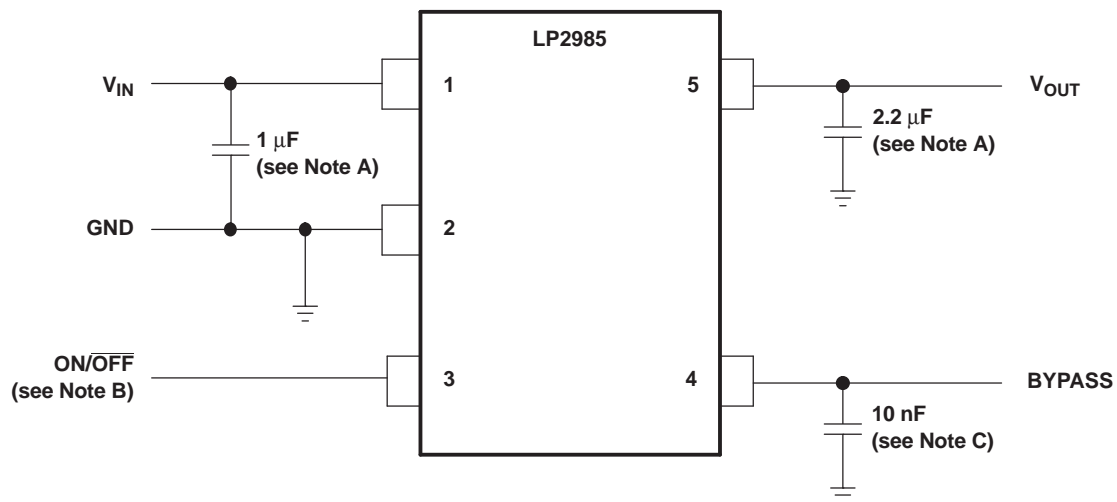


Figure 1. BASIC APPLICATION CIRCUIT



- A. Minimum  $C_{OUT}$  value for stability (can be increased without limit for improved stability and transient response)
- B.  $ON/\overline{OFF}$  must be actively terminated. Connect to  $V_{IN}$  if shutdown feature is not used.
- C. Optional BYPASS capacitor for low-noise operation

## Absolute Maximum Ratings<sup>(1)</sup>

over virtual junction temperature range (unless otherwise noted)

		MIN	MAX	UNIT
$V_{IN}$	Continuous input voltage range <sup>(2)</sup>	-0.3	16	V
$V_{ON/OFF}$	ON/OFF input voltage range	-0.3	16	V
	Output voltage range <sup>(3)</sup>	-0.3	9	V
$I_O$	Output current <sup>(4)</sup>	Internally limited (short-circuit protected)		
$\theta_{JA}$	Package thermal impedance <sup>(4) (5)</sup>		206	°C/W
$T_J$	Operating virtual junction temperature		150	°C
$T_{stg}$	Storage temperature range	-65	150	°C
ESD	Electrostatic discharge protection	Human-Body Model (HBM)	2000	V
		Machine Model (MM)	200	

- (1) 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.
- (2) The PNP pass transistor has a parasitic diode connected between the input and output. This diode normally is reverse biased ( $V_{IN} > V_{OUT}$ ), but will be forward biased if the output voltage exceeds the input voltage by a diode drop (see *Application Information* for more details).
- (3) If load is returned to a negative power supply in a dual-supply system, the output must be diode clamped to GND.
- (4) Maximum power dissipation is a function of  $T_J(\max)$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(\max) - T_A)/\theta_{JA}$ . Operating at the absolute maximum  $T_J$  of 150°C can affect reliability.
- (5) The package thermal impedance is calculated in accordance with JESD 51-7.

## Recommended Operating Conditions

		MIN	MAX	UNIT
$V_{IN}$	Supply input voltage	2.2 <sup>(1)</sup>	16	V
$V_{ON/OFF}$	ON/OFF input voltage	0	$V_{IN}$	V
$I_{OUT}$	Output current		150	mA
$T_J$	Virtual junction temperature	-40	125	°C

- (1) Recommended minimum  $V_{IN}$  is the greater of 2.5 V or  $V_{OUT(\max)} +$  rated dropout voltage (max) for operating  $I_L$ .

## Electrical Characteristics

at specified virtual junction temperature range,  $V_{IN} = V_{OUT(NOM)} + 1\text{ V}$ ,  $V_{ON/OFF} = 2\text{ V}$ ,  $C_{IN} = 1\text{ }\mu\text{F}$ ,  $I_L = 1\text{ mA}$ ,  $C_{OUT} = 4.7\text{ }\mu\text{F}$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	T <sub>J</sub>	LP2985A-xx			LP2985-xx			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
$\Delta V_{OUT}$ Output voltage tolerance	$I_L = 1\text{ mA}$	25°C	-1		1	-1.5		1.5	%V <sub>NOM</sub>
	$1\text{ mA} \leq I_L \leq 50\text{ mA}$	25°C	-1.5		1.5	-2.5		2.5	
		-40°C to 125°C	-2.5		2.5	-3.5		3.5	
	$1\text{ mA} \leq I_L \leq 150\text{ mA}$	25°C	-2.5		2.5	-3		3	
-40°C to 125°C		-3.5		3.5	-4		4		
Line regulation	$V_{IN} = [V_{OUT(NOM)} + 1\text{ V}] \text{ to } 16\text{ V}$	25°C		0.007	0.014		0.007	0.014	%V
		-40°C to 125°C			0.032			0.032	
$V_{IN} - V_{OUT}$ Dropout voltage <sup>(1)</sup>	$I_L = 0$	25°C		1	3		1	3	mV
		-40°C to 125°C			5		5		
	$I_L = 1\text{ mA}$	25°C		7	10		7	10	
		-40°C to 125°C			15		15		
	$I_L = 10\text{ mA}$	25°C		40	60		40	60	
		-40°C to 125°C			90		90		
	$I_L = 50\text{ mA}$	25°C		120	150		120	150	
		-40°C to 125°C			225		225		
	$I_L = 150\text{ mA}$	25°C		280	350		280	350	
		-40°C to 125°C			575		575		
$I_{GND}$ GND pin current	$I_L = 0$	25°C		65	95		65	95	$\mu\text{A}$
		25°C (LP2985-10)			125		125		
		-40°C to 125°C			125		125		
		-40°C to 125°C (LP2985-10)			160		160		
	$I_L = 1\text{ mA}$	25°C		75	110		75	110	
		25°C (LP2985-10)			140		140		
		-40°C to 125°C			170		170		
	$I_L = 10\text{ mA}$	25°C		120	220		120	220	
		25°C (LP2985-10)			250		250		
		-40°C to 125°C			400		400		
	$I_L = 50\text{ mA}$	25°C		350	600		350	600	
		25°C (LP2985-10)			650		650		
		-40°C to 125°C			1000		1000		
	$I_L = 150\text{ mA}$	25°C		850	1500		850	1500	
		25°C (LP2985-10)			1800		1800		
		-40°C to 125°C			2500		2500		
$V_{ON/OFF} < 0.3\text{ V (OFF)}$	25°C		0.01	0.8		0.01	0.8		
	-40°C to 105°C			0.05	2		0.05	2	
	-40°C to 125°C				5		5		
	-40°C to 125°C				5		5		
$V_{ON/OFF}$ ON/OFF input voltage <sup>(2)</sup>	$V_{ON/OFF} = \text{HIGH} \rightarrow \text{O/P ON}$	25°C		1.4		1.4		V	
		-40°C to 125°C		1.6		1.6			
	$V_{ON/OFF} = \text{LOW} \rightarrow \text{O/P OFF}$	25°C		0.55		0.55			
		-40°C to 125°C			0.15		0.15		
$I_{ON/OFF}$ ON/OFF input current	$V_{ON/OFF} = 0$	25°C		0.01		0.01		$\mu\text{A}$	
		-40°C to 125°C			-2		-2		
	$V_{ON/OFF} = 5\text{ V}$	25°C		5		5			
		-40°C to 125°C			15		15		

(1) Dropout voltage is defined as the input-to-output differential at which the output voltage drops 100 mV below the value measured with a 1-V differential.

(2) The ON/OFF input must be driven properly for reliable operation (see *Application Information*).

## Electrical Characteristics (continued)

at specified virtual junction temperature range,  $V_{IN} = V_{OUT(NOM)} + 1\text{ V}$ ,  $V_{ON/OFF} = 2\text{ V}$ ,  $C_{IN} = 1\text{ }\mu\text{F}$ ,  $I_L = 1\text{ mA}$ ,  $C_{OUT} = 4.7\text{ }\mu\text{F}$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	T <sub>J</sub>	LP2985A-xx			LP2985-xx			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
V <sub>n</sub> Output noise (RMS)	BW = 300 Hz to 50 kHz, C <sub>OUT</sub> = 10 $\mu\text{F}$ , C <sub>BYPASS</sub> = 10 nF	25°C		30		30		$\mu\text{V}$	
$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$ Ripple rejection	f = 1 kHz, C <sub>OUT</sub> = 10 $\mu\text{F}$ , C <sub>BYPASS</sub> = 10 nF	25°C		45		45		dB	
I <sub>OUT(PK)</sub> Peak output current	V <sub>OUT</sub> $\geq$ V <sub>O(NOM)</sub> – 5%	25°C		350		350		mA	
I <sub>OUT(SC)</sub> Short-circuit current	R <sub>L</sub> = 0 (steady state) <sup>(3)</sup>	25°C		400		400		mA	

(3) See [Figure 7](#) in *Typical Performance Characteristics*.

**TYPICAL PERFORMANCE CHARACTERISTICS**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**OUTPUT VOLTAGE  
vs  
TEMPERATURE**

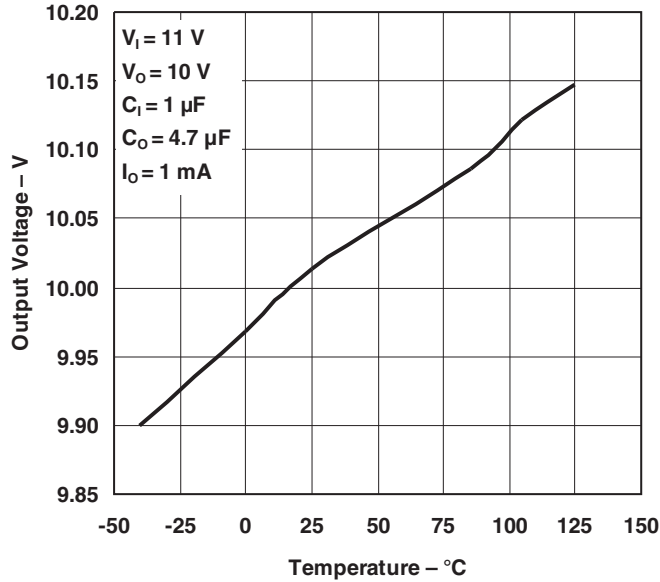


Figure 2.

**OUTPUT VOLTAGE  
vs  
TEMPERATURE**

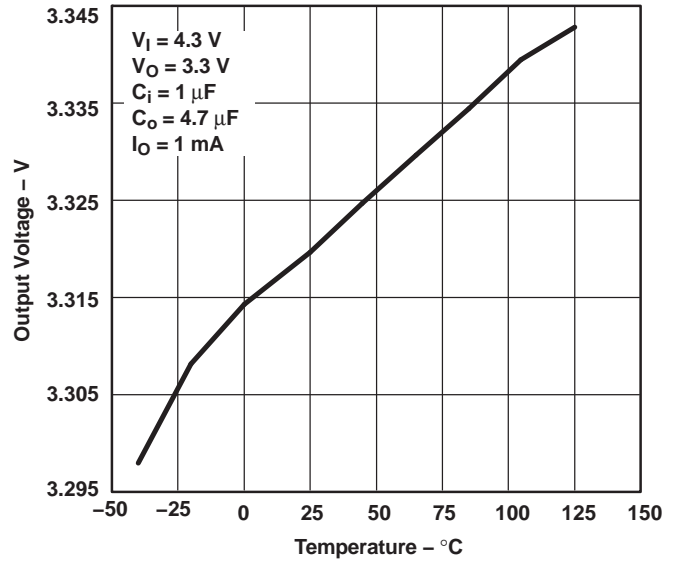


Figure 3.

**DROPOUT VOLTAGE  
vs  
TEMPERATURE**

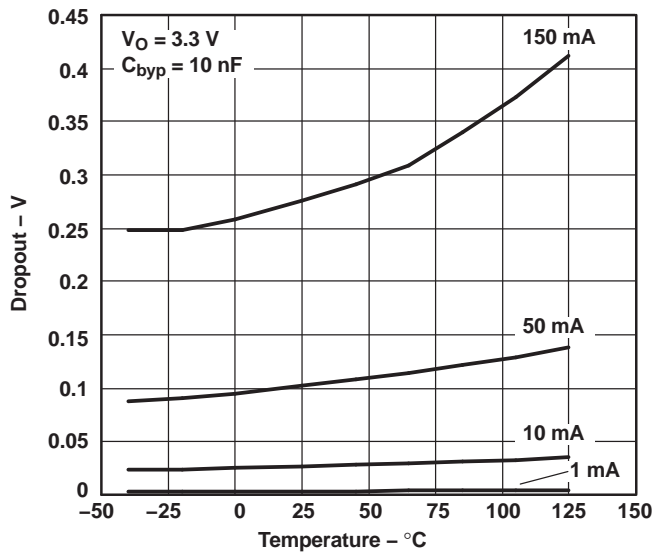


Figure 4.

**SHORT-CIRCUIT CURRENT  
vs  
TIME**

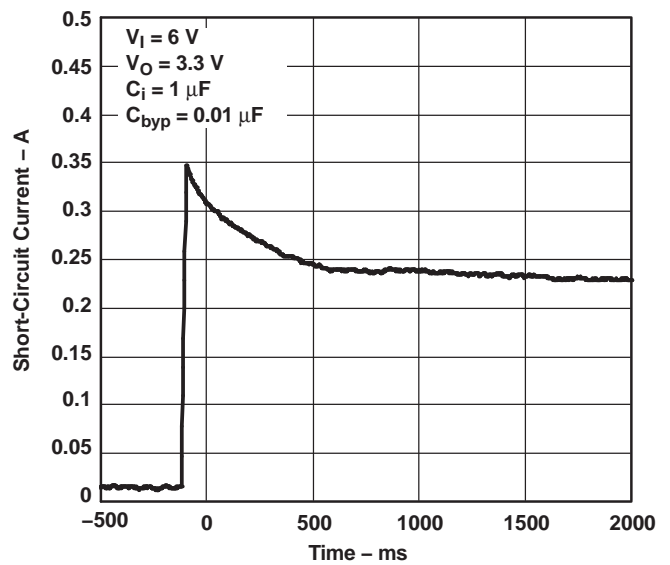


Figure 5.

**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**SHORT-CIRCUIT CURRENT**

vs  
TIME

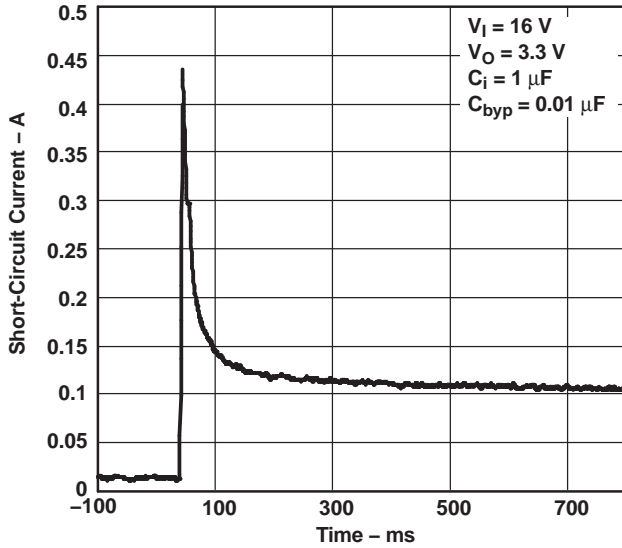


Figure 6.

**SHORT-CIRCUIT CURRENT**

vs  
OUTPUT VOLTAGE

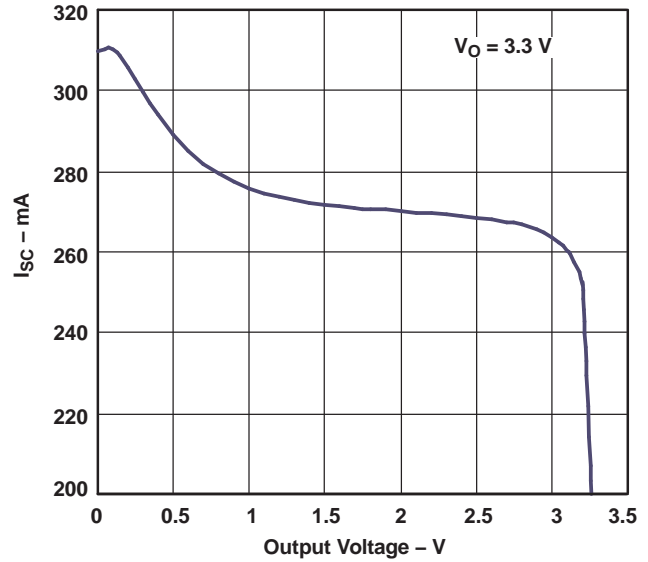


Figure 7.

**GROUND-PIN CURRENT**

vs  
LOAD CURRENT

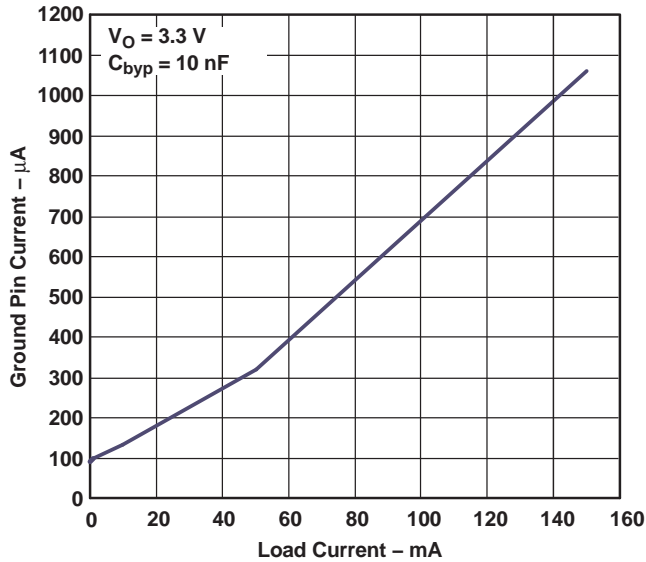


Figure 8.

**RIPPLE REJECTION**

vs  
FREQUENCY

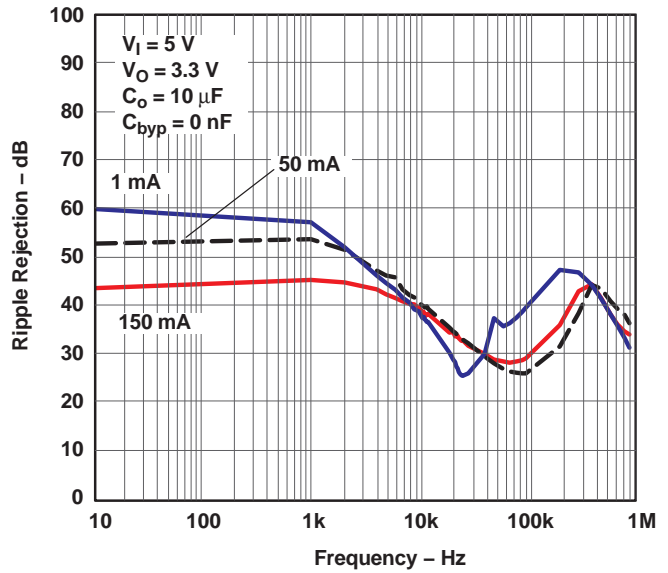


Figure 9.



**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu\text{F}$ ,  $C_{OUT} = 4.7 \mu\text{F}$ ,  $V_{IN} = V_{OUT(NOM)} + 1 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**RIPPLE REJECTION  
vs  
FREQUENCY**

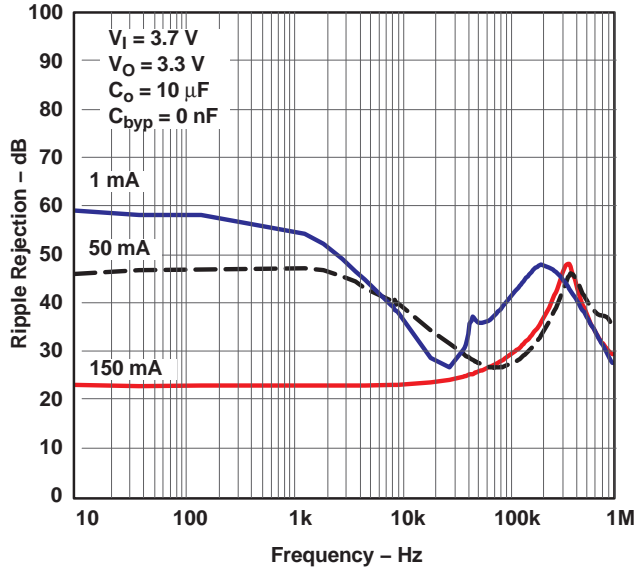


Figure 10.

**RIPPLE REJECTION  
vs  
FREQUENCY**

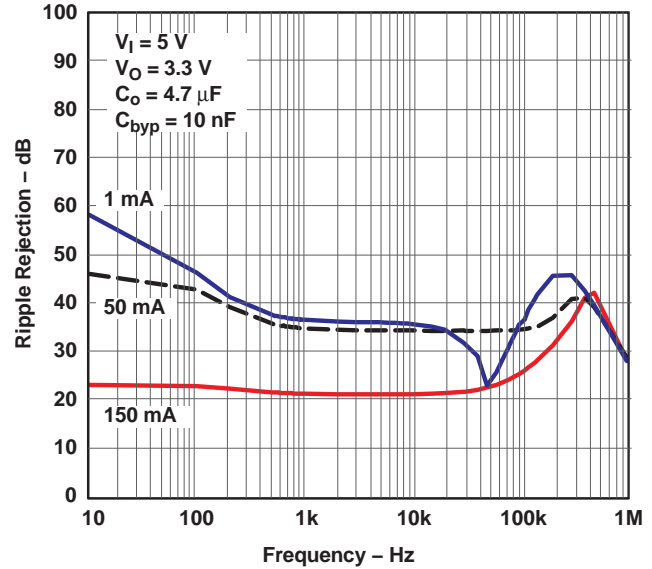


Figure 11.

**RIPPLE REJECTION  
vs  
FREQUENCY**

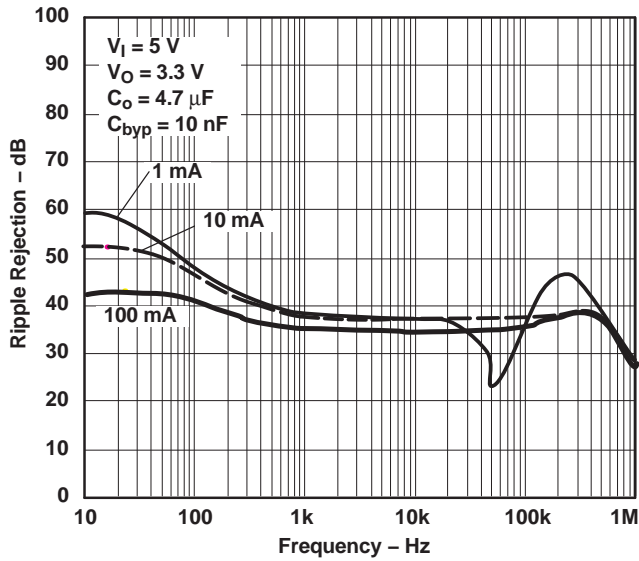


Figure 12.

**OUTPUT IMPEDANCE  
vs  
FREQUENCY**

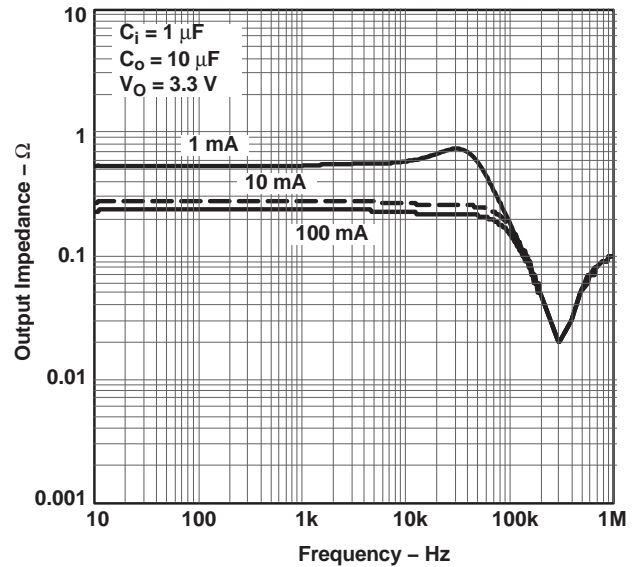


Figure 13.

**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**OUTPUT IMPEDANCE  
vs  
FREQUENCY**

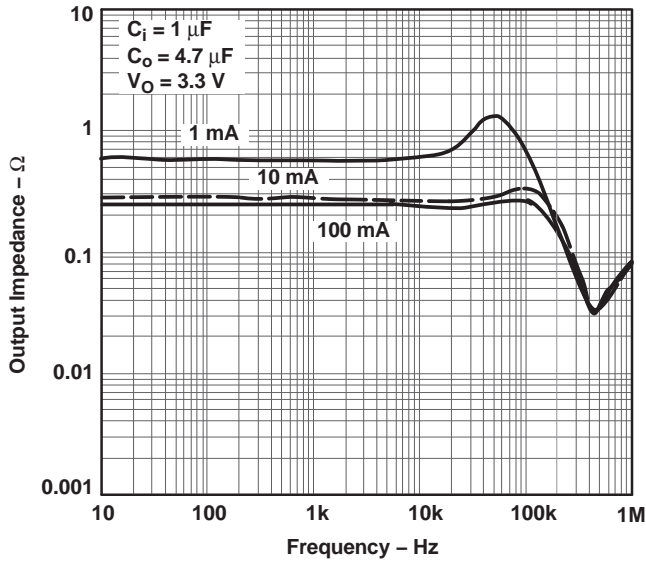


Figure 14.

**OUTPUT NOISE DENSITY  
vs  
FREQUENCY**

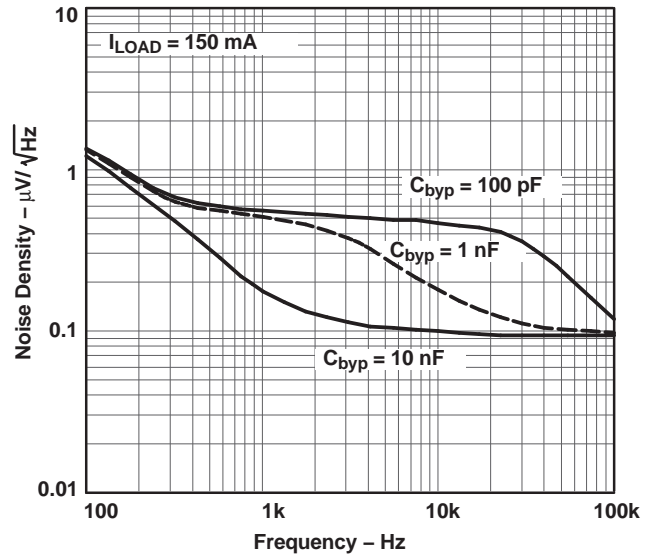


Figure 15.

**OUTPUT NOISE DENSITY  
vs  
FREQUENCY**

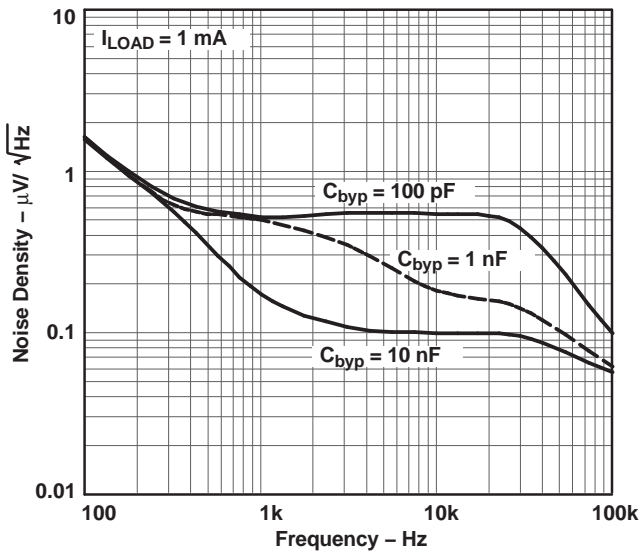


Figure 16.

**INPUT CURRENT  
vs  
INPUT VOLTAGE**

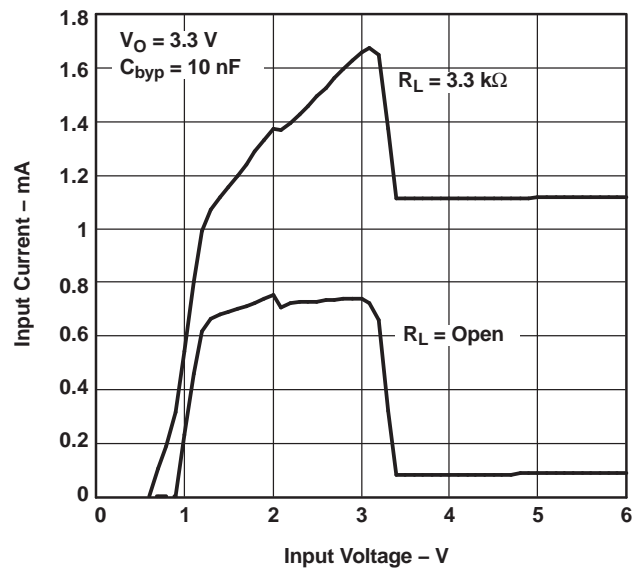


Figure 17.

**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**GROUND-PIN CURRENT**

vs  
**TEMPERATURE**

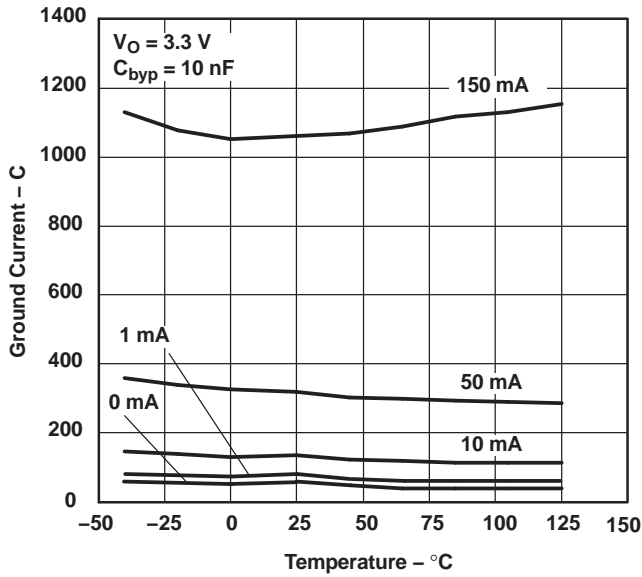


Figure 18.

**LOAD TRANSIENT RESPONSE**

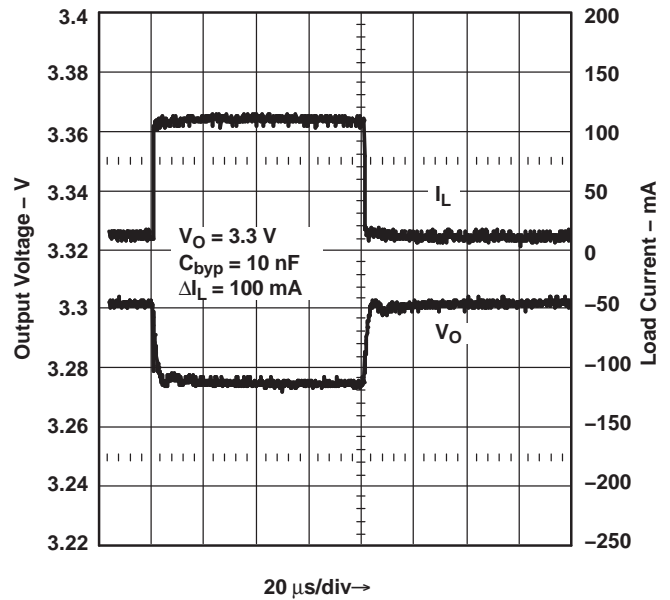


Figure 19.

**LOAD TRANSIENT RESPONSE**

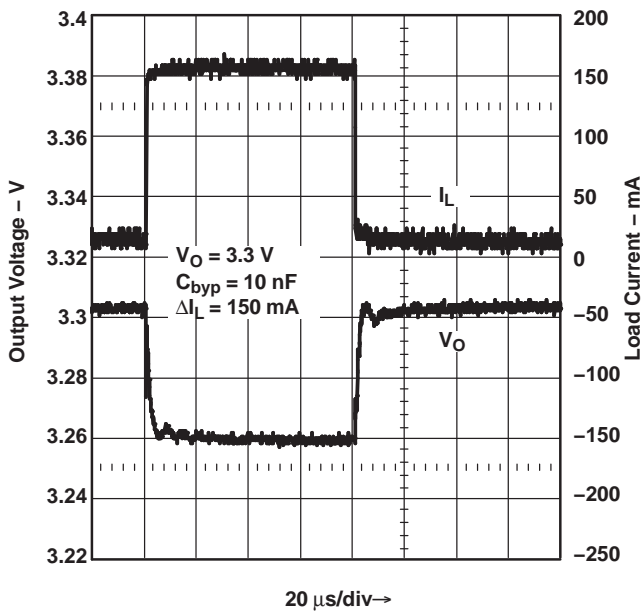


Figure 20.

**LOAD TRANSIENT RESPONSE**

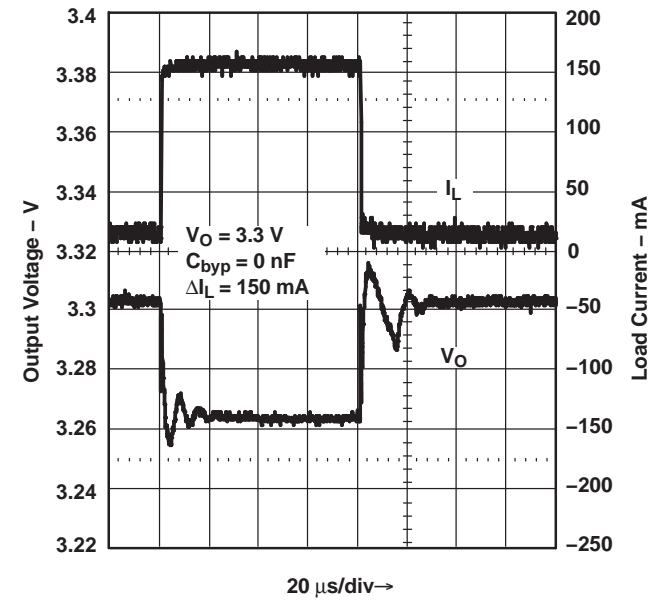
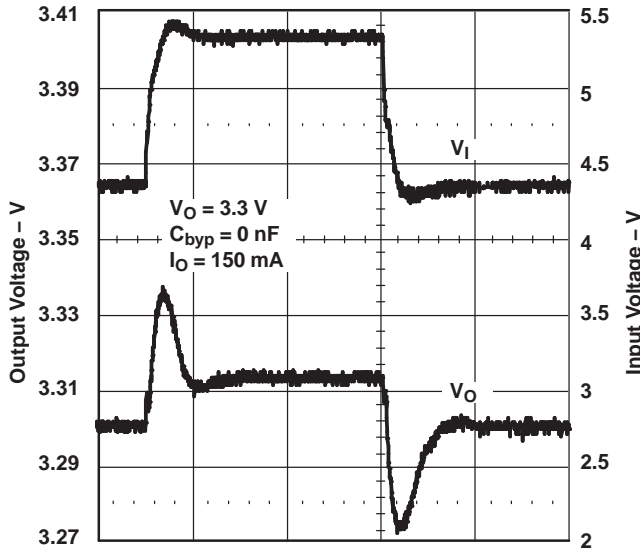


Figure 21.

**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

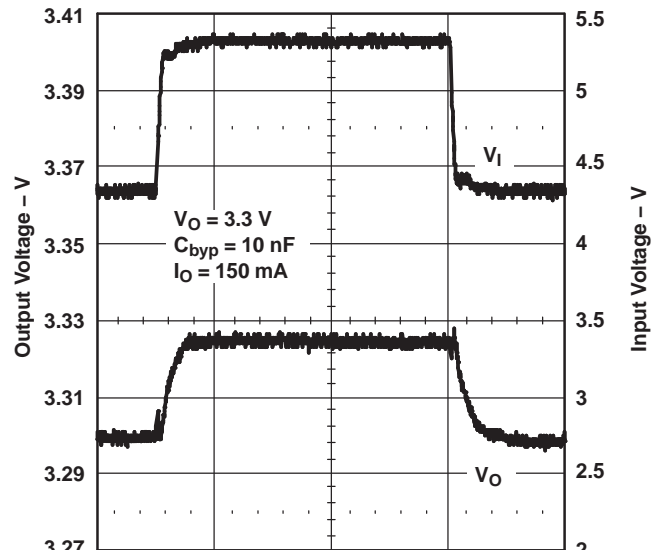
**LINE TRANSIENT RESPONSE**



20  $\mu s/div \rightarrow$

Figure 22.

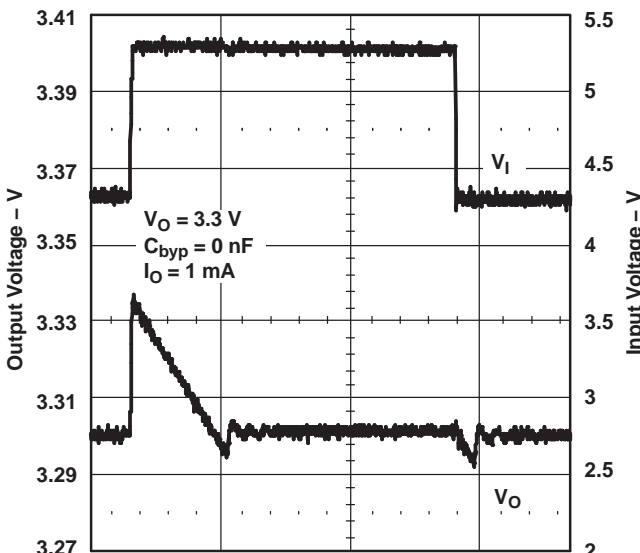
**LINE TRANSIENT RESPONSE**



20  $\mu s/div \rightarrow$

Figure 23.

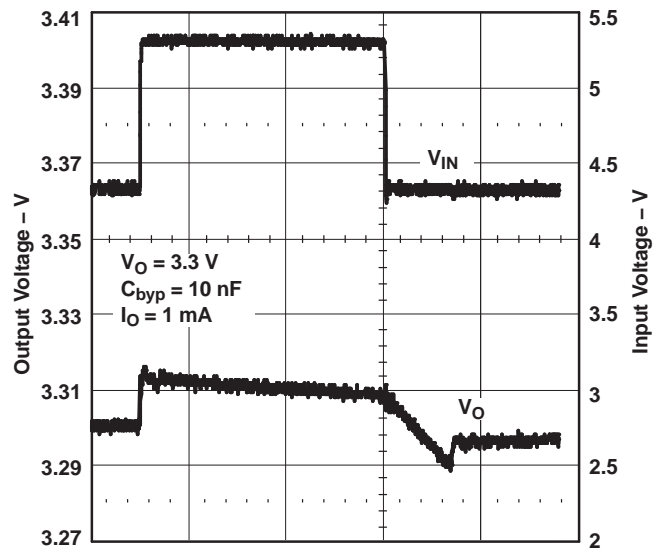
**LINE TRANSIENT RESPONSE**



20  $\mu s/div \rightarrow$

Figure 24.

**LINE TRANSIENT RESPONSE**



100  $\mu s/div \rightarrow$

Figure 25.

**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**

$C_{IN} = 1 \mu F$ ,  $C_{OUT} = 4.7 \mu F$ ,  $V_{IN} = V_{OUT(NOM)} + 1 V$ ,  $T_A = 25^\circ C$ , ON/OFF pin tied to  $V_{IN}$  (unless otherwise specified)

**TURN-ON TIME**

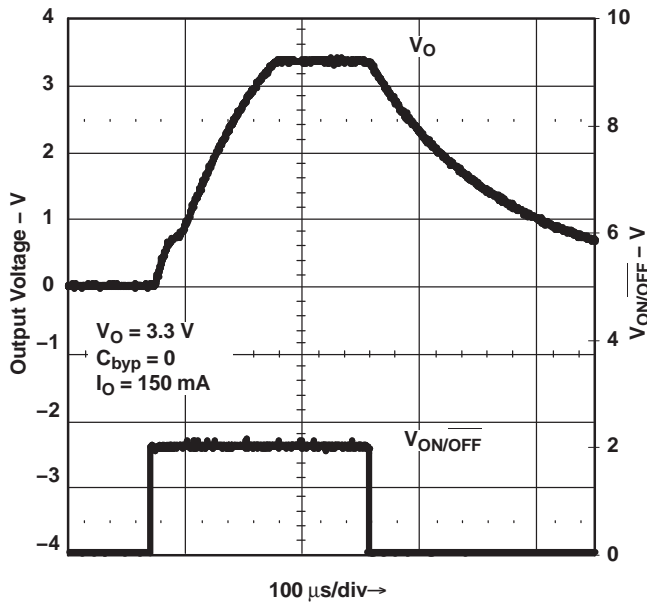


Figure 26.

**TURN-ON TIME**

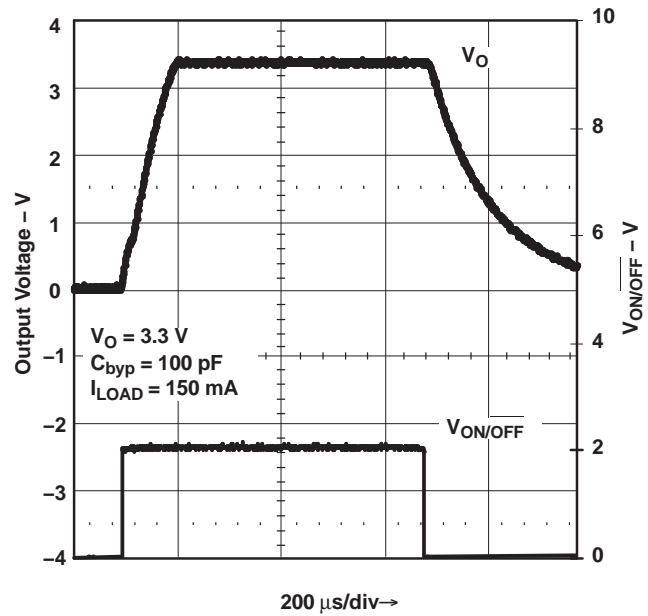


Figure 27.

**TURN-ON TIME**

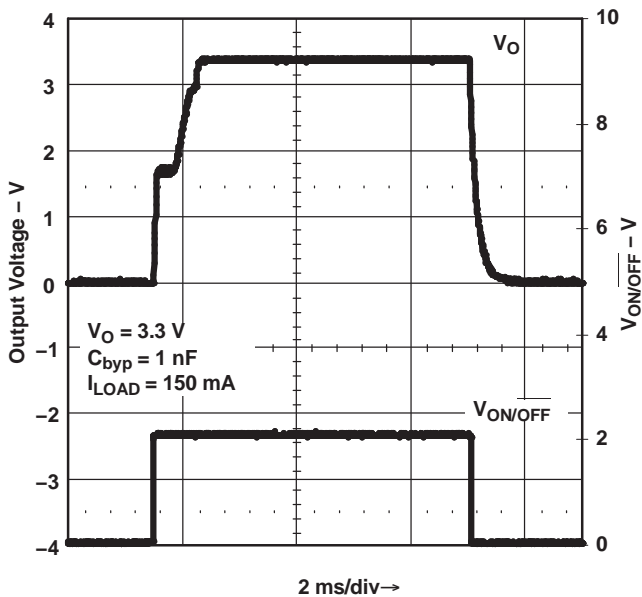


Figure 28.

**TURN-ON TIME**

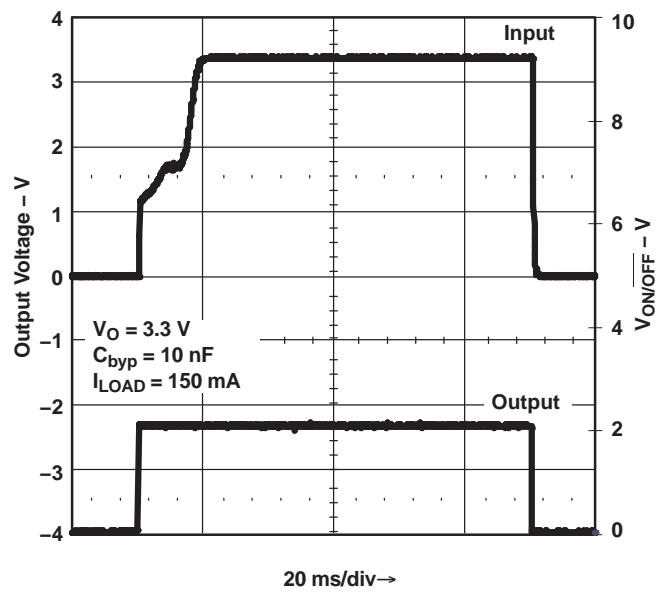


Figure 29.

## APPLICATION INFORMATION

### Capacitors

#### Input Capacitor ( $C_{IN}$ )

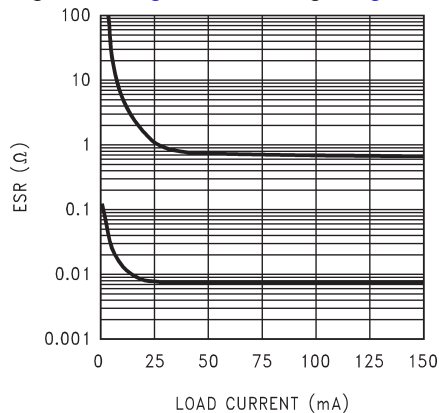
A minimum value of 1  $\mu\text{F}$  (over the entire operating temperature range) is required at the input of the LP2985. In addition, this input capacitor should be located within 1 cm of the input pin and connected to a clean analog ground. There are no equivalent series resistance (ESR) requirements for this capacitor, and the capacitance can be increased without limit.

#### Output Capacitor ( $C_{OUT}$ )

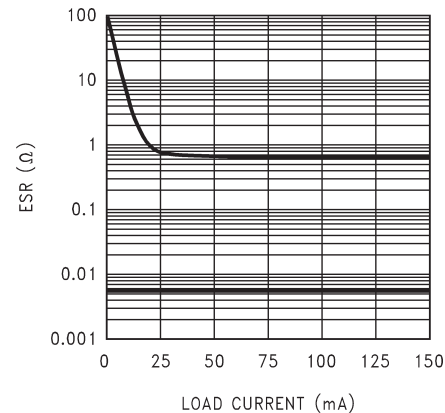
As an advantage over other regulators, the LP2985 permits the use of low-ESR capacitors at the output, including ceramic capacitors that can have an ESR as low as 5 m $\Omega$ . Tantalum and film capacitors also can be used if size and cost are not issues. The output capacitor also should be located within 1 cm of the output pin and be returned to a clean analog ground.

As with other PNP LDOs, stability conditions require the output capacitor to have a minimum capacitance and an ESR that falls within a certain range.

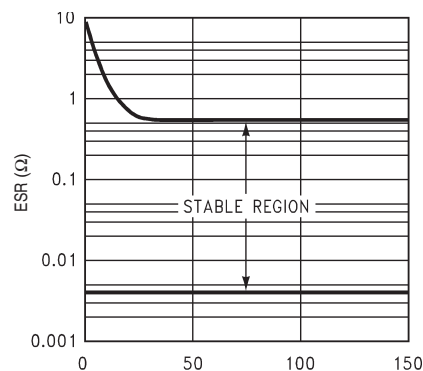
- Minimum  $C_{OUT}$ : 2.2  $\mu\text{F}$  (can be increased without limit to improve transient response stability margin)
- ESR range: see [Figure 30](#) through [Figure 32](#)



**Figure 30. 2.2- $\mu\text{F}$  Stable ESR Range for Output Voltage  $\leq 2.3$  V**



**Figure 31. 4.7- $\mu\text{F}$  Stable ESR Range for Output Voltage  $\leq 2.3$  V**



**Figure 32. 2.2- $\mu\text{F}$ /3.3- $\mu\text{F}$  Stable ESR Range for Output Voltage  $\geq 2.5$  V**

It is critical that both the minimum capacitance and ESR requirement be met *over the entire operating temperature range*. Depending on the type of capacitors used, both these parameters can vary significantly with temperature (see *capacitor characteristics*).

## Noise Bypass Capacitor ( $C_{\text{BYPASS}}$ )

The LP2985 allows for low-noise performance with the use of a bypass capacitor that is connected to the internal bandgap reference via the BYPASS pin. This high-impedance bandgap circuitry is biased in the microampere range and, thus, cannot be loaded significantly, otherwise, its output – and, correspondingly, the output of the regulator – changes. Thus, for best output accuracy, dc leakage current through  $C_{\text{BYPASS}}$  should be minimized as much as possible and never should exceed 100 nA.

A 10-nF capacitor is recommended for  $C_{\text{BYPASS}}$ . Ceramic and film capacitors are well suited for this purpose.

## Capacitor Characteristics

### Ceramics

Ceramic capacitors are ideal choices for use on the output of the LP2985 for several reasons. For capacitances in the range of 2.2  $\mu\text{F}$  to 4.7  $\mu\text{F}$ , ceramic capacitors have the lowest cost and the lowest ESR, making them choice candidates for filtering high-frequency noise. For instance, a typical 2.2- $\mu\text{F}$  ceramic capacitor has an ESR in the range of 10 m $\Omega$  to 20 m $\Omega$  and, thus, satisfies minimum ESR requirements of the regulator.

Ceramic capacitors have one major disadvantage that must be taken into account – a poor temperature coefficient, where the capacitance can vary significantly with temperature. For instance, a large-value ceramic capacitor ( $\geq 2.2 \mu\text{F}$ ) can lose more than half of its capacitance as the temperature rises from 25°C to 85°C. Thus, a 2.2- $\mu\text{F}$  capacitor at 25°C drops well below the minimum  $C_{\text{OUT}}$  required for stability, as ambient temperature rises. For this reason, select an output capacitor that maintains the minimum 2.2  $\mu\text{F}$  required for stability over the entire operating temperature range. Note that there are some ceramic capacitors that can maintain a  $\pm 15\%$  capacitance tolerance over temperature.

### Tantalum

Tantalum capacitors can be used at the output of the LP2985, but there are significant disadvantages that could prohibit their use:

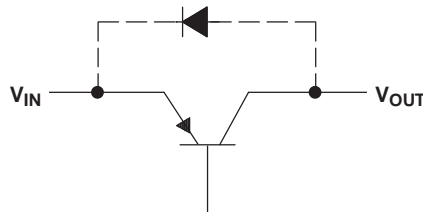
- In the 1- $\mu\text{F}$  to 4.7- $\mu\text{F}$  range, tantalum capacitors are more expensive than ceramics of the equivalent capacitance and voltage ratings.
- Tantalum capacitors have higher ESRs than their equivalent-sized ceramic counterparts. Thus, to meet the ESR requirements, a higher-capacitance tantalum may be required, at the expense of larger size and higher cost.
- The ESR of a tantalum capacitor increases as temperature drops, as much as double from 25°C to –40°C. Thus, ESR margins must be maintained over the temperature range to prevent regulator instability.

## ON/OFF Operation

The LP2985 allows for a shutdown mode via the ON/OFF pin. Driving the pin LOW ( $\leq 0.3 \text{ V}$ ) turns the device OFF; conversely, a HIGH ( $\geq 1.6 \text{ V}$ ) turns the device ON. If the shutdown feature is not used, ON/OFF should be connected to the input to ensure that the regulator is on at all times. For proper operation, do not leave ON/OFF unconnected, and apply a signal with a slew rate of  $\geq 40 \text{ mV}/\mu\text{s}$ .

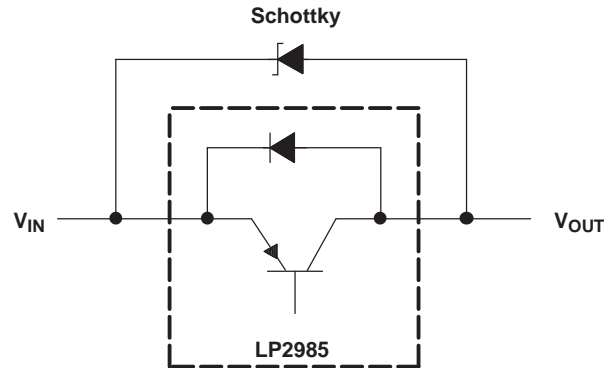
## Reverse Input-Output Voltage

There is an inherent diode present across the PNP pass element of the LP2985.



With the anode connected to the output, this diode is reverse biased during normal operation, since the input voltage is higher than the output. However, if the output is pulled higher than the input for any reason, this diode

is forward biased and can cause a parasitic silicon-controlled rectifier (SCR) to latch, resulting in high current flowing from the output to the input. Thus, to prevent possible damage to the regulator in any application where the output may be pulled above the input, an external Schottky diode should be connected between the output and input. With the anode on output, this Schottky limits the reverse voltage across the output and input pins to  $\sim 0.3$  V, preventing the regulator's internal diode from forward biasing.





**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP2985-10DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LRCG	<a href="#">Samples</a>
LP2985-10DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LRCG	<a href="#">Samples</a>
LP2985-18DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-18DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-18DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-18DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-18DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-18DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPH3 ~ LPHG ~ LPHL)	<a href="#">Samples</a>
LP2985-25DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPL3 ~ LPLG ~ LPLL)	<a href="#">Samples</a>
LP2985-25DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPL3 ~ LPLG ~ LPLL)	<a href="#">Samples</a>
LP2985-25DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPL3 ~ LPLG ~ LPLL)	<a href="#">Samples</a>
LP2985-25DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPL3 ~ LPLG ~ LPLL)	<a href="#">Samples</a>
LP2985-28DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>
LP2985-28DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>
LP2985-28DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>
LP2985-28DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>
LP2985-28DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP2985-28DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPG3 ~ LPGG ~ LPGL)	<a href="#">Samples</a>
LP2985-29DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPM3 ~ LPMG ~ LPML)	<a href="#">Samples</a>
LP2985-29DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPM3 ~ LPMG ~ LPML)	<a href="#">Samples</a>
LP2985-29DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPM3 ~ LPMG ~ LPML)	<a href="#">Samples</a>
LP2985-29DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPM3 ~ LPMG ~ LPML)	<a href="#">Samples</a>
LP2985-30DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPN3 ~ LPNG ~ LPNL)	<a href="#">Samples</a>
LP2985-30DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPN3 ~ LPNG ~ LPNL)	<a href="#">Samples</a>
LP2985-30DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPN3 ~ LPNG ~ LPNL)	<a href="#">Samples</a>
LP2985-30DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPN3 ~ LPNG ~ LPNL)	<a href="#">Samples</a>
LP2985-33DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-33DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-33DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-33DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-33DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-33DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPF3 ~ LPFG ~ LPFL)	<a href="#">Samples</a>
LP2985-50DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPS3 ~ LPSG ~ LPSL)	<a href="#">Samples</a>
LP2985-50DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPS3 ~ LPSG ~ LPSL)	<a href="#">Samples</a>
LP2985-50DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPS3 ~ LPSG ~ LPSL)	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP2985-50DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPS3 ~ LPSG ~ LP5L)	<a href="#">Samples</a>
LP2985A-10DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LRDG	<a href="#">Samples</a>
LP2985A-10DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LRDG	<a href="#">Samples</a>
LP2985A-18DBVJ	ACTIVE	SOT-23	DBV	5	10000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LPTL	<a href="#">Samples</a>
LP2985A-18DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-18DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-18DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-18DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-18DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-18DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPT3 ~ LPTG ~ LPTL)	<a href="#">Samples</a>
LP2985A-25DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPU3 ~ LPUG ~ LPUL)	<a href="#">Samples</a>
LP2985A-25DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPU3 ~ LPUG ~ LPUL)	<a href="#">Samples</a>
LP2985A-25DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPU3 ~ LPUG ~ LPUL)	<a href="#">Samples</a>
LP2985A-25DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPU3 ~ LPUG ~ LPUL)	<a href="#">Samples</a>
LP2985A-28DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>
LP2985A-28DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>
LP2985A-28DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>
LP2985A-28DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP2985A-28DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>
LP2985A-28DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPJ3 ~ LPJG ~ LPJL)	<a href="#">Samples</a>
LP2985A-29DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPZ3 ~ LPZG ~ LPZL)	<a href="#">Samples</a>
LP2985A-29DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPZ3 ~ LPZG ~ LPZL)	<a href="#">Samples</a>
LP2985A-29DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPZ3 ~ LPZG ~ LPZL)	<a href="#">Samples</a>
LP2985A-29DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPZ3 ~ LPZG ~ LPZL)	<a href="#">Samples</a>
LP2985A-30DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LRA3 ~ LRA3 ~ LRAL)	<a href="#">Samples</a>
LP2985A-30DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LRA3 ~ LRA3 ~ LRAL)	<a href="#">Samples</a>
LP2985A-30DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LRA3 ~ LRA3 ~ LRAL)	<a href="#">Samples</a>
LP2985A-30DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LRA3 ~ LRA3 ~ LRAL)	<a href="#">Samples</a>
LP2985A-33DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-33DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-33DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-33DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-33DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-33DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LPK3 ~ LPKG ~ LPKL)	<a href="#">Samples</a>
LP2985A-50DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LR13 ~ LR1G ~ LR1L)	<a href="#">Samples</a>
LP2985A-50DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LR13 ~ LR1G ~ LR1L)	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP2985A-50DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LR13 ~ LR1G ~ LR1L)	<a href="#">Samples</a>
LP2985A-50DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(LR13 ~ LR1G ~ LR1L)	<a href="#">Samples</a>

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) Multiple Top-Side Markings will be inside parentheses. Only one Top-Side Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Top-Side Marking for that device.

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**TAPE AND REEL INFORMATION**
**REEL DIMENSIONS**

**TAPE DIMENSIONS**


A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

**TAPE AND REEL INFORMATION**

\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LP2985-10DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-10DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-18DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-18DBVT	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-18DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-25DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-25DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-25DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-28DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-28DBVT	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-28DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-29DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-29DBVT	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-29DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-30DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-30DBVT	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-30DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-33DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LP2985-33DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-33DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-33DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-50DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985-50DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985-50DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-10DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-10DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-18DBVJ	SOT-23	DBV	5	10000	330.0	8.4	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-18DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-18DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-18DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-25DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-25DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-25DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-28DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-28DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-28DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-29DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-29DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-29DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-30DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-30DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-30DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-33DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-33DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-33DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-33DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-50DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3
LP2985A-50DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
LP2985A-50DBVT	SOT-23	DBV	5	250	180.0	9.2	3.17	3.23	1.37	4.0	8.0	Q3

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

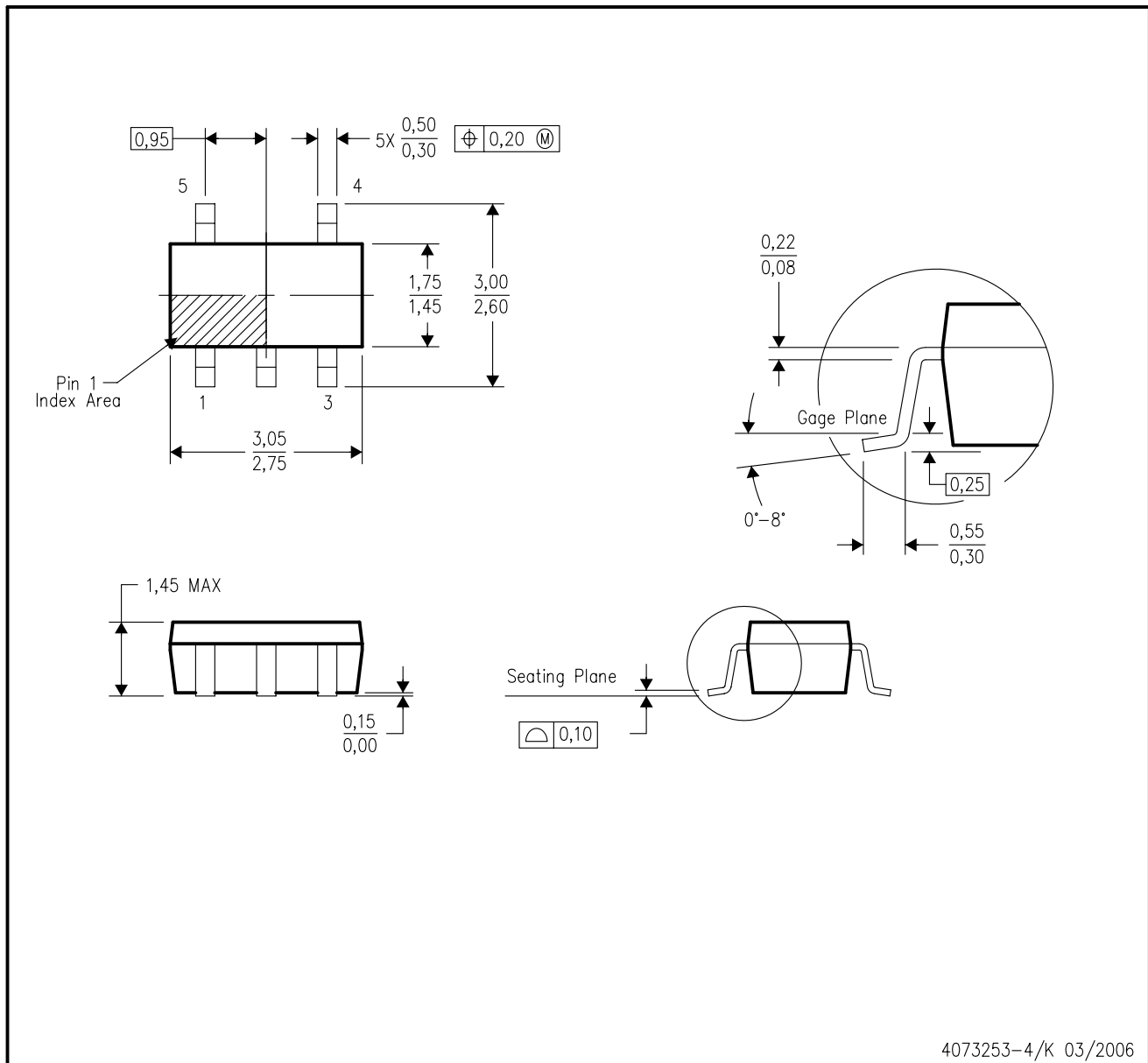
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LP2985-10DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-10DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
LP2985-18DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-18DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-18DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-25DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-25DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-25DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-28DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-28DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-28DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-29DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-29DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-29DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-30DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-30DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-30DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-33DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-33DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-33DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0



Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LP2985-33DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985-50DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985-50DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985-50DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-10DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-10DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
LP2985A-18DBVJ	SOT-23	DBV	5	10000	358.0	332.0	35.0
LP2985A-18DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-18DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-18DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-25DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-25DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-25DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-28DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-28DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-28DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-29DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-29DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-29DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-30DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-30DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-30DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-33DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-33DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-33DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
LP2985A-33DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
LP2985A-50DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
LP2985A-50DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
LP2985A-50DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0

DBV (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- All linear dimensions are in millimeters.
  - This drawing is subject to change without notice.
  - Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
  - Falls within JEDEC MO-178 Variation AA.

DBV (R-PDSO-G5)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
  - D. Publication IPC-7351 is recommended for alternate designs.
  - E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.

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