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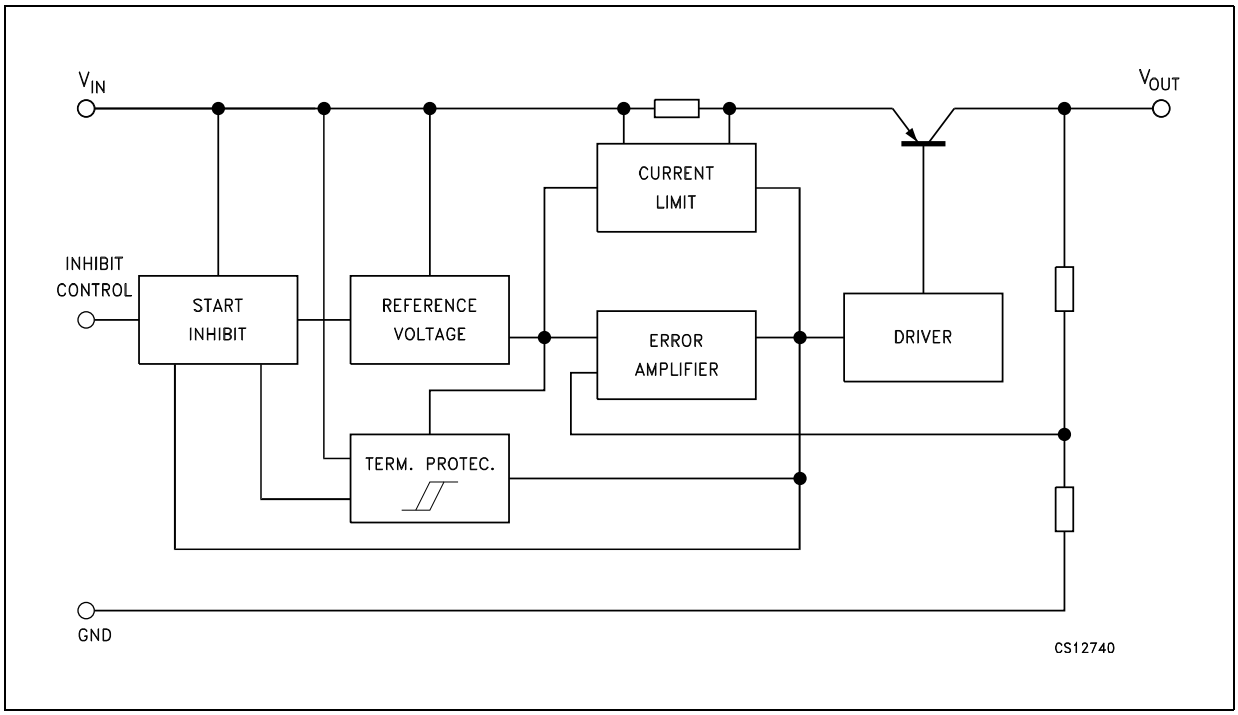
1 Diagram

Figure 1. Schematic diagram



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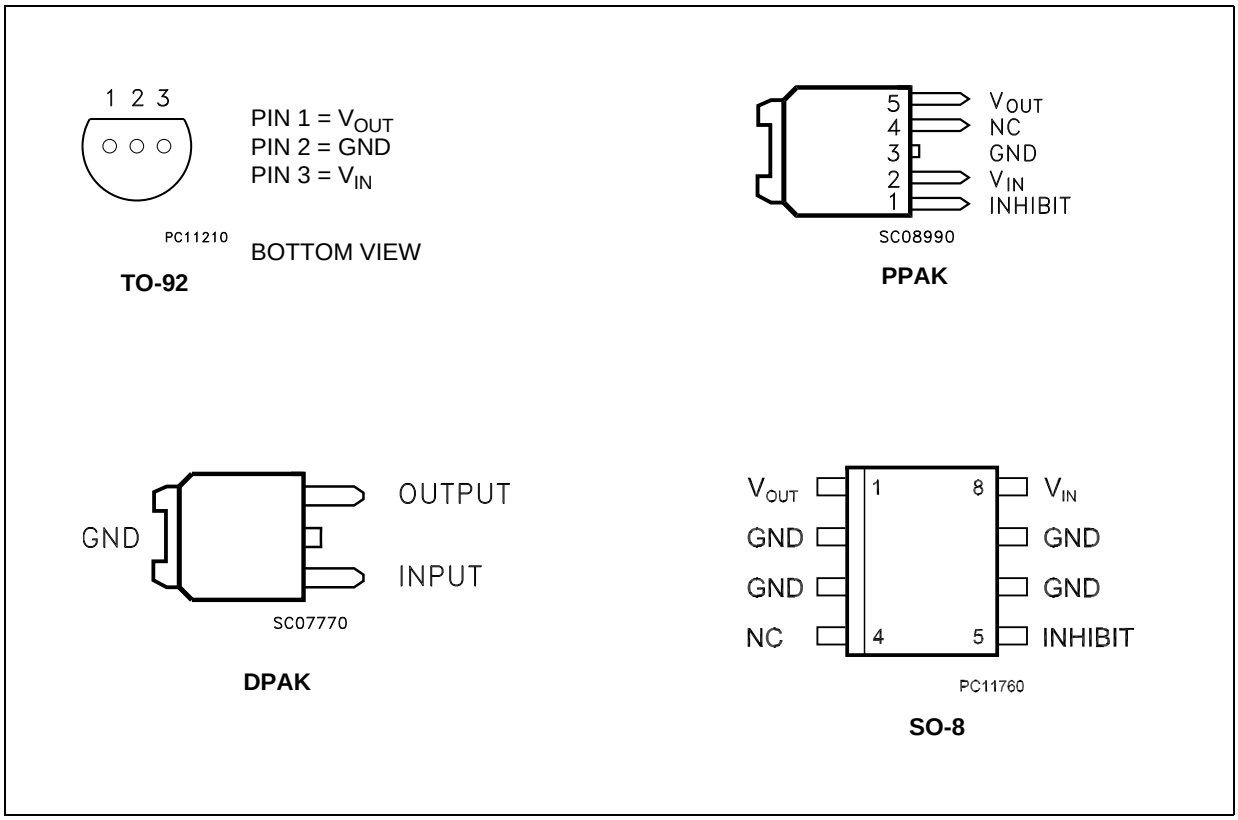
2 Pin configuration

Figure 2. Pin connections (top view)



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3 Maximum ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_I	DC Input voltage	20	V
I_O	Output current	Internally limited	mA
P_D	Power dissipation	Internally limited	mW
T_{STG}	Storage temperature range	-40 to 150	°C
T_{OP}	Operating junction temperature range	-40 to 125	°C

Note: Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

Table 2. Thermal data

Symbol	Parameter	TO-92	DPAK	SO-8	Unit
R_{thJC}	Thermal resistance junction-case		8	20	°C/W
R_{thJA}	Thermal resistance junction-ambient	200	100	55	°C/W

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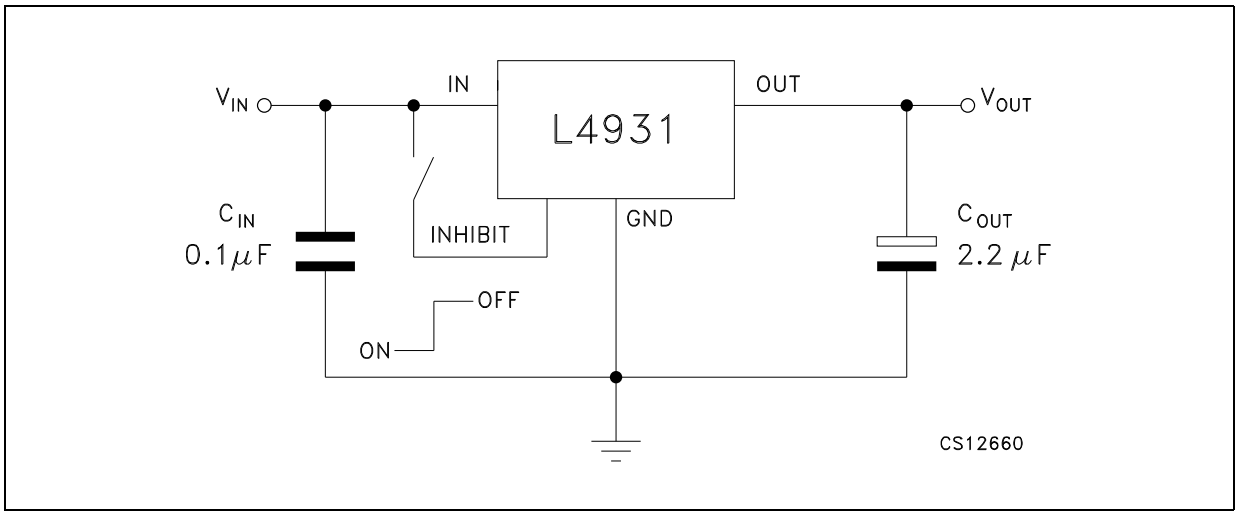
4 Application circuit

Figure 3. Test circuit



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5 Electrical characteristics

(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 3. L4931Cxx27 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 4.7 V		2.646	2.7	2.754	V
		I_O = 5 mA, V_I = 4.7 V, T_A = -25 to 85 °C		2.592		2.808	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
DV_O	Line regulation	V_I = 3.4 to 20 V, I_O = 0.5 mA			3	18	mV
DV_O	Load regulation (1)	V_I = 3.6 V, I_O = 0.5 to 250 mA			3	18	mV
I_d	Quiescent current ON mode	V_I = 3.6 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 3.6 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 4.6 ± 1 V	f = 120 Hz		74		dB
			f = 1 kHz		71		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A = -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 W, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = -40 to 125 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 4. L4931Cxx27-TRY (automotive-grade) electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 4.7 V, T_A = 25 °C		2.646	2.7	2.754	V
		I_O = 5 mA, V_I = 4.7 V		2.592		2.808	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit	T_A = 25 °C			300		mA
ΔV_O	Line regulation	V_I = 3.4 to 20 V, I_O = 0.5 mA				20	mV
ΔV_O	Load regulation	V_I = 3.6 V, I_O = 0.5 to 250 mA				38	mV
I_d	Quiescent current ON mode	V_I = 3.6 to 20 V, I_O = 0 mA				1	mA
		V_I = 3.6 to 20 V, I_O = 250 mA				6	
	OFF mode	V_I = 6 V				100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 4.6 ± 1 V T_A = 25 °C	f = 120 Hz		74		dB
			f = 1 kHz		71		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz, T_A = 25 °C			50		µV
V_d	Dropout voltage	I_O = 250 mA, T_A = 25 °C			0.4	0.6	V
		I_O = 250 mA				0.82	V
V_{IL}	Control input logic low					0.82	V
V_{IH}	Control input logic high			2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V, T_A = 25 °C			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA, T_A = 25 °C		2	10		µF

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 5. L4931ABxx33 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 5.3 V		3.267	3.3	3.333	V
		I_O = 5 mA, V_I = 5.3 V, T_A=-25 to 85 °C		3.234		3.366	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 4 to 20 V, I_O = 0.5 mA			3	15	mV
ΔV_O	Load regulation (1)	V_I = 4.2 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 4.2 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 4.2 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 5.2 ± 1 V	f = 120 Hz		73		dB
			f = 1 kHz		70		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 6. L4931Cxx33 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 5.3 V		3.234	3.3	3.366	V
		I_O = 5 mA, V_I = 5.3 V, T_A=-25 to 85 °C		3.168		3.432	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 4.1 to 20 V, I_O = 0.5 mA			3	18	mV
ΔV_O	Load regulation (1)	V_I = 4.3 V, I_O = 0.5 to 250 mA			3	18	mV
I_d	Quiescent current ON mode	V_I = 4.3 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 4.3 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 5.3 ± 1 V	f = 120 Hz		73		dB
			f = 1 kHz		70		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125°C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = -40 to 125 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 7. L4931Cxx33-TRY (automotive-grade) electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 5.3 V, T_A = 25 °C		3.234	3.3	3.366	V
		I_O = 5 mA, V_I = 5.3 V		3.168		3.432	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit	T_A = 25 °C			300		mA
ΔV_O	Line regulation	V_I = 4.1 to 20 V, I_O = 0.5 mA				20	mV
ΔV_O	Load regulation	V_I = 4.3 V, I_O = 0.5 to 250 mA				38	mV
I_d	Quiescent current ON mode	V_I = 4.3 to 20 V, I_O = 0 mA				1	mA
		V_I = 4.3 to 20 V, I_O = 250 mA				6	
	OFF mode	V_I = 6 V				100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 5.3 ± 1 V T_A = 25 °C	f = 120 Hz		73		dB
			f = 1 kHz		70		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz, T_A = 25 °C			50		µV
V_d	Dropout voltage	I_O = 250 mA, T_A = 25 °C			0.4	0.6	V
		I_O = 250 mA				0.82	V
V_{IL}	Control input logic low					0.82	V
V_{IH}	Control input logic high			2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V, T_A = 25 °C			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA, T_A = 25 °C		2	10		µF

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 8. L4931ABxx35 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 5.5 V		3.465	3.5	3.535	V
		I_O = 5 mA, V_I = 5.5 V, T_A=-25 to 85 °C		3.43		3.57	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 4.2 to 20 V, I_O = 0.5 mA			3	15	mV
ΔV_O	Load regulation (1)	V_I = 4.4 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 4.4 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 4.4 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 5.4 ± 1 V	f = 120 Hz		73		dB
			f = 1 kHz		70		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 9. L4931Cxx35 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 5.5 V		3.43	3.5	3.57	V
		I_O = 5 mA, V_I = 5.5 V, T_A=-25 to 85 °C		3.36		3.64	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 4.3 to 20 V, I_O = 0.5 mA			3	18	mV
ΔV_O	Load regulation (1)	V_I = 4.5 V, I_O = 0.5 to 250 mA			3	18	mV
I_d	Quiescent current ON mode	V_I = 4.5 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 4.5 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 5.5 ± 1 V	f = 120 Hz		73		dB
			f = 1 kHz		70		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A= -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A= -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 10. L4931ABxx50 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 7 V		4.95	5	5.05	V
		I_O = 5 mA, V_I = 7 V, T_A=-25 to 85 °C		4.9		5.1	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 5.8 to 20 V, I_O = 0.5 mA			3.5	17.5	mV
ΔV_O	Load regulation (1)	V_I = 6 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 6 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 6 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 7 ± 1 V	f = 120 Hz		70		dB
			f = 1 kHz		67		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 11. L4931Cxx50 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 7 V		4.9	5	5.1	V
		I_O = 5 mA, V_I = 7 V, T_A=-25 to 85 °C		4.8		5.2	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 5.8 to 20 V, I_O = 0.5 mA			3.5	17.5	mV
ΔV_O	Load regulation (1)	V_I = 6 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 6 to 20 V, I_O = 0 mA			0.6	1	mA
		V_I = 6 to 20 V, I_O = 250 mA			4	6	
	OFF mode	V_I = 6 V			50	100	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 7 ± 1 V	f = 120 Hz		70		dB
			f = 1 kHz		67		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 12. L4931ABxx80 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 10 V		7.92	8	8.08	V
		I_O = 5 mA, V_I = 10 V, T_A=-25 to 85 °C		7.84		8.16	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 8.8 to 20 V, I_O = 0.5 mA			4	20	mV
ΔV_O	Load regulation (1)	V_I = 9 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 9 to 20 V, I_O = 0 mA			0.8	1.6	mA
		V_I = 9 to 20 V, I_O = 250 mA			4.5	7	
	OFF mode	V_I = 6 V			70	140	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 10 ± 1 V	f = 120 Hz		67		dB
			f = 1 kHz		64		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 13. L4931Cxx80 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 10 V		7.84	8	8.16	V
		I_O = 5 mA, V_I = 10 V, T_A=-25 to 85 °C		7.68		8.32	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 8.9 to 20 V, I_O = 0.5 mA			4	24	mV
ΔV_O	Load regulation (1)	V_I = 9.1 V, I_O = 0.5 to 250 mA			3	18	mV
I_d	Quiescent current ON mode	V_I = 9.1 to 20 V, I_O = 0 mA			0.8	1.6	mA
		V_I = 9.1 to 20 V, I_O = 250 mA			4.5	7	
	OFF mode	V_I = 6 V			70	140	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 10.1 ± 1 V	f = 120 Hz		67		dB
			f = 1 kHz		64		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 14. L4931ABxx120 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 14 V		11.88	12	12.12	V
		I_O = 5 mA, V_I = 14 V, T_A=-25 to 85 °C		11.76		12.24	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 12.8 to 20 V, I_O = 0.5 mA			4	20	mV
ΔV_O	Load regulation (1)	V_I = 13 V, I_O = 0.5 to 250 mA			3	15	mV
I_d	Quiescent current ON mode	V_I = 13 to 20 V, I_O = 0 mA			0.8	1.6	mA
		V_I = 13 to 20 V, I_O = 250 mA			4.5	7	
	OFF mode	V_I = 6 V			90	180	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 14 ± 1 V	f = 120 Hz		64		dB
			f = 1 kHz		61		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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(Refer to the test circuits, T_A = 25 °C, C_I = 0.1 µF, C_O = 2.2 µF unless otherwise specified).

Table 15. L4931Cxx120 electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_O	Output voltage	I_O = 5 mA, V_I = 14 V		11.76	12	12.24	V
		I_O = 5 mA, V_I = 14 V, T_A=-25 to 85 °C		11.52		12.48	
V_I	Operating input voltage	I_O = 250 mA				20	V
I_{out}	Output current limit				300		mA
ΔV_O	Line regulation	V_I = 12.9 to 20 V, I_O = 0.5 mA			4	24	mV
ΔV_O	Load regulation (1)	V_I = 13.1 V, I_O = 0.5 to 250 mA			3	18	mV
I_d	Quiescent current ON mode	V_I = 13.1 to 20 V, I_O = 0 mA			0.8	1.6	mA
		V_I = 13.1 to 20 V, I_O = 250 mA			4.5	7	
	OFF mode	V_I = 6 V			90	180	µA
SVR	Supply voltage rejection	I_O = 5 mA V_I = 14.1 ± 1 V	f = 120 Hz		64		dB
			f = 1 kHz		61		
			f = 10 kHz		55		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		µV
V_d	Dropout voltage (1)	I_O = 250 mA			0.4	0.6	V
		I_O = 250 mA, T_A= -40 to 125 °C				0.8	V
V_{IL}	Control input logic low	T_A = -40 to 125 °C				0.8	V
V_{IH}	Control input logic high	T_A = -40 to 125 °C		2			V
I_I	Control input current	V_I = 6 V, V_C = 6 V			10		µA
C_O	Output bypass capacitance	ESR = 0.1 to 10 Ω, I_O = 0 to 250 mA		2	10		µF

1. For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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6 Typical application

Figure 4. Line regulation vs temperature

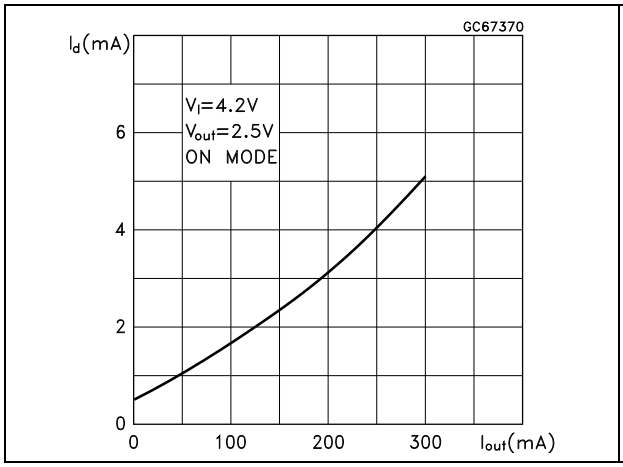


Figure 5. Dropout voltage vs temperature

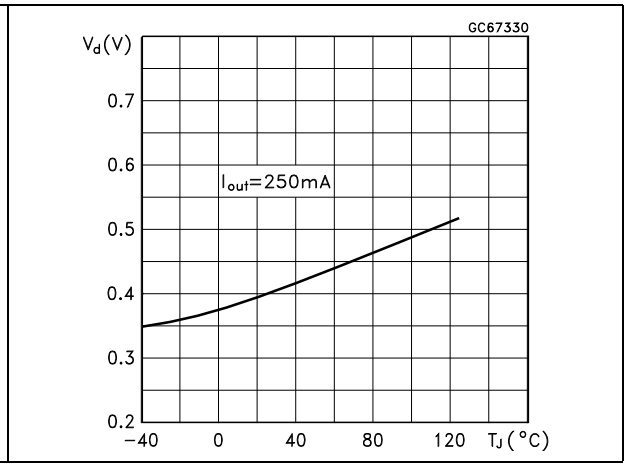


Figure 6. Supply current vs input voltage

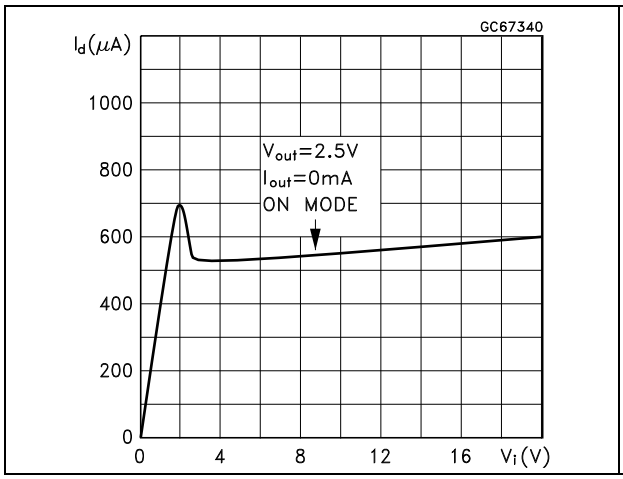


Figure 7. Supply current vs temperature

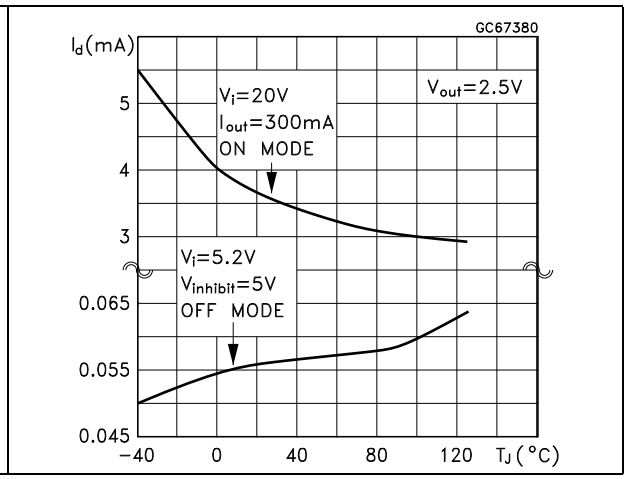


Figure 8. Short-circuit current vs dropout voltage

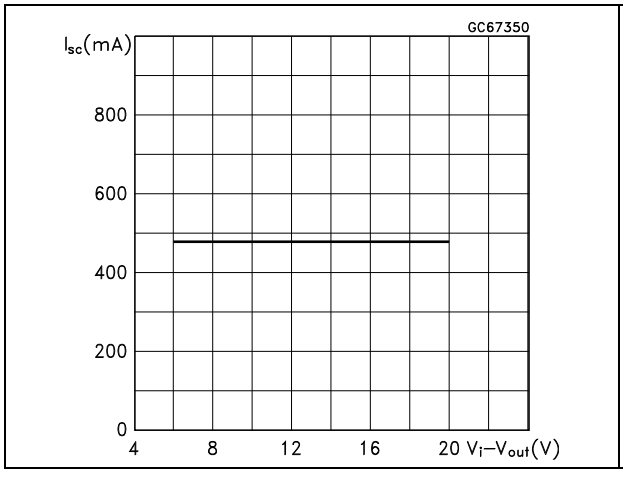
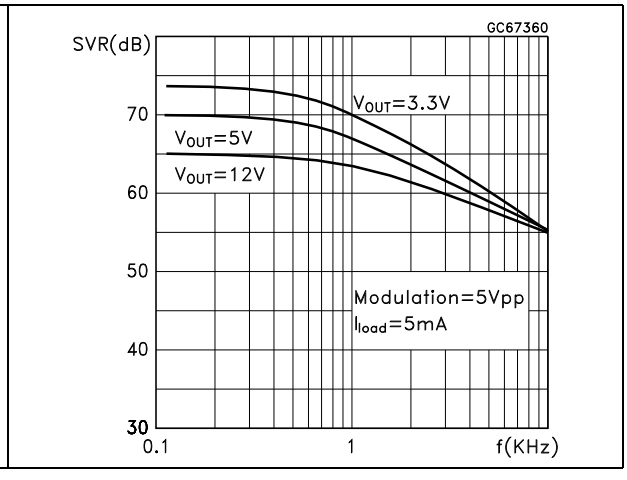


Figure 9. SVR vs input voltage signal frequency



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7 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK® is an ST trademark.

Table 16. TO-92 mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	4.32		4.95
b	0.36		0.51
D	4.45		4.95
E	3.30		3.94
e	2.41		2.67
e1	1.14		1.40
L	12.70		15.49
R	2.16		2.41
S1	0.92		1.52
W	0.41		0.56
V		5°	

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Figure 10. TO-92 drawings

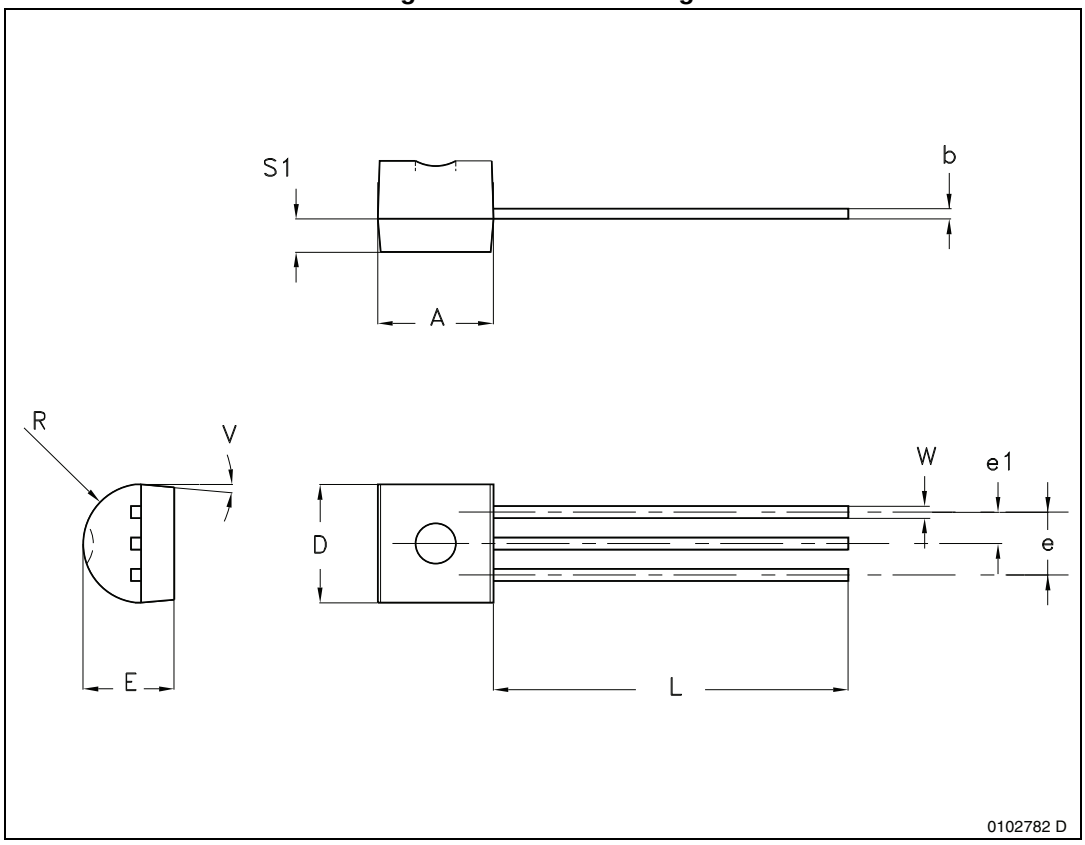

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Table 17. PPAK mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	2.2		2.4
A1	0.9		1.1
A2	0.03		0.23
B	0.4		0.6
B2	5.2		5.4
C	0.45		0.6
C2	0.48		0.6
D	6		6.2
D1		5.1	
E	6.4		6.6
E1		4.7	
e		1.27	
G	4.9		5.25
G1	2.38		2.7
H	9.35		10.1
L2		0.8	1
L4	0.6		1
L5	1		
L6		2.8	
R		0.20	
V2	0°		8°

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Figure 11. PPAK drawings

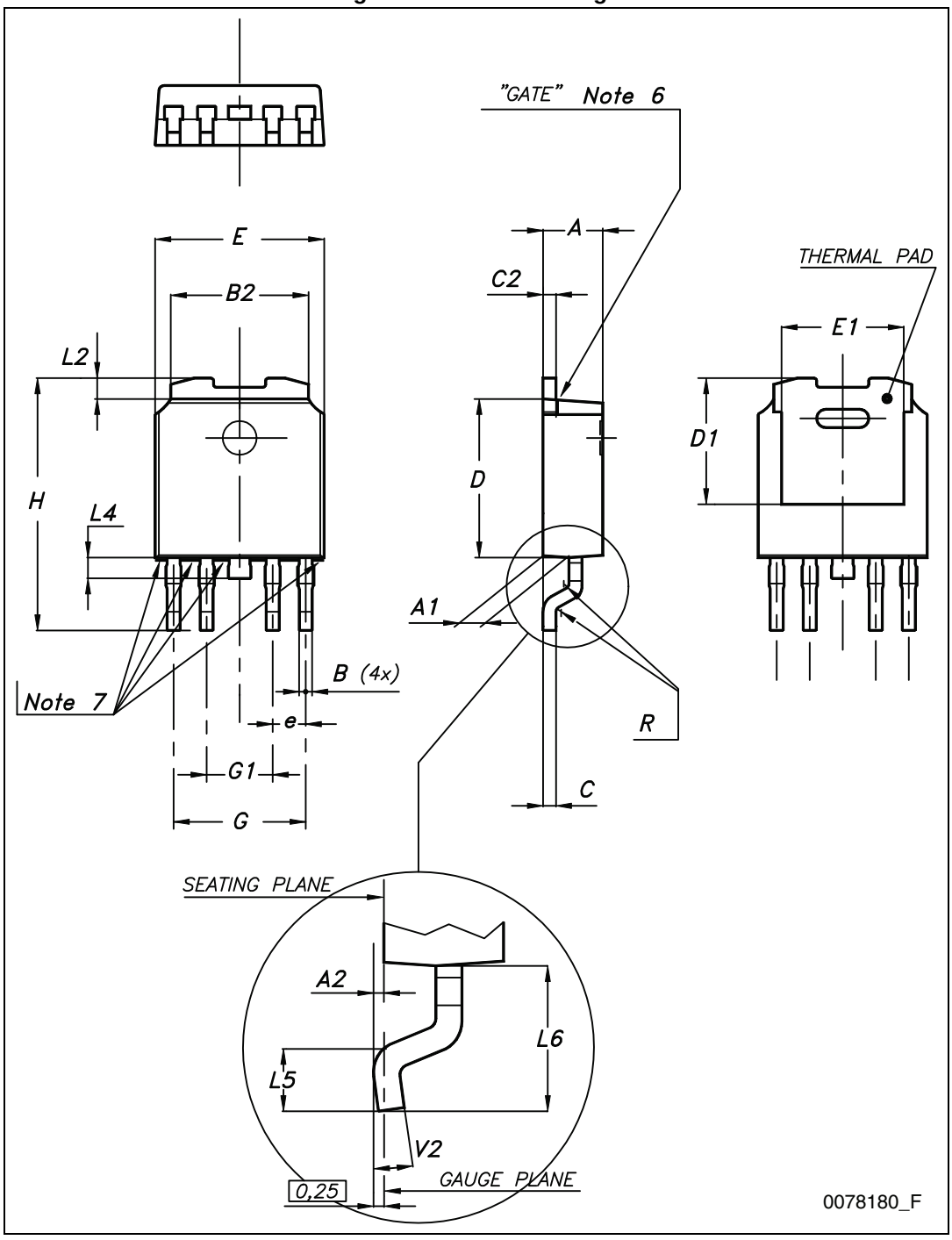

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Table 18.DPAK mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	2.20		2.40
A1	0.90		1.10
A2	0.03		0.23
b	0.64		0.90
b4	5.20		5.40
c	0.45		0.60
c2	0.48		0.60
D	6.00		6.20
D1		5.10	
E	6.40		6.60
E1		4.70	
e		2.28	
e1	4.40		4.60
H	9.35		10.10
L	1.00		1.50
(L1)		2.80	
L2		0.80	
L4	0.60		1.00
R		0.20	
V2	0°		8°

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Figure 12. DPAK drawings

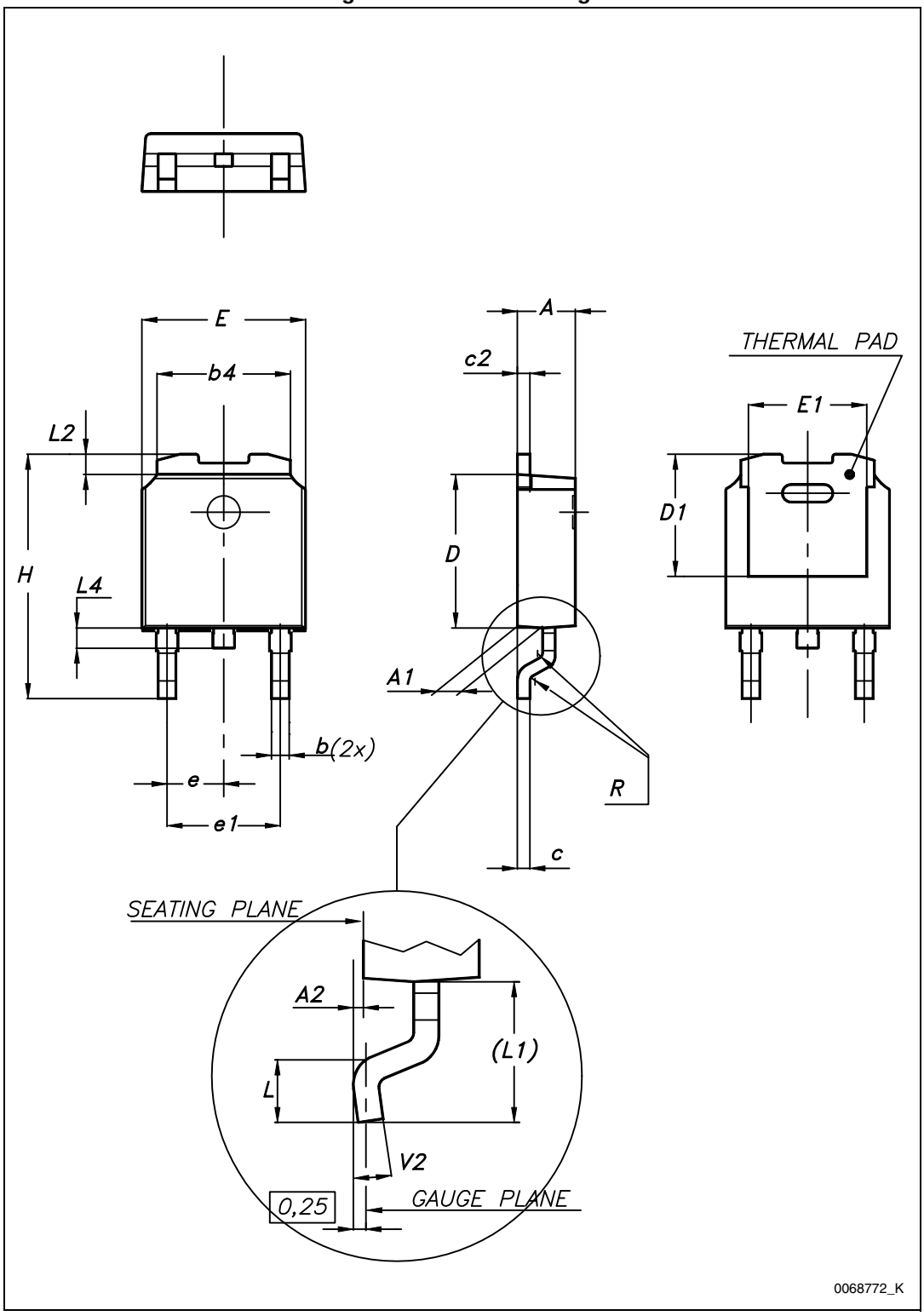

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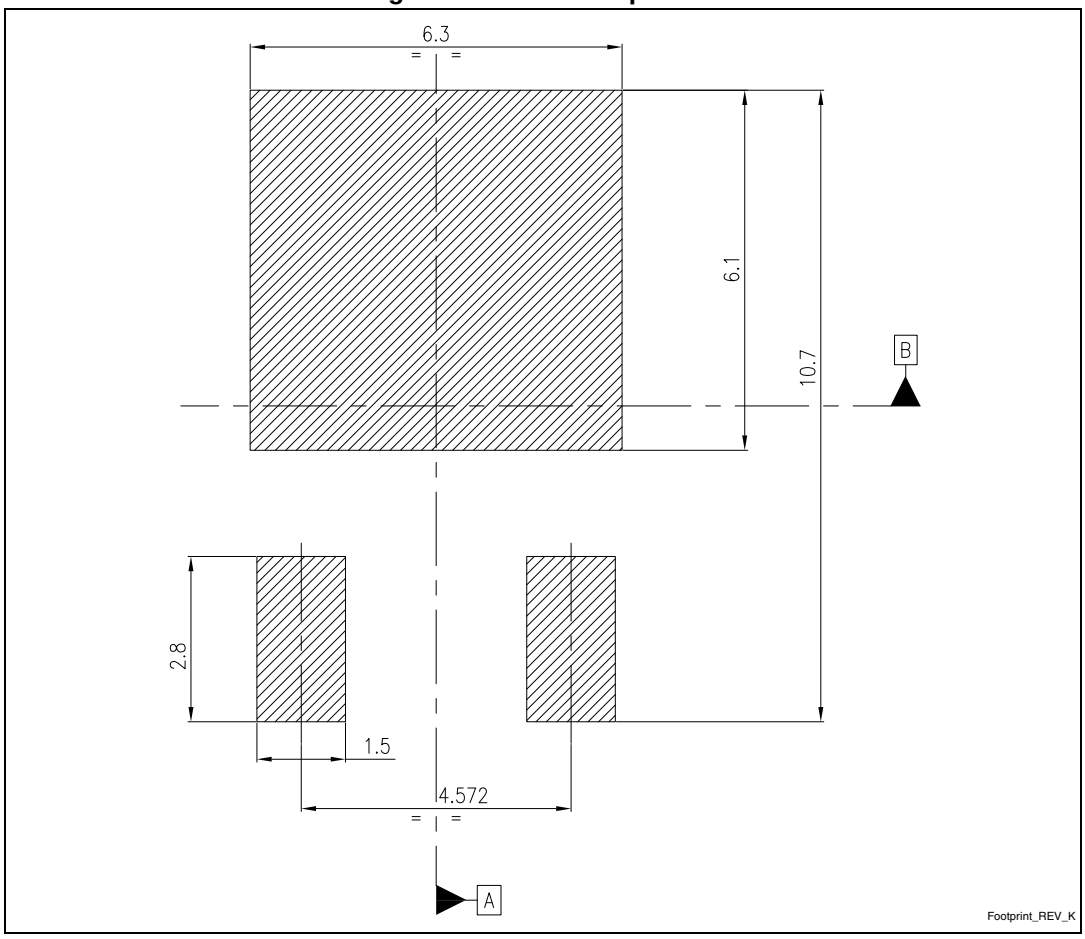
Figure 13. DPAK footprint [(a)]



a. All dimensions are in millimeters.

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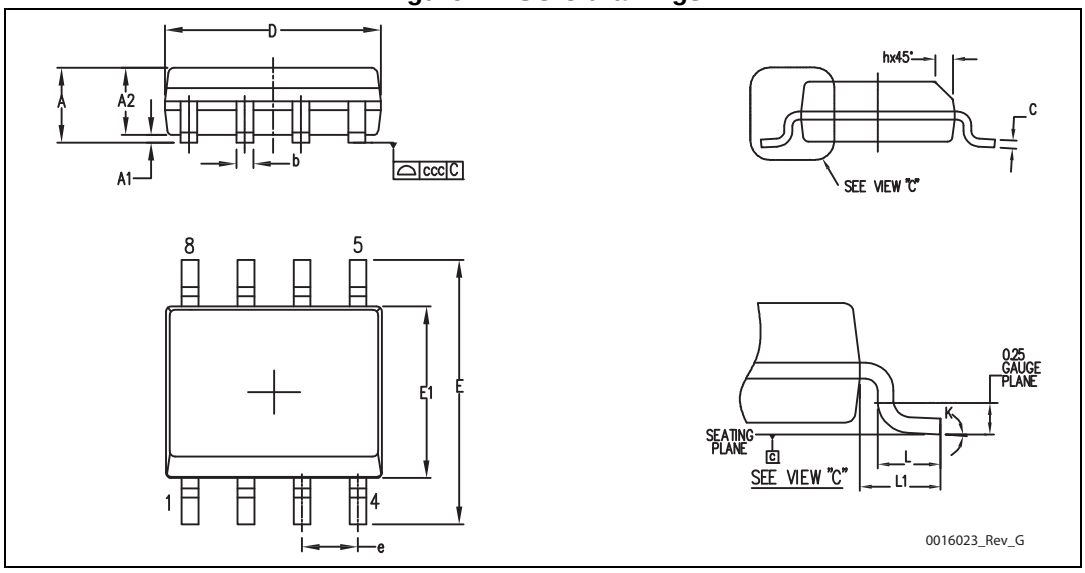
Table 19. SO-8 mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A			1.75
A1	0.10		0.25
A2	1.25		
b	0.28		0.48
c	0.17		0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e		1.27	
h	0.25		0.50
L	0.40		1.27
L1		1.04	
k	0°		8°
ccc			0.10

Figure 14. SO-8 drawings



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8 Packaging mechanical data

Table 20. TO-92 tape and reel mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A1		4.80	
T		3.80	
T1		1.60	
T2		2.30	
d		0.48	
Po	12.5		12.9
P2	5.65		7.05
F1, F2	2.44	2.54	2.94
delta H		±2	
W	17.5	18.00	19
W0	5.7		6.3
W1	8.5		9.25
W2		0.50	
H		18.50	18.70
H0	15.50		16.50
H1		25.00	
D0	3.8		4.2
t		0.90	
L1		3	
delta P		±1	
u		50	
Φ1		360	
Φ2		30	

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Figure 15. TO-92 tape and reel dimensions

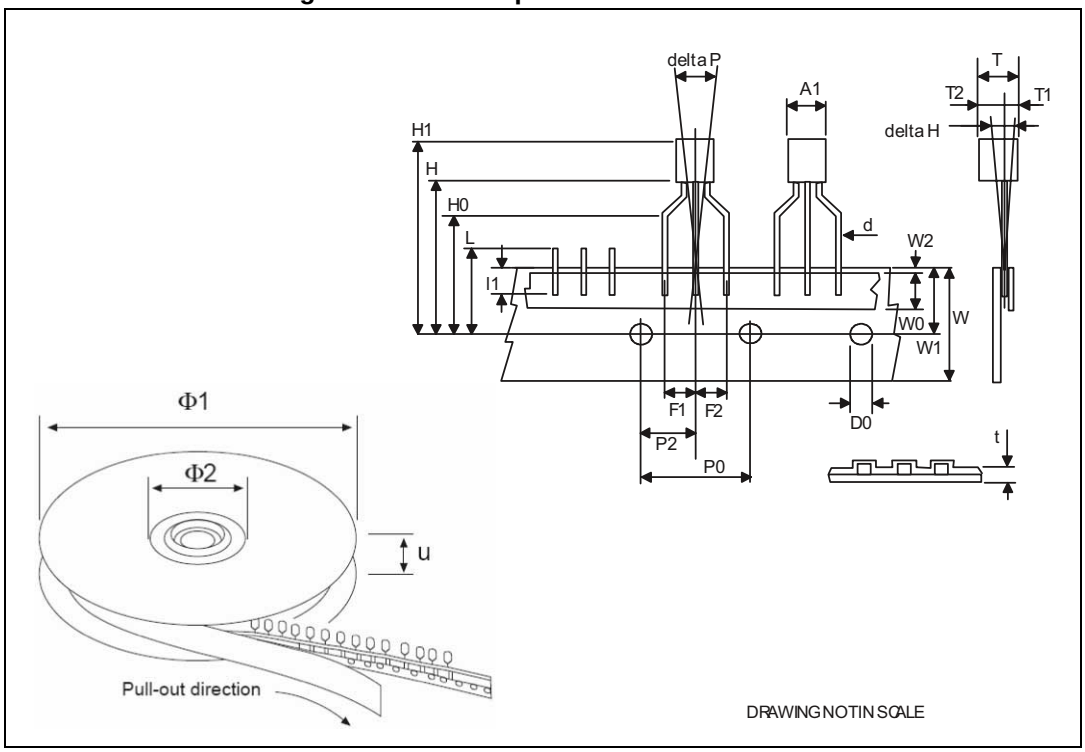

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Table 21. PPAK and DPAK tape and reel mechanical data

Tape			Reel		
Dim.	mm		Dim.	mm	
	Min.	Max.		Min.	Max.
A0	6.8	7	A		330
B0	10.4	10.6	B	1.5	
B1		12.1	C	12.8	13.2
D	1.5	1.6	D	20.2	
D1	1.5		G	16.4	18.4
E	1.65	1.85	N	50	
F	7.4	7.6	T		22.4
K0	2.55	2.75			
P0	3.9	4.1	Base qty.		2500
P1	7.9	8.1	Bulk qty.		2500
P2	1.9	2.1			
R	40				
T	0.25	0.35			
W	15.7	16.3			

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Figure 16. Tape for PPAK and DPAK

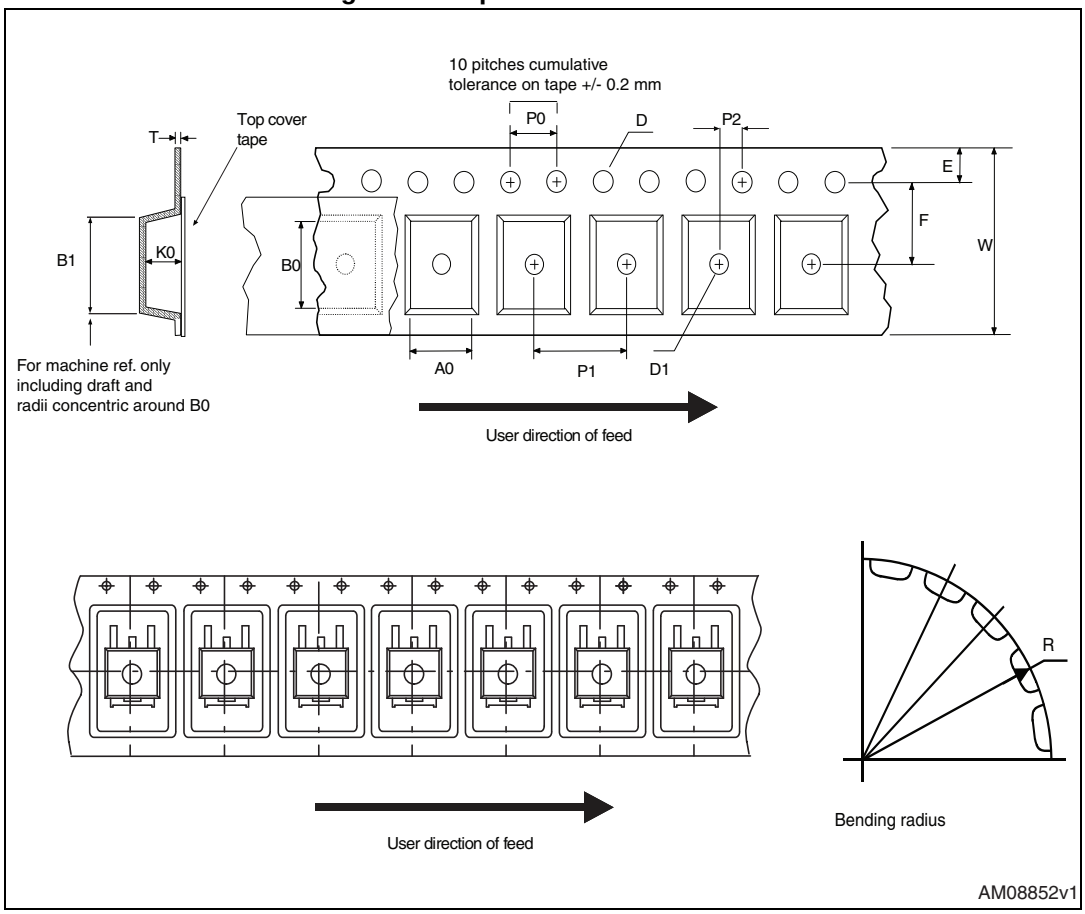

Figure 17. Reel for PPAK and DPAK

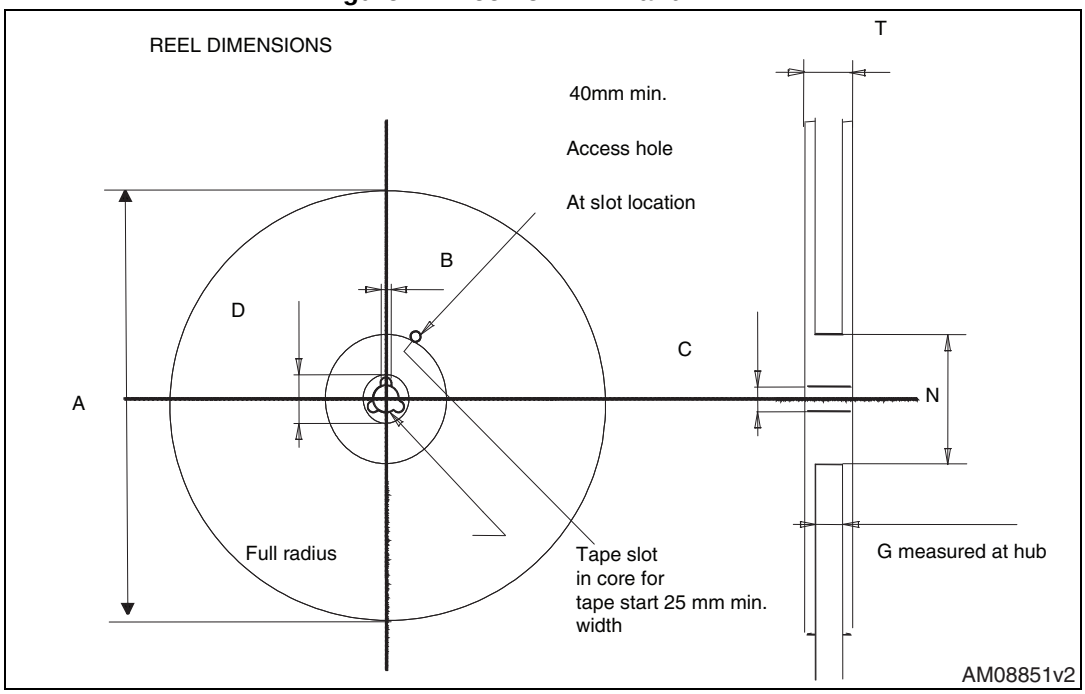

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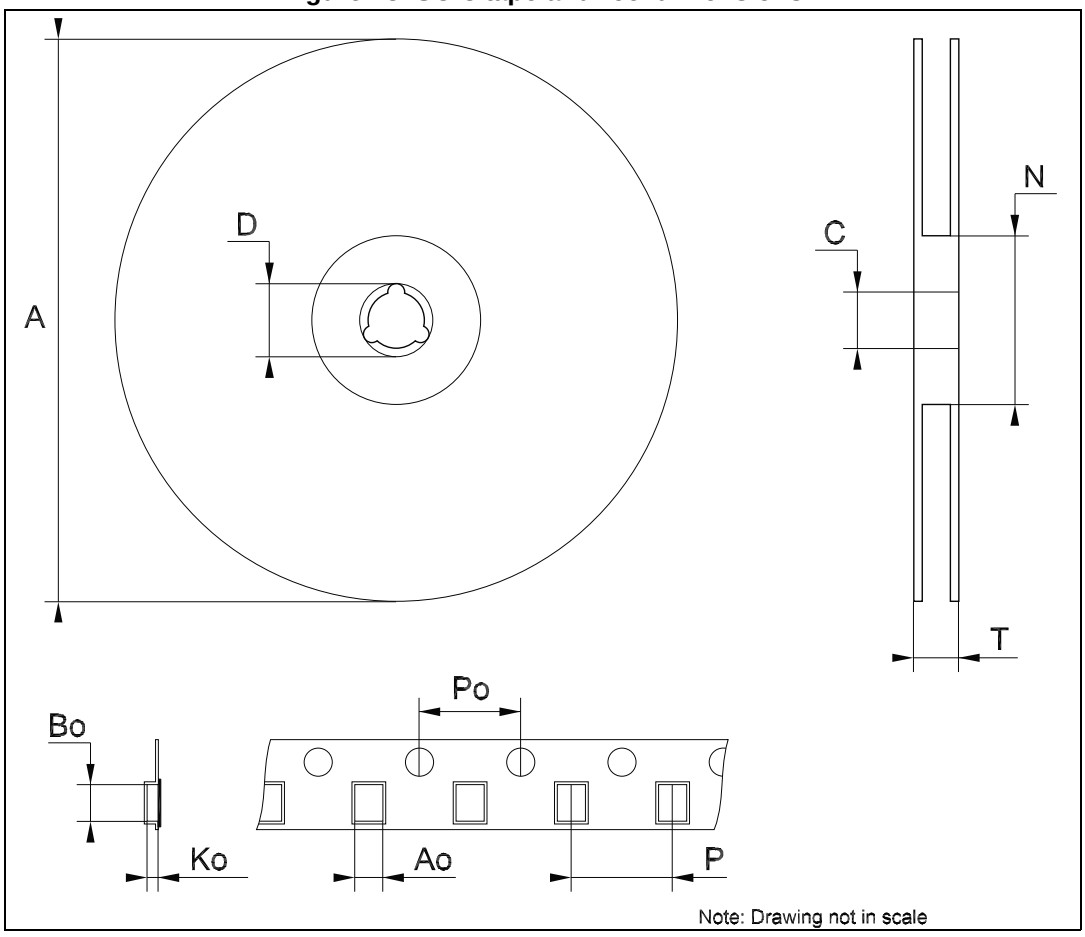
Table 22. SO-8 tape and reel mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A			330
C	12.8		13.2
D	20.2		
N	60		
T			22.4
Ao	8.1		8.5
Bo	5.5		5.9
Ko	2.1		2.3
Po	3.9		4.1
P	7.9		8.1

Figure 18. SO-8 tape and reel dimensions



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9 Ordering information

Table 23. Order codes

Packages					Output voltage
TO-92	PPAK	DPAK	SO-8	SO-8 (automotive-grade)	
			L4931CD27-TR	L4931CD27-TRY	2.7 V
L4931CZ33-AP		L4931CDT33-TR	L4931CD33-TR	L4931CD33-TRY	3.3 V
		L4931ABDT33-TR	L4931ABD33-TR		3.3 V
			L4931CD35-TR		3.5 V
		L4931ABDT35TR	L4931ABD35-TR		3.5 V
L4931CZ50-AP	L4931CPT50-TR	L4931CDT50-TR	L4931CD50-TR		5 V
		L4931ABDT50-TR	L4931ABD50-TR		5 V
			L4931CD80-TR		8 V
		L4931ABDT80-TR			8 V
			L4931CD120-TR		12 V
			L4931ABD120TR		12 V

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10 Revision history

Table 24. Document revision history

Date	Revision	Changes
21-Jun-2004	11	Document updating.
14-Jun-2006	12	Order codes updated.
31-Jan-2008	13	Added: *Table 1* and new order codes for Automotive grade products.
20-Feb-2008	14	Modified: *Table 23 on page 36*.
11-Mar-2008	15	Modified: *Table 1 on page 1* and *Table 23 on page 36*.
15-Jul-2008	16	Modified: *Table 1 on page 1* and *Table 23 on page 36*.
18-Aug-2008	17	Modified: *Table 23 on page 36*.
30-Oct-2013	18	Changed the L4931ABxx and L4931Cxx to L4931. Updated: Description in cover page. Deleted table1: Device summary. Updated *Figure 2: Pin connections (top view)*, *Table 2: Thermal data*, *Section 5: Electrical characteristics* and *Section 7: Package mechanical data*. Added *Section 8: Packaging mechanical data*. Minor text changes.

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