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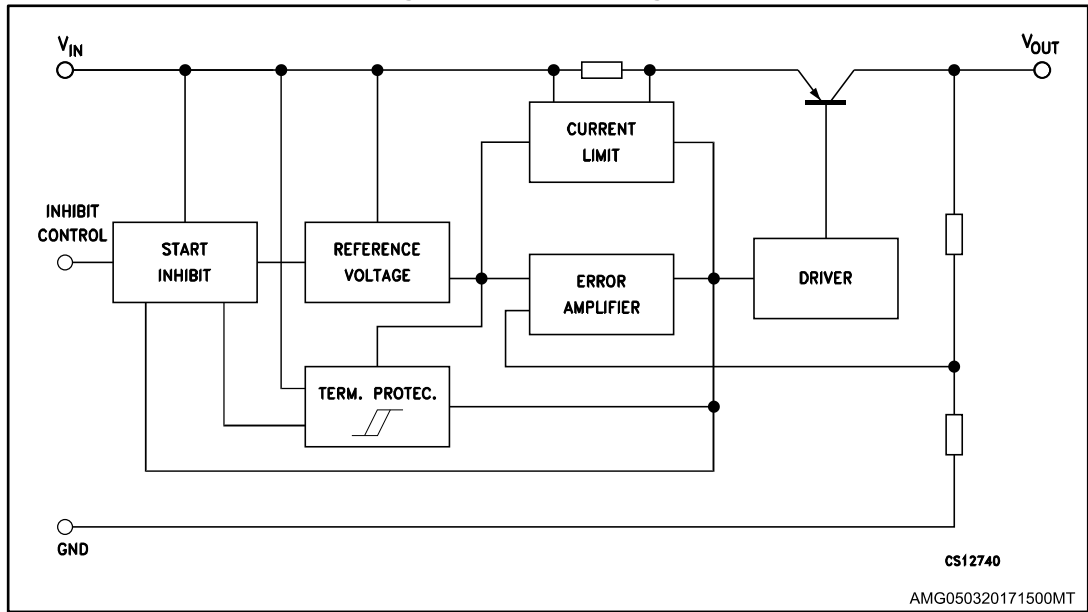
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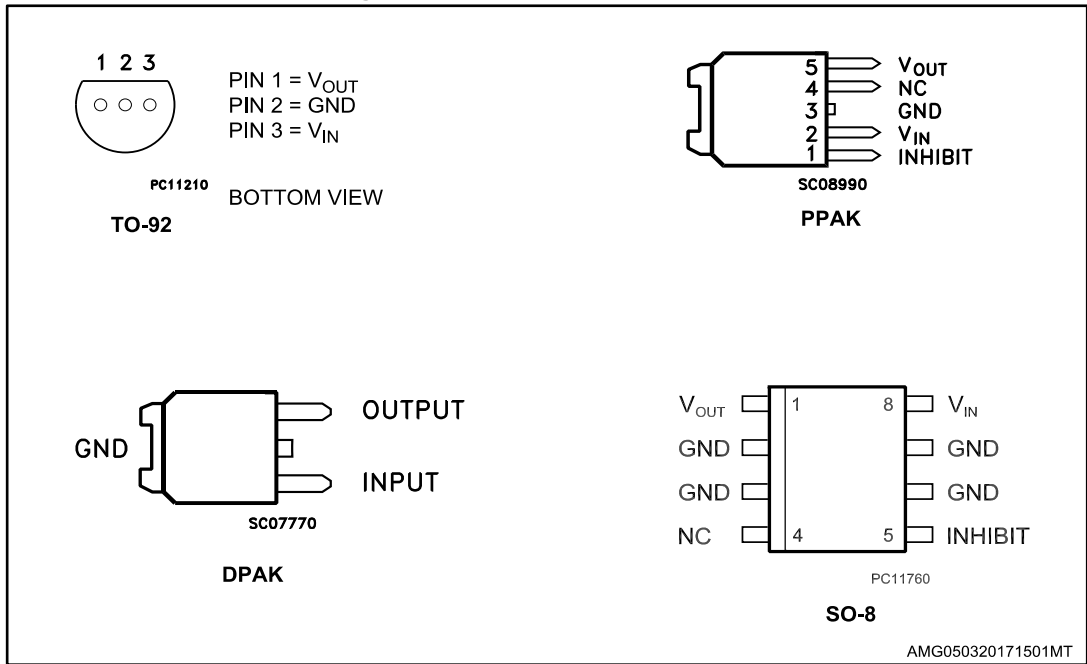
# 1 Diagram

Figure 1: Schematic diagram



## 2 Pin configuration

Figure 2: Pin connections (top view)



### 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



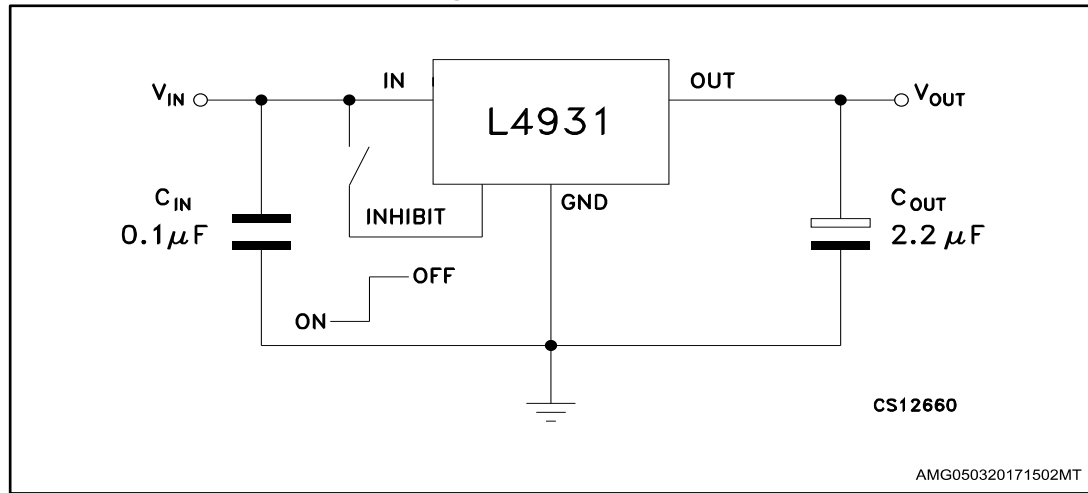
Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

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

## 4 Application circuit

Figure 3: Test circuit



## 5 Electrical characteristics

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 3: L4931ABxx33 electrical characteristics

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

### Notes:

<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

**Table 4: L4931Cxx33 electrical characteristics**

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

**Notes:**

<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

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

**Table 5: 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
$\Delta V_O$	Line regulation	$V_I = 4.1$ to $20$ V, $I_O = 0.5$ mA			20	mV
$\Delta V_O$	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	$\mu$ A
SVR	Supply voltage rejection	$I_O = 5$ mA $V_I = 5.3 \pm 1$ 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		$\mu$ V
$V_d$	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		$\mu$ A
$C_O$	Output bypass capacitance	ESR = 0.1 to 10 $\Omega$ , $I_O = 0$ to $250$ mA, $T_A = 25$ °C	2	10		$\mu$ F



(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 6: L4931ABxx35 electrical characteristics

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

**Notes:**<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 7: L4931Cxx35 electrical characteristics

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

**Notes:**<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 8: L4931ABxx50 electrical characteristics

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

**Notes:**<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 9: L4931Cxx50 electrical characteristics

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

**Notes:**

<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 10: L4931ABxx120 electrical characteristics

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

**Notes:**<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

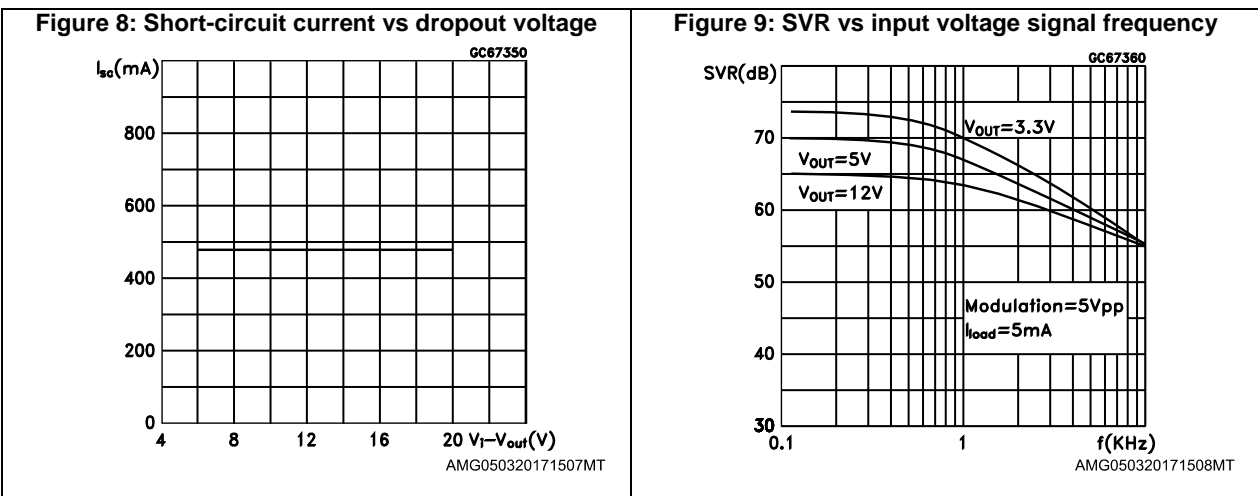
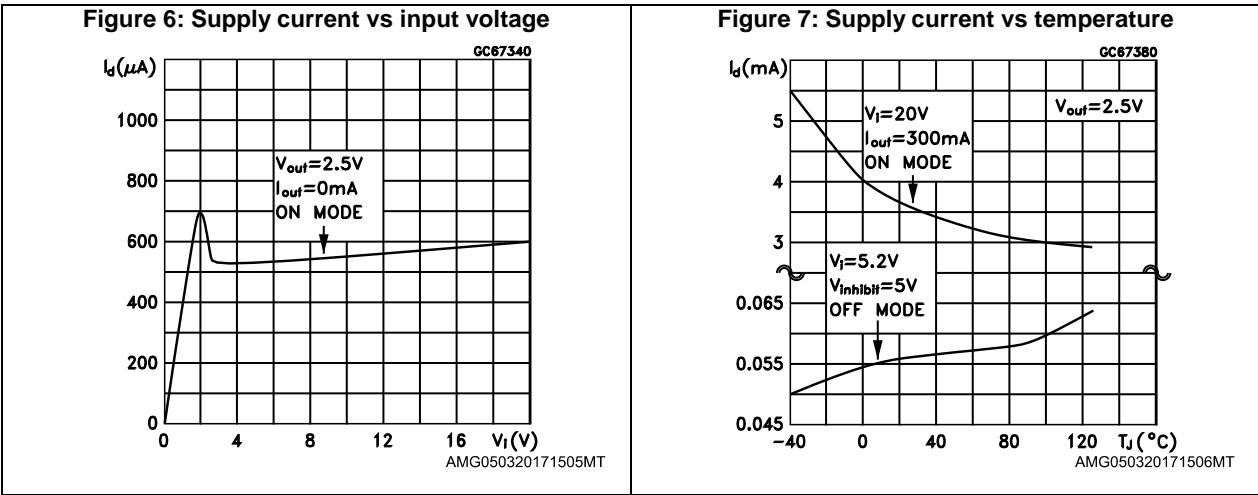
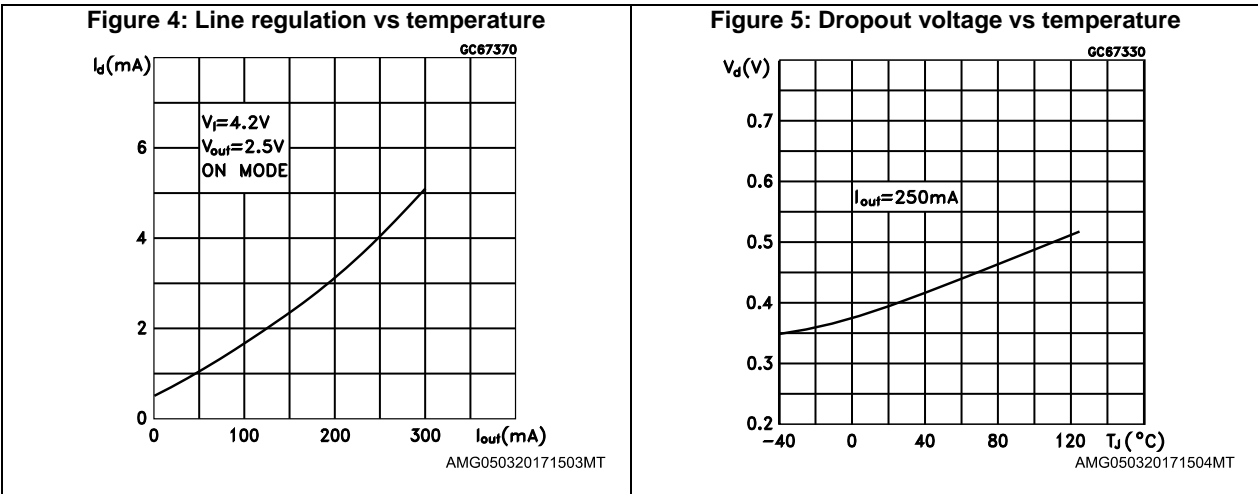
(Refer to the test circuits,  $T_A = 25\text{ °C}$ ,  $C_I = 0.1\text{ }\mu\text{F}$ ,  $C_O = 2.2\text{ }\mu\text{F}$  unless otherwise specified).

Table 11: L4931Cxx120 electrical characteristics

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

**Notes:**<sup>(1)</sup>For SO-8 package the maximum limit of load regulation and dropout should be increased by 20 mV.

## 6 Typical application

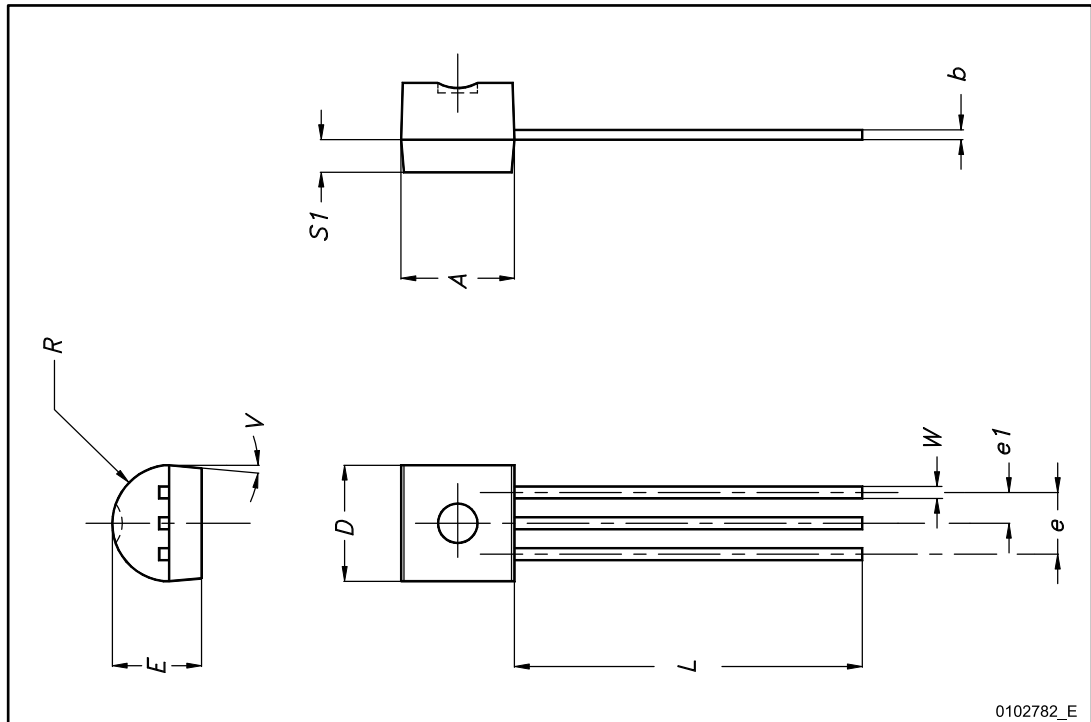


## 7 Package information

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](http://www.st.com). ECOPACK® is an ST trademark.

### 7.1 TO-92 package information

Figure 10: TO-92 package outline



0102782\_E

Table 12: 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°	



## 7.2 TO-92 Ammopak packing information

Figure 11: TO-92 Ammopak tape and reel outline

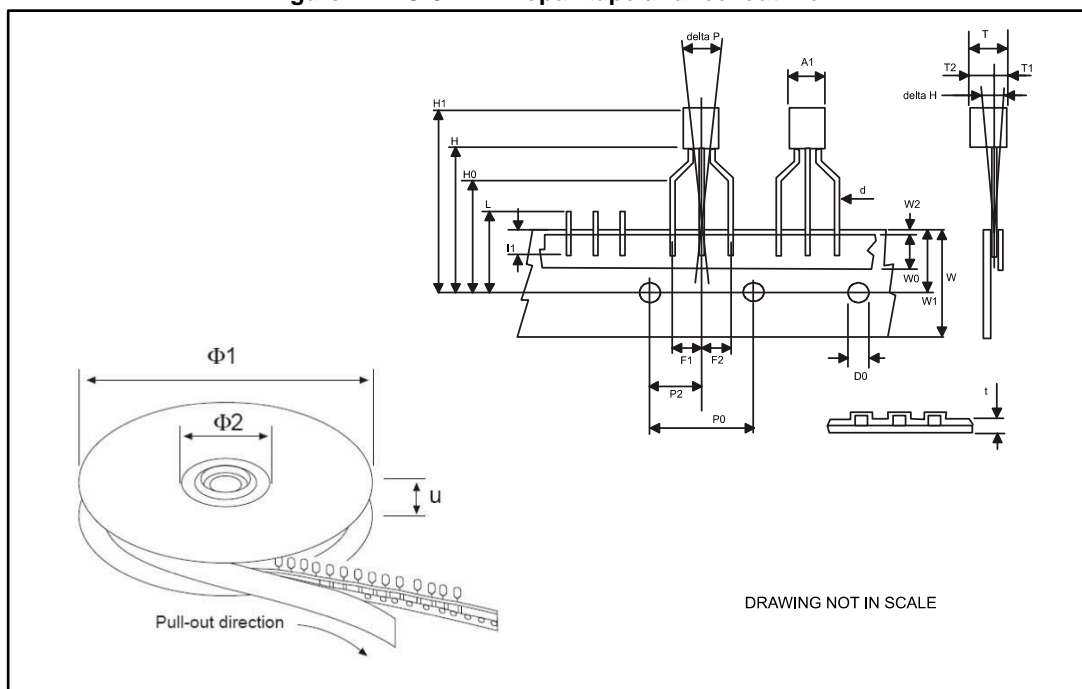
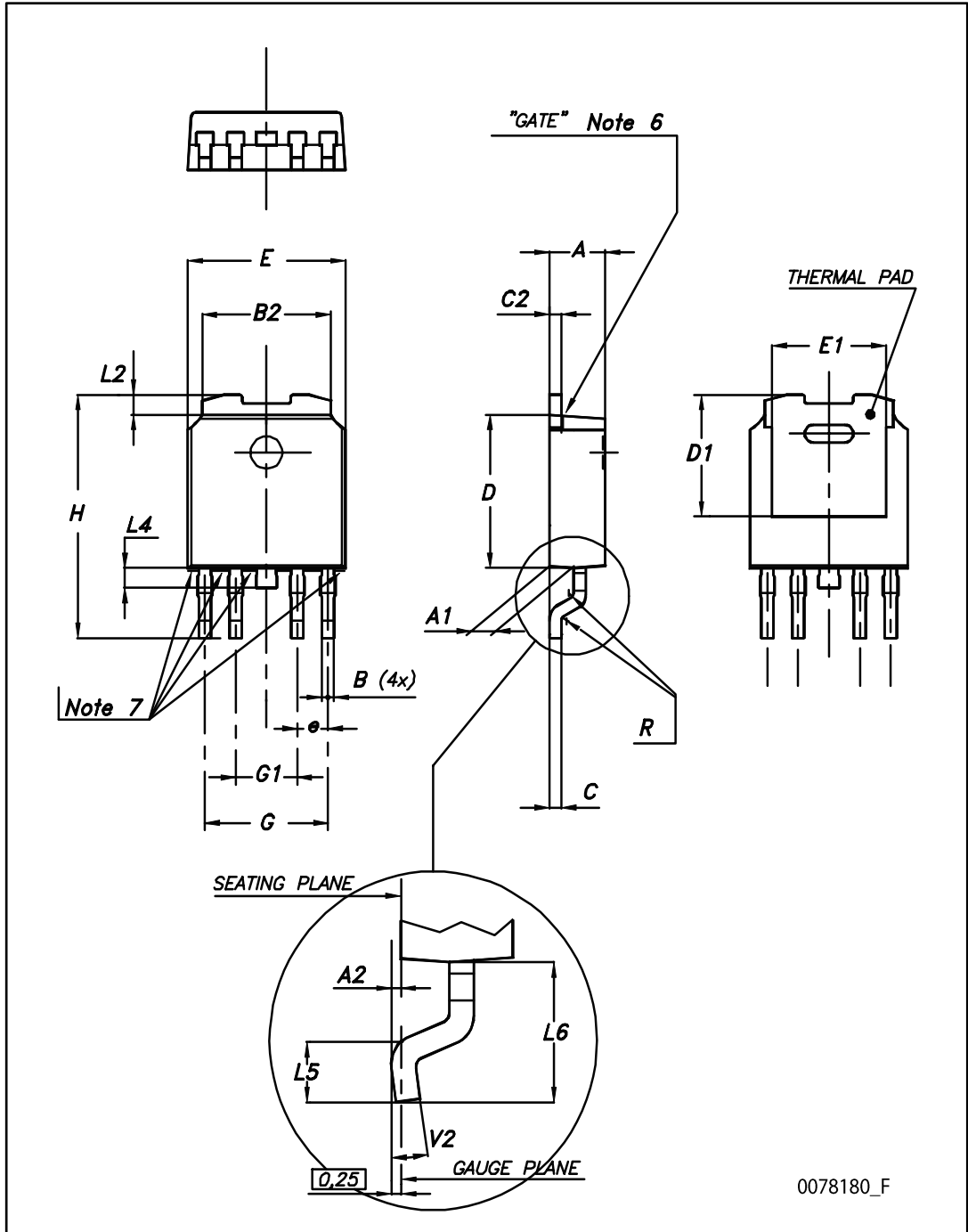


Table 13: TO-92 Ammopak tape and reel mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A1			4.80
T			3.80
T1			1.60
T2			2.30
d	0.45	0.47	0.48
P0	12.50	12.70	12.90
P2	5.65	6.35	7.05
F1, F2	2.40	2.50	2.94
F3	4.98	5.08	5.48
delta H	-2.00		2.00
W	17.50	18.00	19.00
W0	5.5	6.00	6.5
W1	8.50	9.00	9.25
W2			0.50
H		18.50	21
H3	0.5	1	2
H0	15.50	16.00	18.8
H1		25.0	27.0
D0	3.80	4.00	4.20
t			0.90
L			11.00
I1	3.00		
delta P	-1.00		1.00

### 7.3 PPAK package information

Figure 12: PPAK package outline



0078180\_F

Table 14: 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°

### 7.4 DPAK package information

Figure 13: DPAK package outline

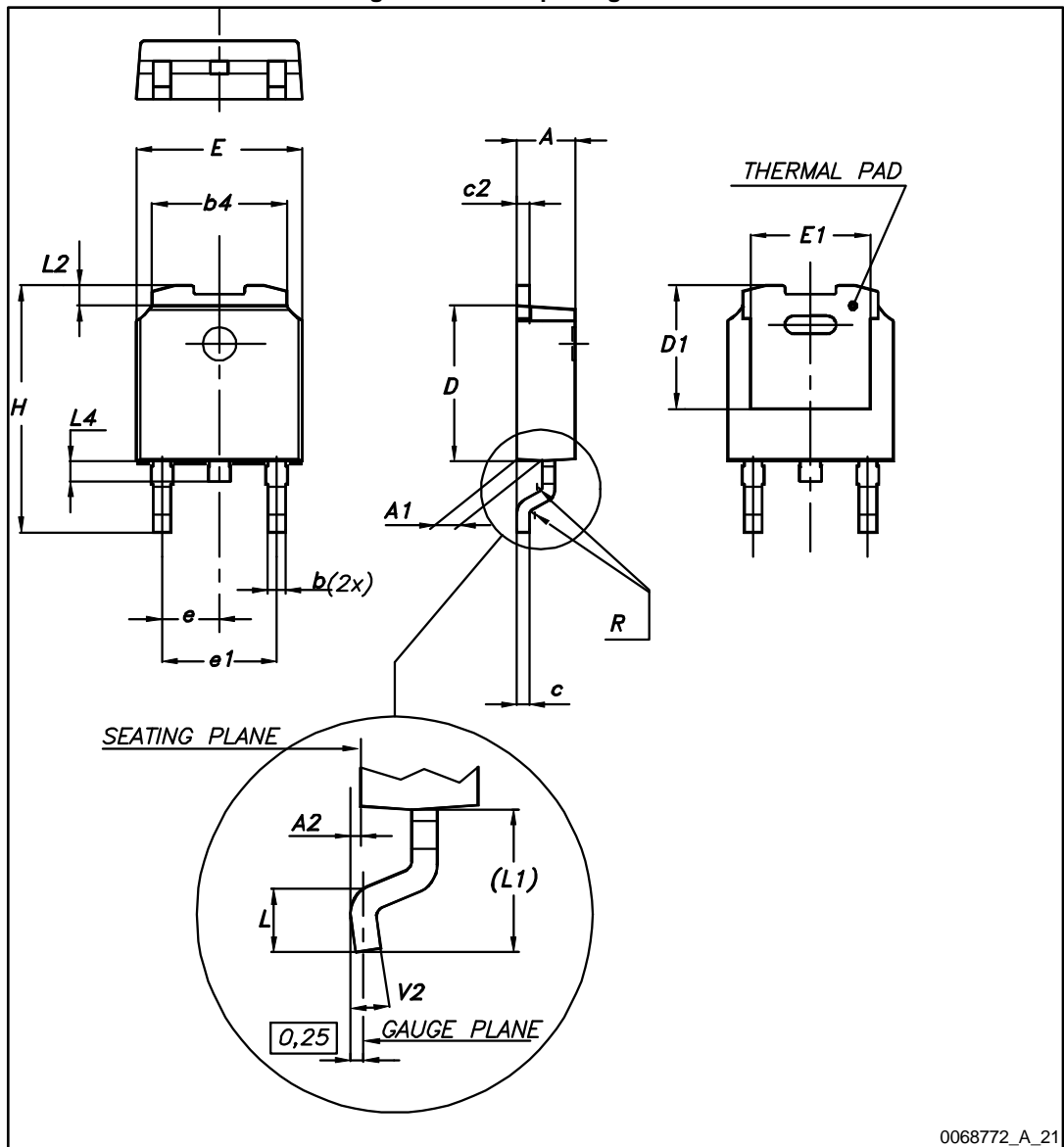
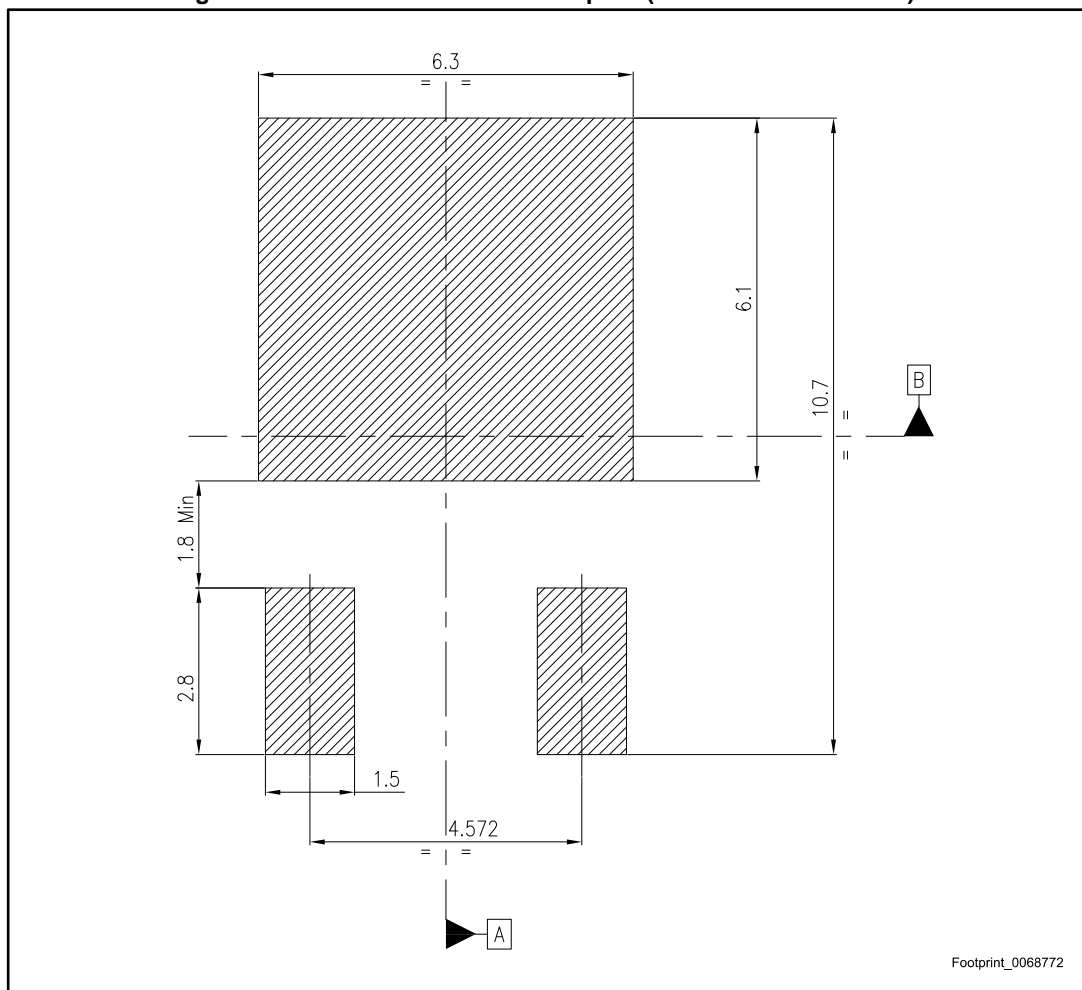


Table 15: DPAK mechanical data

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°

Figure 14: DPAK recommended footprint (dimensions are in mm)



# 7.5 PPAK and DPAK paking information

Figure 15: PPAK and DPAK tape

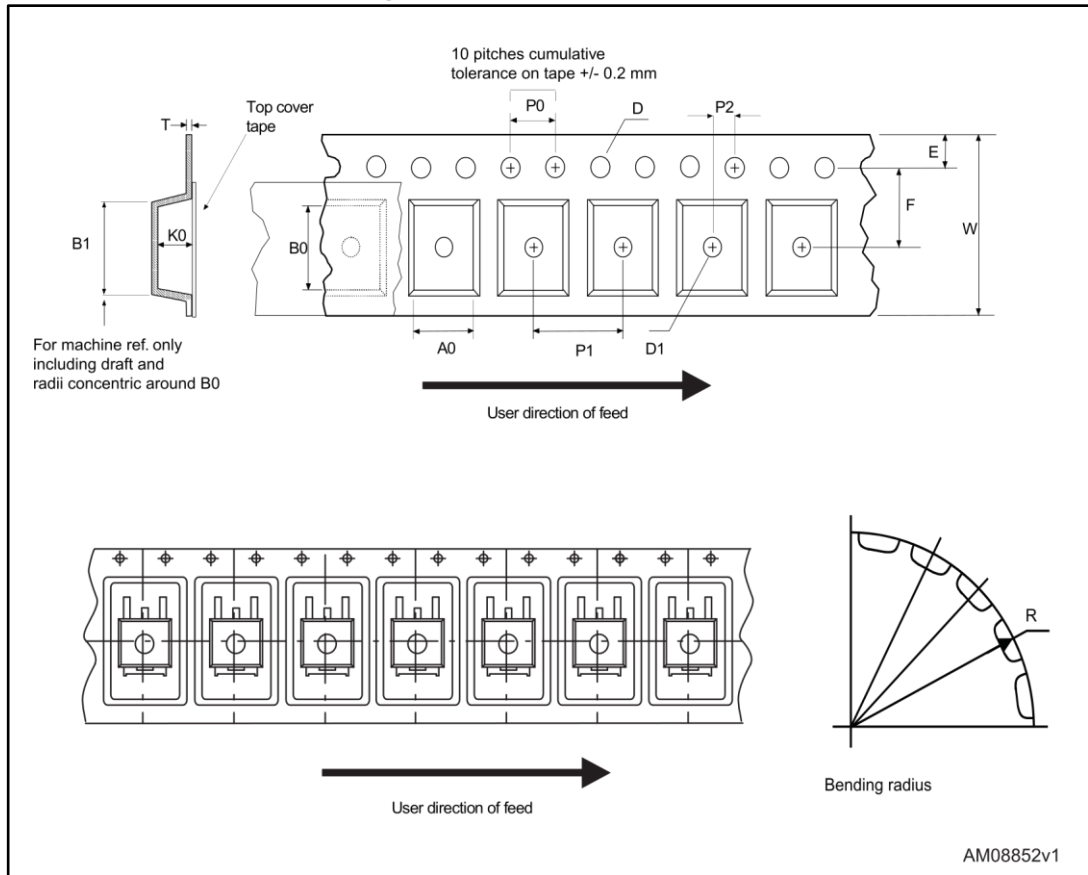




Figure 16: PPAK and DPAK reel

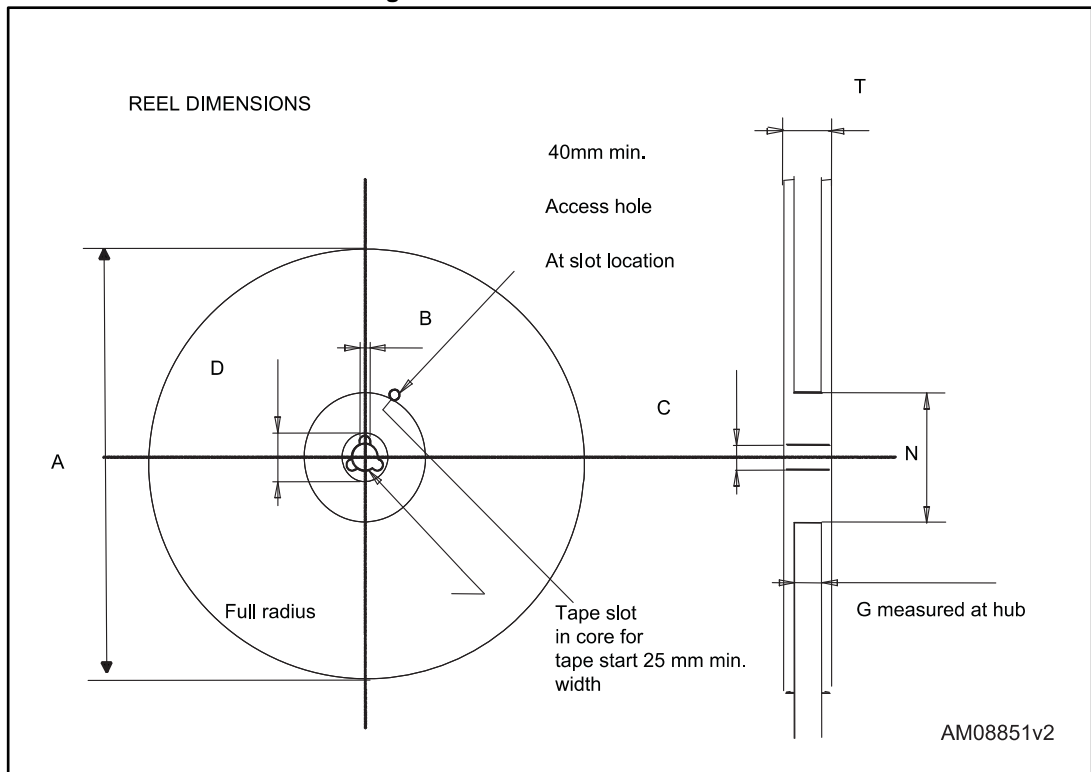


Table 16: PPAK and DPAK tape and reel mechanical data

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			

## 7.6 SO-8 package information

Figure 17: SO-8 package outline

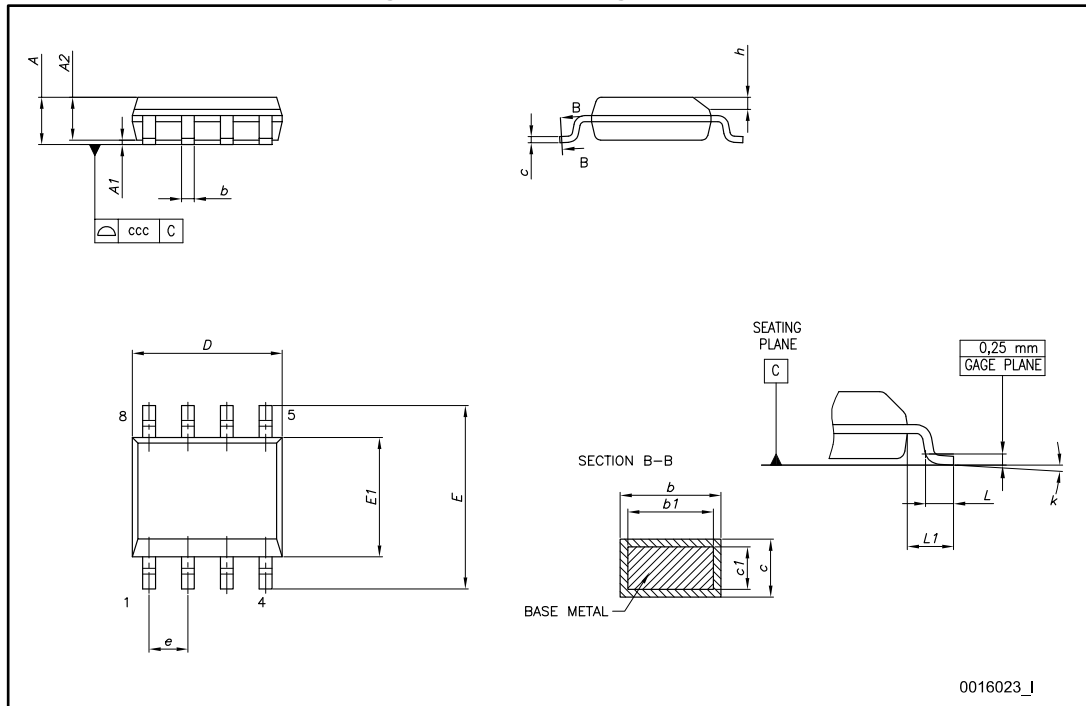
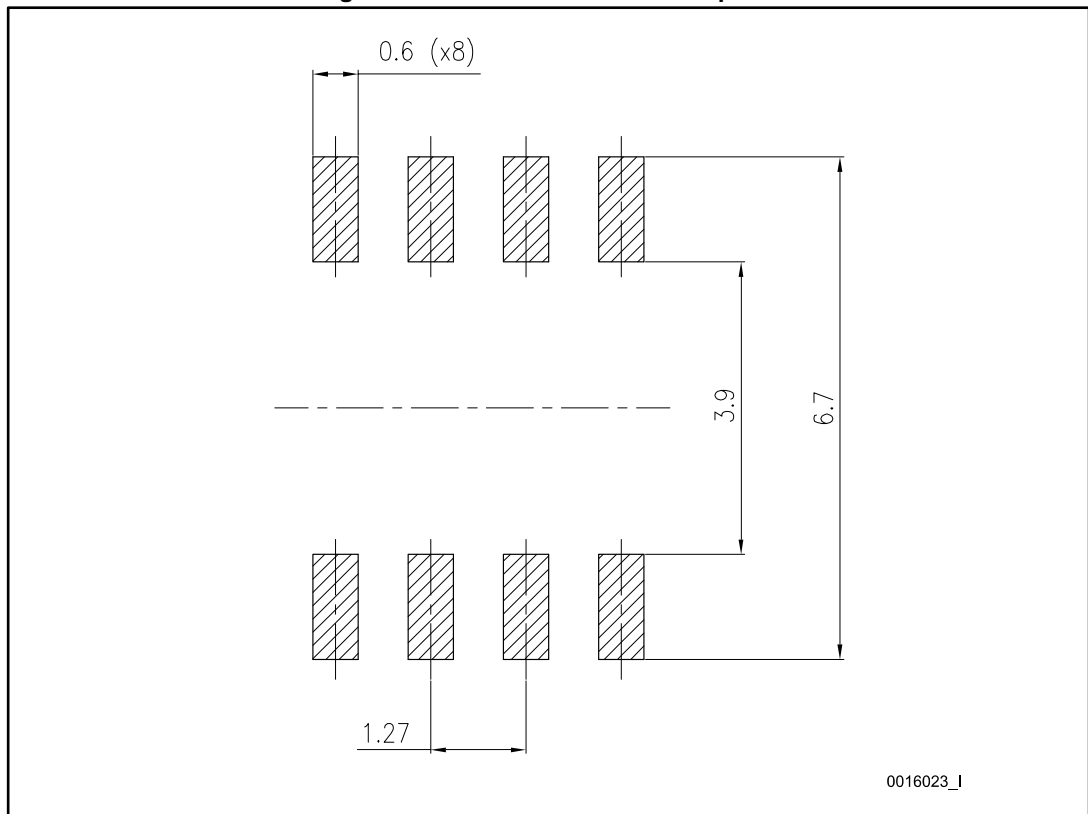


Table 17: SO-8 mechanical data

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 18: SO-8 recommended footprint



## 7.7 SO-8 packing information

Figure 19: SO8-batwing tape and reel outline

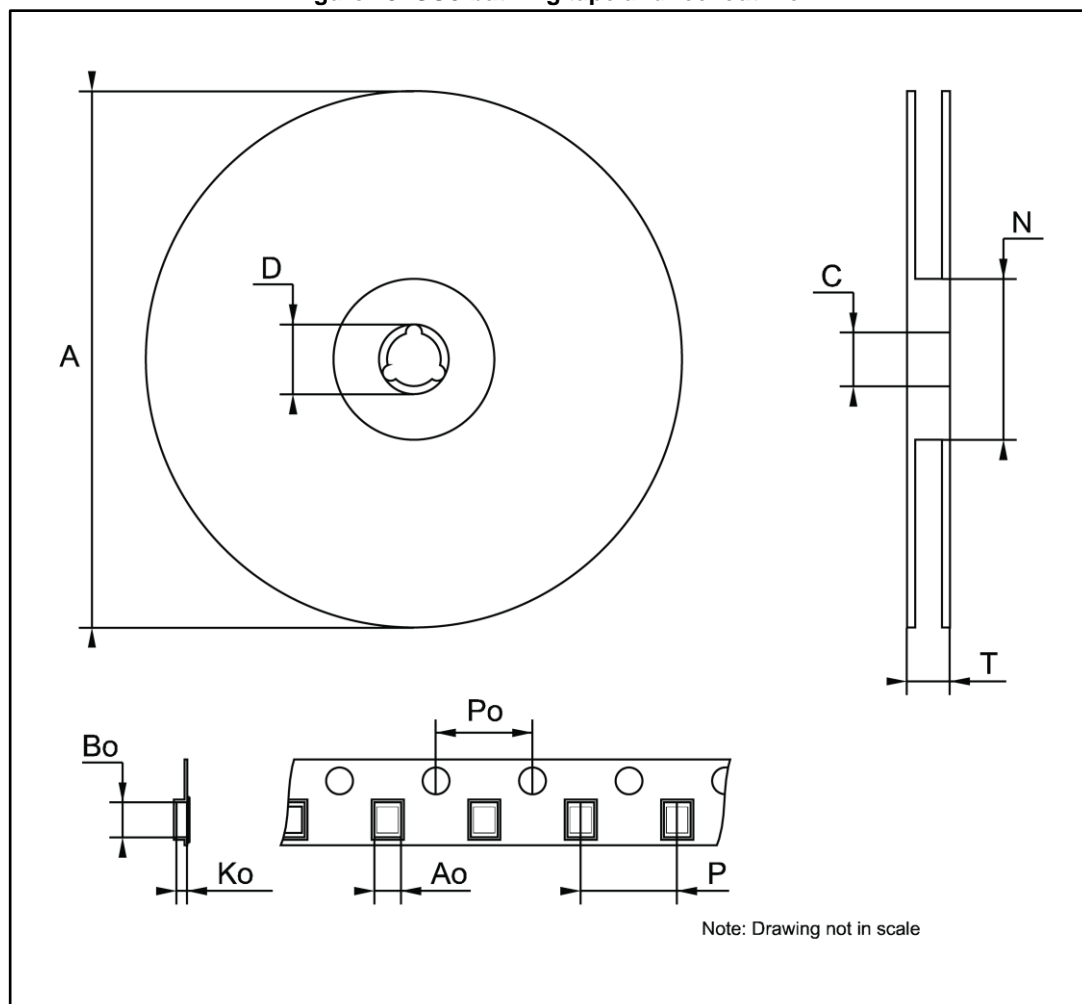


Table 18: SO8-batwing mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A			330
C	12.8		13.2
D	20.2		
N	60		
T			22.4
A0	8.1		8.5
B0	5.5		5.9
K0	2.1		2.3
P0	3.9		4.1
P	7.9		8.1

## 8 Ordering information

Table 19: Order codes

Package					Output voltage
TO-92	PPAK	DPAK	SO-8	SO-8 (automotive-grade)	
			L4931CD27-TR	L4931CD27-TRY <sup>(1)</sup>	2.7 V
L4931CZ33-AP		L4931CDT33-TR	L4931CD33-TR	L4931CD33-TRY <sup>(1)</sup>	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

### Notes:

<sup>(1)</sup>Qualified and characterized according to AEC Q100 and Q003 or equivalent, advanced screening according to AEC Q001 and Q002 or equivalent.

## 9 Revision history

**Table 20: 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	<p>Changed the L4931ABxx and L4931Cxx to L4931.</p> <p>Updated: Description in cover page.</p> <p>Deleted table1: Device summary.</p> <p>Updated Figure 2: Pin connections (top view), Table 2: Thermal data, Section 5: Electrical characteristics and Section 7: Package mechanical data.</p> <p>Added Section 8: Packaging mechanical data.</p> <p>Minor text changes.</p>
02-Aug-2017	19	<p>Updated features in cover page.</p> <p>Deleted table 3: L4931Cxx27 electrical characteristics, table 4: L4931Cxx27-TRY (automotive-grade) electrical characteristics, table 12:L4931ABxx80 electrical characteristics, table 13: L4931Cxx80 electrical characteristics.</p> <p>Updated <a href="#">Table 19: "Order codes"</a>.</p> <p>Minor text changes.</p>

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