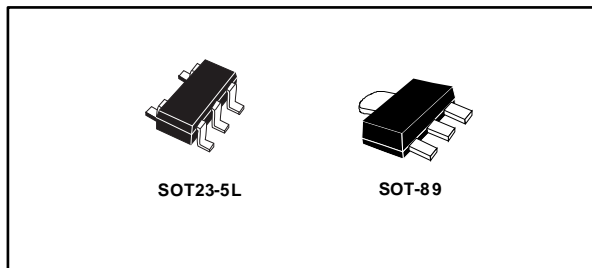


## 200 mA high accuracy and high PSRR voltage regulator

Datasheet - production data



### Features

- Input voltage from 2.5 to 18 V
- Very low-dropout voltage (100 mV typ. @ 100 mA load)
- Low quiescent current (typ. 60  $\mu$ A, 1  $\mu$ A in off mode)
- High PSRR: 88 dB@120 Hz
- Low noise
- Output voltage tolerance:  $\pm 0.5\%$  @ 25 °C (LDK320A) or  $\pm 2\%$  25 °C
- Output current up to 200 mA
- Wide range of output voltages available on request: fixed from 1.2 V to 12 V with 100 mV step and adjustable
- Logic-controlled electronic shutdown
- Compatible with ceramic capacitor  $C_{OUT} = 1\ \mu$ F
- Current, SOA and thermal protections
- Available in SOT23-5L and SOT-89 packages
- Temperature range: -40 °C to 125 °C

### Applications

- DSC
- TV
- BD, DVD
- PC
- Industrial

### Description

The LDK320 is a low drop voltage regulator, which provides a maximum output current of 200 mA from an input voltage in the range of 2.5 V to 18 V, with a typical dropout voltage of 100 mV.

It is stabilized with a ceramic capacitor on the output.

The very good dynamic characteristic, combined with low drop voltage and low quiescent current make it suitable for low power battery-powered applications.

The enable logic control function allows the LDK320 to be in shutdown mode by consuming a total current lower than 1  $\mu$ A.

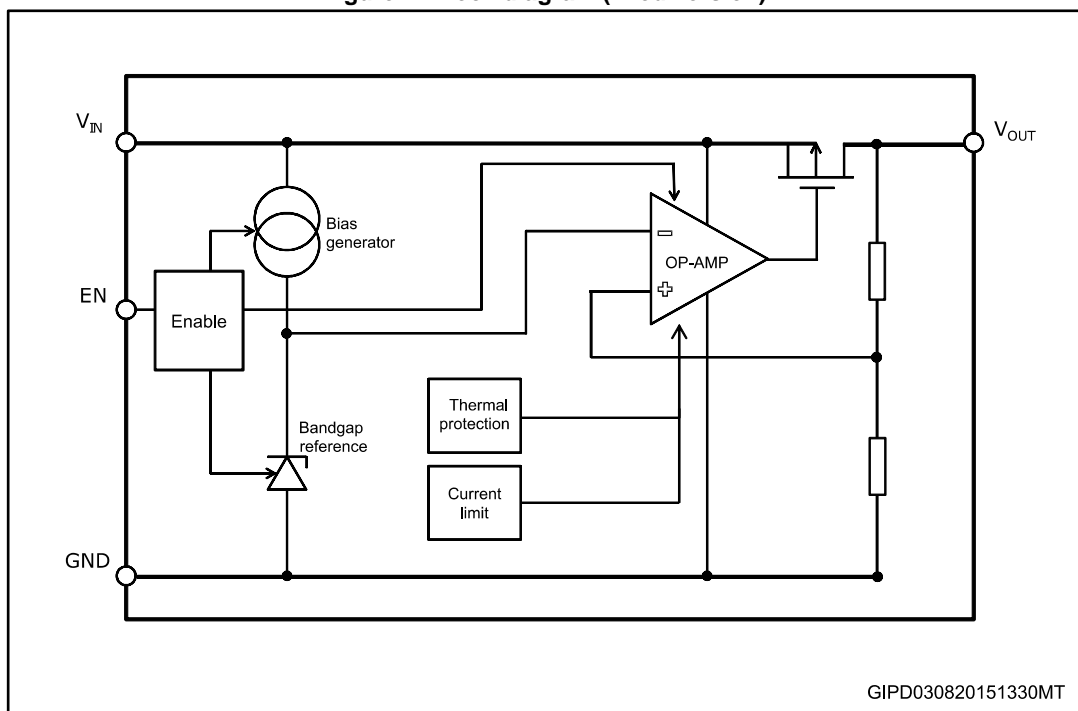
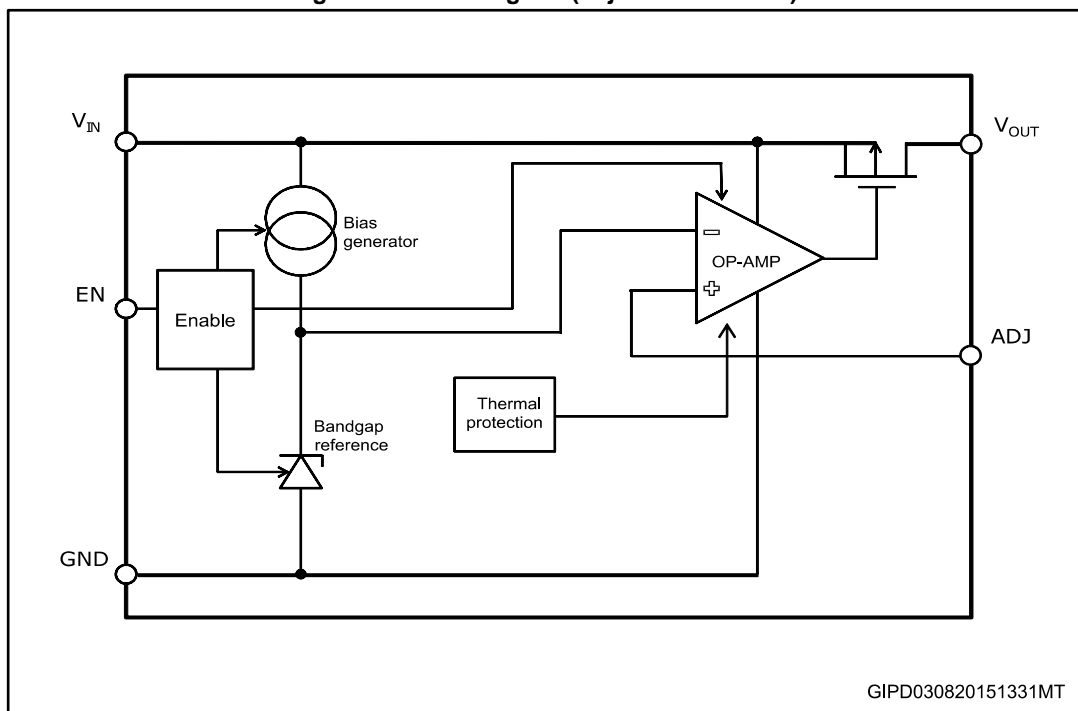
This device also includes a short-circuit current limiting, thermal and SOA protections.

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# 1 Diagram

**Figure 1: Block diagram (fixed version)****Figure 2: Block diagram (adjustable version)**

## 2 Pin configuration

Figure 3: Pin connection (top view)

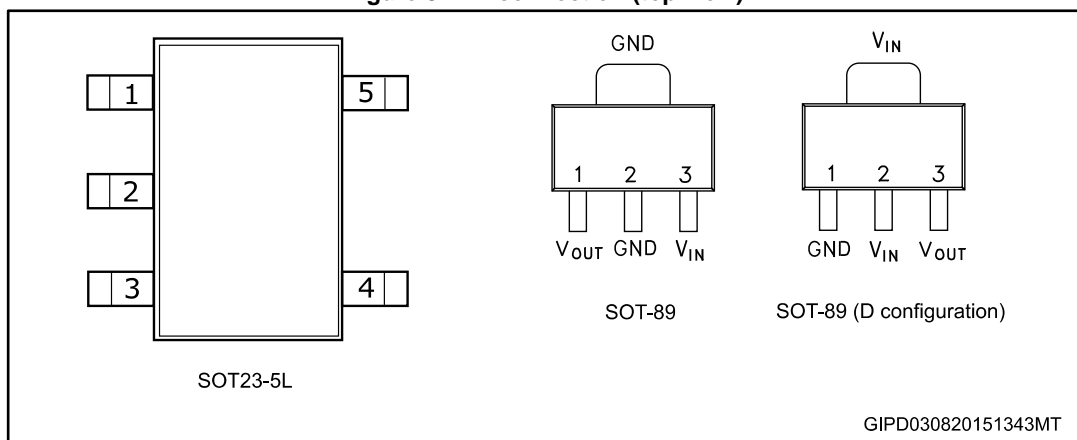


Table 1: Pin description (SOT23-5L)

Pin n°	Symbol	Function
1	IN	Input voltage of the LDO
2	GND	Common ground
3	EN	Enable pin logic input: low = shutdown, high = active
4	ADJ/NC	Adjustable pin on ADJ version, not connected on fixed version
5	OUT	Output voltage of the LDO

Table 2: Pin description (SOT-89)

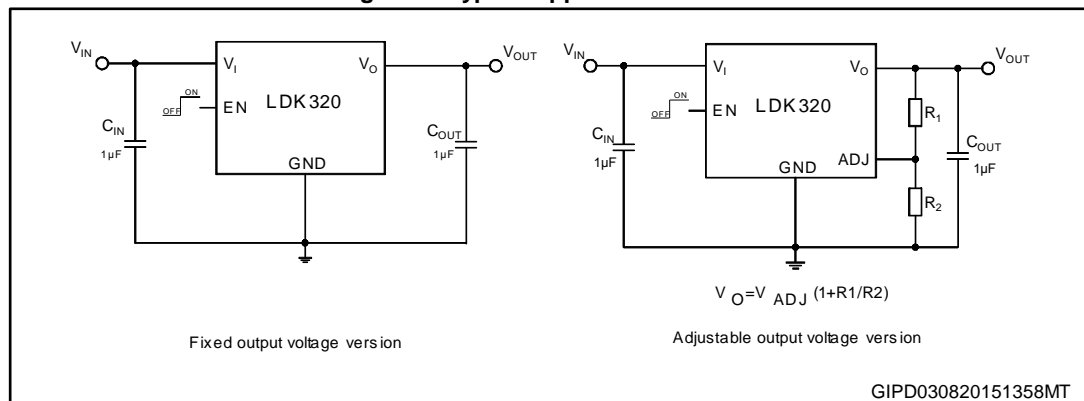
Pin n°	Symbol	Function
1	OUT	Output voltage of the LDO
2	GND	Common ground
3	IN	Input voltage of the LDO
TAB	GND	Common ground

Table 3: Pin description (SOT-89, D configuration)

Pin n°	Symbol	Function
1	GND	Common ground
2	IN	Input voltage of the LDO
3	OUT	Output voltage of the LDO
TAB	IN	Input voltage of the LDO

### 3 Typical application

Figure 4: Typical application circuits



Adjustable version and enable pin are not available on SOT-89 package.

## 4 Maximum ratings

Table 4: Absolute maximum ratings

Symbol	Parameter	Value	Unit
$V_{IN}$	DC input voltage	- 0.3 to 20	V
$V_{OUT}$	DC output voltage	- 0.3 to $V_I + 0.3$	V
$V_{EN}$	Enable input voltage	- 0.3 to $V_I + 0.3$	V
$V_{ADJ}$	ADJ pin voltage	- 0.3 to 2	V
$I_{OUT}$	Output current	Internally limited	mA
$P_D^{(1)}$	Power dissipation	Internally limited	mW
$T_{STG}$	Storage temperature range	- 65 to 150	°C
$T_{OP}$	Operating junction temperature range	- 40 to 125	°C

**Notes:**

<sup>(1)</sup>Maximum power dissipation must be calculated by taking into account the package and thermal performance.



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

Table 5: Thermal data

Symbol	Parameter	SOT23-5L	SOT-89	Unit
$R_{thJA}$	Thermal resistance junction-ambient	160	110	°C/W
$R_{thJC}$	Thermal resistance junction-case	68	15	°C/W

## 5 Electrical characteristics

$T_J = 25\text{ °C}$ ,  $V_{IN} = V_{OUT(NOM)} + 1\text{ V}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$ ,  $I_{OUT} = 1\text{ mA}$ ,  $V_{EN} = V_{IN}$ , unless otherwise specified.

Table 6: LDK320 electrical characteristics (fixed output version)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{IN}$	Operating input voltage		2.5		18	V
$V_{OUT}$	$V_{OUT}$ accuracy	$T_J = 25\text{ °C}$	-2		2	%
		$-40\text{ °C} < T_J < 125\text{ °C}$	-3		3	%
	$V_{OUT}$ accuracy, LDK320A	$T_J = 25\text{ °C}$	-0.5		0.5	%
		$-40\text{ °C} < T_J < 125\text{ °C}$	-1.5		1.5	%
$V_{OUT}$	Static line regulation	$V_{OUT} + 1\text{ V}$ $V_{IN} 18\text{ V}$		0.001	0.05	%/V
$V_{OUT}$	Static load regulation	$I_{OUT} = 1\text{ mA}$ to $200\text{ mA}$		0.001	0.003	%/mA
$V_{DROP}$	Dropout voltage (1)	$I_{OUT} = 100\text{ mA}$ , $V_{OUT} = 3.3\text{ V}$		100		
		$I_{OUT} = 200\text{ mA}$ , $V = 3.3\text{ V}$ $40\text{ °C} < T_J < 125\text{ °C}$		200	350	mV
$e_N$	Output noise voltage	10 Hz to 100 kHz $I_{OUT} = 10\text{ mA}$		63		$\mu\text{V}_{RMS}/\text{V}$
SVR	Supply voltage rejection	$f = 120\text{ Hz}$ , $I_{OUT} = 10\text{ mA}$ $V_{OUT} = 3.3\text{ V}$		88		dB
		$f = 1\text{ kHz}$ $I_{OUT} = 10\text{ mA}$ $V_{OUT} = 3.3\text{ V}$		65		
		$f = 10\text{ kHz}$ , $I_{OUT} = 10\text{ mA}$ $V_{OUT} = 3.3\text{ V}$		48		
$I_Q$	Quiescent current	$V_{OUT} + 1\text{ V}$ $V_{IN} 18\text{ V}$ $I_{OUT} = 0\text{ mA}$ , $-40\text{ °C} < T_J < 125\text{ °C}$		60	90	$\mu\text{A}$
		$V_{IN} = V_{OUT} + 1\text{ V}$ $I_{OUT} = 200\text{ mA}$ , $-40\text{ °C} < T_J < 125\text{ °C}$		70	100	
		$V_{IN}$ input current in OFF mode: $V_{EN} = GND$ $T_J = 25\text{ °C}$		0.2	1	
$I_{SC}$	Short-circuit current	$R_L = 0$		330		mA
		$R_L = 0$ , $V_{IN} = 16\text{ V}$		200		

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V <sub>EN</sub>	Enable input logic low	V <sub>IN</sub> = 2.5 V to 18 V -40 °C < T <sub>J</sub> < 125 °C			0.4	V
	Enable input logic high	V <sub>IN</sub> = 2.5 V to 18 V -40 °C < T <sub>J</sub> < 125 °C	1.2			
I <sub>EN</sub>	Enable pin input current	V <sub>EN</sub> = V <sub>IN</sub>		0.1	100	nA
T <sub>SHDN</sub>	Thermal shutdown			160		°C
	Hysteresis			20		
C <sub>OUT</sub>	Output capacitor	Capacitance (see <a href="#">Section 6: "Typical characteristics"</a> )	1		22	μF

**Notes:**

<sup>(1)</sup>Dropout voltage is the input-to-output voltage difference at which the output voltage is 100 mV below its nominal value.



$T_J = 25\text{ }^{\circ}\text{C}$ ,  $V_{IN} = 2.5\text{ V}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$ ,  $I_{OUT} = 1\text{ mA}$ ,  $V_{EN} = V_{IN}$ , unless otherwise specified.

Table 7: LDK320 electrical characteristics (ADJ version)

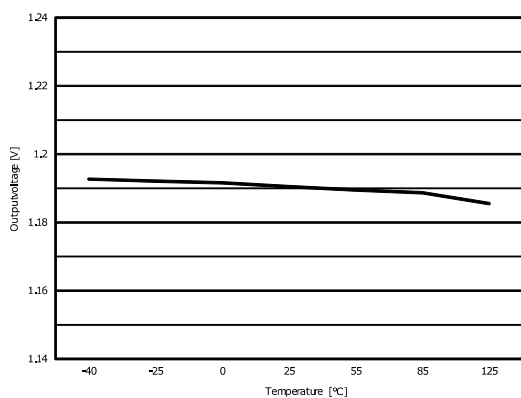
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{IN}$	Operating input voltage		2.5		18	V
$V_{ADJ}$	Adjustable voltage	$T_J = 25\text{ }^{\circ}\text{C}$		1.185		V
	Adjustable voltage accuracy	$T_J = 25\text{ }^{\circ}\text{C}$	-2		+2	%
		$40\text{ }^{\circ}\text{C} < T_J < 125\text{ }^{\circ}\text{C}$	-3		+3	
	Adjustable voltage, LDK320A	$T_J = 25\text{ }^{\circ}\text{C}$		1.2		V
	Adjustable voltage accuracy, LDK320A	$T_J = 25\text{ }^{\circ}\text{C}$	-0.5		+0.5	%
		$40\text{ }^{\circ}\text{C} < T_J < 125\text{ }^{\circ}\text{C}$	-1.5		+1.5	
$\Delta V_{OUT}$	Static line regulation	$V_{OUT} + 1\text{ V} \leq V_{IN} \leq 18\text{ V}$		0.001	0.05	%/V
$\Delta V_{OUT}$	Static load regulation	$I_{OUT} = 1\text{ mA}$ to 200 mA		0.0002	0.003	%/mA
$V_{DROP}$	Dropout voltage <sup>(1)</sup>	$I_{OUT} = 100\text{ mA}$ $V_{OUT} = 3.3\text{ V}$		100		mV
		$I_{OUT} = 200\text{ mA}$ $V_{OUT} = 3.3\text{ V}$ $40\text{ }^{\circ}\text{C} < T_J < 125\text{ }^{\circ}\text{C}$		200	350	
$e_N$	Output noise voltage	10 Hz to 100 kHz $I_{OUT} = 10\text{ mA}$		60		$\mu\text{V}_{RMS}$
$I_{ADJ}$	Adjust pin current				1	$\mu\text{A}$
SVR	Supply voltage rejection	$f = 120\text{ Hz}$ $I_{OUT} = 10\text{ mA}$ , $V_{OUT} = V_{ADJ}$		83		dB
		$f = 1\text{ kHz}$ $I_{OUT} = 10\text{ mA}$ $V_{OUT} = V_{ADJ}$		73		
		$f = 10\text{ kHz}$ $I_{OUT} = 10\text{ mA}$ $V_{OUT} = V_{ADJ}$		58		
$I_Q$	Quiescent current	$V_{OUT} + 1\text{ V} \leq V_{IN} \leq 18\text{ V}$ $I_{OUT} = 0\text{ mA}$ $-40\text{ }^{\circ}\text{C} < T_J < 125\text{ }^{\circ}\text{C}$		50	90	$\mu\text{A}$
		$V_{IN} = V_{OUT} + 1\text{ V}$ $I_{OUT} = 200\text{ mA}$ $-40\text{ }^{\circ}\text{C} < T_J < 125\text{ }^{\circ}\text{C}$		60	100	
		$V_{IN}$ input current in OFF mode: $V_{EN} = \text{GND}$ $T_J = 25\text{ }^{\circ}\text{C}$		0.2	1	

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I <sub>SC</sub>	Short-circuit current	R <sub>L</sub> = 0		330		mA
		R <sub>L</sub> = 0, V <sub>IN</sub> = 16 V		200		
V <sub>EN</sub>	Enable input logic low	V <sub>IN</sub> = 2.5 V to 18 V -40 °C < T <sub>J</sub> < 125 °C			0.4	V
	Enable input logic high	V <sub>IN</sub> = 2.5 V to 18 V -40 °C < T <sub>J</sub> < 125 °C	1.2			
I <sub>EN</sub>	Enable pin input current	V <sub>EN</sub> = V <sub>IN</sub>		0.1	100	nA
T <sub>SHDN</sub>	Thermal shutdown			160		°C
	Hysteresis			20		
C <sub>OUT</sub>	Output capacitor	Capacitance (see <a href="#">Section 6: "Typical characteristics"</a> )	1		22	μF

## 6 Typical characteristics

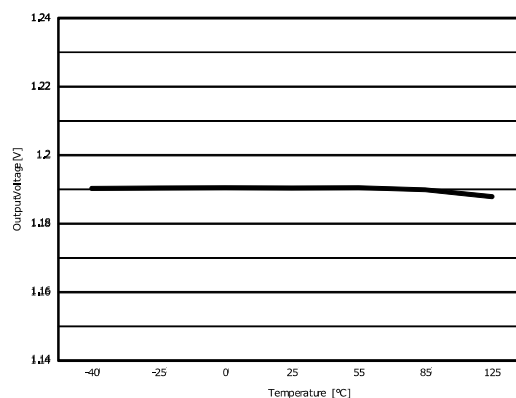
Unless otherwise specified:  $T_J = 25\text{ }^{\circ}\text{C}$ ,  $V_{IN} = V_{OUT(NOM)} + 1\text{ V}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$ .

**Figure 5: Output voltage vs temperature**  
( $V_{IN} = 2.5\text{ V}$ ,  $V_{OUT} = V_{ADJ}$ ,  $I_{OUT} = 1\text{ mA}$ )



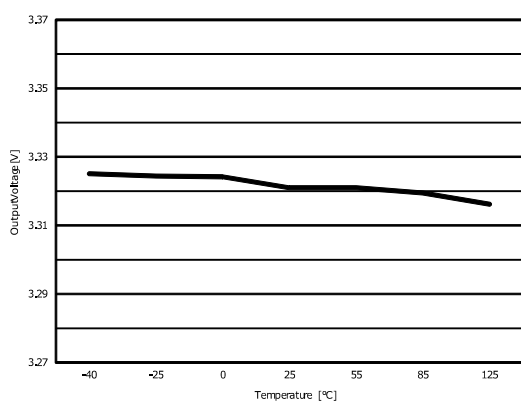
GIPD040820151207MT

**Figure 6: Output voltage vs temperature**  
( $V_{IN} = 2.5\text{ V}$ ,  $V_{OUT} = V_{ADJ}$ ,  $I_{OUT} = 200\text{ mA}$ )



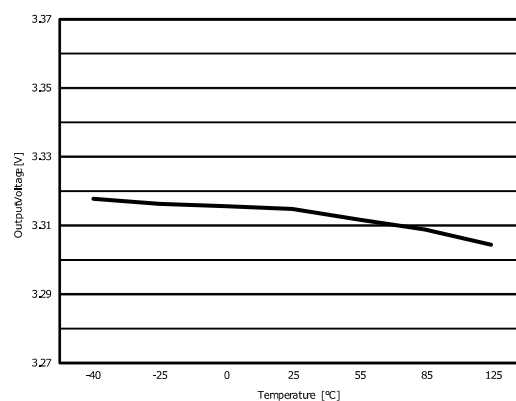
GIPD040820151208MT

**Figure 7: Output voltage vs temperature**  
( $V_{IN} = 4.3\text{ V}$ ,  $V_{OUT} = 3.3\text{ V}$ ,  $I_{OUT} = 1\text{ mA}$ )



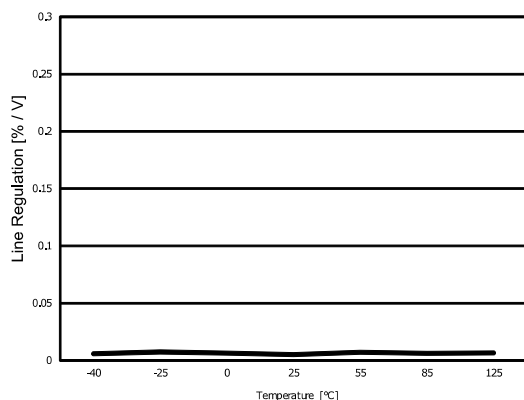
GIPD040820151209MT

**Figure 8: Output voltage vs temperature**  
( $V_{IN} = 4.3\text{ V}$ ,  $V_{OUT} = 3.3\text{ V}$ ,  $I_{OUT} = 200\text{ mA}$ )



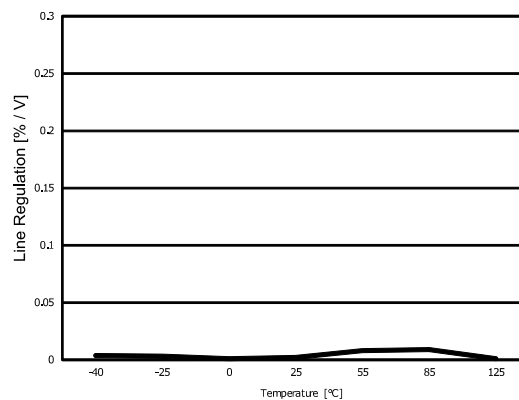
GIPD040820151210MT

**Figure 9: Line regulation vs temperature**  
( $V_{IN} = 4.3$  to  $18$  V,  $V_{OUT} = 3.3$  V,  $I_{OUT} = 1$  mA)



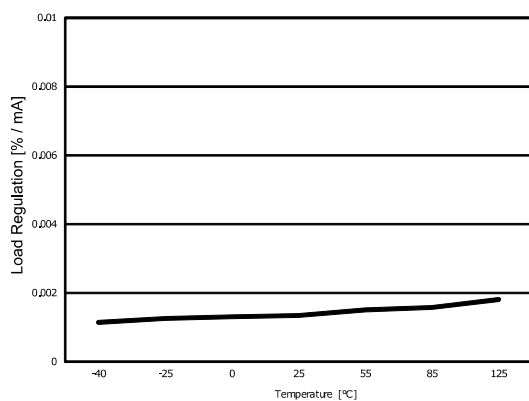
GIPD040820151211MT

**Figure 10: Line regulation vs temperature**  
( $V_{IN} = 2.5$  to  $18$  V,  $V_{OUT} = V_{ADJ}$ ,  $I_{OUT} = 1$  mA)



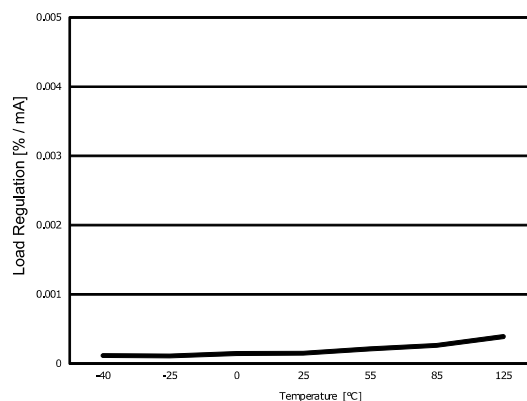
GIPD040820151212MT

**Figure 11: Load regulation vs temperature**  
( $V_{IN} = 4.3$  V,  $V_{OUT} = 3.3$  V,  $I_{OUT} = 1$  to  $200$  mA)



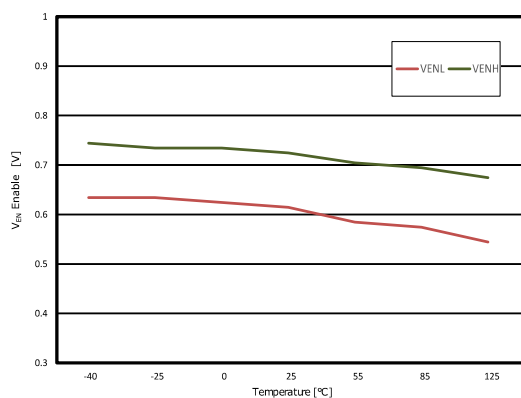
GIPD040820151213MT

**Figure 12: Load regulation vs temperature**  
( $V_{IN} = 2.5$  V,  $V_{OUT} = V_{ADJ}$ ,  $I_{OUT} = 1$  to  $200$  mA)



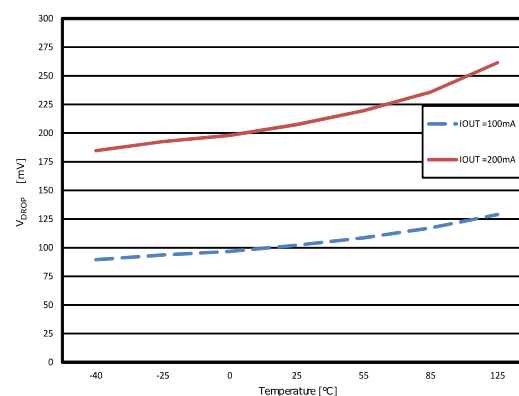
GIPD040820151214MT

**Figure 13: Enable thresholds vs temperature**  
( $I_{OUT} = 1$  mA)



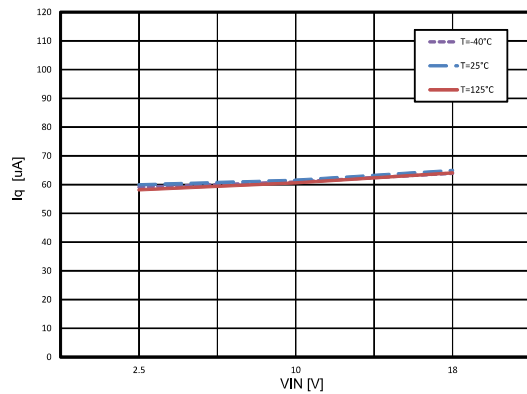
GIPD040820151215MT

**Figure 14: Dropout voltage vs temperature**



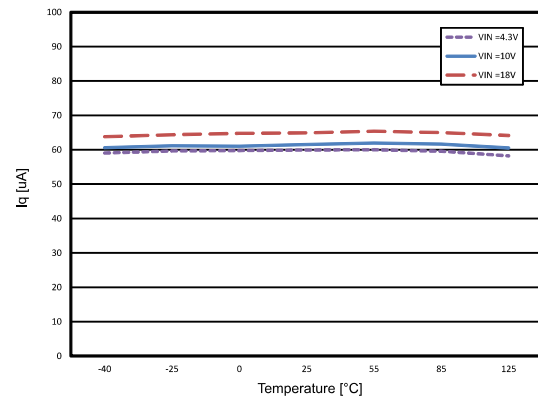
GIPD040820151216MT

Figure 15: Quiescent current vs input voltage  
( $I_{OUT} = 1 \text{ mA}$ )



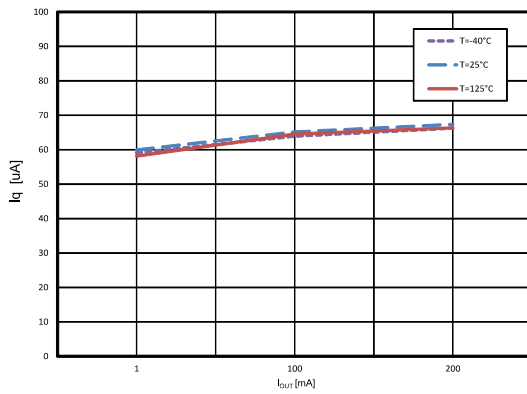
GIPD040820151217MT

Figure 16: Quiescent current vs temperature  
( $I_{OUT} = 1 \text{ mA}$ )



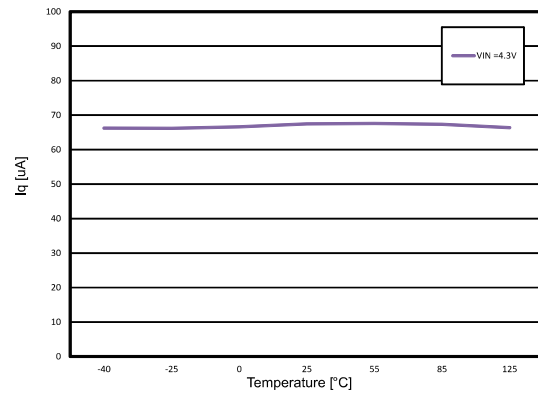
GIPD040820151218MT

Figure 17: Quiescent current vs output current  
( $V_{IN} = 4.3 \text{ V}$ )



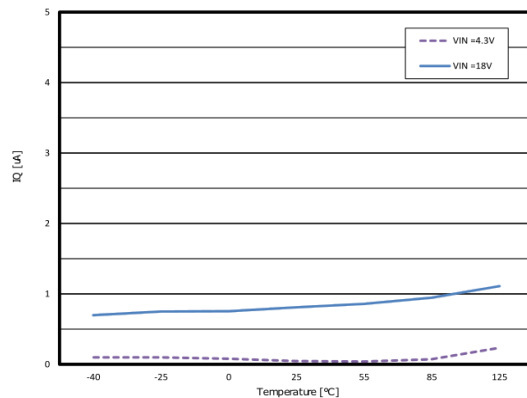
GIPD040820151219MT

Figure 18: Quiescent current vs temperature  
( $I_{OUT} = 200 \text{ mA}$ )



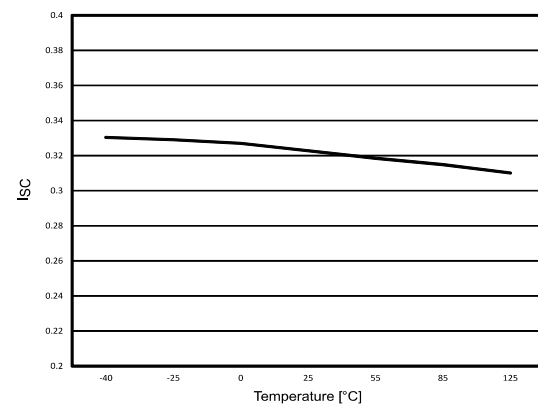
GIPD040820151220MT

Figure 19: Off-state current vs temperature



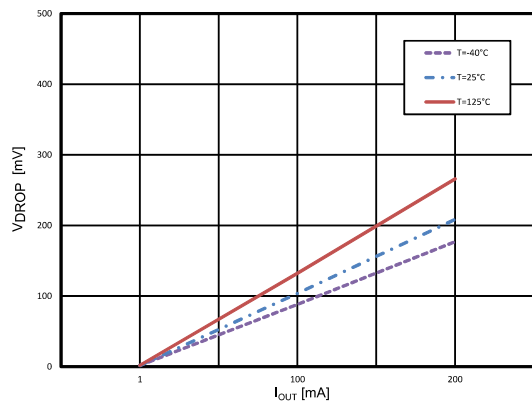
GIPD040820151221MT

Figure 20: Short-circuit current vs temperature  
( $V_{IN} = 4.3 \text{ V}$ )



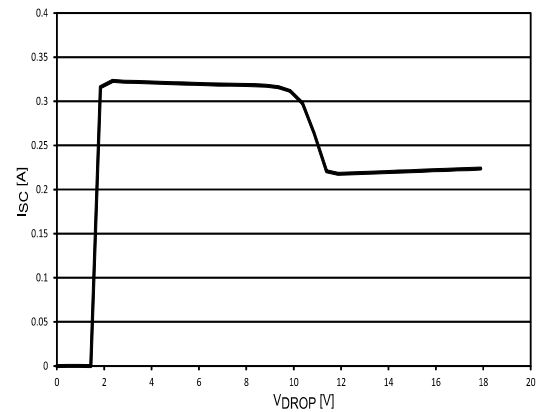
GIPD040820151222MT

Figure 21: Dropout voltage vs  $I_{OUT}$



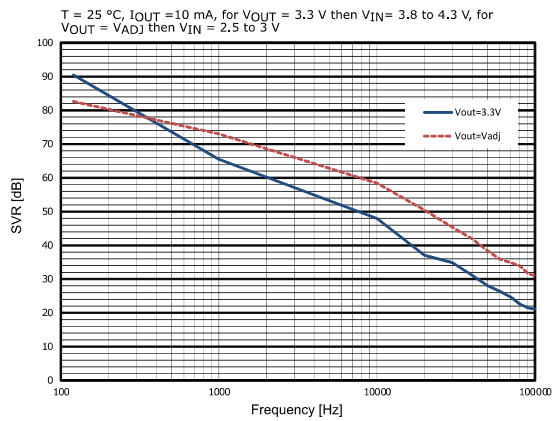
GIPD040820151223MT

Figure 22: Short-circuit current vs drop voltage



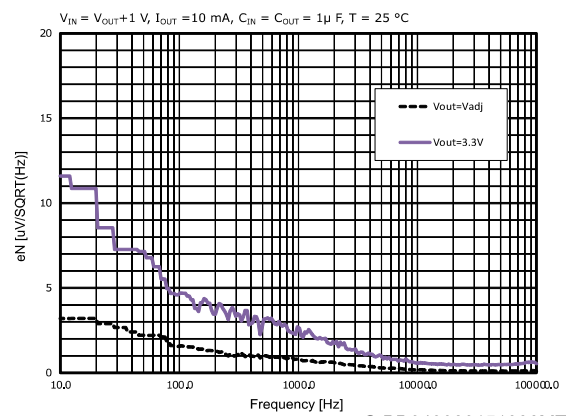
GIPD040820151224MT

Figure 23: SVR vs frequency



GIPD040820151225MT

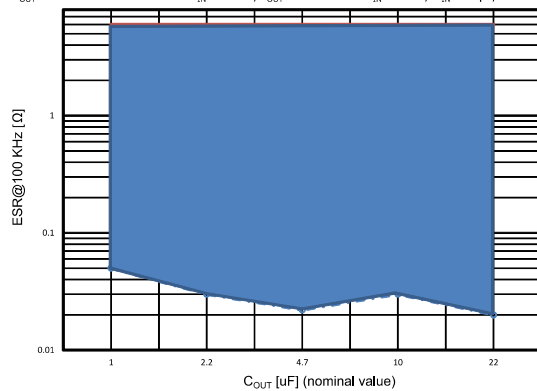
Figure 24: Output noise spectral density



GIPD040820151226MT

Figure 25: Stability plan ( $V_{OUT} = 3.3\text{ V}$ )

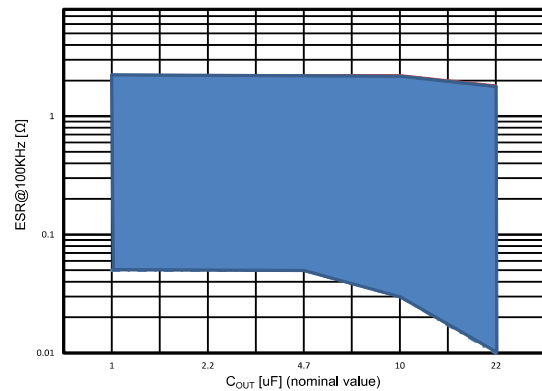
$I_{OUT}$  from 10 mA to 0.2 A for  $V_{IN} = 4.3\text{ V}$ ,  $I_{OUT} = 0.18\text{ A}$  for  $V_{IN} = 18\text{ V}$ ,  $C_{IN} = 1\text{ }\mu\text{F}$ ,  $T = 25\text{ }^{\circ}\text{C}$



GIPD040820151227MT

Figure 26: Stability plan ( $V_{OUT} = V_{ADJ}$ )

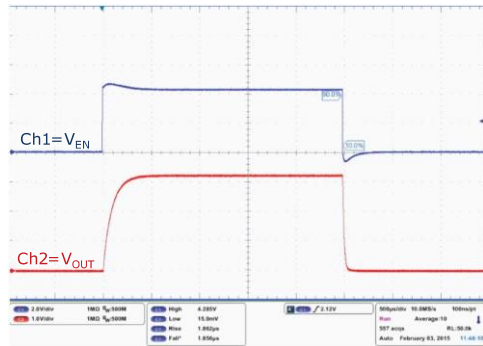
$I_{OUT}$  from 10 mA to 0.2 A for  $V_{IN} = 2.5\text{ V}$ ,  $I_{OUT} = 0.18\text{ A}$  for  $V_{IN} = 18\text{ V}$ ,  $C_{IN} = 1\text{ }\mu\text{F}$ ,  $T = 25\text{ }^{\circ}\text{C}$



GIPD040820151228MT

**Figure 27: Startup with enable ( $V_{OUT} = 3.3\text{ V}$ )**

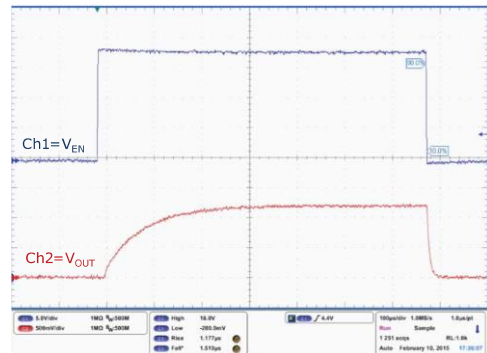
$V_{IN} = 4.3\text{ V}$ ,  $V_{EN}$  = from 0 to  $V_{IN}$ ,  $I_{OUT} = 200\text{ mA}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $t_{rise} = t_{fall} = 1\text{ }\mu\text{s}$



GIPD040820151229MT

**Figure 28: Startup with enable ( $V_{OUT} = V_{ADJ}$ )**

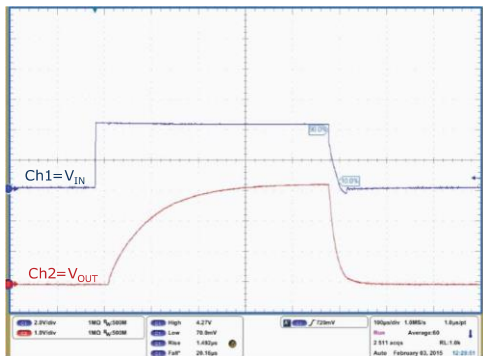
$V_{IN} = 18\text{ V}$ ,  $V_{EN}$  = from 0 to  $V_{IN}$ ,  $I_{OUT} = 200\text{ mA}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $t_{rise} = t_{fall} = 1\text{ }\mu\text{s}$



GIPD040820151230MT

**Figure 29: Turn-on time ( $V_{OUT} = 3.3\text{ V}$ )**

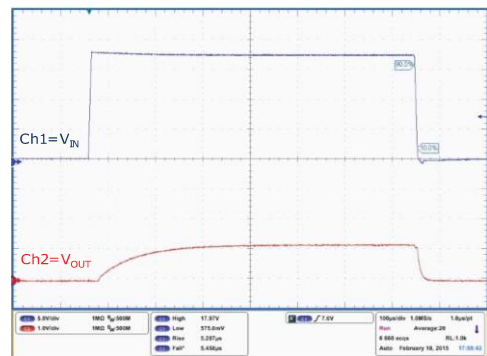
$V_{IN} = V_{EN}$  = from 0 to  $4.3\text{ V}$ ,  $I_{OUT} = 200\text{ mA}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$ ,  $T_{rise} = 1\text{ }\mu\text{s}$



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**Figure 30: Turn-on time ( $V_{OUT} = V_{ADJ}$ )**

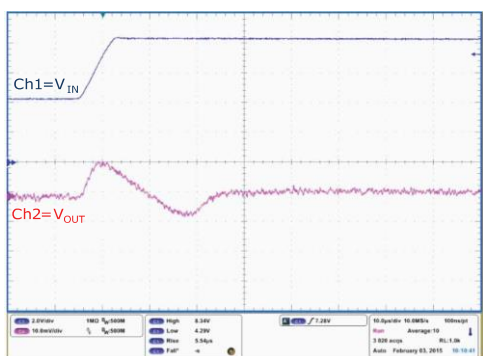
$V_{IN} = V_{EN}$  = from 0 to  $18\text{ V}$ ,  $I_{OUT} = 200\text{ mA}$ ,  $V_{OUT} = V_{REF}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $T_{rise} = 5\text{ }\mu\text{s}$



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**Figure 31: Line transient ( $V_{OUT} = 3.3\text{ V}$ , rise)**

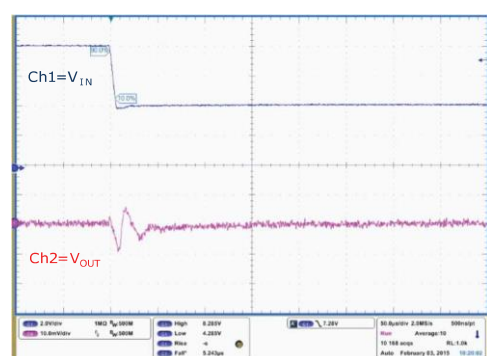
$V_{IN} = V_{EN}$  = from  $4.3$  to  $8.3\text{ V}$ ,  $I_{OUT} = 10\text{ mA}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $T_{rise} = 5\text{ }\mu\text{s}$



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**Figure 32: Line transient ( $V_{OUT} = 3.3\text{ V}$ , fall)**

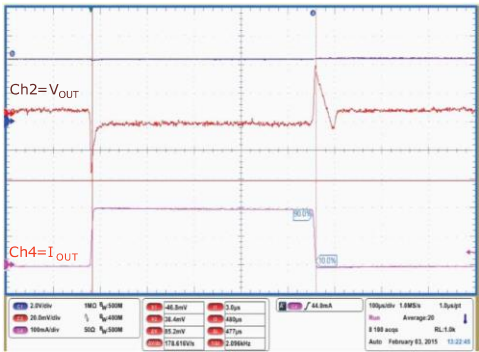
$V_{IN} = V_{EN}$  = from  $4.3$  to  $8.3\text{ V}$ ,  $I_{OUT} = 10\text{ mA}$ ,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $T_{fall} = 5\text{ }\mu\text{s}$



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Figure 33: Load transient ( $V_{OUT} = 3.3\text{ V}$ , rise)

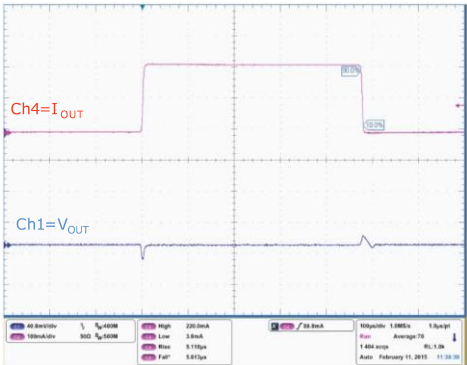
$V_{IN} = V_{EN} = 4.3\text{ V}$ ,  $I_{OUT}$  = from 1 to 200 mA,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $T_{rise} = 5\text{ }\mu\text{s}$



GIPD040820151236MT

Figure 34: Load transient ( $V_{OUT} = V_{ADJ}$ , fall)

$V_{IN} = V_{EN} = 2.5\text{ V}$ ,  $I_{OUT}$  = from 1 to 200 mA,  $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$   $T_{rise} - T_{fall} = 5\text{ }\mu\text{s}$



GIPD040820151237bMT



## 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 SOT23-5L package information

Figure 35: SOT23-5L package outline

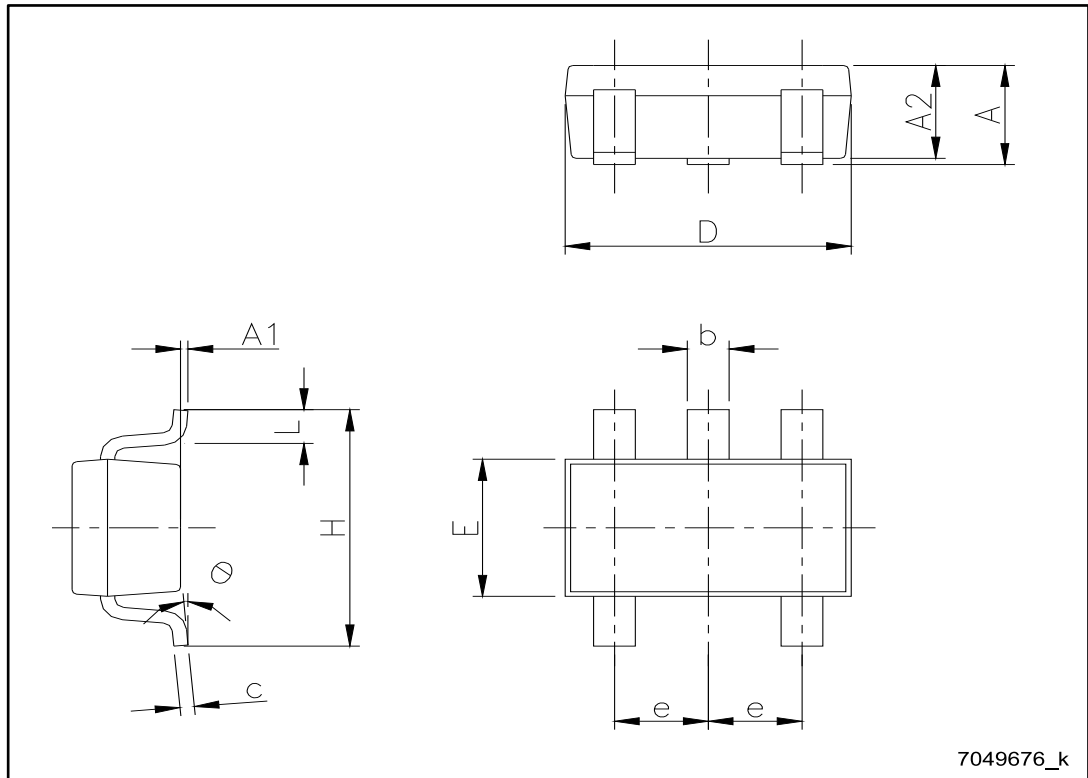
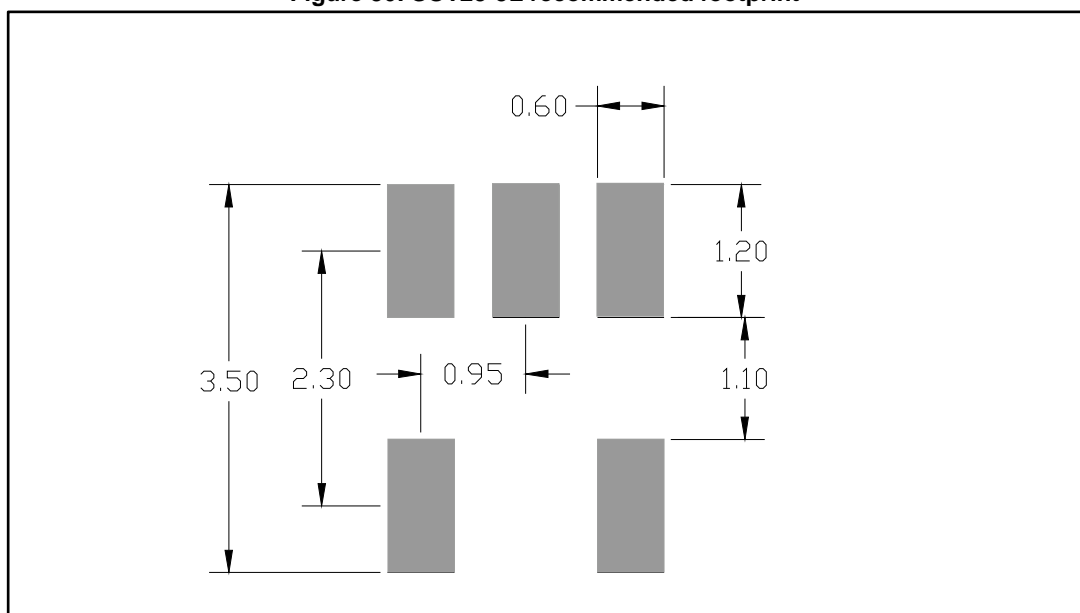


Table 8: SOT23-5L package mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	0.90		1.45
A1	0		0.15
A2	0.90		1.30
b	0.30		0.50
c	0.09		0.20
D		2.95	
E		1.60	
e		0.95	
H		2.80	
L	0.30		0.60
$\theta$	0°		8°

Figure 36: SOT23-5L recommended footprint



Dimensions are in mm

## 7.2 SOT23-5L packing information

Figure 37: SOT23-5L tape and reel outline

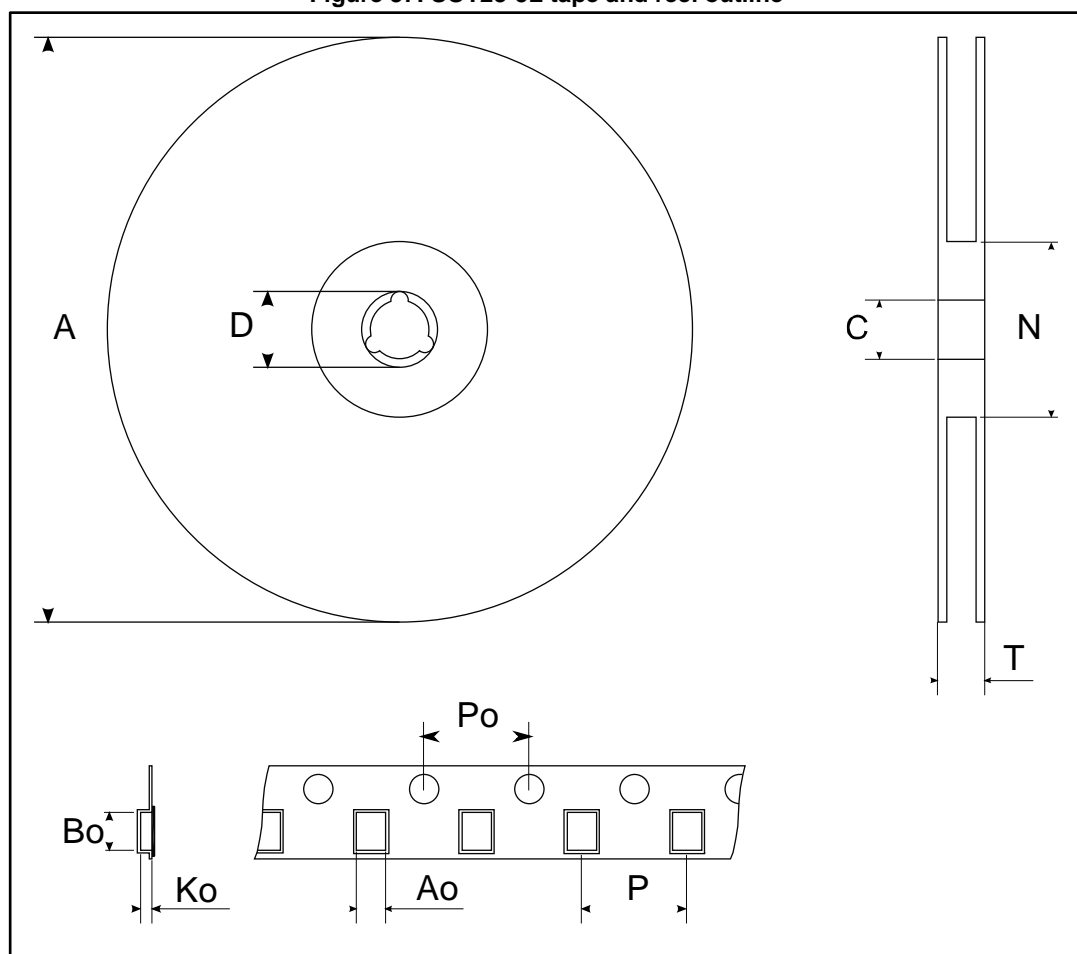


Table 9: SOT23-5L tape and reel mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A			180
C	12.8	13.0	13.2
D	20.2		
N	60		
T			14.4
Ao	3.13	3.23	3.33
Bo	3.07	3.17	3.27
Ko	1.27	1.37	1.47
Po	3.9	4.0	4.1
P	3.9	4.0	4.1

## 7.3 SOT-89 package information

Figure 38: SOT-89 package outline

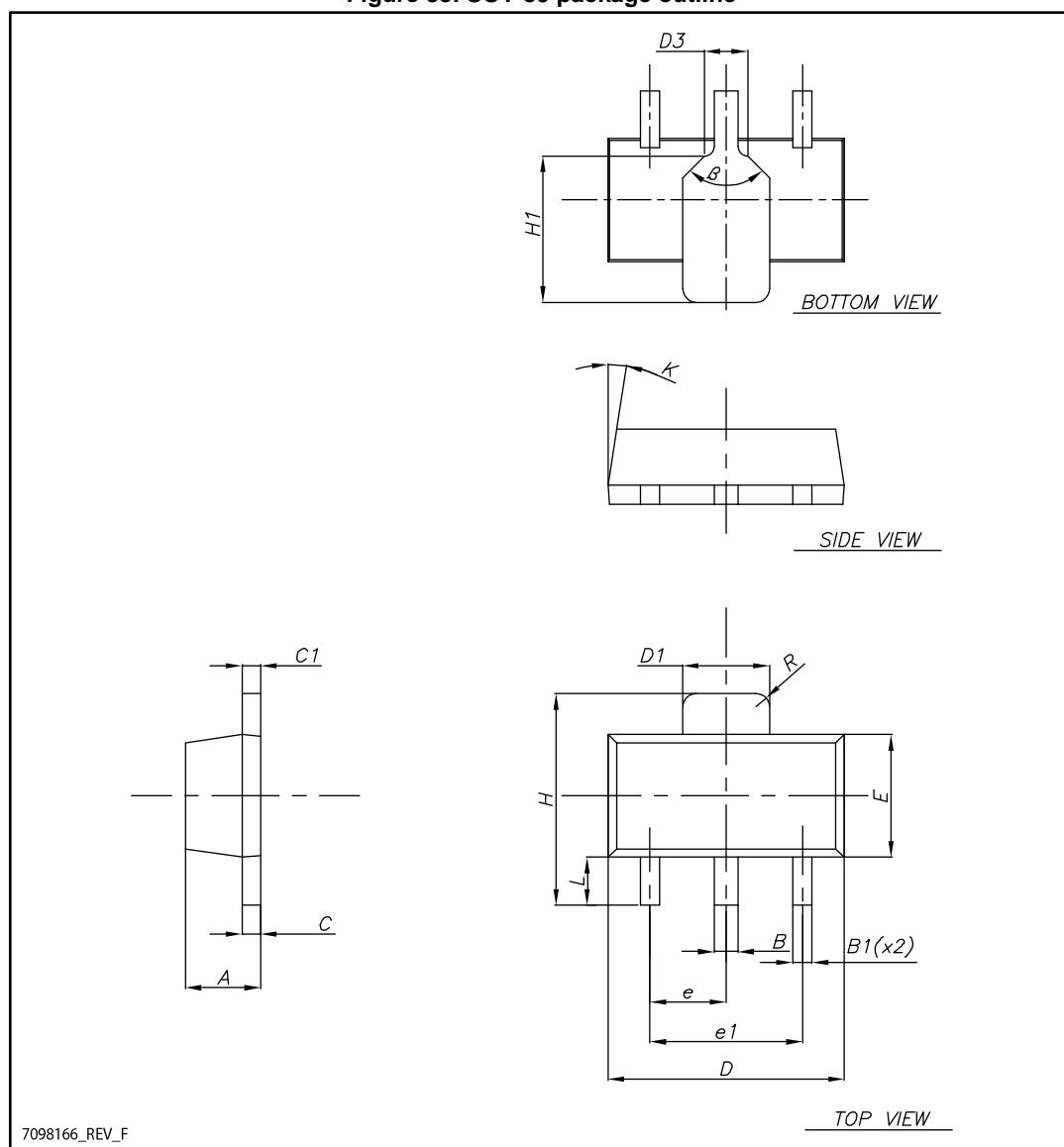
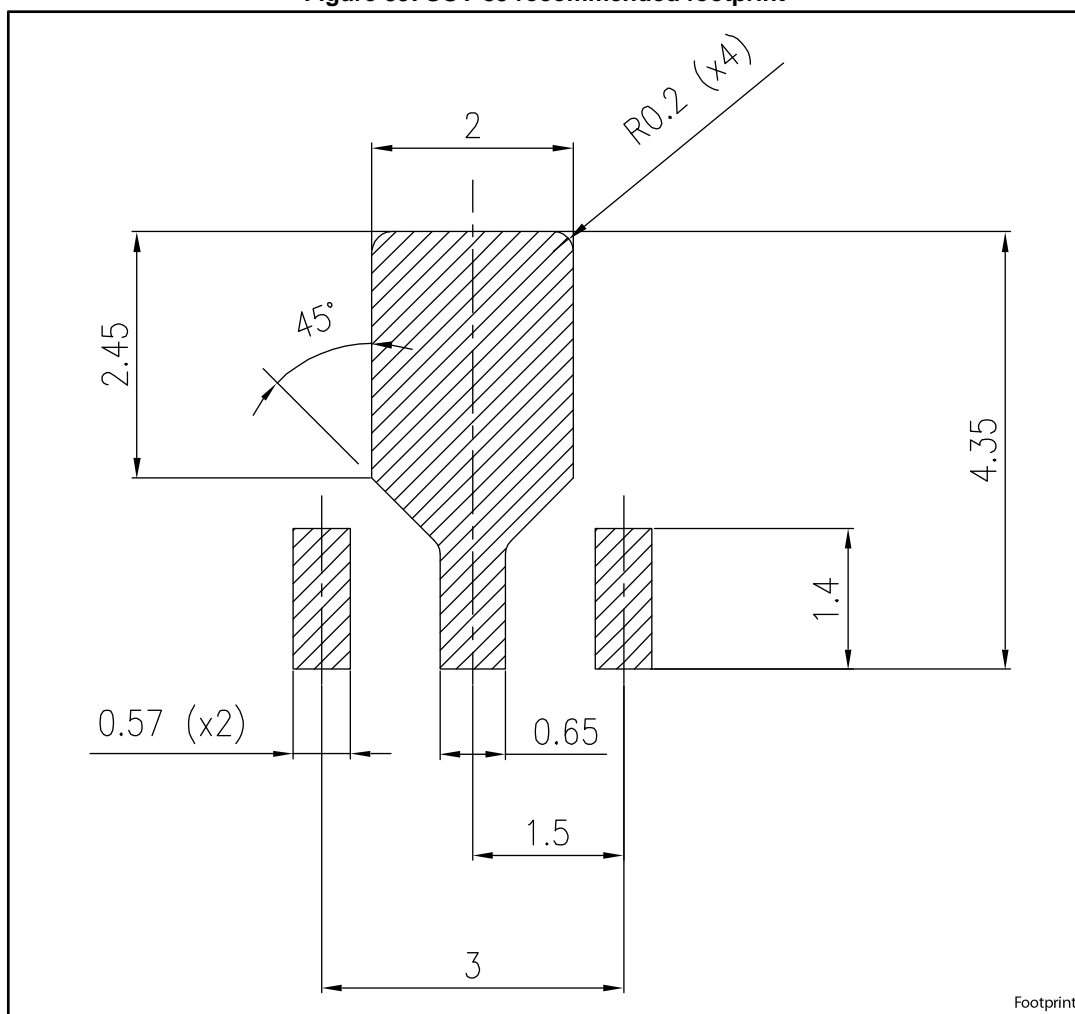


Table 10: SOT-89 mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	1.40		1.60
B	0.44		0.56
B1	0.36		0.48
C	0.35		0.44
C1	0.35		0.44
D	4.40		4.60
D1	1.62		1.83
D3		0.90	
E	2.29		2.60
e	1.42		1.57
e1	2.92		3.07
H	3.94		4.25
H1	2.70		3.10
K	1°		8°
L	0.89		120
R		0.25	
β		90°	

Figure 39: SOT-89 recommended footprint



## 7.4 SOT-89 packing information

Figure 40: SOT-89 carrier tape outline

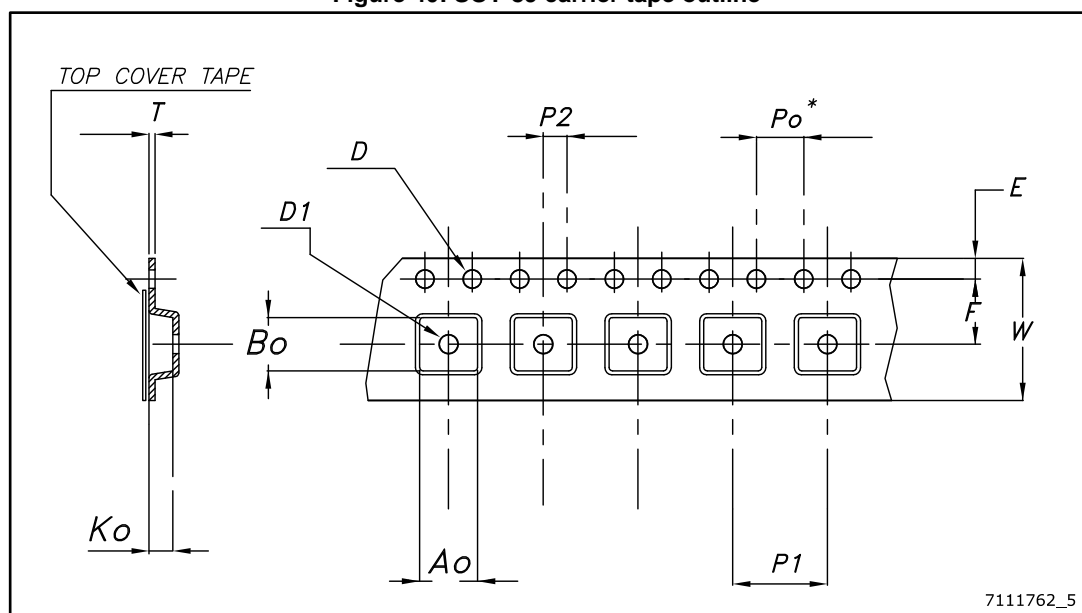


Table 11: SOT-89 carrier tape mechanical data

Dim.	mm	
	Value	Tolerance
Ao	4.91	± 0.10
Bo	4.52	± 0.10
Ko	1.90	± 0.10
F	5.50	± 0.10
E	1.75	± 0.10
W	12	± 0.30
P2	2	± 0.10
Po	4	± 0.10
P1	8	± 0.10
T	0.30	± 0.10
D	Ø 1.55	± 0.05
D1	Ø 1.60	± 0.10

## 8 Ordering information

Table 12: Order code

SOT23-5L	SOT-89 (D configuration)	Accuracy (%)	Output voltage
LDK320AM-R		0.5	ADJ
LDK320M-R		2	
LDK320AM12R <sup>(1)</sup>		0.5	1.2
LDK320M12R <sup>(1)</sup>		2	
LDK320AM15R <sup>(1)</sup>		0.5	1.5
LDK320M15R <sup>(1)</sup>		2	
LDK320AM18R <sup>(1)</sup>		0.5	1.8
LDK320M18R <sup>(1)</sup>		2	
LDK320AM25R <sup>(1)</sup>		0.5	2.5
LDK320M25R <sup>(1)</sup>		2	
LDK320AM30R	LDK320ADU30R <sup>(1)</sup>	0.5	3
LDK320M30R		2	
LDK320AM33R	LDK320ADU33R	0.5	3.3
LDK320M33R		2	
LDK320AM36R <sup>(1)</sup>		0.5	3.6
LDK320M36R <sup>(1)</sup>		2	
LDK320AM50R	LDK320ADU50R	0.5	5
LDK320M50R		2	
LDK320AM120R <sup>(1)</sup>	LDK320ADU120R <sup>(1)</sup>	0.5	12
LDK320M120R <sup>(1)</sup>		2	

**Notes:**

<sup>(1)</sup> Available on request.



## 9 Revision history

**Table 13: Document revision history**

Date	Revision	Changes
16-Nov-2015	1	First release.
01-Jun-2016	2	Document status promoted from preliminary data to production data. Updated title and features in cover page. Updated <i>Section 8: "Ordering information"</i> . Minor text changes.
05-Jul-2017	3	Updated <i>Section 8: "Ordering information"</i> . Minor text changes.

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