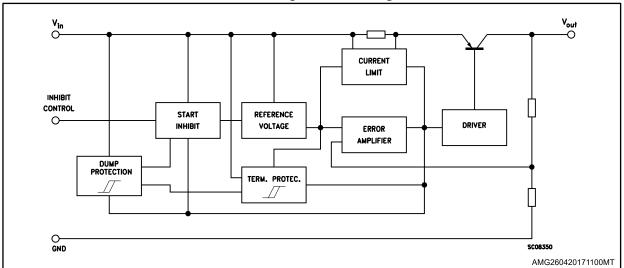
Contents

Co	ntents		
1	Diagran	n	3
2	Pin con	figuration	4
3	Maximu	ım ratings	5
4	Electric	al characteristics	6
5	Typical	performance characteristics	33
1 2 3 4	Packag	e information	38
	6.1	TO-220 (dual gauge) package information	38
	6.2	TO-220 (single gauge) package information	40
	6.3	TO-220FP package information	42
	6.4	TO-220 packing information	44
	6.5	DPAK package information	45
	6.6	PPAK package information	47
	6.7	PPAK and DPAK packing information	49
7	Orderin	g information	51
8	Revisio	n history	52

LFXX Diagram

1 Diagram

Figure 1: Block diagram

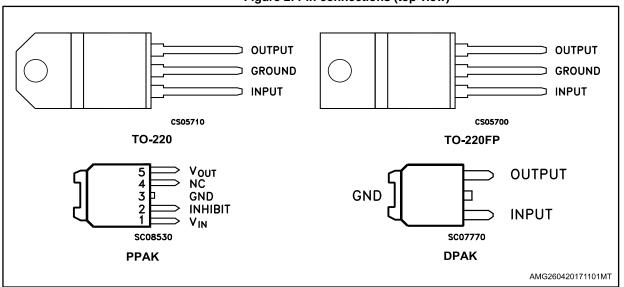




Pin configuration LFXX

2 Pin configuration

Figure 2: Pin connections (top view)





TAB is electrically connected to GND on TO-220, PPAK and DPAK packages.

LFXX Maximum ratings

3 Maximum ratings

Table 1: Absolute maximum ratings

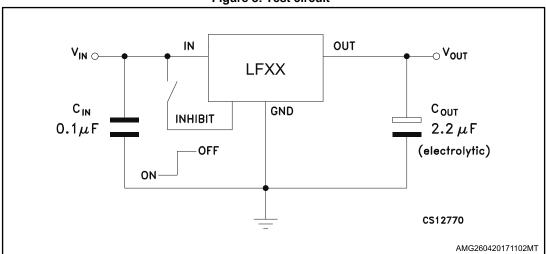
Symbol	Parameter	Value	Unit
Vı	DC input voltage	-0.5 to 40 ⁽¹⁾	V
lo	Output current	Internally limited	Α
Ртот	Power dissipation	Internally limited	W
T _{STG}	Storage temperature range	-40 to 150	°C
T _{OP}	Operating junction temperature range	-40 to 125	°C

Notes:

Table 2: Thermal data

Symbol	Parameter	TO-220	TO-220FP	DPAK/PPAK	Unit
R _{thJC}	Thermal resistance junction-case	5	5	8	°C/W
R _{thJA}	Thermal resistance junction-ambient	50	60	100	°C/W

Figure 3: Test circuit



 $^{^{(1)}\}mbox{For }18 < \mbox{V_{I}} < 40$ the regulator is in shutdown.

4 Electrical characteristics

Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1~\mu F$, $C_O = 2.2~\mu F$ unless otherwise specified.

Table 3: LF15AB electrical characteristics

Symbol	Parameter	Test condition	Test condition		Тур.	Max.	Unit
		I _O = 50 mA V _I = 3.5 V		1.485	1.5	1.515	
Vo	Output voltage	Io = 50 mA V _I = 3.5 V T _a = -25 to 85 °C		1.470		1.530	V
Vı	Operating input voltage	I _O = 500 mA		2.5		16	V
lo	Output current limit				1		Α
ΔVo	Line regulation	$V_1 = 2.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$				10	mV
ΔVo	Load regulation	V _I = 2.8 V I _O = 5 to 500 mA		2	10	mV	
	Quiescent current	$V_1 = 2.5 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	ON made		0.5	1	^
I _d		$V_1 = 2.8 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μA
			f = 120 Hz		82		dB
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 3.5 \pm 1 \text{ V}$	f = 1 kHz		77		
		V1 = 0.0 ± 1 V	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		μV
Vd	Dropout voltage	lo = 200 mA			1		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
lı	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 4: LF18AB electrical characteristics

Symbol	Parameter	Test condition		Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 3.3 V		1.782	1.8	1.818	
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 3.3 \text{ V}$ $T_{a} = -25 \text{ to } 85 \text{ °C}$		1.764		1.836	V
Vı	Operating input voltage	Io = 500 mA		3		16	V
lo	Output current limit				1		Α
ΔVo	Line regulation	V _I = 2.8 to 16 V I _O = 5 mA			2	12	mV
ΔVo	Load regulation	V _I = 3.3 V I _O = 5 to 500 mA			2	10	mV
	Quiescent current	V _I = 2.5 to 16 V I _O = 0 mA			0.5	1	
l _d		V _I = 3.1 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μA
			f = 120 Hz		82		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 3.5 \pm 1 \text{ V}$	f = 1 kHz		77		dB
		VI = 3.3 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		μV
V _d	Dropout voltage	I _O = 200 mA			0.7		V
V _{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
VIH	Control input logic high	T _a = -40 to 125 °C		2			V
Iı	Control input current	V _I = 6 V V _C = 6 V	V _I = 6 V		10		μA
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, T_J = 25 °C, C_I = 0.1 μF , C_O = 2.2 μF unless otherwise specified.

Table 5: LF18C electrical characteristics

Symbol	Parameter	Test condit	ion	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 3.5 V		1.764	1.8	1.836	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 3.5 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$		1.728		1.872	V
Vı	Operating input voltage	Io = 500 mA		3		16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	V _I = 2.8 to 16 V I _O = 5 mA			2	12	mV
ΔV_{O}	Load regulation	V _I = 3.3 V I _O = 5 to 500 mA			2	10	mV
	Quiescent current	V _I = 2.5 to 16 V I _O = 0 mA	ON mode	0.5	1	_	
l _d		V _I = 3.1 to 16 V I _O = 500 mA				12	mA
		V _I = 6 V	OFF mode		50	100	μΑ
			f = 120 Hz		82		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 3.5 \pm 1 \text{ V}$	f = 1 kHz		77		dB
		VI = 3.3 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		μV
Vd	Dropout voltage	I _O = 200 mA			0.7		V
VIL	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
l _l	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

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

Table 6: LF18C (automotive grade) electrical characteristics

Symbol	Parameter	Test con	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 3.5 \text{ V}$ $T_a = 25 \text{ °C}$		1.764	1.8	1.836	V
		Io = 50 mA V _I = 3.5 V		1.713		1.887	
Vı	Operating input voltage	Io = 500 mA		3		16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔVο	Line regulation	$V_1 = 2.8 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			2	15	mV
ΔVο	Load regulation	$V_1 = 3.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			2	15	mV
	I _d Quiescent current	$V_1 = 2.5 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	ON made		0.5	2	A
ld		V _I = 3.1 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	120	μA
		I _O = 5 mA	f = 120 Hz		82		
SVR	Supply voltage rejection $V_1 = 3.5 \pm 1 \text{ V}$		f = 1 kHz		77		dB
		T _a = 25 °C	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 kHz $T_a = 25 ^{\circ}\text{C}$	2		50		μV
	Dranautwaltana	I _O = 200 mA			0.2	1.3	V
V_d	Dropout voltage	Io = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
lı	Control input current	$V_{I} = 6 V$ $V_{C} = 6 V$ $T_{a} = 25 °C$			10		μA
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I _O = 0 to 500 mA		2	10		μF

Refer to test circuits, T_J = 25 °C, C_I = 0.1 μF , C_O = 2.2 μF unless otherwise specified.

Table 7: LF25AB electrical characteristics

Symbol	Parameter	Test cond	lition	Min.	Тур.	Max.	Unit
		Io = 50 mA V _I = 4.5 V		2.475	2.5	2.525	
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 4.5 \text{ V}$ $T_{a} = -25 \text{ to } 85 \text{ °C}$		2.450		2.550	V
Vı	Operating input voltage	Io = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			2	12	mV
ΔV_{O}	Load regulation	V _I = 3.8 V I _O = 5 to 500 mA			2	12	mV
	Quiescent current	V _I = 3.5 to 16 V I _O = 0 mA			0.5	1	
ld		V _I = 3.8 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μΑ
			f = 120 Hz		82		dB
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 4.5 \pm 1 \text{ V}$	f = 1 kHz		77		
		VI = 4.5 ± 1 V	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
Iı	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω $l_0 = 0$ to 500 mA		2	10		μF

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

Table 8: LF25AB (automotive grade) electrical characteristics

Symbol	Parameter	Test co	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 4.5 \text{ V}$ $T_{a} = 25 \text{ °C}$		2.475	2.5	2.525	V
		I _O = 50 mA V _I = 4.5 V		2.435		2.565	
Vı	Operating input voltage	Io = 500 mA				16	٧
lo	Output current limit	T _a = 25 °C			1		Α
ΔVo	Line regulation	$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			2	15	mV
ΔVo	Load regulation	$V_1 = 3.8 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			2	15	mV
		$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	ON mode		0.5	2	mA
ld	Quiescent current	$V_1 = 3.8 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	110 (
			OFF mode		50	120	μΑ
		I _O = 5 mA	f = 120 Hz		82		
SVR	Supply voltage rejection	$V_1 = 4.5 \pm 1 \text{ V}$	f = 1 kHz		77		dB
		T _a = 25 °C	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kH T _a = 25 °C	łz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	1.3	V
V d	Dropout voltage	I _O = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V_{IH}	Control input logic high			2			V
l ₁	Control input current	$V_{I} = 6 V$ $V_{C} = 6 V$ $T_{a} = 25 °C$	Vc = 6 V		10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF



Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1$ μF , $C_O = 2.2$ μF unless otherwise specified.

Table 9: LF25C electrical characteristics

Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 4.5 V		2.45	2.5	2.55	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 4.5 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$		2.4		2.6	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_O	Line regulation	$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			2	12	mV
ΔV_{O}	Load regulation	$V_1 = 3.8 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			2	12	mV
	Quiescent current	V _I = 3.5 to 16 V I _O = 0 mA			0.5	1	
l _d		V _I = 3.8 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μA
		J 5 A	f = 120 Hz		82		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 4.5 \pm 1 \text{ V}$	f = 1 kHz		77		dB
		VI = 4.0 ± 1 V	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kH	łz		50		μV
Vd	Drangut valtage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA			0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω lo = 0 to 500 mA		2	10		μF

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

Table 10: LF25C (automotive grade) electrical characteristics

Symbol	Parameter	Test co	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 4.5 \text{ V}$ $T_{a} = 25 \text{ °C}$		2.45	2.5	2.55	V
		I _O = 50 mA V _I = 4.5 V		2.385		2.615	
Vı	Operating input voltage	Io = 500 mA				16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔV_{O}	Line regulation	$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			2	15	mV
ΔVo	Load regulation	$V_1 = 3.8 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			2	15	mV
	Quiescent current	$V_1 = 3.5 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	- ON mode		0.5	2	Λ
ld		$V_1 = 3.8 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	mA
		V _I = 6 V	OFF mode		50	120	μΑ
		I _O = 5 mA	f = 120 Hz		82		
SVR	Supply voltage rejection	$V_1 = 4.5 \pm 1 \text{ V}$	f = 1 kHz		77		dB
		T _a = 25 °C	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 k T _a = 25 °C	Hz		50		μV
	Duranturaltana	I _O = 200 mA			0.2	1.3	V
V_{d}	Dropout voltage	Io = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
l ₁	Control input current	$V_{I} = 6 V$ $V_{C} = 6 V$ $T_{a} = 25 °C$	Vc = 6 V		10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, T_J = 25 °C, C_I = 0.1 μF , C_O = 2.2 μF unless otherwise specified.

Table 11: LF33AB electrical characteristics

Symbol	Parameter	Test condition		Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 5.3 V		3.267	3.3	3.333	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 5.3 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$		3.234		3.366	V
Vı	Operating input voltage	Io = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 4.3 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			3	16	mV
ΔVo	Load regulation	V _I = 4.6 V I _O = 5 to 500 mA			3	16	mV
	Quiescent current	V _I = 4.3 to 16 V I _O = 0 mA			0.5	1	
ld		V _I = 4.6 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μA
			f = 120 Hz		80		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 5.3 \pm 1 \text{ V}$	f = 1 kHz		75		dB
		VI = 3.3 ± 1 V	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kH	Нz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
Iı	Control input current	$V_1 = 6 V$ $V_C = 6 V$	•		10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 12: LF33C electrical characteristics

Symbol	Parameter	Test cond	lition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 5.3 V		3.234	3.3	3.366	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 5.3 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$	i = 5.3 V			3.432	V
Vı	Operating input voltage	Io = 500 mA	o = 500 mA			16	V
lo	Output current limit				1		Α
ΔV _O	Line regulation	V _I = 4.3 to 16 V I _O = 5 mA			3	16	mV
ΔV _O	Load regulation	V _I = 4.6 V I _O = 5 to 500 mA			3	16	mV
		V _I = 4.3 to 16 V I _O = 0 mA	ON		0.5	1	
I _d	Quiescent current	V _I = 4.6 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μΑ
			f = 120 Hz		80		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 5.3 \pm 1 \text{ V}$	f = 1 kHz		75		dB
		V1 = 3.3 ± 1 V	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kH	z		50		μV
Vd	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voitage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

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

Table 13: LF33C (automotive grade) electrical characteristics

Symbol	Parameter	Test cond	dition	Min.	Тур.	Max.	Unit
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 5.3 \text{ V}$ $T_{a} = 25 \text{ °C}$		3.234	3.3	3.366	V
		I _O = 50 mA V _I = 5.3 V,		3.153		3.447	
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔVo	Line regulation	$V_1 = 4.3 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			3	19	mV
ΔVo	Load regulation	$V_1 = 4.6 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			3	19	mV
		V _I = 4.3 to 16 V I _O = 0 mA	ON TO THE		0.5	2	^
ld	Quiescent current	V _I = 4.6 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	120	μA
		I _O = 5 mA	f = 120 Hz		80		
SVR	Supply voltage rejection	$V_1 = 5.3 \pm 1 \text{ V}$	f = 1 kHz		75		dB
		T _a = 25 °C	f = 10 kHz		65		
eN	Output noise voltage	B = 10 Hz to 100 kH $T_a = 25 ^{\circ}\text{C}$	Нz		50		μV
	Dranautualtana	I _O = 200 mA			0.2	1.3	\ /
V _d	Dropout voltage	I _O = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
I _I	Control input current	$V_1 = 6 V$ $V_C = 6 V$ $T_a = 25 °C$			10		μA
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, T_a = -40 to 125 °C, C_I = 0.1 μ F, C_O = 2.2 μ F unless otherwise specified.

Table 14: LF50AB electrical characteristics

Symbol	Parameter	Test co	Test condition		Тур.	Max.	Unit
		I _O = 50 mA V _I = 7 V		4.95	5	5.05	
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 7 \text{ V}$ $T_{a} = -25 \text{ to } 85 \text{ °C}$		4.9		5.1	V
Vı	Operating input voltage	I _O = 500 mA	o = 500 mA			16	>
lo	Output current limit				1		Α
ΔVο	Line regulation	$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			5	25	mV
ΔVο	Load regulation	$V_1 = 6.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			5	25	mV
		V _I = 6 to 16 V I _O = 0 mA	- ON mode		0.5	1	mA
l _d	Quiescent current	V _I = 6.3 to 16 V I _O = 500 mA	- ON Mode			12	IIIA
		V _I = 6 V	OFF mode		50	100	μΑ
			f = 120 Hz		76		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 7 \pm 1 \text{ V}$	f = 1 kHz		71		dB
		V1 - 7 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100	kHz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Diopout voltage	Io = 500 mA			0.4	0.7	٧
VIL	Control input logic low	T _a = -40 to 125 °C	·			0.8	>
V _{IH}	Control input logic high	$T_a = -40 \text{ to } 125 \text{ °C}$	T _a = -40 to 125 °C				V
lı	Control input current	V _I = 6 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I _O = 0 to 500 mA)	2	10		μF

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

Table 15: LF50AB (automotive grade) electrical characteristics

Symbol	Parameter	Test cor	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 7 \text{ V}$ $T_{a} = 25 \text{ °C}$		4.95	5	5.05	V
		I _O = 50 mA V _I = 7 V		4.885		5.115	
Vı	Operating input voltage	Io = 500 mA				16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔVo	Line regulation	$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			5	28	mV
ΔVo	Load regulation	$V_1 = 6.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			5	28	mV
		$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	- ON mode		0.5	2	mA
ld	Quiescent current	V _I = 6.3 to 16 V I _O = 500 mA	- ON Mode			12	IIIA
		V _I = 6 V	OFF mode		50	120	μΑ
		Io = 5 mA	f = 120 Hz		76		
SVR	Supply voltage rejection	$V_1 = 7 \pm 1 \ V$	f = 1 kHz		71		dB
		T _a = 25 °C	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 k T _a = 25 °C	KHz		50		μV
V _d	Dropout voltage	I _O = 200 mA			0.2	1.3	V
Vd	Dropout voltage	I _O = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
I _I	Control input current	$V_1 = 6 V$ $V_C = 6 V$ $T_a = 25 °C$			10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω lo = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 16: LF50AC electrical characteristics

Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 7 V		4.925	5	5.075	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 7 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$		4.875		5.125	V
Vı	Operating input voltage	I _O = 500 mA	Io = 500 mA			16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			5	25	mV
ΔV_{O}	Load regulation	$V_1 = 6.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			5	25	mV
		V _I = 6 to 16 V I _O = 0 mA			0.5	1	
ld	Quiescent current	V _I = 6.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μA
			f = 120 Hz		76		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 7 \pm 1 \text{ V}$	f = 1 kHz		71		dB
		V1 = 7 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100	kHz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C	T _a = -40 to 125 °C				V
lı	Control input current	V _I = 6 V V _C = 6 V	·		10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 0 lo = 0 to 500 mA	Σ	2	10		μF

Refer to test circuits, T_J = 25 °C, C_I = 0.1 μF , C_O = 2.2 μF unless otherwise specified.

Table 17: LF50C electrical characteristics

Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		Io = 50 mA V _I = 7 V		4.9	5	5.1	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 7 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$		4.8		5.2	V
Vı	Operating input voltage	I _O = 500 mA	lo = 500 mA			16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			5	25	mV
ΔV_{O}	Load regulation	$V_1 = 6.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			5	25	mV
		V _I = 6 to 16 V I _O = 0 mA			0.5	1	
ld	Quiescent current	V _I = 6.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	100	μΑ
			f = 120 Hz		76		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 7 \pm 1 \text{ V}$	f = 1 kHz		71		dB
		V1 = 7 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100	kHz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C				8.0	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 6 V V _C = 6 V	·		10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 g lo = 0 to 500 mA	Ω	2	10		μF

Refer to test circuits, T_a = -40 to 125 °C, C_I = 0.1 μ F, C_O = 2.2 μ F unless otherwise specified.

Table 18: LF50C (automotive grade) electrical characteristics

Symbol	Parameter	Test cond	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 7 \text{ V}$ $T_a = 25 \text{ °C}$		4.9	5	5.1	V
		I _O = 50 mA V _I = 7 V		4.785		5.215	
Vı	Operating input voltage	I _O = 500 mA				16	V
lο	Output current limit	T _a = 25 °C			1		Α
ΔV_{O}	Line regulation	$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			5	28	mV
ΔVo	Load regulation	V _I = 6.3 V I _O = 5 to 500 mA			5	28	mV
		$V_1 = 6 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$	ON made		0.5	2	A
ld	Quiescent current	V _I = 6.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 6 V	OFF mode		50	120	μΑ
		I _O = 5 mA	f = 120 Hz		76		
SVR	Supply voltage rejection	$V_1 = 7 \pm 1 \text{ V}$	f = 1 kHz		71		dB
		T _a = 25 °C	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 kH T _a = 25 °C	Hz		50		μV
\ <i>/</i>	Dronout valtage	I _O = 200 mA			0.2	1.3	V
V_d	Dropout voltage	I _O = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
ViH	Control input logic high			2			V
I _I	Control input current	$V_{I} = 6 V$ $V_{C} = 6 V$ $T_{a} = 25 °C$			10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1$ μF , $C_O = 2.2$ μF unless otherwise specified.

Table 19: LF60AB electrical characteristics

Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		$I_0 = 50 \text{ mA}$ $V_1 = 8 \text{ V}$		5.94	6	6.06	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 8 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$		5.88		6.12	V
Vı	Operating input voltage	Io = 500 mA	Io = 500 mA			16	V
lo	Output current limit				1		Α
ΔV _O	Line regulation	$V_1 = 7 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			6	30	mV
ΔV _O	Load regulation	V _I = 7.3 V I _O = 5 to 500 mA			6	30	mV
		V _I = 7 to 16 V I _O = 0 mA			0.7	1.5	
I _d	Quiescent current	V _I = 7.3 to 16 V I _O = 500 mA			12	mA	
		V _I = 9 V	OFF mode		70	140	μA
			f = 120 Hz		75		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 8 \pm 1 \text{ V}$	f = 1 kHz		70		dB
		VI = 0 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 k	Hz		50		μV
Vd	Dropout voltogo	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA			0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 9 V V _C = 6 V			10		μA
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω $I_0 = 0$ to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 20: LF60C electrical characteristics

Symbol	Parameter	Test cond	lition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 8 V		5.88	6	6.12	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 8 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$		5.76		6.24	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 7 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			6	30	mV
ΔV_{O}	Load regulation	V _I = 7.3 V I _O = 5 to 500 mA			6	30	mV
		V _I = 7 to 16 V I _O = 0 mA			0.7	1.5	
ld	Quiescent current	V _I = 7.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 9 V	OFF mode		70	140	μA
		I 5 A	f = 120 Hz		75		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 8 \pm 1 \text{ V}$	f = 1 kHz		70		dB
		VI = 0 ± 1 V	f = 10 kHz		60		
eN	Output noise voltage	B = 10 Hz to 100 kH	z		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 9 V V _C = 6 V			10		μA
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω $I_0 = 0$ to 500 mA		2	10		μF

Refer to test circuits, T_J = 25 °C, C_I = 0.1 μF , C_O = 2.2 μF unless otherwise specified.

Table 21: LF80AB electrical characteristics

Symbol	Parameter	Test o	Test condition		Тур.	Max.	Unit
		I _O = 50 mA V _I = 10 V		7.92	8	8.08	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 10 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$;	7.84		8.16	V
Vı	Operating input voltage	I _O = 500 mA	o = 500 mA			16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 9 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	40	mV
ΔV_{O}	Load regulation	V _I = 9.3 V I _O = 5 to 500 mA			8	40	mV
		V _I = 9 to 16 V I _O = 0 mA			0.7	1.5	
ld	Quiescent current	$V_1 = 9.3 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	mA
		V _I = 9 V	OFF mode		70	140	μΑ
			f = 120 Hz		72		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 10 \pm 1 \text{ V}$	f = 1 kHz		67		dB
		VI = 10 ± 1 V	f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100) kHz		50		μV
V_d	Dronout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA			0.4	0.7	V
VIL	Control input logic low	$T_a = -40 \text{ to } 125 ^\circ$	С			0.8	V
ViH	Control input logic high	$T_a = -40 \text{ to } 125 ^\circ$	С	2			V
I _I	Control input current	V _I = 9 V V _C = 6 V			10		μA
Со	Output bypass capacitance	ESR = 0.1 to 10 lo = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 22: LF80C electrical characteristics

Symbol	Parameter	Test c	ondition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 10 V		7.84	8	8.16	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 10 \text{ V}$ $T_a = -25 \text{ to } 85 ^{\circ}\text{C}$		7.68		8.32	V
Vı	Operating input voltage	Io = 500 mA	o = 500 mA			16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 9 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	40	mV
ΔV_{O}	Load regulation	V _I = 9.3 V I _O = 5 to 500 mA			8	40	mV
		$V_1 = 9 \text{ to } 16 \text{ V}$ $I_0 = 0 \text{ mA}$			0.7	1.5	
ld	Quiescent current	V _I = 9.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 9 V	OFF mode		70	140	μΑ
			f = 120 Hz		72		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 10 \pm 1 \text{ V}$	f = 1 kHz		67		dB
		V1 = 10 ± 1 V	f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100	kHz		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 9 V V _C = 6 V	·		10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 g lo = 0 to 500 mA	Σ	2	10		μF

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

Table 23: LF80C (automotive grade) electrical characteristics

Symbol	Parameter	Test co	Test condition		Тур.	Max.	Unit
Vo	Output voltage	$I_{O} = 50 \text{ mA}$ $V_{I} = 10 \text{ V}$ $T_{a} = 25 \text{ °C}$		7.84	8	8.16	V
		$I_0 = 50 \text{ mA}$ $V_1 = 10 \text{ V}$		7.665		8.335	
Vı	Operating input voltage	I _O = 500 mA	o = 500 mA			16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔVo	Line regulation	$V_1 = 9 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	44	mV
ΔVo	Load regulation	$V_1 = 9.3 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			8	44	mV
		V _I = 9 to 16 V I _O = 0 mA	av		0.7	2.5	
ld	Quiescent current	$V_1 = 9.3 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	mA
		V _I = 9 V	OFF mode		70	160	μΑ
		Io = 5 mA	f = 120 Hz		72		
SVR	Supply voltage rejection	V _I = 10 ± 1 V	f = 1 kHz		67		dB
		T _a = 25 °C	f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100 k T _a = 25 °C	:Hz		50		μV
	Danasakasakasa	I _O = 200 mA			0.2	1.3	.,
V_d	Dropout voltage	Io = 500 mA			0.4	1.3	V
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
Iı	Control input current	$V_I = 9 V$ $V_C = 6 V$ $T_a = 25 °C$	Vc = 6 V		10		μА
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 24: LF85AB electrical characteristics

Symbol	Parameter	Test cond	lition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 10.5 V		8.415	8.5	8.585	
Vo	Output voltage	I _O = 50 mA V _I = 10.5 V T _a = -25 to 85 °C		8.33		8.67	V
Vı	Operating input voltage	I _O = 500 mA				16	٧
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 9.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	42	mV
ΔV_{O}	Load regulation	V _I = 9.8 V I _O = 5 to 500 mA			8	42	mV
		V _I = 9.5 to 16 V I _O = 0 mA			0.7	1.5	· mA
ld	Quiescent current	V _I = 9.8 to 16 V I _O = 500 mA	ON mode			12	
		V _I = 9 V	OFF mode		70	140	μA
			f = 120 Hz		72		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 10.5 \pm 1 \text{ V}$	f = 1 kHz		67		dB
		V1 = 10.0 ± 1 V	f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100 kH	z		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	٧
V_{IL}	Control input logic low	T _a = -40 to 125 °C	T _a = -40 to 125 °C			0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C	T _a = -40 to 125 °C				٧
Iı	Control input current	V _I = 9 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1~\mu F$, $C_O = 2.2~\mu F$ unless otherwise specified.

Table 25: LF85C electrical characteristics

Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 10.5 V		8.33	8.5	8.67	
Vo	Vo Output voltage		I _O = 50 mA V _I = 10.5 V T _a = -25 to 85 °C			8.84	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔVo	Line regulation	$V_1 = 9.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	42	mV
ΔVo	Load regulation	V _I = 9.8 V I _O = 5 to 500 mA			8	42	mV
		V _I = 9.5 to 16 V I _O = 0 mA		0.7	0.7	1.5	- mA
ld	Quiescent current	V _I = 9.8 to 16 V I _O = 500 mA	ON mode			12	
		V _I = 9 V	OFF mode		70	140	μA
			f = 120 Hz		72		
SVR	Supply voltage rejection	$I_0 = 5 \text{ mA}$ $V_1 = 10.5 \pm 1 \text{ V}$ f = 1 kHz f = 10 kHz	f = 1 kHz		67		dB
			f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100 H	kHz		50		μV
V.	Drangut valtage	I _O = 200 mA			0.2	0.35	V
V _d	Dropout voltage	I _O = 500 mA	ıA		0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C	T _a = -40 to 125 °C			0.8	V
VIH	Control input logic high	T _a = -40 to 125 °C	T _a = -40 to 125 °C				V
lı	Control input current	V _I = 9 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω lo = 0 to 500 mA	!	2	10		μF

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

Table 26: LF85C (automotive grade) electrical characteristics

Symbol	Parameter	Test con	dition	Min.	Тур.	Max.	Unit
Vo	Output voltage	I _O = 50 mA V _I = 10.5 V T _a = 25 °C		8.33	8.5	8.67	V
		I _O = 50 mA V _I = 10.5 V		8.145		8.855	
Vı	Operating input voltage	Io = 500 mA				16	V
lo	Output current limit	T _a = 25 °C			1		Α
ΔVο	Line regulation	$V_1 = 9.5 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			8	44	mV
ΔVο	Load regulation	$V_1 = 9.8 \text{ V}$ $I_0 = 5 \text{ to } 500 \text{ mA}$			8	44	mV
		V _I = 9.5 to 16 V I _O = 0 mA	ON manda		0.7	2.5	· mA
Id	Quiescent current	$V_1 = 9.8 \text{ to } 16 \text{ V}$ $I_0 = 500 \text{ mA}$	ON mode			12	
		V _I = 9 V	OFF mode		70	160	μA
	Supply voltage rejection	Io = 5 mA V _I = 10.5 ± 1 V T _a = 25 °C	f = 120 Hz		72		dB
SVR			f = 1 kHz		67		
			f = 10 kHz		57		
eN	Output noise voltage	B = 10 Hz to 100 kHz $T_a = 25 ^{\circ}\text{C}$	Z		50		μV
	Danasatasakana	I _O = 200 mA			0.2	1.3	.,
V_{d}	Dropout voltage Io = 500 mA			0.4	1.3	V	
VIL	Control input logic low					0.8	V
V _{IH}	Control input logic high			2			V
lı	Control input current	$V_1 = 9 V$ $V_C = 6 V$ $T_a = 25 °C$	Vc = 6 V		10		μA
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I _O = 0 to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1$ μF , $C_O = 2.2$ μF unless otherwise specified.

Table 27: LF90C electrical characteristics

Symbol	Parameter	Test con	dition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 11 V		8.82	9	9.18	
Vo	Output voltage	I _O = 50 mA V _I = 11 V T _a = -25 to 85 °C		8.64		9.36	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_O	Line regulation	$V_1 = 10 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			9	45	mV
ΔV_{O}	Load regulation	V _I = 10.3 V Io = 5 to 500 mA			9	45	mV
		V _I = 10 to 16 V I _O = 0 mA			0.7	1.5	- mA
ld	Quiescent current	V _I = 10.3 to 16V I _O = 500 mA	ON mode			12	
		V _I = 10 V	OFF mode		70	140	μΑ
	Supply voltage rejection	Io = 5 mA V _I = 11 ± 1 V	f = 120 Hz		71		dB
SVR			f = 1 kHz		66		
		VI = 11 ± 1 V	f = 10 kHz		56		
eN	Output noise voltage	B = 10 Hz to 100 kH	z		50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	$I_0 = 500 \text{ mA}$			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
VIH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 10 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω $I_0 = 0$ to 500 mA		2	10		μF

Refer to test circuits, $T_J = 25 \, ^{\circ}C$, $C_I = 0.1 \, \mu F$, $C_O = 2.2 \, \mu F$ unless otherwise specified.

Table 28: LF120AB electrical characteristics

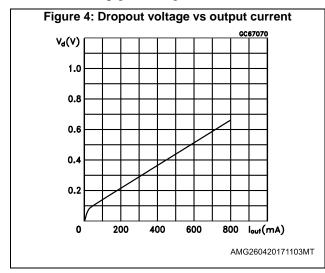
Symbol	Parameter	Test co	ndition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 15 V		11.88	12	12.12	
Vo	Output voltage	$I_0 = 50 \text{ mA}$ $V_1 = 15 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$		11.76		12.24	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	$V_1 = 13 \text{ to } 16 \text{ V}$ $I_0 = 5 \text{ mA}$			12	60	mV
ΔV_{O}	Load regulation	V _I = 13.3 V Io = 5 to 500 mA			12	60	mV
		V _I = 13 to 16 V I _O = 0 mA			0.7	1.5	
ld	Quiescent current	V _I = 13.3 to 16 V I _O = 500 mA	ON mode			12	mA
		V _I = 13 V	OFF mode		70	140	μΑ
			f = 120 Hz		69		dB
SVR	Supply voltage rejection	lo = 5 mA Vı = 14 ± 1 V	f = 1 kHz		64		
		VI = 14 ± 1 V	f = 10 kHz		54		
eN	Output noise voltage	B = 10 Hz to 100 k	Hz		50		μV
Vd	Dropout voltage	I _O = 200 mA			0.2	0.35	V
Vd	Dropout voltage	I _O = 500 mA		0	0.4	0.7	V
VIL	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
I _I	Control input current	V _I = 13 V V _C = 6 V			10		μΑ
Co	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA		2	10		μF

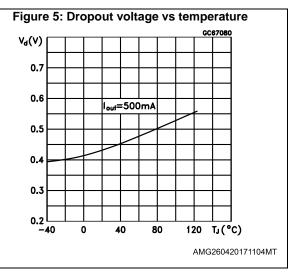
Refer to test circuits, $T_J = 25$ °C, $C_I = 0.1$ μF , $C_O = 2.2$ μF unless otherwise specified.

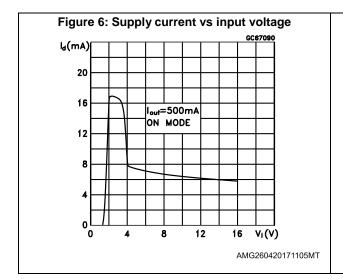
Table 29: LF120C electrical characteristics

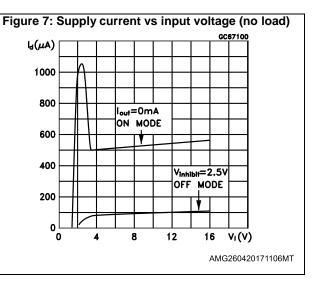
Symbol	Parameter	Test cond	ition	Min.	Тур.	Max.	Unit
		I _O = 50 mA V _I = 14 V		11.76	12	12.24	
Vo Output voltage		$I_0 = 50 \text{ mA}$ $V_1 = 14 \text{ V}$ $T_a = -25 \text{ to } 85 \text{ °C}$		11.52		12.48	V
Vı	Operating input voltage	I _O = 500 mA				16	V
lo	Output current limit				1		Α
ΔV_{O}	Line regulation	V _I = 13 to 16 V I _O = 5 mA			12	60	mV
ΔV_{O}	Load regulation	V _I = 13.3 V I _O = 5 to 500 mA			12	60	mV
		V _I = 13 to 16 V I _O = 0 mA	011		0.7	1.5	
ld	Quiescent current	V _I = 13.3 to 16 V I _O = 500 mA	ON mode				mA
		V _I = 13 V	OFF mode		70	140	μΑ
	Supply voltage rejection		f = 120 Hz		69		dB
SVR		I _O = 5 mA V _I = 14 ± 1 V	f = 1 kHz		64		
		VI = 14 ± 1 V	f = 10 kHz		54		
eN	Output noise voltage	B = 10 Hz to 100 kHz			50		μV
V_d	Dropout voltage	I _O = 200 mA			0.2	0.35	V
V d	Dropout voltage	I _O = 500 mA			0.4	0.7	V
V_{IL}	Control input logic low	T _a = -40 to 125 °C				0.8	V
ViH	Control input logic high	T _a = -40 to 125 °C		2			V
lı	Control input current	V _I = 13 V V _C = 6 V			10		μΑ
Со	Output bypass capacitance	ESR = 0.1 to 10 Ω I_0 = 0 to 500 mA	ESR = 0.1 to 10 Ω		10		μF

5 Typical performance characteristics

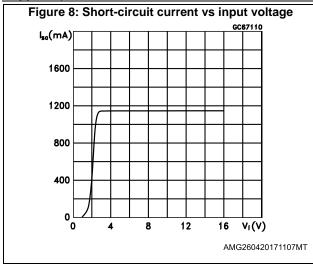


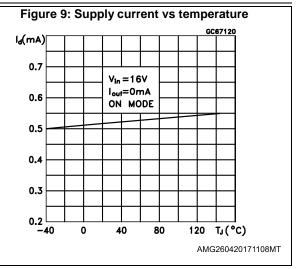






5/







Unless otherwise specified $V_{O(NOM)}$ = 3.3 V.

6<VIN<16 V LF50 VIN VIN VOUT GZD INH 3.3V OR 5.0V +/- 1% 0.5 A MAX LF33 VIN $0.22 \mu F$ VOUT L: VOUT=3.3V H: VOUT=5.0V GZD CTRL INH CMOS OR TTL INVERTERS SC08660 AMG260420171109MT

Figure 10: Logic-controlled precision 3.3/5.0 V selectable output



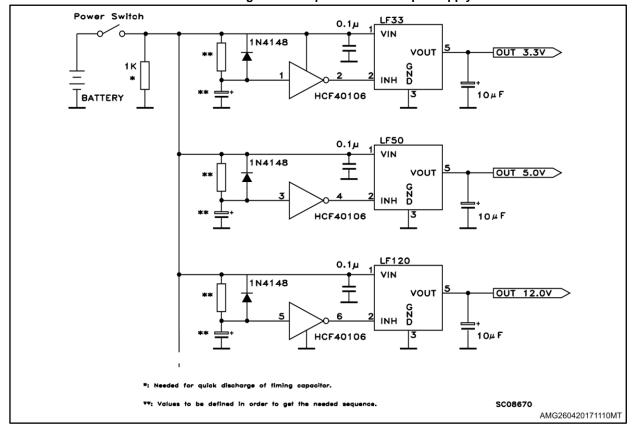




Figure 12: Multiple supply with ON/OFF toggle switch

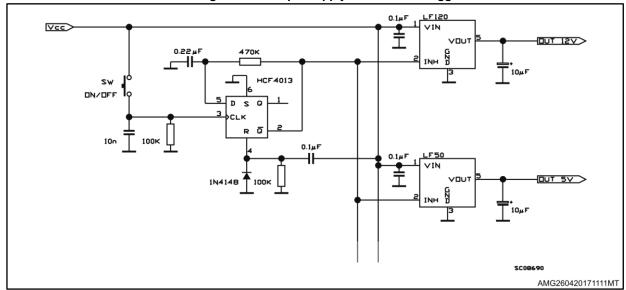


Figure 13: Basic inhibit functions

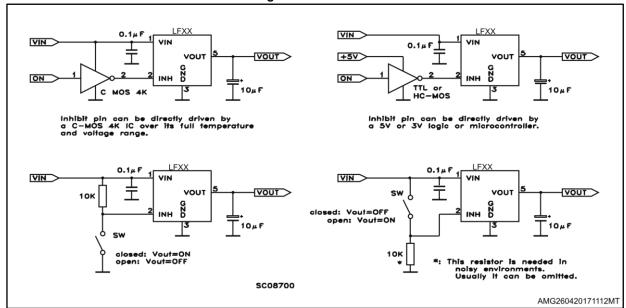


Figure 14: Delayed turn-on

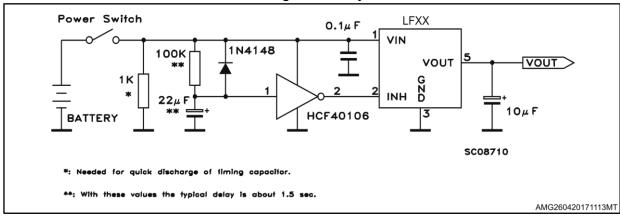
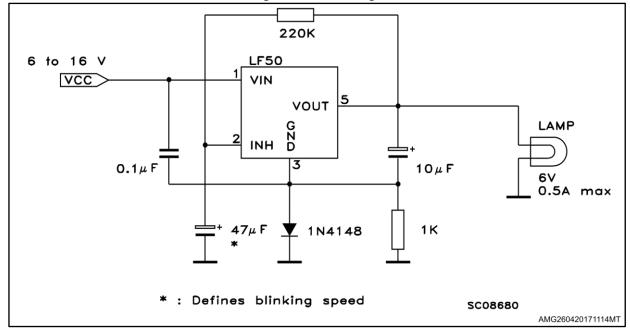


Figure 15: Low voltage bulb blinker



577

6 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**. ECOPACK® is an ST trademark.

6.1 TO-220 (dual gauge) package information

Figure 16: TO-220 (dual gauge) package outline

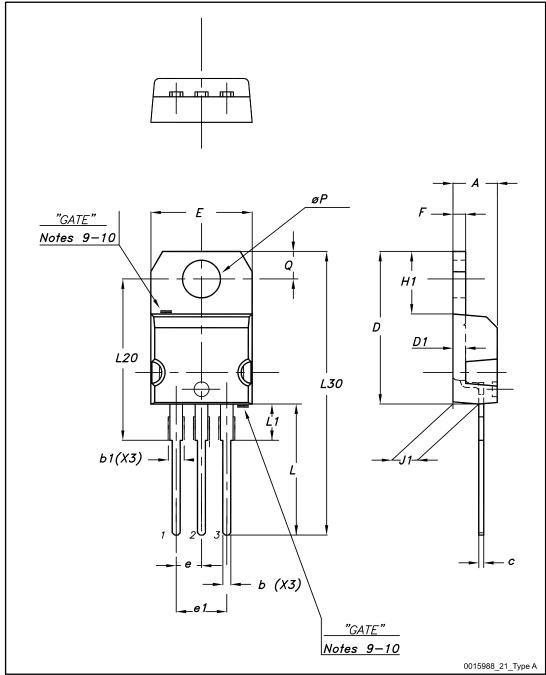
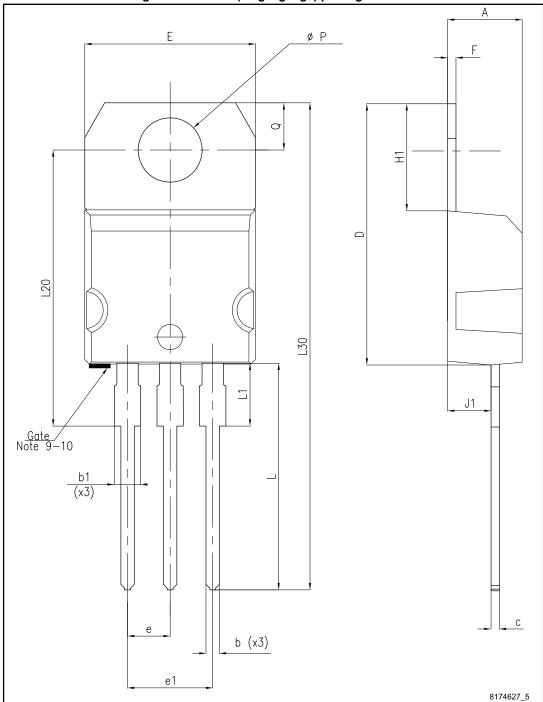


Table 30: TO-220 (dual gauge) mechanical data

		mm	
Dim.	Min.	Тур.	Max.
А	4.40		4.60
b	0.61		0.88
b1	1.14		1.70
С	0.48		0.70
D	15.25		15.75
D1		1.27	
Е	10		10.40
е	2.40		2.70
e1	4.95		5.15
F	1.23		1.32
H1	6.20		6.60
J1	2.40		2.72
L	13		14
L1	3.50		3.93
L20		16.40	
L30		28.90	
ØР	3.75		3.85
Q	2.65		2.95

6.2 TO-220 (single gauge) package information

Figure 17: TO-220 (single gauge) package outline



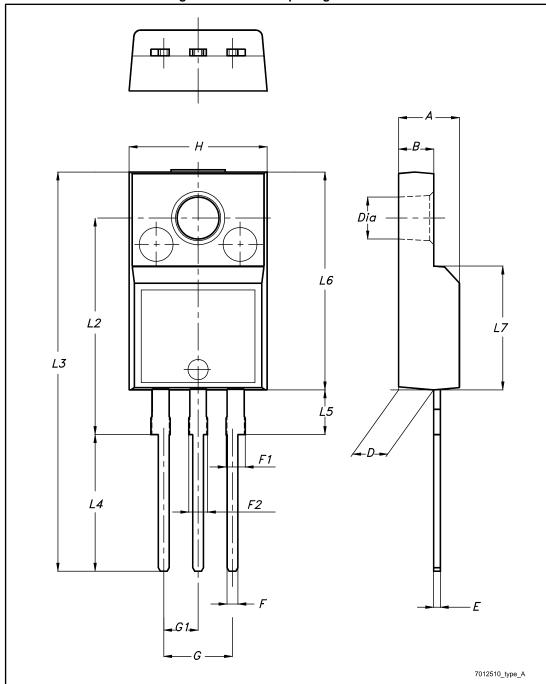
577

Table 31: TO-220 (single gauge) mechanical data

		mm	
Dim.			
	Min.	Тур.	Max.
Α	4.40		4.60
b	0.61		0.88
b1	1.14		1.70
С	0.48		0.70
D	15.25		15.75
E	10.00		10.40
е	2.40		2.70
e1	4.95		5.15
F	0.51		0.60
H1	6.20		6.60
J1	2.40		2.72
L	13.00		14.00
L1	3.50		3.93
L20		16.40	
L30		28.90	
ØР	3.75		3.85
Q	2.65		2.95

6.3 TO-220FP package information

Figure 18: TO-220FP package outline



Downloaded from Arrow.com.

Table 32: TO-220FP package mechanical data

Dim.	·	mm	
	Min.	Тур.	Max.
A	4.4		4.6
В	2.5		2.7
D	2.5		2.75
Е	0.45		0.7
F	0.75		1
F1	1.15		1.70
F2	1.15		1.70
G	4.95		5.2
G1	2.4		2.7
Н	10		10.4
L2		16	
L3	28.6		30.6
L4	9.8		10.6
L5	2.9		3.6
L6	15.9		16.4
L7	9		9.3
Dia	3		3.2

6.4 TO-220 packing information

Figure 19: Tube for TO-220 (dual gauge) (mm.)

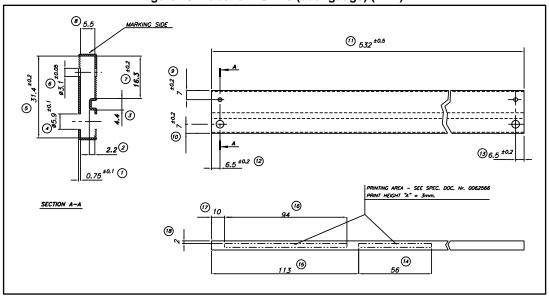
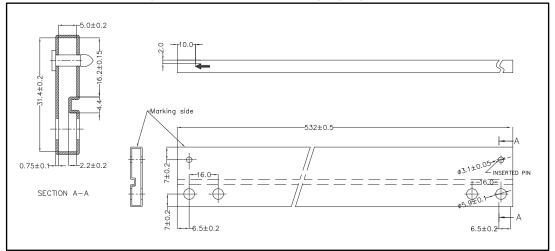


Figure 20: Tube for TO-220 (single gauge) (mm.)



Downloaded from Arrow.com.

6.5 DPAK package information

Figure 21: DPAK package outline

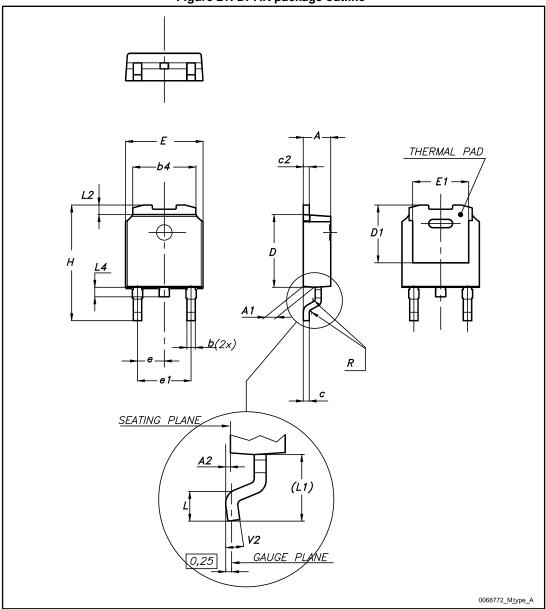
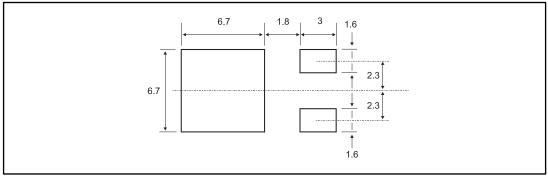


Table 33: DPAK mechanical data

Table 33. DFAR mechanical data				
Dim.	mm			
	Min.	Тур.	Max.	
Α	2.20		2.40	
A1	0.90		1.10	
A2	0.03		0.23	
b	0.64		0.90	
b4	5.20		5.40	
С	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		
е		2.28		
e1	4.40		4.60	
Н	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 22: DPAK recommended footprint (dimensions are in mm)



6.6 PPAK package information

Figure 23: PPAK package outline

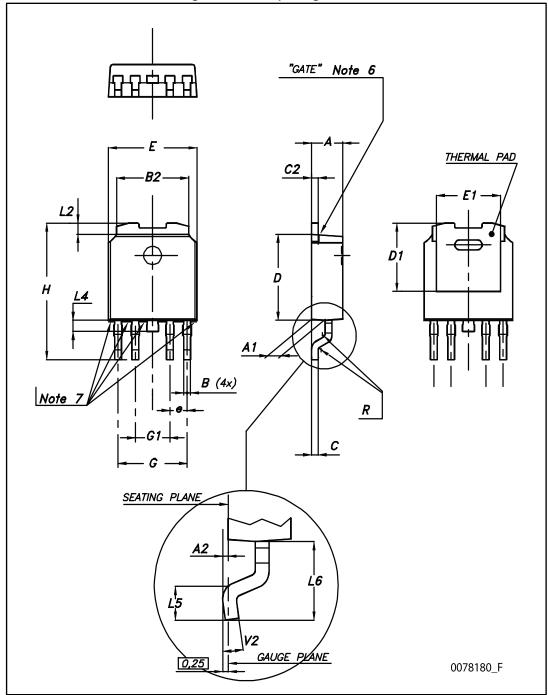
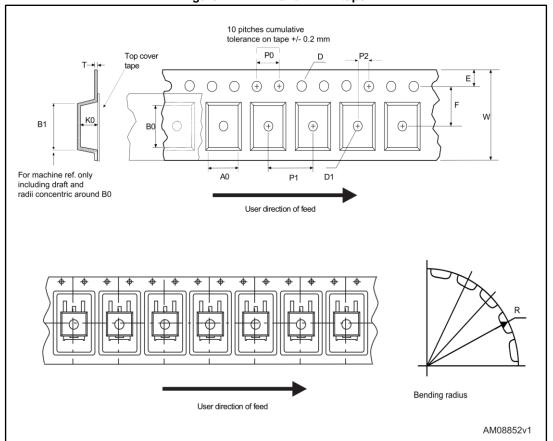


Table 34: PPAK mechanical data

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

6.7 PPAK and DPAK packing information

Figure 24: PPAK and DPAK tape





Т REEL DIMENSIONS 40mm min. Access hole At slot location В D С Tape slot in core for G measured at hub Full radius tape start 25 mm min. width

Figure 25: PPAK and DPAK reel

Table 35: PPAK and DPAK tape and reel mechanical data

AM08851v2

Таре				Reel	
Dim.	mm		Dim.	mm	
Dim.	Min.	Max.	Dilli.	Min.	Max.
A0	6.8	7	Α		330
B0	10.4	10.6	В	1.5	
B1		12.1	С	12.8	13.2
D	1.5	1.6	D	20.2	
D1	1.5		G	16.4	18.4
Е	1.65	1.85	N	50	
F	7.4	7.6	Т		22.4
K0	2.55	2.75			
P0	3.9	4.1	Base qty. 2500		2500
P1	7.9	8.1	†		2500
P2	1.9	2.1			
R	40				
Т	0.25	0.35			
W	15.7	16.3			

LFXX Ordering information

7 Ordering information

Table 36: Order code

Package					Output valtage
TO 220	TO-220	TO 220ED	DPAK	PPAK	Output voltage (V)
TO-220	(dual gauge)	TO-220FP (tape and reel)		(tape and reel)	(*)
			LF15ABDT-TR		1.5
			LF18CDT-TR	LF18CPT-TR	1.8
			LF18CDT-TRY (1)		1.8
			LF18ABDT-TR	LF18ABPT-TR	1.8
			LF25CDT-TR	LF25CPT-TR	2.5
			LF25CDT-TRY ⁽¹⁾		2.5
			LF25ABDT-TR		2.5
			LF25ABDT-TRY ⁽¹⁾		2.5
LF33CV	LF33CV-DG		LF33CDT-TR	LF33CPT-TR	3.3
			LF33CDT-TRY ⁽¹⁾	LF33CPT-TRY ⁽¹⁾	3.3
LF33ABV	LF33ABV-DG		LF33ABDT-TR		3.3
LF50CV	LF50CV-DG		LF50CDT-TR	LF50CPT-TR	5
			LF50CDT-TRY ⁽¹⁾	LF50CPT-TRY ⁽¹⁾	5
LF50ABV	LF50ABV-DG		LF50ABDT-TR	LF50ABPT-TR	5
		LF50ACP			5
			LF50ABDT-TRY ⁽¹⁾		5
LF60CV			LF60CDT-TR		6
LF60ABV			LF60ABDT-TR		6
			LF80CDT-TR		8
			LF80CDT-TRY ⁽¹⁾		8
			LF80ABDT-TR		8
			LF85CDT-TR	LF85CPT-TR	8.5
			LF85CDT-TRY ⁽¹⁾	LF85CPT-TRY ⁽¹⁾	8.5
LF90CV				LF90CPT-TR	9
			LF120CDT-TR		12
			LF120ABDT-TR		12

Notes



 $^{^{(1)}}$ Qualified and characterized according to AEC Q100 and Q003 or equivalent, advanced screening according to AEC Q001 and Q002 or equivalent.

Revision history LFXX

8 Revision history

Table 37: Document revision history

Date	Revision	Changes	
21-Jun-2004	14	Document updating.	
24-May-2006	15	Order codes updated.	
02-Apr-2007	16	Order codes updated.	
14-May-2007	17	Order codes updated.	
26-Jul-2007	18	Add table 1 in cover page.	
26-Nov-2007	19	Modified: Table 34.	
16-Jan-2008	20	Added new order codes for automotive grade products see Table 34 on page 51.	
12-Feb-2008	21	Modified: Table 34 on page 51.	
10-Jul-2008	22	Modified: Table 34 on page 51.	
05-May-2010	23	Added: Table 29 on page 41, fig 16, fig 17, fig 18 and fig 19.	
16-Nov-2010	24	Modified: RthJC value for TO-220 Table 2 on page 7.	
10-Feb-2012	25	Added: order code LF33CV-DG and LF33ABV-DG Table 34 on page 51.	
09-Mar-2012	26	Added: order code LF50ABV-DG Table 34 on page 51.	
28-Feb-2014	27	Changed the part numbers LFxxAB and LFxxC to LFXX. Changed the title. Removed table from cover page. Removed PENTAWATT package from the figure in cover page, the Description and Figure 2. Updated the Description. Updated: Table 2, Table 6, Table 8, Table 10, Table 13, Table 1 Table 17, Table 22, Table 25 and Table 34. Changed title of Figure 7. Updated mechanical data.	
03-Mar-2015	28	Updated Table 34: Order code. Minor text changes.	
19-Jan-2017	29	Updated output voltage values in Table 16 and added new commercial type in TO-220FP in Table 35. Minor text changes.	
27-Jan-2017	30	Updated features in cover page. Added Table 14 and updated Table 35.	
22-May-2017	31	Updated <i>Table 36:</i> "Order code". Minor text changes.	

IMPORTANT NOTICE - PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics - All rights reserved

