

Very low drop voltage regulators with inhibit

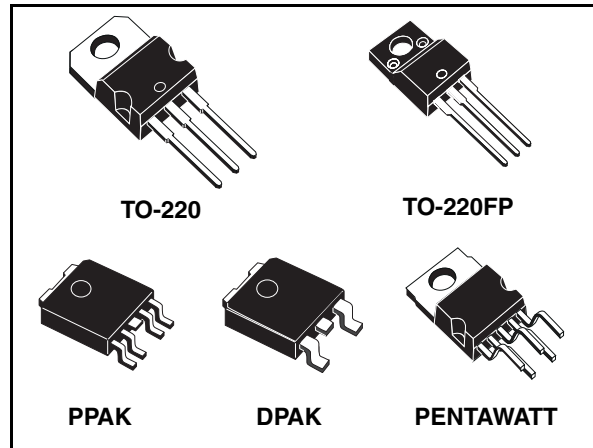
Feature summary

- Very low dropout voltage (0.45V)
- Very low quiescent current (TYP. 50 μ A in OFF mode, 500 μ A in ON mode)
- Output current up to 500 mA
- Logic-controlled electronic shutdown
- Output voltages of 1.5; 1.8; 2.5; 2.7; 3; 3.3; 3.5; 4; 5; 6; 8; 8.5; 9; 12V
- Internal current and thermal limit
- Only 2.2 μ F for stability
- Available in $\pm 1\%$ (AB) or $\pm 2\%$ (C) selection at 25°C
- Supply voltage rejection: 80db (typ.)
- Temperature range: -40 to 125°C

Description

The LF00 series are very Low Drop regulators available in PENTAWATT, TO-220, TO-220FP, DPAK and PPAK package and in a wide range of output voltages.

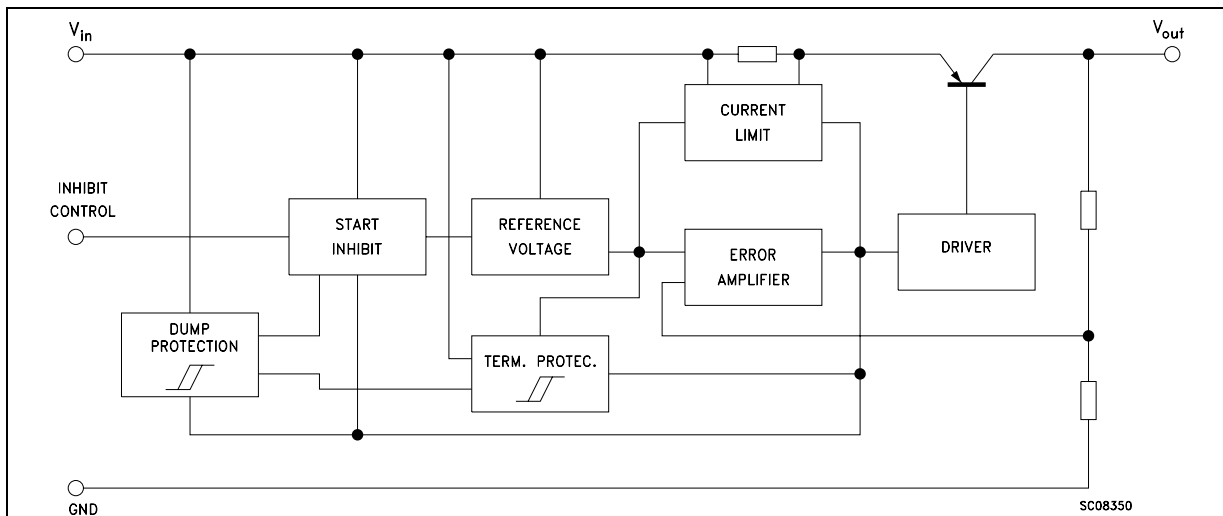
The very Low Drop voltage (0.45V) and the very low quiescent current make them particularly



suitable for Low Noise, Low Power applications and specially in battery powered systems.

In the 5 pins configuration (PENTAWATT and PPAK) a Shutdown Logic Control function is available (pin 2, TTL compatible). This means that when the device is used as a local regulator, it is possible to put a part of the board in standby, decreasing the total power consumption. In the three terminal configuration the device has the same electrical performance, but is fixed in the ON state. It requires only a 2.2 μ F capacitor for stability allowing space and cost saving.

Schematic diagram

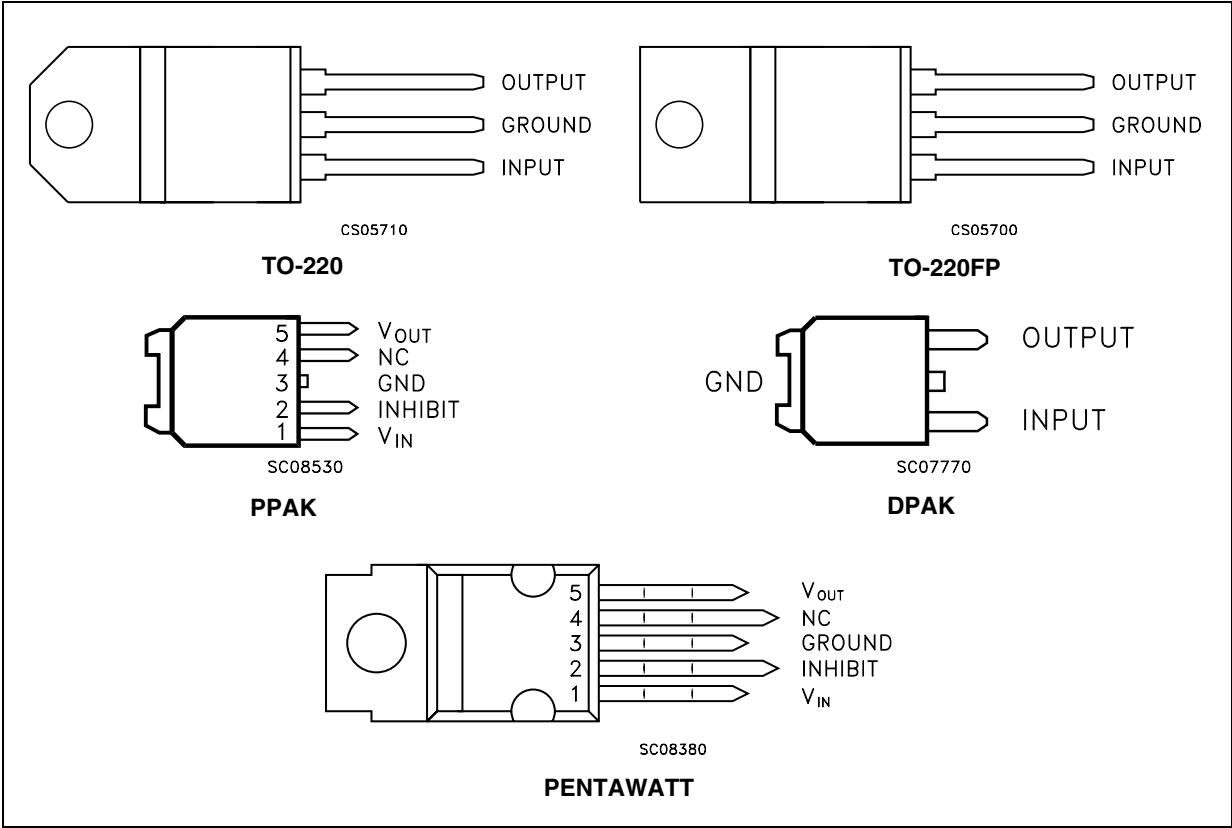


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1 Pin configuration

Figure 1. Pin connections (top view)



2 Maximum ratings

Table 1. Absolute maximum ratings

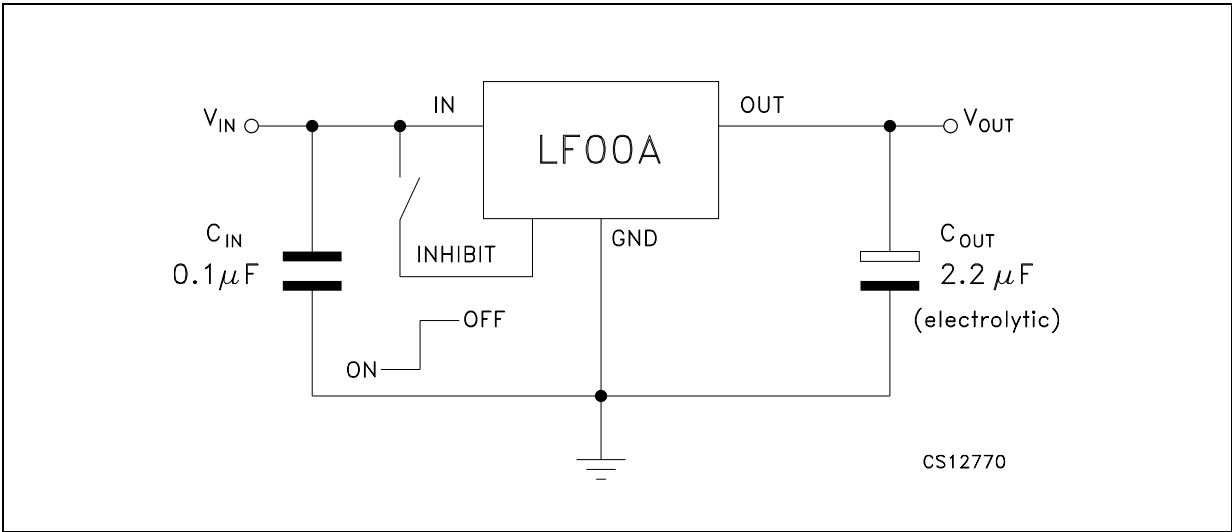
Symbol	Parameter	Value	Unit
V_I	DC Input Voltage	-0.5 to 40 ⁽¹⁾	V
I_O	Output Current	Internally Limited	
P_{TOT}	Power Dissipation	Internally Limited	
T_{STG}	Storage Temperature Range	-40 to 150	°C
T_{OP}	Operating Junction Temperature Range	-40 to 125	°C

1. For $18 < V_I < 40$ the regulator is in shut-down

Table 2. Thermal data

Symbol	Parameter	PENTAWATT	TO-220	TO-220FP	DPAK/PPAK	Unit
R_{thJC}	Thermal resistance junction-case	3	3	5	8	°C/W
R_{thJA}	Thermal resistance junction-ambient	50	50	60	100	°C/W

Figure 2. Test circuit



3 Electrical characteristics

Table 3. Electrical characteristics for LF15AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$	1.485	1.5	1.515	V
		$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	1.470		1.530	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$	2.5		16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	10	mV
ΔV_O	Load regulation	$V_I = 2.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	10	mV
I_d	Quiescent current	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 2.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 3.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		1		V
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 4. Electrical characteristics for LF15C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$	1.47	1.5	1.53	V
		$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	1.44		1.56	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$	2.5		16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	10	mV
ΔV_O	Load regulation	$V_I = 2.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	10	mV
I_d	Quiescent current	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 2.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 3.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		1		V
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 5. Electrical characteristics for LF18AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 3.3\ \text{V}$	1.782	1.8	1.818	V
		$I_O = 50\ \text{mA}$, $V_I = 3.3\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	1.764		1.836	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$	3		16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 2.8\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	12	mV
ΔV_O	Load regulation	$V_I = 3.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	10	mV
I_d	Quiescent current	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 3.1\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 3.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.7		V
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 6. Electrical characteristics for LF18C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$	1.764	1.8	1.836	V
		$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	1.728		1.872	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$	3		16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 2.8\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	12	mV
ΔV_O	Load regulation	$V_I = 3.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	10	mV
I_d	Quiescent current	$V_I = 2.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 3.1\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 3.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.7		V
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 7. Electrical characteristics for LF25AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$	2.475	2.5	2.525	V
		$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.450		2.550	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 3.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	12	mV
ΔV_O	Load regulation	$V_I = 3.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	12	mV
I_d	Quiescent current	$V_I = 3.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 3.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 8. Electrical characteristics for LF25C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$	2.45	2.5	2.55	V
		$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.4		2.6	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 3.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	12	mV
ΔV_O	Load regulation	$V_I = 3.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	12	mV
I_d	Quiescent current	$V_I = 3.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 3.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 9. Electrical characteristics for LF27AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.7\ \text{V}$	2.673	2.7	2.727	V
		$I_O = 50\ \text{mA}$, $V_I = 4.7\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.646		2.754	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 3.7\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	13	mV
ΔV_O	Load regulation	$V_I = 4\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	13	mV
I_d	Quiescent current	$V_I = 3.7\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.7 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 10. Electrical characteristics for LF27C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.7\ \text{V}$	2.646	2.7	2.754	V
		$I_O = 50\ \text{mA}$, $V_I = 4.7\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.592		2.808	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 3.7\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		2	13	mV
ΔV_O	Load regulation	$V_I = 4\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		2	13	mV
I_d	Quiescent current	$V_I = 3.7\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.7 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{KHz}$	77		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 11. Electrical characteristics for LF30AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5\ \text{V}$	2.970	3	3.03	V
		$I_O = 50\ \text{mA}$, $V_I = 5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.94		3.06	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	15	mV
ΔV_O	Load regulation	$V_I = 4.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	15	mV
I_d	Quiescent current	$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	81		dB
			$f = 1\ \text{KHz}$	76		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 12. Electrical characteristics for LF30C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5\ \text{V}$	2.94	3	3.06	V
		$I_O = 50\ \text{mA}$, $V_I = 5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	2.88		3.12	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	15	mV
ΔV_O	Load regulation	$V_I = 4.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	15	mV
I_d	Quiescent current	$V_I = 4\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	81		dB
			$f = 1\ \text{KHz}$	76		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 13. Electrical characteristics for LF33AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$	3.267	3.3	3.333	V
		$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.234		3.366	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	16	mV
ΔV_O	Load regulation	$V_I = 4.6\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	16	mV
I_d	Quiescent current	$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.6\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5.3 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	80		dB
			$f = 1\ \text{KHz}$	75		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 14. Electrical characteristics for LF33C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$	3.234	3.3	3.366	V
		$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.168		3.432	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	16	mV
ΔV_O	Load regulation	$V_I = 4.6\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	16	mV
I_d	Quiescent current	$V_I = 4.3\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.6\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5.3 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	80		dB
			$f = 1\ \text{KHz}$	75		
			$f = 10\ \text{KHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 15. Electrical characteristics for LF35AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5.5\ \text{V}$	3.465	3.5	3.535	V
		$I_O = 50\ \text{mA}$, $V_I = 5.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.430		3.570	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	17	mV
ΔV_O	Load regulation	$V_I = 4.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	17	mV
I_d	Quiescent current	$V_I = 4.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	79		dB
			$f = 1\ \text{KHz}$	74		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 16. Electrical characteristics for LF35C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5.5\ \text{V}$	3.43	3.5	3.57	V
		$I_O = 50\ \text{mA}$, $V_I = 5.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.36		3.64	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 4.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		3	17	mV
ΔV_O	Load regulation	$V_I = 4.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		3	17	mV
I_d	Quiescent current	$V_I = 4.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 4.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	79		dB
			$f = 1\ \text{KHz}$	74		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 17. Electrical characteristics for LF40AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 6\ \text{V}$	3.96	4	4.04	V
		$I_O = 50\ \text{mA}$, $V_I = 6\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.92		4.08	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		4	20	mV
ΔV_O	Load regulation	$V_I = 5.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		4	20	mV
I_d	Quiescent current	$V_I = 5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 5.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 6 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	78		dB
			$f = 1\ \text{KHz}$	73		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 18. Electrical characteristics for LF40C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 6\ \text{V}$	3.92	4	4.08	V
		$I_O = 50\ \text{mA}$, $V_I = 6\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	3.84		4.16	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		4	20	mV
ΔV_O	Load regulation	$V_I = 5.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		4	20	mV
I_d	Quiescent current	$V_I = 5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 5.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 6 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	78		dB
			$f = 1\ \text{KHz}$	73		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 19. Electrical characteristics for LF50AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$	4.95	5	5.05	V
		$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	4.9		5.1	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 6\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		5	25	mV
ΔV_O	Load regulation	$V_I = 6.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		5	25	mV
I_d	Quiescent current	$V_I = 6\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 6.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 7 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	76		dB
			$f = 1\ \text{KHz}$	71		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 20. Electrical characteristics for LF50C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$	4.9	5	5.1	V
		$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	4.8		5.2	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 6\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		5	25	mV
ΔV_O	Load regulation	$V_I = 6.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		5	25	mV
I_d	Quiescent current	$V_I = 6\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	1	mA
		$V_I = 6.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	100	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 7 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	76		dB
			$f = 1\ \text{KHz}$	71		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 21. Electrical characteristics for LF60AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 8\ \text{V}$	5.94	6	6.06	V
		$I_O = 50\ \text{mA}$, $V_I = 8\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	5.88		6.12	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 7\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		6	30	mV
ΔV_O	Load regulation	$V_I = 7.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		6	30	mV
I_d	Quiescent current	$V_I = 7\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 7.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 8 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	75		dB
			$f = 1\ \text{KHz}$	70		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 22. Electrical characteristics for LF60C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 8\ \text{V}$	5.88	6	6.12	V
		$I_O = 50\ \text{mA}$, $V_I = 8\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	5.76		6.24	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 7\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		6	30	mV
ΔV_O	Load regulation	$V_I = 7.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		6	30	mV
I_d	Quiescent current	$V_I = 7\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 7.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 8 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	75		dB
			$f = 1\ \text{KHz}$	70		
			$f = 10\ \text{KHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 23. Electrical characteristics for LF80AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$	7.92	8	8.08	V
		$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	7.84		8.16	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 9\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		8	40	mV
ΔV_O	Load regulation	$V_I = 9.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		8	40	mV
I_d	Quiescent current	$V_I = 9\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 9.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{KHz}$	67		
			$f = 10\ \text{KHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 24. Electrical characteristics for LF80C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$	7.84	8	8.16	V
		$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	7.68		8.32	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 9\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		8	40	mV
ΔV_O	Load regulation	$V_I = 9.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		8	40	mV
I_d	Quiescent current	$V_I = 9\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 9.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{KHz}$	67		
			$f = 10\ \text{KHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 25. Electrical characteristics for LF85AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$	8.415	8.5	8.585	V
		$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	8.33		8.67	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 9.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		8	42	mV
ΔV_O	Load regulation	$V_I = 9.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		8	42	mV
I_d	Quiescent current	$V_I = 9.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 9.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{KHz}$	67		
			$f = 10\ \text{KHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 26. Electrical characteristics for LF85C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$	8.33	8.5	8.67	V
		$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	8.16		8.84	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 9.5\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		8	42	mV
ΔV_O	Load regulation	$V_I = 9.8\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		8	42	mV
I_d	Quiescent current	$V_I = 9.5\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 9.8\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10.5 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{KHz}$	67		
			$f = 10\ \text{KHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 27. Electrical characteristics for LF90AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 11\ \text{V}$	8.91	9	9.09	V
		$I_O = 50\ \text{mA}$, $V_I = 11\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	8.82		9.18	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 10\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		9	45	mV
ΔV_O	Load regulation	$V_I = 10.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		9	45	mV
I_d	Quiescent current	$V_I = 10\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 10.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 10\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 11 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	71		dB
			$f = 1\ \text{KHz}$	66		
			$f = 10\ \text{KHz}$	56		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 10\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 28. Electrical characteristics for LF90C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 11\ \text{V}$	8.82	9	9.18	V
		$I_O = 50\ \text{mA}$, $V_I = 11\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	8.64		9.36	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 10\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		9	45	mV
ΔV_O	Load regulation	$V_I = 10.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		9	45	mV
I_d	Quiescent current	$V_I = 10\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 10.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 10\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 11 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	71		dB
			$f = 1\ \text{KHz}$	66		
			$f = 10\ \text{KHz}$	56		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 10\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 29. Electrical characteristics for LF120AB (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 15\ \text{V}$	11.88	12	12.12	V
		$I_O = 50\ \text{mA}$, $V_I = 15\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	11.76		12.24	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 13\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		12	60	mV
ΔV_O	Load regulation	$V_I = 13.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		12	60	mV
I_d	Quiescent current	$V_I = 13\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 13.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 13\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 14 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	69		dB
			$f = 1\ \text{KHz}$	64		
			$f = 10\ \text{KHz}$	54		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 13\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

Table 30. Electrical characteristics for LF120C (refer to the test circuits, $T_J = 25^\circ\text{C}$, $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified).

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 14\ \text{V}$	11.76	12	12.24	V
		$I_O = 50\ \text{mA}$, $V_I = 14\ \text{V}$, $T_a = -25\ \text{to}\ 85^\circ\text{C}$	11.52		12.48	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit			1		A
ΔV_O	Line regulation	$V_I = 13\ \text{to}\ 16\ \text{V}$, $I_O = 5\ \text{mA}$		12	60	mV
ΔV_O	Load regulation	$V_I = 13.3\ \text{V}$, $I_O = 5\ \text{to}\ 500\ \text{mA}$		12	60	mV
I_d	Quiescent current	$V_I = 13\ \text{to}\ 16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	1.5	mA
		$V_I = 13.3\ \text{to}\ 16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 13\ \text{V}$	OFF MODE	70	140	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 14 \pm 1\ \text{V}$	$f = 120\ \text{Hz}$	69		dB
			$f = 1\ \text{KHz}$	64		
			$f = 10\ \text{KHz}$	54		
eN	Output noise voltage	$B = 10\ \text{Hz to}\ 100\ \text{KHz}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	0.35	V
		$I_O = 500\ \text{mA}$		0.4	0.7	
V_{IL}	Control input logic low	$T_a = -40\ \text{to}\ 125^\circ\text{C}$			0.8	V
V_{IH}	Control input logic high	$T_a = -40\ \text{to}\ 125^\circ\text{C}$	2			V
I_I	Control input current	$V_I = 13\ \text{V}$, $V_C = 6\ \text{V}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1\ \text{to}\ 10\ \Omega$, $I_O = 0\ \text{to}\ 500\ \text{mA}$	2	10		μF

4 Typical performance characteristics

(unless otherwise specified $V_{O(NOM)} = 3.3\text{ V}$)

Figure 3. Dropout voltage vs output current

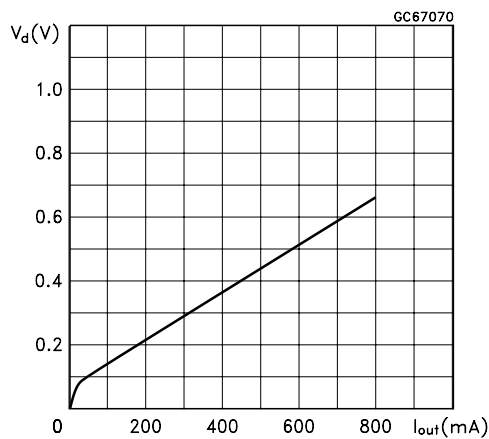


Figure 4. Dropout voltage vs temperature

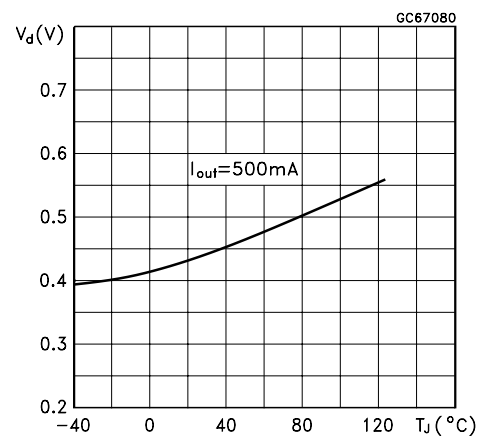


Figure 5. Supply current vs input voltage

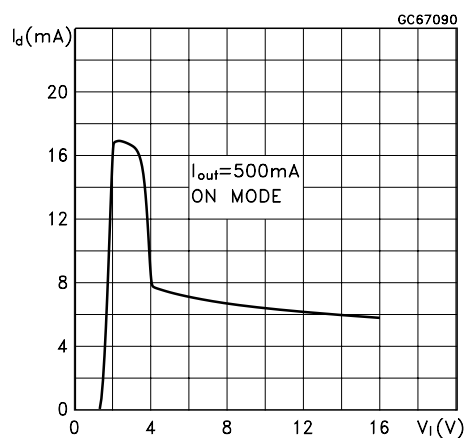


Figure 6. Supply current vs input voltage

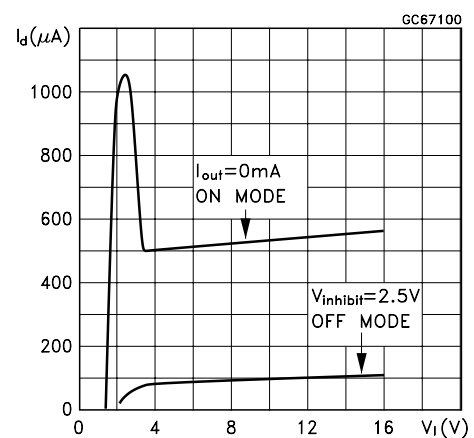


Figure 7. Short circuit current vs input voltage

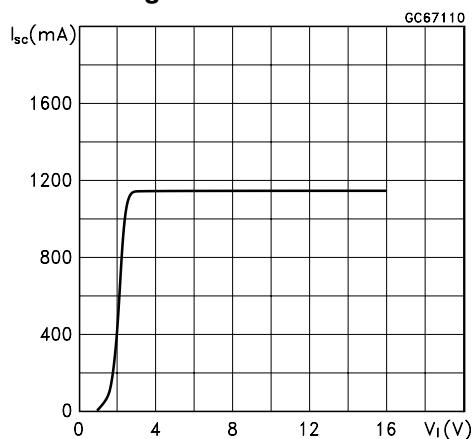
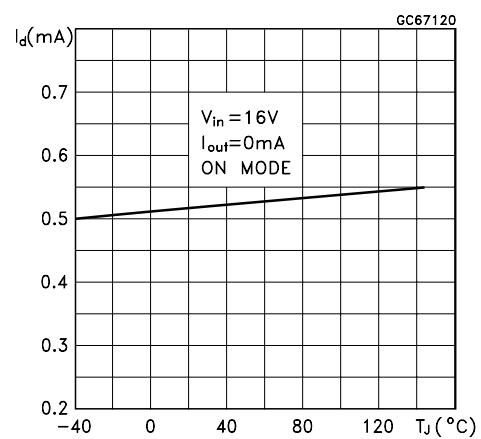


Figure 8. Supply current vs temperature



[illegible]

The diagram shows three identical circuit stages, each designed to produce a specific output voltage from a battery source. Each stage consists of a battery connected to a power switch and a 1K resistor. The circuit then branches into three parallel paths, each leading to a different op-amp comparator: LF33 (for 3.3V), LF50 (for 5.0V), and LF120 (for 12.0V). Each comparator stage includes a 1N4148 diode, a 0.1μF capacitor, and a 10μF capacitor. The output of each stage is labeled 'OUT 3.3V', 'OUT 5.0V', and 'OUT 12.0V' respectively.

Power Switch

BATTERY

1K

1N4148

0.1μ

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

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LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

3

5

OUT 12.0V

10μF

HCF40106

1

2

3

5

LF33

VIN

VOUT

INH

DZG

3

5

OUT 3.3V

10μF

HCF40106

1

2

3

5

LF50

VIN

VOUT

INH

DZG

3

5

OUT 5.0V

10μF

HCF40106

1

2

3

5

LF120

VIN

VOUT

INH

DZG

Figure 11. Multiple supply with ON/OFF toggle switch

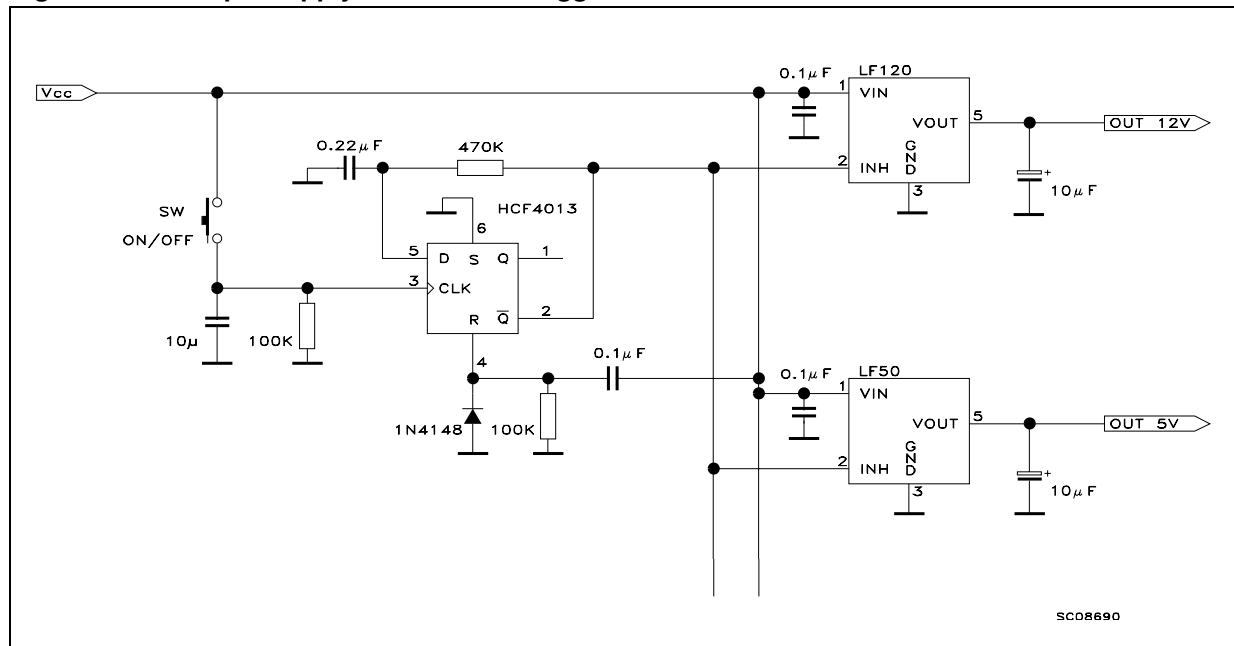


Figure 12. Basic inhibit functions

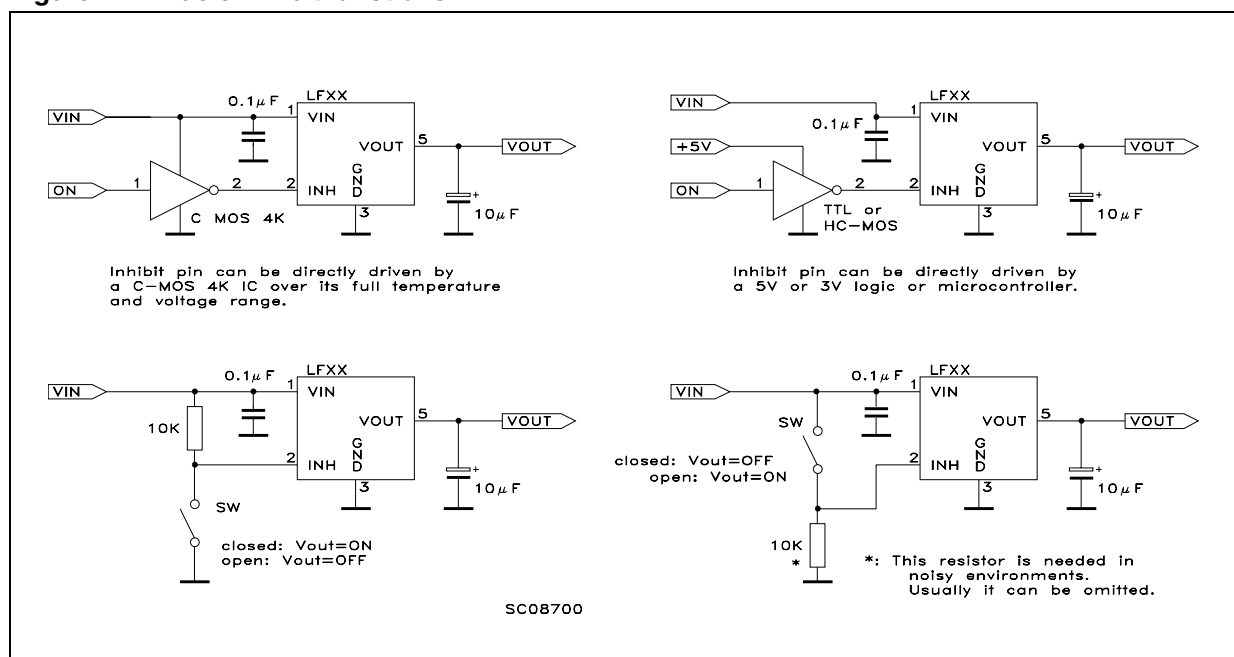


Figure 13. Delayed Turn-On

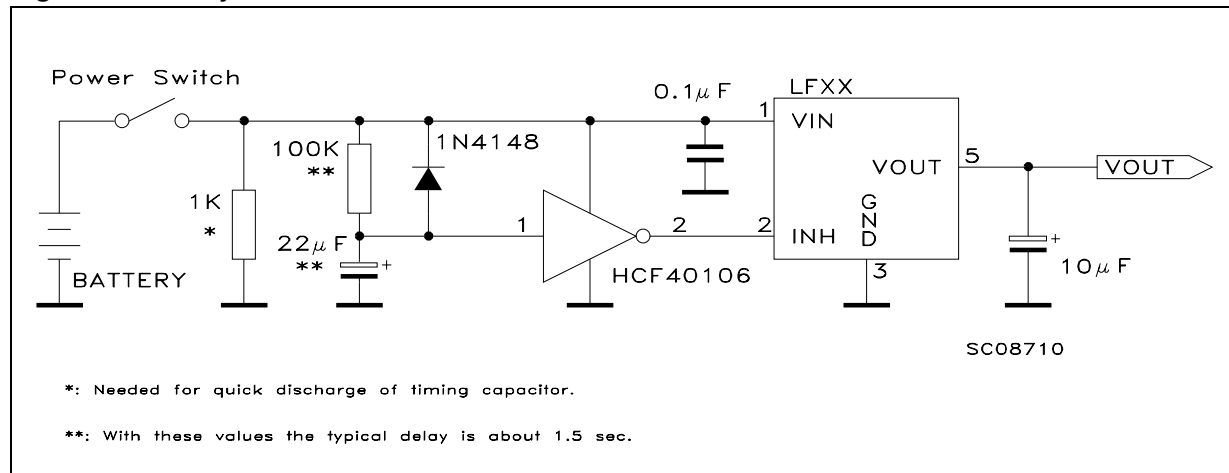
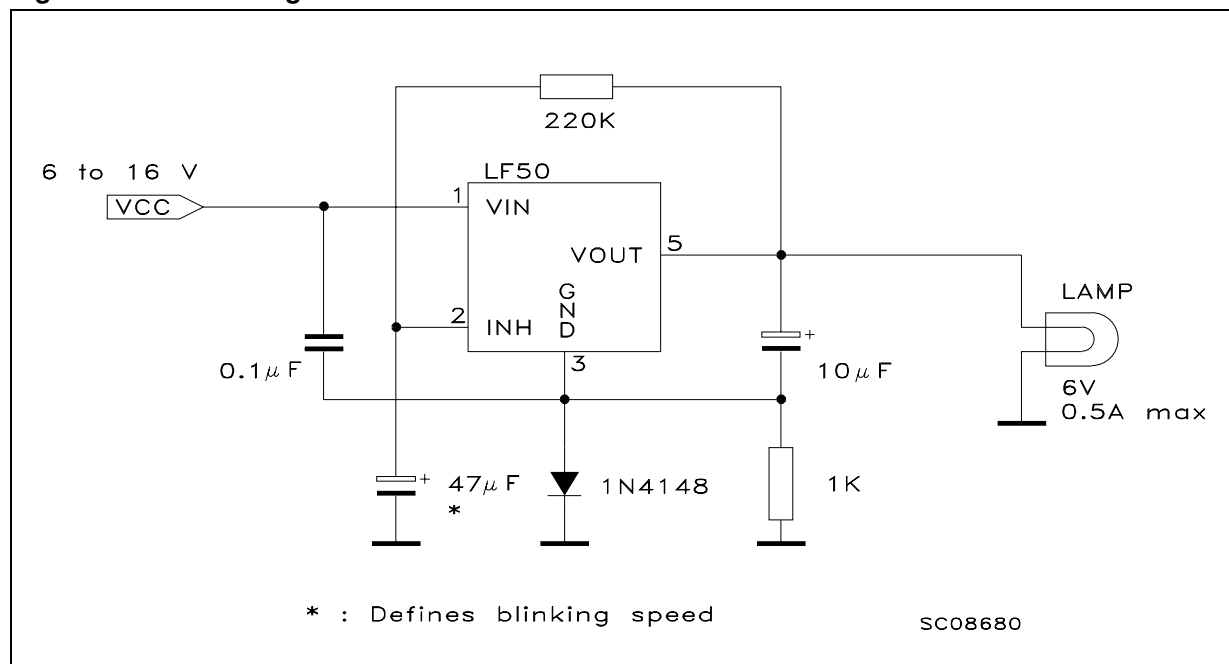


Figure 14. Low voltage bulb blinker

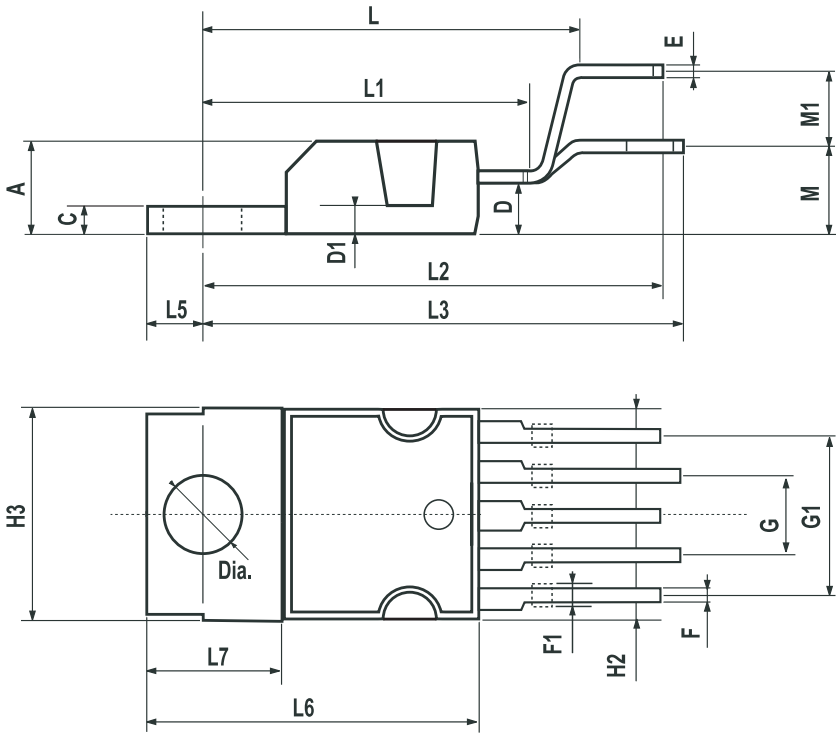


5 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

PENTAW ATT (VERTICAL) MECHANICAL DATA

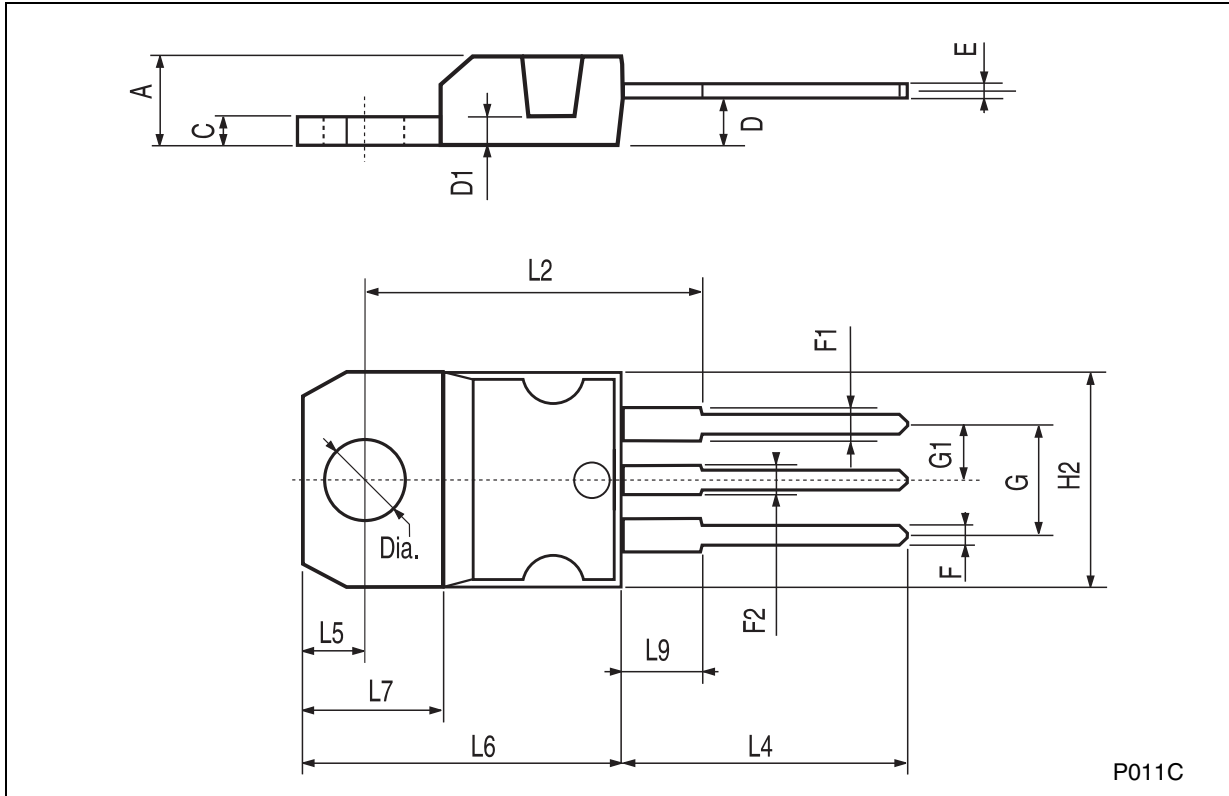
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F1	1		1.4	0.039		0.055
G	3.2	3.4	3.6	0.126	0.134	0.142
G1	6.6	6.8	7	0.260	0.268	0.276
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		17.85			0.703	
L1		15.75			0.620	
L2		21.4			0.843	
L3		22.5			0.886	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		4.5			0.177	
M1		4			0.157	
Dia1	3.65		3.85	0.144		0.152



P010E

TO-220 MECHANICAL DATA

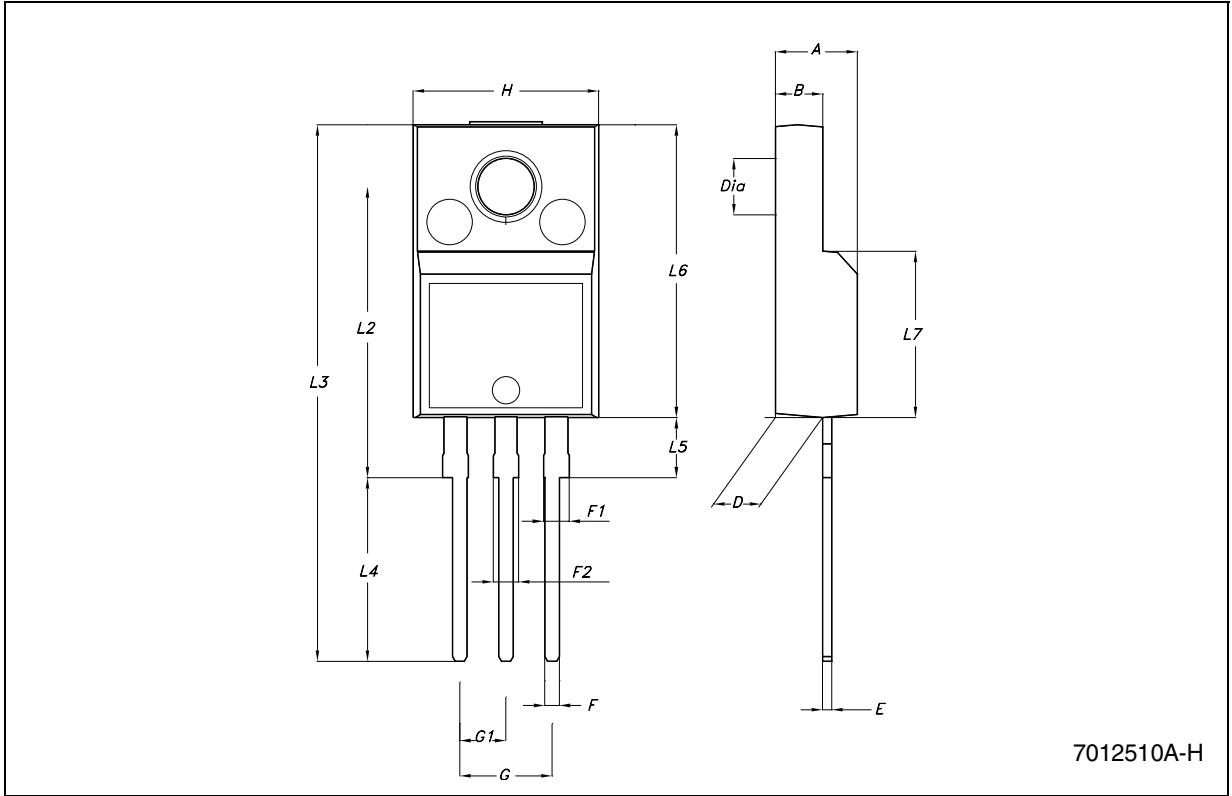
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



P011C

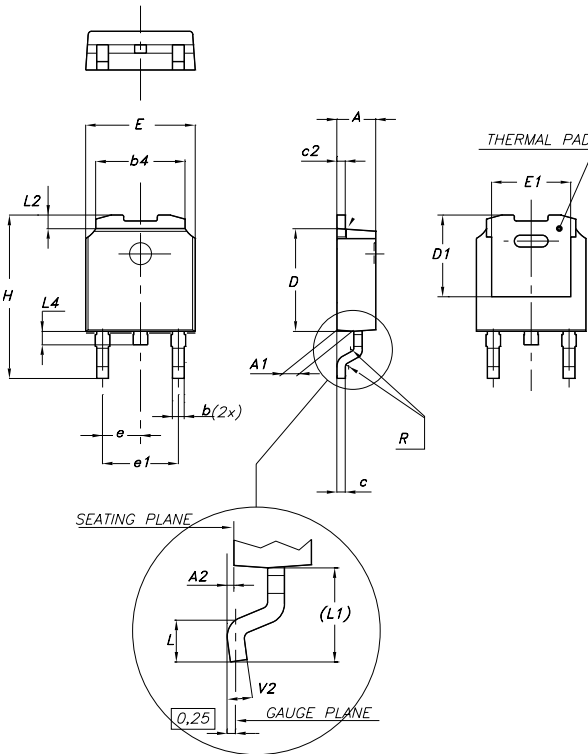
TO-220FP MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.70	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.15		1.50	0.045		0.059
F2	1.15		1.50	0.045		0.059
G	4.95		5.2	0.194		0.204
G1	2.4		2.7	0.094		0.106
H	10.0		10.40	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L5	2.9		3.6	0.114		0.142
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
DIA.	3		3.2	0.118		0.126



DPAK MECHANICAL DATA

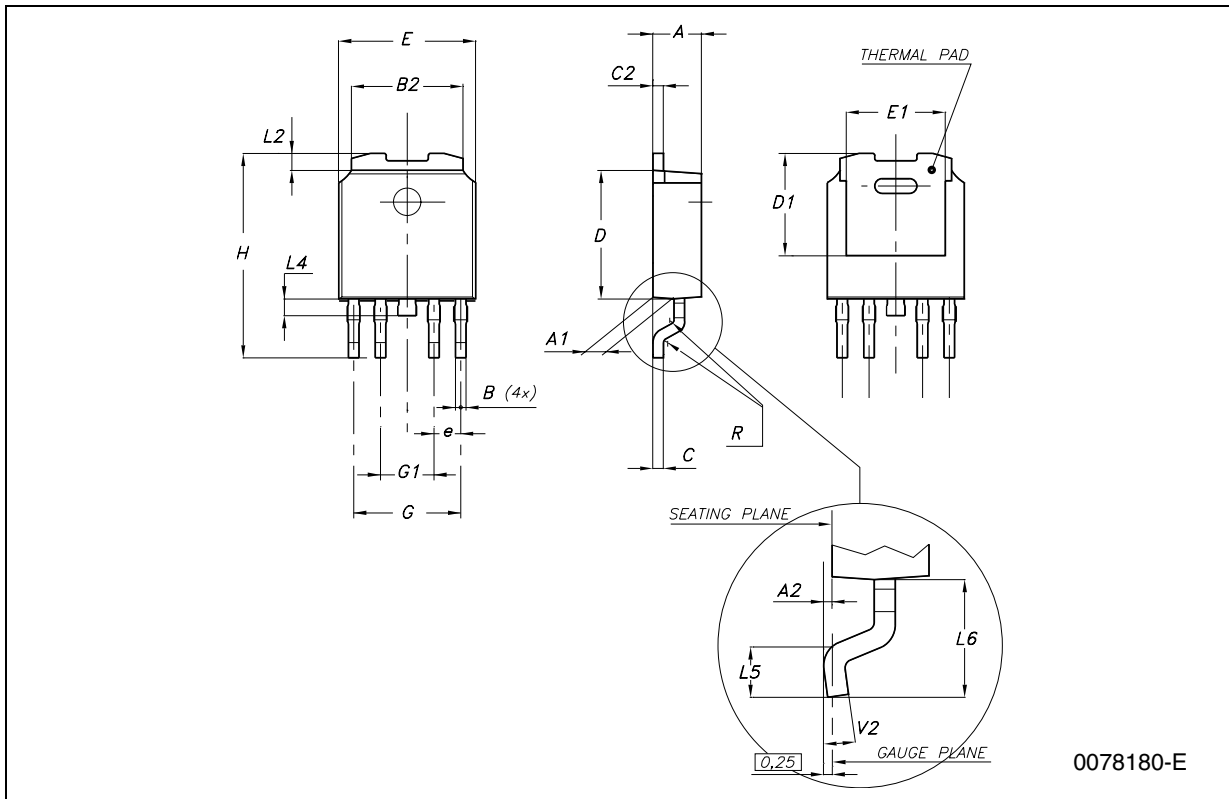
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
b4	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.200	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
e		2.28			0.090	
e1	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L	1			0.039		
(L1)		2.8			0.110	
L2		0.8			0.031	
L4	0.6		1	0.023		0.039
R		0.2			0.008	
V2	0°		8°	0°		8°



0068772-F

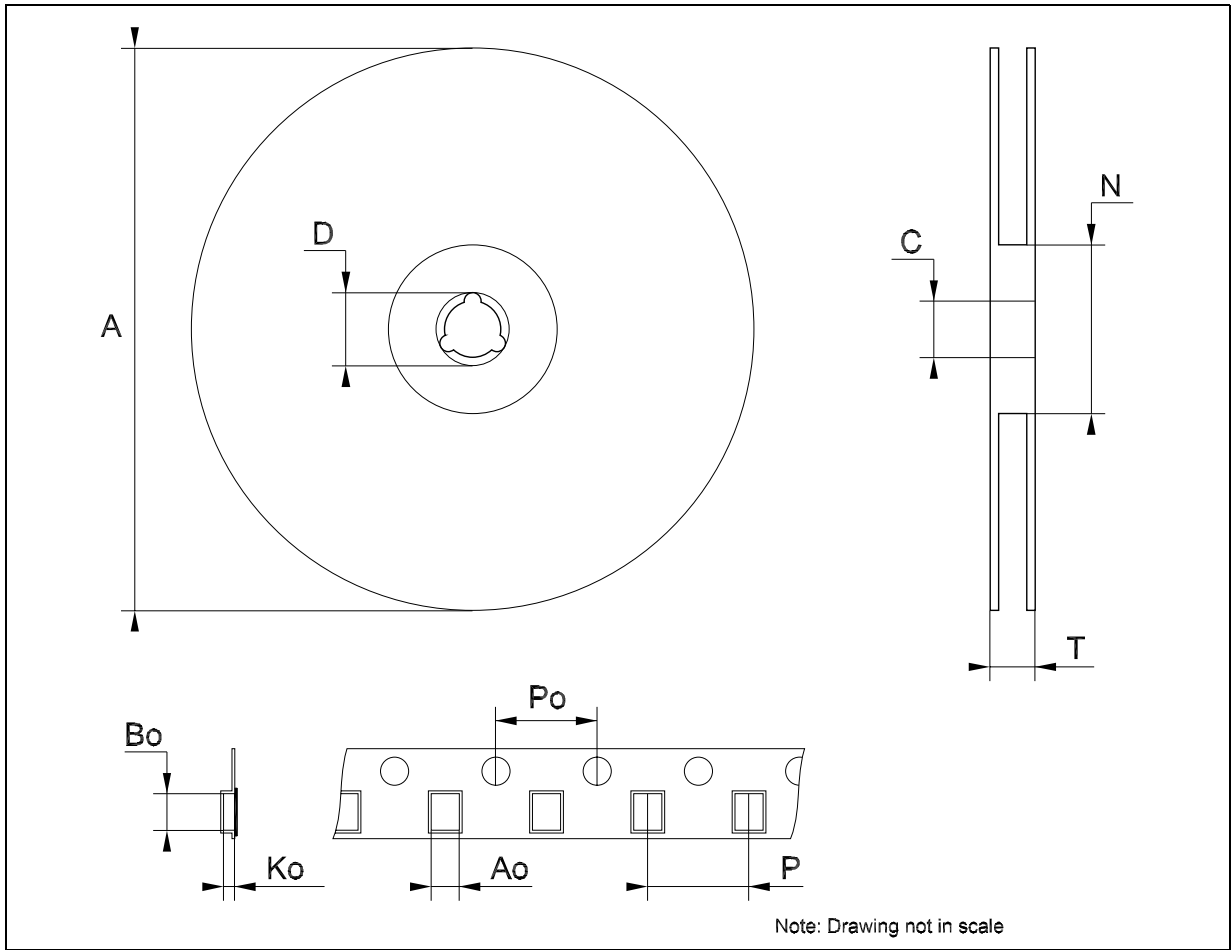
PPAK MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.4		0.6	0.015		0.023
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.201	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
e		1.27			0.050	
G	4.9		5.25	0.193		0.206
G1	2.38		2.7	0.093		0.106
H	9.35		10.1	0.368		0.397
L2		0.8	1		0.031	0.039
L4	0.6		1	0.023		0.039
L5	1			0.039		
L6		2.8			0.110	



Tape & Reel DPAK-PPAK MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			330			12.992
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			22.4			0.882
Ao	6.80	6.90	7.00	0.268	0.272	0.276
Bo	10.40	10.50	10.60	0.409	0.413	0.417
Ko	2.55	2.65	2.75	0.100	0.104	0.105
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	7.9	8.0	8.1	0.311	0.315	0.319



6 Order code

Table 31. Order code

Part numbers						
Packages						Output voltage
TO-220	TO-220FP	DPAK	DPAK (T&R)	PPAK	PPAK (T&R)	
LF15CV ⁽¹⁾	LF15CP ⁽¹⁾	LF15CDT	LF15CDT-TR	LF15CPT ⁽¹⁾	LF15CPT-TR ⁽¹⁾	1.5 V
LF15ABV ⁽¹⁾	LF15ABP ⁽¹⁾	LF15ABDT	LF15ABDT-TR	LF15ABPT ⁽¹⁾	LF15ABPT-TR	1.5 V
LF18CV	LF18CP ⁽¹⁾	LF18CDT	LF18CDT-TR	LF18CPT	LF18CPT-TR	1.8 V
LF18ABV	LF18ABP ⁽¹⁾	LF18ABDT	LF18ABDT-TR	LF18ABPT	LF18ABPT-TR	1.8 V
LF25CV	LF25CP ⁽¹⁾	LF25CDT	LF25CDT-TR	LF25CPT	LF25CPT-TR	2.5 V
LF25ABV	LF25ABP ⁽¹⁾	LF25ABDT	LF25ABDT-TR	LF25ABPT ⁽¹⁾	LF25ABPT-TR	2.5 V
LF27CV ⁽¹⁾	LF27CP ⁽¹⁾	LF27CDT	LF27CDT-TR	LF27CPT	LF27CPT-TR ⁽¹⁾	2.7 V
LF27ABV ⁽¹⁾	LF27ABP ⁽¹⁾	LF27ABDT	LF27ABDT-TR	LF27ABPT ⁽¹⁾	LF27ABPT-TR ⁽¹⁾	2.7 V
LF30CV	LF30CP ⁽¹⁾	LF30CDT	LF30CDT-TR	LF30CPT	LF30CPT-TR ⁽¹⁾	3 V
LF30ABV ⁽¹⁾	LF30ABP ⁽¹⁾	LF30ABDT	LF30ABDT-TR	LF30ABPT	LF30ABPT-TR ⁽¹⁾	3 V
LF33CV	LF33CP	LF33CDT	LF33CDT-TR	LF33CPT	LF33CPT-TR	3.3 V
LF33ABV	LF33ABP	LF33ABDT	LF33ABDT-TR	LF33ABPT	LF33ABPT-TR	3.3 V
LF35CV ⁽¹⁾	LF35CP ⁽¹⁾	LF35CDT	LF35CDT-TR ⁽¹⁾	LF35CPT ⁽¹⁾	LF35CPT-TR ⁽¹⁾	3.5 V
LF35ABV ⁽¹⁾	LF35ABP ⁽¹⁾	LF35ABDT	LF35ABDT-TR	LF35ABPT ⁽¹⁾	LF35ABPT-TR ⁽¹⁾	3.5 V
LF40CV ⁽¹⁾	LF40CP ⁽¹⁾	LF40CDT	LF40CDT-TR	LF40CPT	LF40CPT-TR ⁽¹⁾	4 V
LF40ABV ⁽¹⁾	LF40ABP ⁽¹⁾	LF40ABDT ⁽¹⁾	LF40ABDT-TR ⁽¹⁾	LF40ABPT ⁽¹⁾	LF40ABPT-TR ⁽¹⁾	4 V
LF50CV	LF50CP	LF50CDT	LF50CDT-TR	LF50CPT	LF50CPT-TR	5 V
LF50ABV	LF50ABP	LF50ABDT	LF50ABDT-TR	LF50ABPT	LF50ABPT-TR	5 V
LF60CV	LF60CP ⁽¹⁾	LF60CDT	LF60CDT-TR	LF60CPT	LF60CPT-TR ⁽¹⁾	6 V
LF60ABV	LF60ABP ⁽¹⁾	LF60ABDT	LF60ABDT-TR	LF60ABPT ⁽¹⁾	LF60ABPT-TR ⁽¹⁾	6 V
LF80CV	LF80CP ⁽¹⁾	LF80CDT	LF80CDT-TR	LF80CPT	LF80CPT-TR	8 V
LF80ABV	LF80ABP ⁽¹⁾	LF80ABDT	LF80ABDT-TR	LF80ABPT	LF80ABPT-TR	8 V
LF85CV	LF85CP	LF85CDT	LF85CDT-TR	LF85CPT	LF85CPT-TR	8.5 V
LF85ABV	LF85ABP ⁽¹⁾	LF85ABDT	LF85ABDT-TR	LF85ABPT ⁽¹⁾	LF85ABPT-TR	8.5 V
LF90CV	LF90CP ⁽¹⁾	LF90CDT	LF90CDT-TR	LF90CPT	LF90CPT-TR	9 V
LF90ABV	LF90ABP ⁽¹⁾	LF90ABDT ⁽¹⁾	LF90ABDT-TR	LF90ABPT	LF90ABPT-TR	9 V
LF120CV	LF120CP ⁽¹⁾	LF120CDT	LF120CDT-TR	LF120CPT	LF120CPT-TR	12 V
LF120ABV	LF120ABP	LF120ABDT	LF120ABDT-TR	LF120ABPT ⁽¹⁾	LF120ABPT-TR	12 V

1. Available on request

7 Revision history

Table 32. Revision history

Date	Revision	Changes
21-Jun-2004	14	Document updating.
24-May-2006	15	Order Codes has been updated and new template.

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