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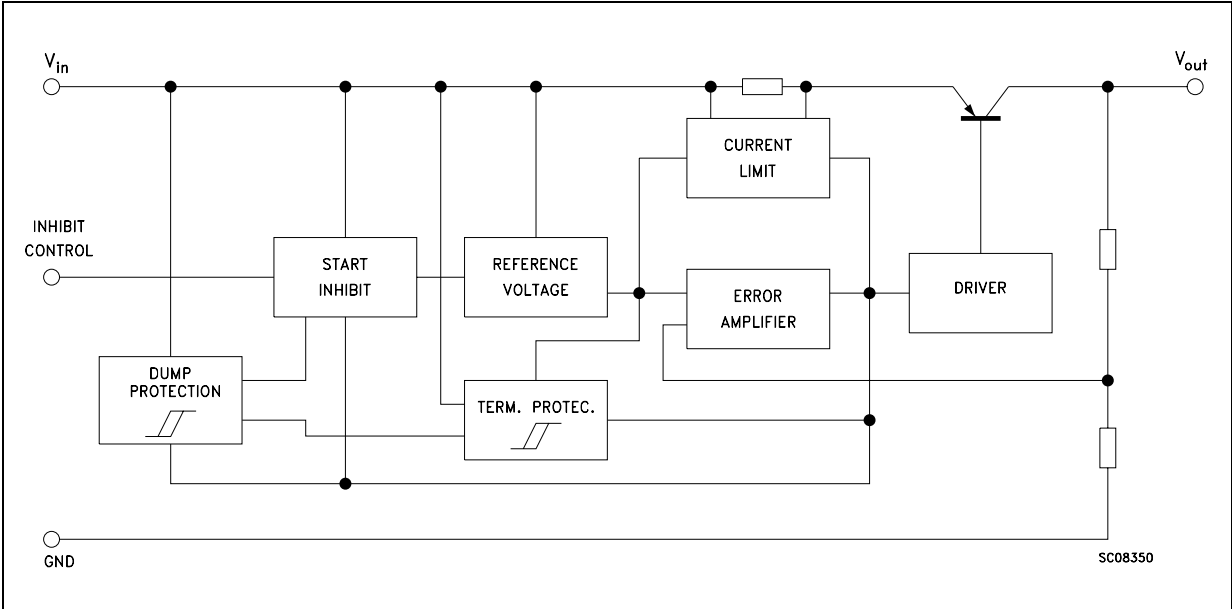
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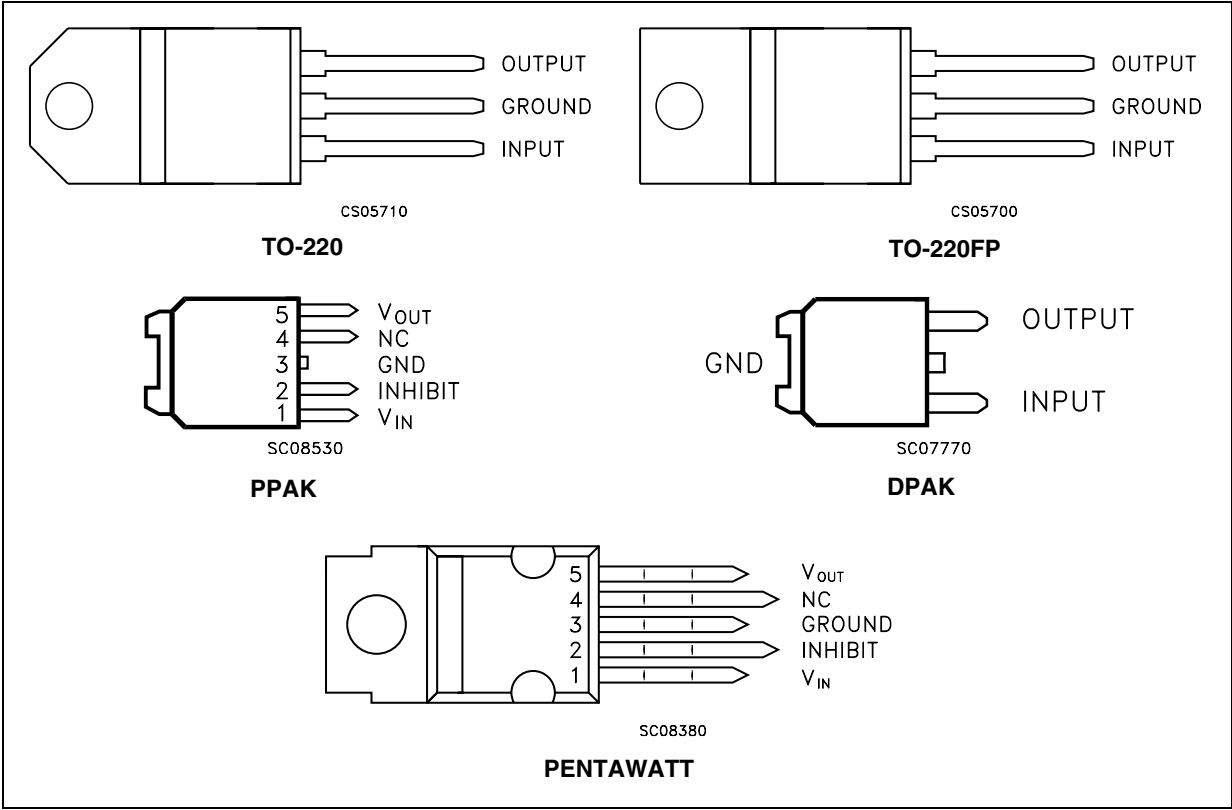
1 Diagram

Figure 1. Block diagram



2 Pin configuration

Figure 2. Pin connections (top view)



3 Maximum ratings

Table 2. Absolute maximum ratings

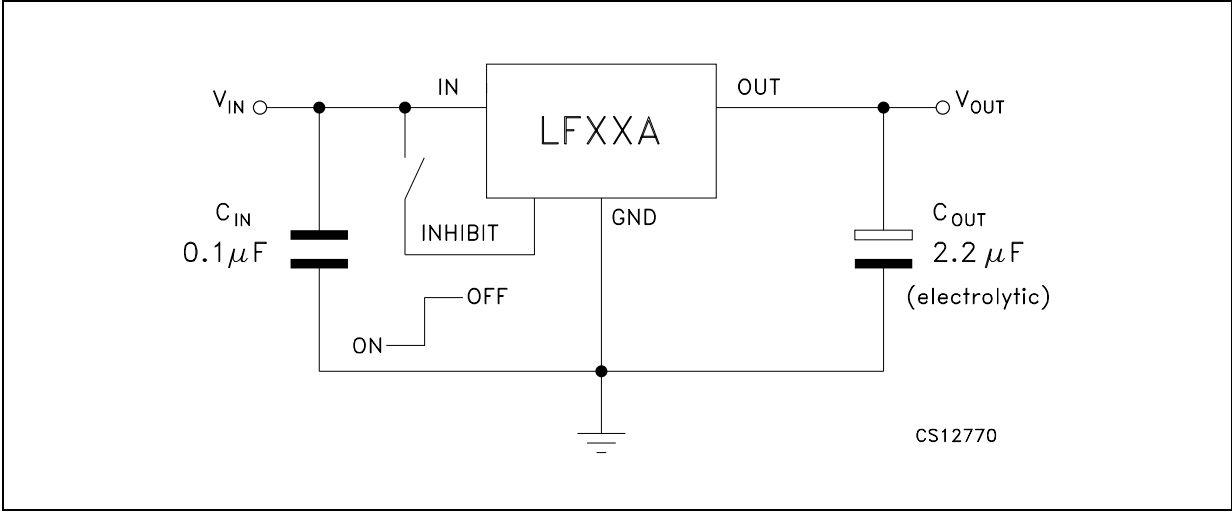
Symbol	Parameter	Value	Unit
V_I	DC input voltage	-0.5 to 40 ⁽¹⁾	V
I_O	Output current	Internally limited	
P_{TOT}	Power dissipation	Internally limited	
T_{STG}	Storage temperature range	-40 to 150	°C
T_{OP}	Operating junction temperature range	-40 to 125	°C

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

Table 3. Thermal data

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

Figure 3. Test circuit



4 Electrical characteristics

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.

Table 4. Electrical characteristics for LF15AB

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

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.

Table 5. Electrical characteristics for LF18AB

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

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.

Table 6. Electrical characteristics for LF18C

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

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

Table 7. Electrical characteristics for LF18CDT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$, $T_a = 25^\circ\text{C}$	1.764	1.8	1.836	V
		$I_O = 50\ \text{mA}$, $V_I = 3.5\ \text{V}$	1.713		1.887	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$	3		16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 2.8$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		2	15	mV
ΔV_O	Load regulation	$V_I = 3.3\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		2	15	mV
I_d	Quiescent current	$V_I = 2.5$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 3.1$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 3.5 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{kHz}$	77		
			$f = 10\ \text{kHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 8. Electrical characteristics for LF25AB

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

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

Table 9. Electrical characteristics for LF25ABDT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$, $T_a = 25^\circ\text{C}$	2.475	2.5	2.525	V
		$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$	2.435		2.565	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 3.5$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		2	15	mV
ΔV_O	Load regulation	$V_I = 3.8\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		2	15	mV
I_d	Quiescent current	$V_I = 3.5$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 3.8$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.5 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{kHz}$	77		
			$f = 10\ \text{kHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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

Table 10. Electrical characteristics for LF25C

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	$\text{ESR} = 0.1\text{ to }10\text{ }\Omega$, $I_O = 0\text{ to }500\text{ mA}$	2	10		μF

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

Table 11. Electrical characteristics for LF25CDT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$, $T_a = 25^\circ\text{C}$	2.45	2.5	2.55	V
		$I_O = 50\ \text{mA}$, $V_I = 4.5\ \text{V}$	2.385		2.615	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 3.5$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		2	15	mV
ΔV_O	Load regulation	$V_I = 3.8\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		2	15	mV
I_d	Quiescent current	$V_I = 3.5$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 3.8$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 4.5 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	82		dB
			$f = 1\ \text{kHz}$	77		
			$f = 10\ \text{kHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 12. Electrical characteristics for LF33AB

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

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.

Table 13. Electrical characteristics for LF33C

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

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

Table 14. Electrical characteristics for LF33CDT-TRY and LF33CPT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$, $T_a = 25^\circ\text{C}$	3.234	3.3	3.366	V
		$I_O = 50\ \text{mA}$, $V_I = 5.3\ \text{V}$,	3.153		3.447	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 4.3$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		3	19	mV
ΔV_O	Load regulation	$V_I = 4.6\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		3	19	mV
I_d	Quiescent current	$V_I = 4.3$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 4.6$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 5.3 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	80		dB
			$f = 1\ \text{kHz}$	75		
			$f = 10\ \text{kHz}$	65		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 15. Electrical characteristics for LF50AB

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

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

Table 16. Electrical characteristics for LF50ABDT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$, $T_a = 25^\circ\text{C}$	4.95	5	5.05	V
		$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$	4.885		5.115	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 6$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		5	28	mV
ΔV_O	Load regulation	$V_I = 6.3\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		5	28	mV
I_d	Quiescent current	$V_I = 6$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 6.3$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 7 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	76		dB
			$f = 1\ \text{kHz}$	71		
			$f = 10\ \text{kHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 17. Electrical characteristics for LF50C

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

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

Table 18. Electrical characteristics for LF50CDT-TRY and LF50CPT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$, $T_a = 25^\circ\text{C}$	4.9	5	5.1	V
		$I_O = 50\ \text{mA}$, $V_I = 7\ \text{V}$	4.785		5.215	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 6$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		5	28	mV
ΔV_O	Load regulation	$V_I = 6.3\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		5	28	mV
I_d	Quiescent current	$V_I = 6$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.5	2	mA
		$V_I = 6.3$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 6\ \text{V}$	OFF MODE	50	120	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 7 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	76		dB
			$f = 1\ \text{kHz}$	71		
			$f = 10\ \text{kHz}$	60		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 6\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 19. Electrical characteristics for LF60AB

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

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.

Table 20. Electrical characteristics for LF60C

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

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.

Table 21. Electrical characteristics for LF80AB

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

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.

Table 22. Electrical characteristics for LF80C

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

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

Table 23. Electrical characteristics for LF80CDT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$, $T_a = 25^\circ\text{C}$	7.84	8	8.16	V
		$I_O = 50\ \text{mA}$, $V_I = 10\ \text{V}$	7.665		8.335	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 9$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		8	44	mV
ΔV_O	Load regulation	$V_I = 9.3\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		8	44	mV
I_d	Quiescent current	$V_I = 9$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	2.5	mA
		$V_I = 9.3$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	160	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{kHz}$	67		
			$f = 10\ \text{kHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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.

Table 24. Electrical characteristics for LF85AB

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

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.

Table 25. Electrical characteristics for LF85C

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

Refer to the test circuits, $T_A = -40$ to 25°C , $C_I = 0.1\ \mu\text{F}$, $C_O = 2.2\ \mu\text{F}$ unless otherwise specified.

Table 26. Electrical characteristics for LF85CDT-TRY and LF85CPT-TRY (Automotive Grade)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$, $T_a = 25^\circ\text{C}$	8.33	8.5	8.67	V
		$I_O = 50\ \text{mA}$, $V_I = 10.5\ \text{V}$	8.145		8.855	
V_I	Operating input voltage	$I_O = 500\ \text{mA}$			16	V
I_O	Output current limit	$T_a = 25^\circ\text{C}$		1		A
ΔV_O	Line regulation	$V_I = 9.5$ to $16\ \text{V}$, $I_O = 5\ \text{mA}$		8	44	mV
ΔV_O	Load regulation	$V_I = 9.8\ \text{V}$, $I_O = 5$ to $500\ \text{mA}$		8	44	mV
I_d	Quiescent current	$V_I = 9.5$ to $16\ \text{V}$, $I_O = 0\ \text{mA}$	ON MODE	0.7	2.5	mA
		$V_I = 9.8$ to $16\ \text{V}$, $I_O = 500\ \text{mA}$			12	
		$V_I = 9\ \text{V}$	OFF MODE	70	160	μA
SVR	Supply voltage rejection	$I_O = 5\ \text{mA}$, $V_I = 10.5 \pm 1\ \text{V}$ $T_a = 25^\circ\text{C}$	$f = 120\ \text{Hz}$	72		dB
			$f = 1\ \text{kHz}$	67		
			$f = 10\ \text{kHz}$	57		
eN	Output noise voltage	$B = 10\ \text{Hz}$ to $100\ \text{kHz}$, $T_a = 25^\circ\text{C}$		50		μV
V_d	Dropout voltage	$I_O = 200\ \text{mA}$		0.2	1.3	V
		$I_O = 500\ \text{mA}$		0.4	1.3	
V_{IL}	Control input logic low				0.8	V
V_{IH}	Control input logic high		2			V
I_I	Control input current	$V_I = 9\ \text{V}$, $V_C = 6\ \text{V}$, $T_a = 25^\circ\text{C}$		10		μA
C_O	Output bypass capacitance	$\text{ESR} = 0.1$ to $10\ \Omega$, $I_O = 0$ to $500\ \text{mA}$	2	10		μF

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

Table 27. Electrical characteristics for LF90AB

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	$\text{ESR} = 0.1\text{ to }10\text{ }\Omega$, $I_O = 0\text{ to }500\text{ mA}$	2	10		μF

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.

Table 28. Electrical characteristics for LF90C

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

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.

Table 29. Electrical characteristics for LF120AB

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

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.

Table 30. Electrical characteristics for LF120C

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

5 Typical performance characteristics

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

Figure 4. Dropout voltage vs. output current **Figure 5. Dropout voltage vs. temperature**

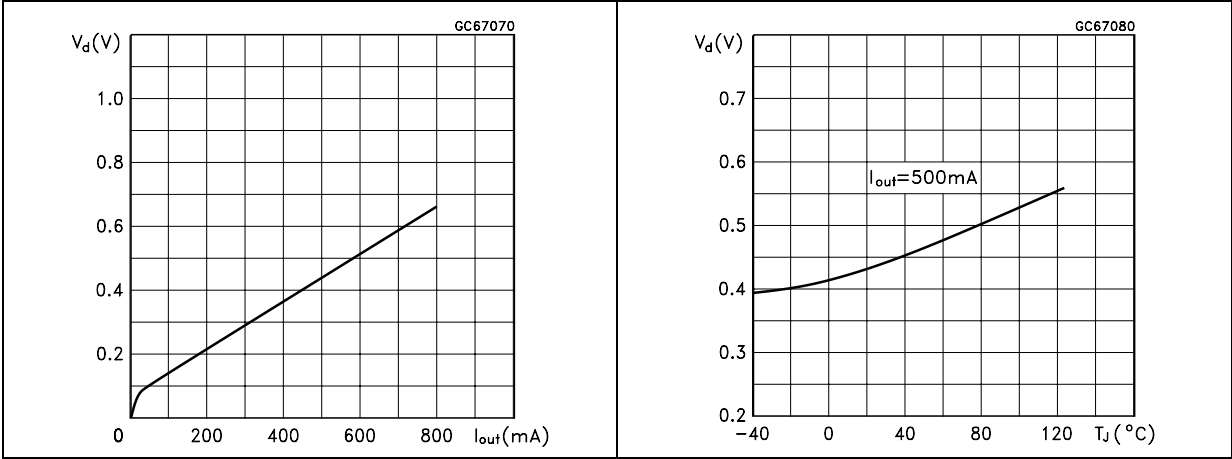


Figure 6. Supply current vs. input voltage **Figure 7. Supply current vs. input voltage**

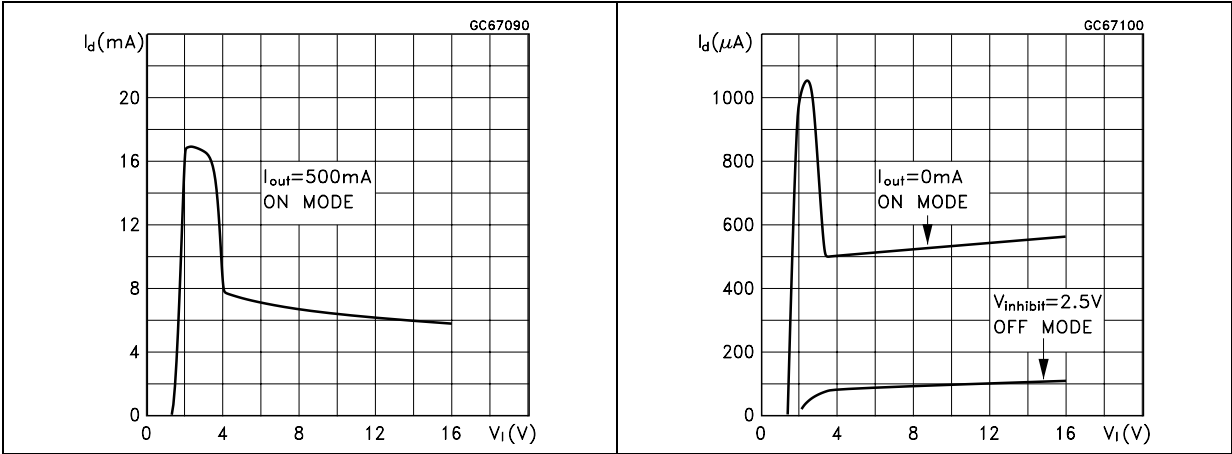
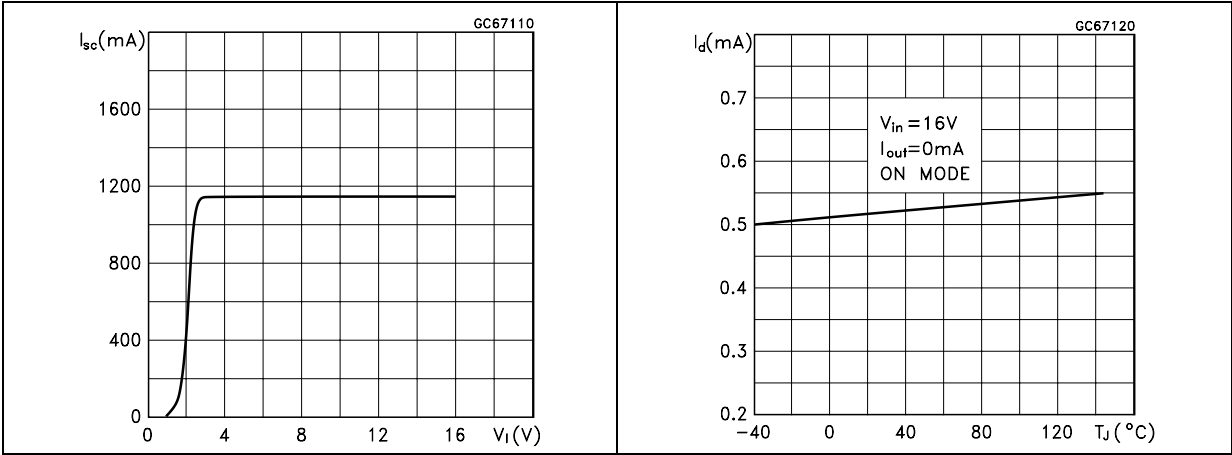


Figure 8. Short circuit current vs. input voltage **Figure 9. Supply current vs. temperature**



The schematic diagram illustrates a precision current source circuit. It features two operational amplifiers, an LF50A and an LF33A, and two CMOS or TTL inverters. The input voltage V_{IN} is constrained by $6 < V_{IN} < 16 \text{ V}$. The control signal $CTRL$ is used to select between two output voltages: $V_{OUT} = 3.3\text{V}$ (Low) and $V_{OUT} = 5.0\text{V}$ (High). The circuit is powered by a 3.3V or 5.0V supply, which can deliver a maximum current of 0.5 A with $\pm 1\%$ accuracy. The output voltage V_{OUT} is measured across a load, and the output current is I_{OUT} . The circuit is identified by the number SC08660.

The diagram shows three identical voltage regulator stages. Each stage consists of an op-amp comparator (HCF40106) configured as a voltage detector. The non-inverting input (pin 1) is connected to a voltage divider network. The inverting input (pin 2) is connected to a reference voltage (pin 3). The output (pin 5) is connected to a 10 μF capacitor. The output voltage is indicated by an arrow pointing to the right.

- 3.3V Regulator:** Uses LF33 op-amp. The output is 3.3V.
- 5.0V Regulator:** Uses LF50 op-amp. The output is 5.0V.
- 12.0V Regulator:** Uses LF120 op-amp. The output is 12.0V.

Each stage includes a 1N4148 diode and a 0.1 μF capacitor. The output of each stage is connected to a 10 μF capacitor. The output voltage is indicated by an arrow pointing to the right.

Legend:

- *: Needed for quick discharge of timing capacitor.
- ** : Values to be defined in order to get the needed sequence.

SC08670

Figure 12. Multiple supply with ON / OFF toggle switch

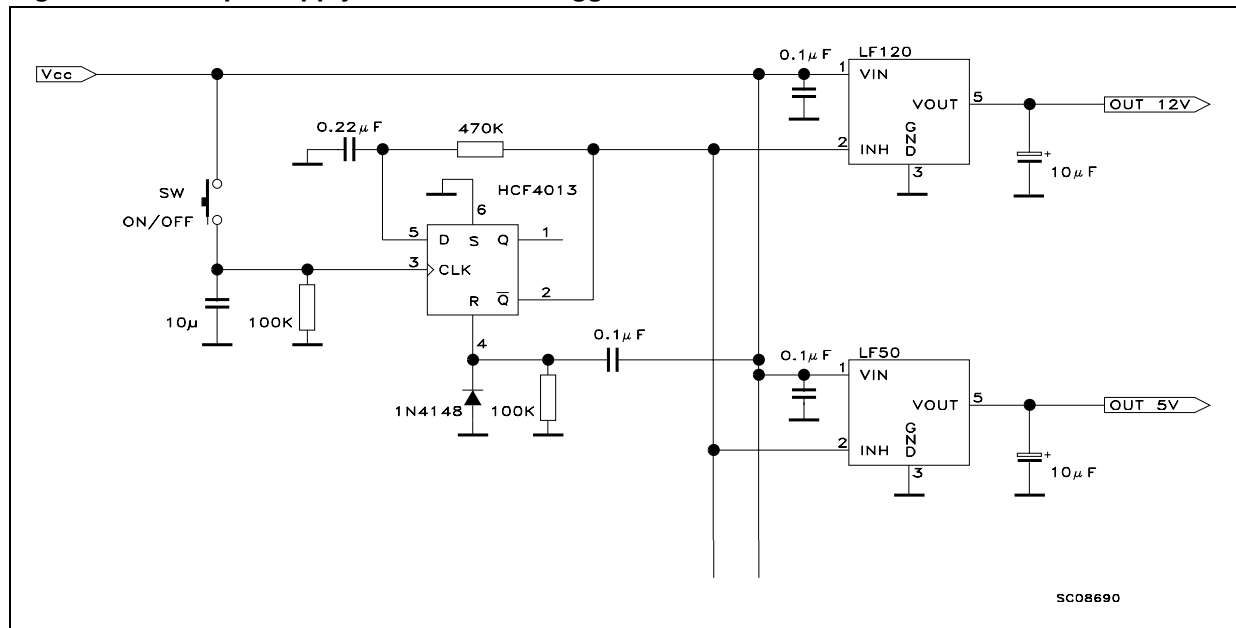


Figure 13. Basic inhibit functions

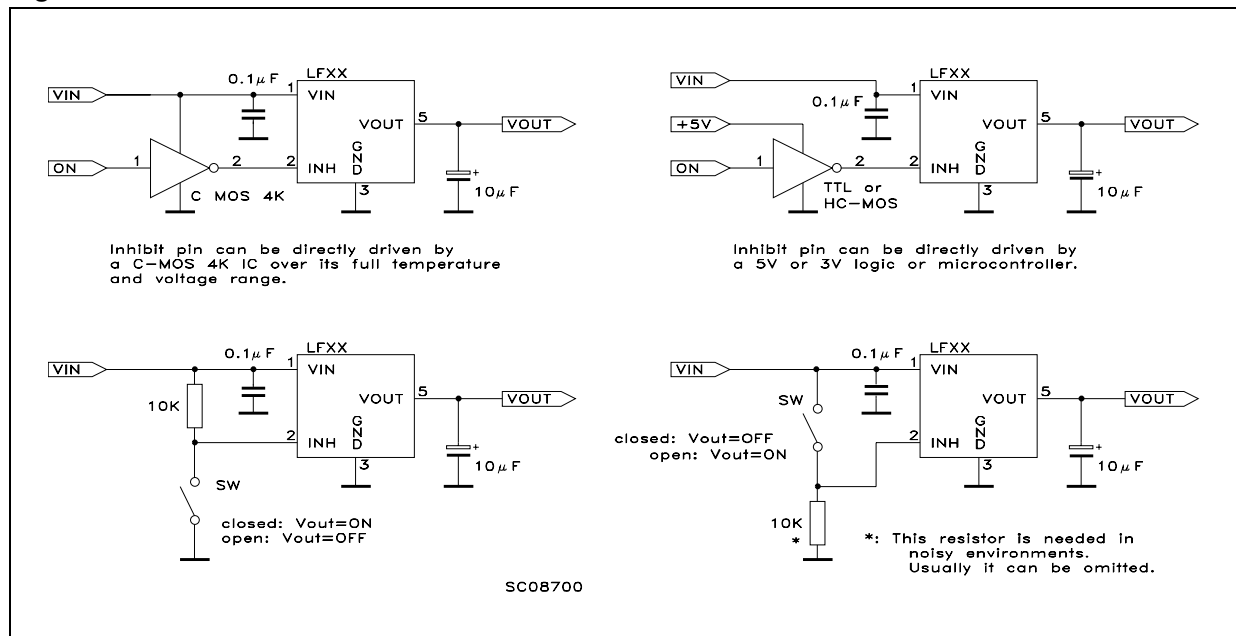


Figure 14. Delayed turn-on

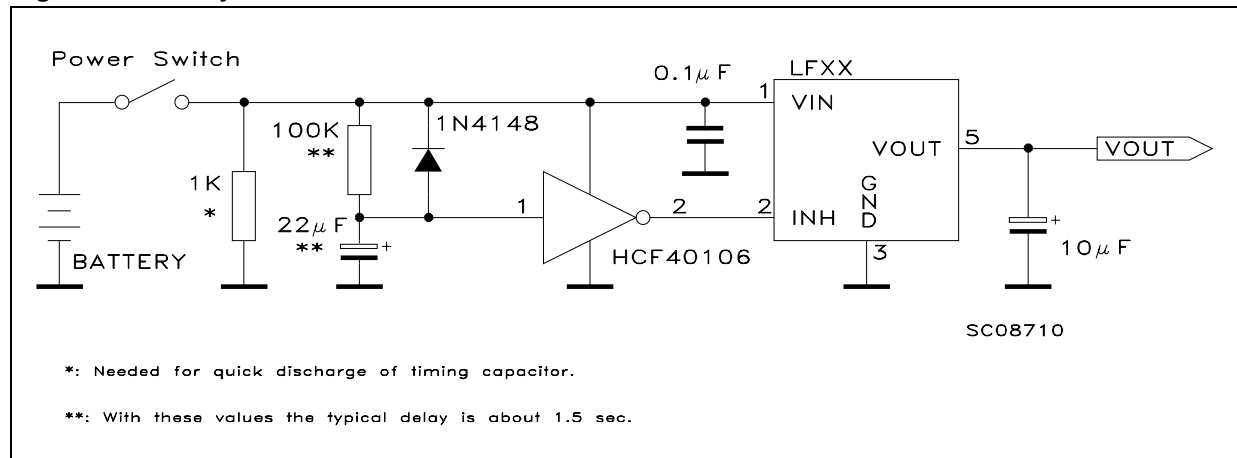
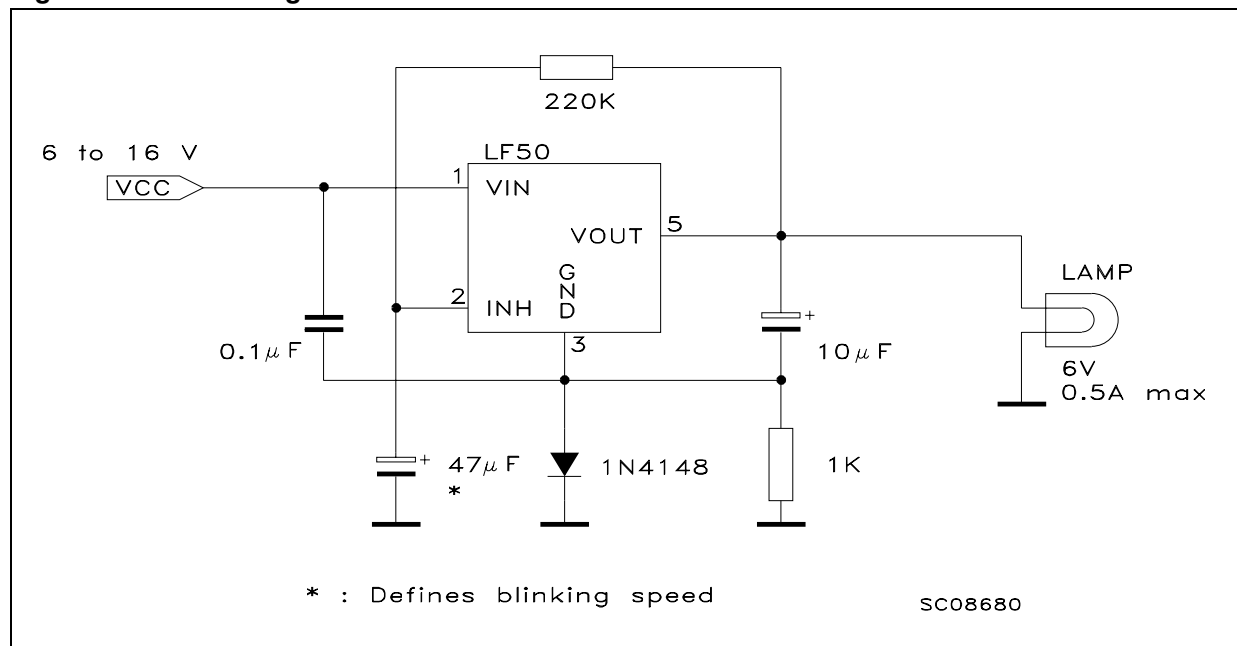


Figure 15. Low voltage bulb blinker



6 Package mechanical data

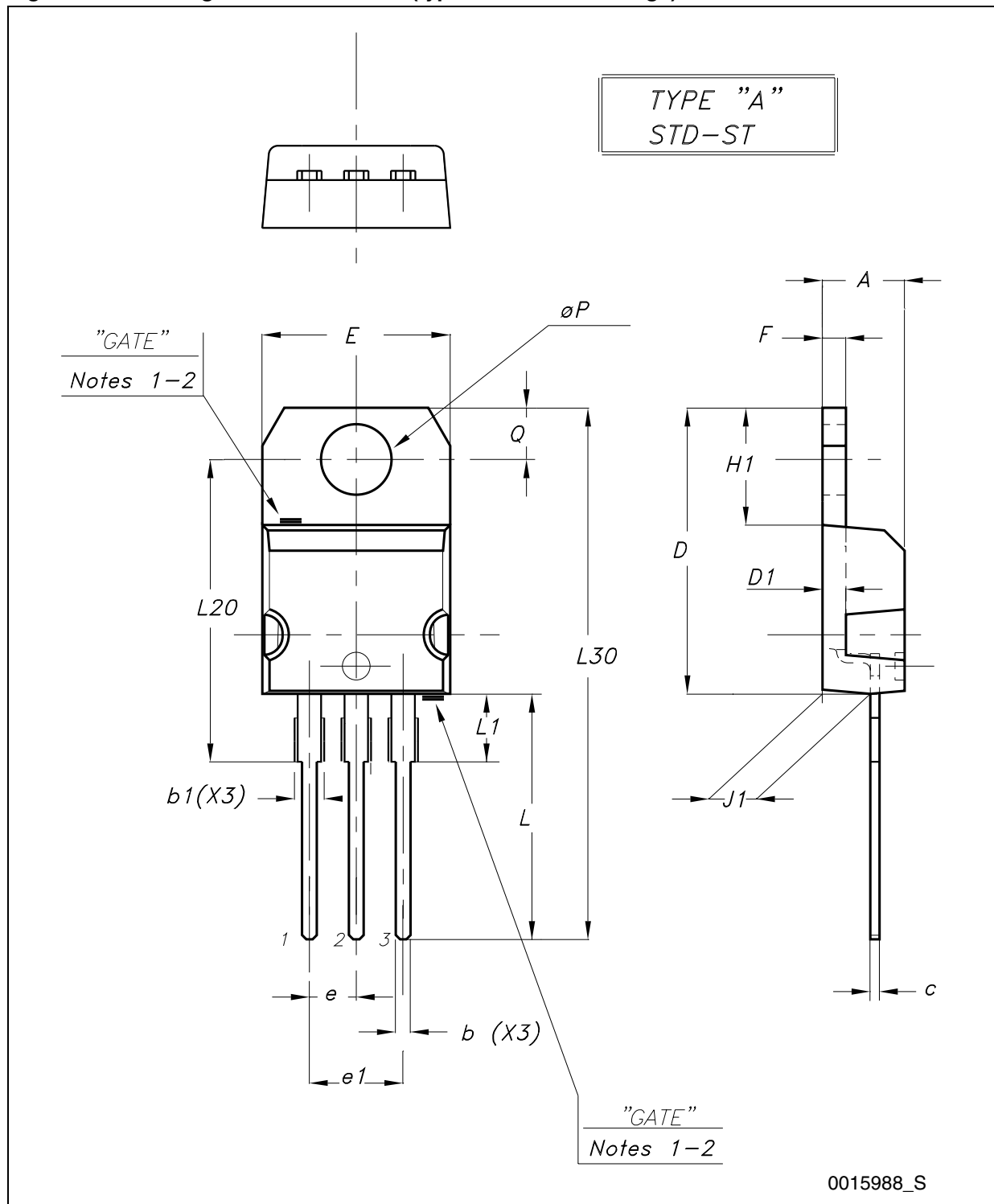
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 31. TO-220 mechanical data

Dim.	Type STD - ST Dual Gauge			Type STD - ST Single Gauge		
	mm.			mm.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	4.40		4.60
b	0.61		0.88	0.61		0.88
b1	1.14		1.70	1.14		1.70
c	0.48		0.70	0.48		0.70
D	15.25		15.75	15.25		15.75
D1		1.27				
E	10.00		10.40	10.00		10.40
e	2.40		2.70	2.40		2.70
e1	4.95		5.15	4.95		5.15
F	1.23		1.32	0.51		0.60
H1	6.20		6.60	6.20		6.60
J1	2.40		2.72	2.40		2.72
L	13.00		14.00	13.00		14.00
L1	3.50		3.93	3.50		3.93
L20		16.40			16.40	
L30		28.90			28.90	
ØP	3.75		3.85	3.75		3.85
Q	2.65		2.95	2.65		2.95

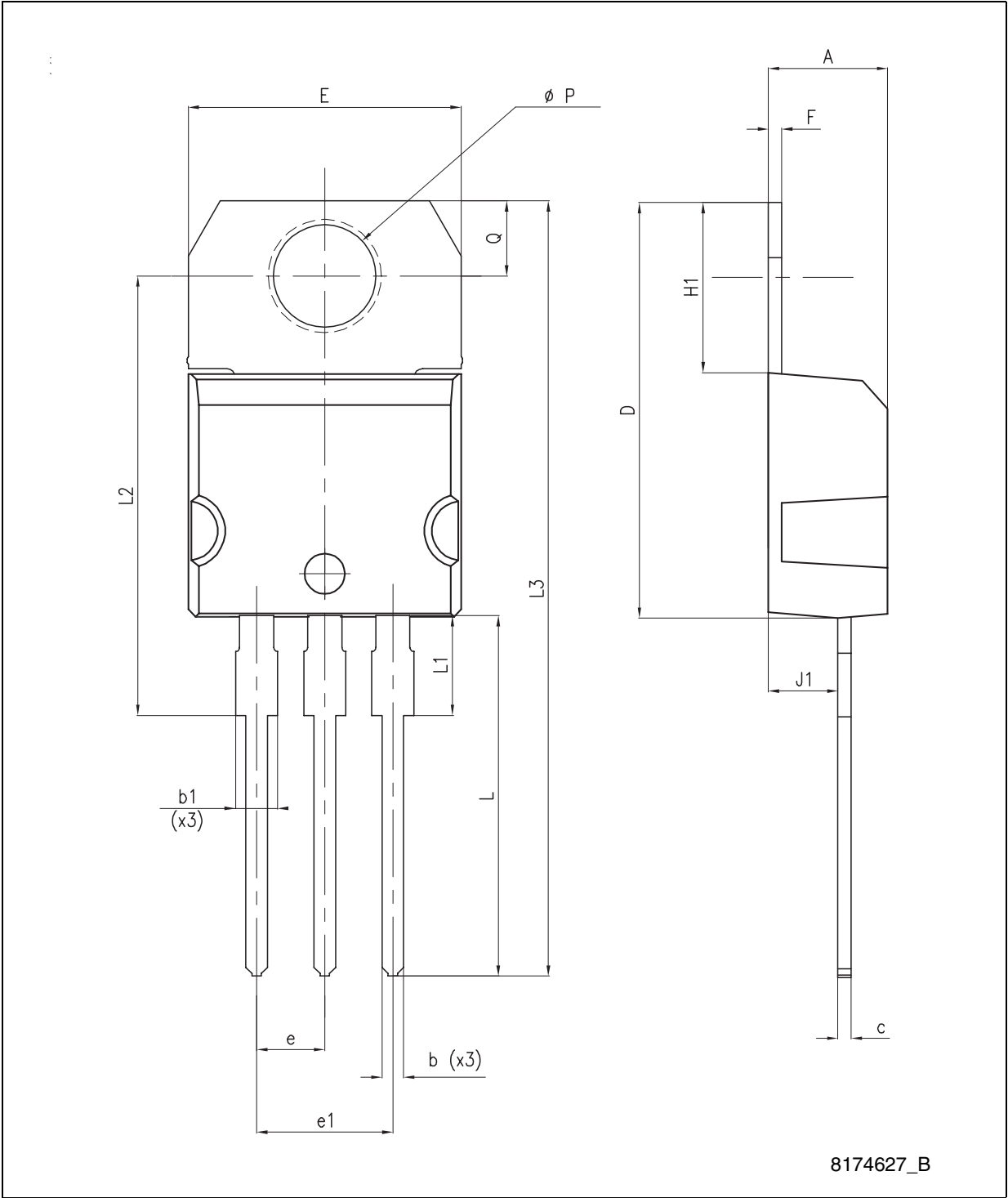
In spite of some difference in tolerances, the packages are compatible.

Figure 16. Drawing dimension TO-220 (type STD-ST Dual Gauge)



- Note: 1 Maximum resin gate protrusion: 0.5 mm.
 2 Resin gate position is accepted in each of the two positions shown on the drawing, or their symmetrical.

Figure 17. Drawing dimension TO-220 (type STD-ST Single Gauge)



SECTION A-A

Technical drawing showing three views of a mechanical part with dimensions and callouts:

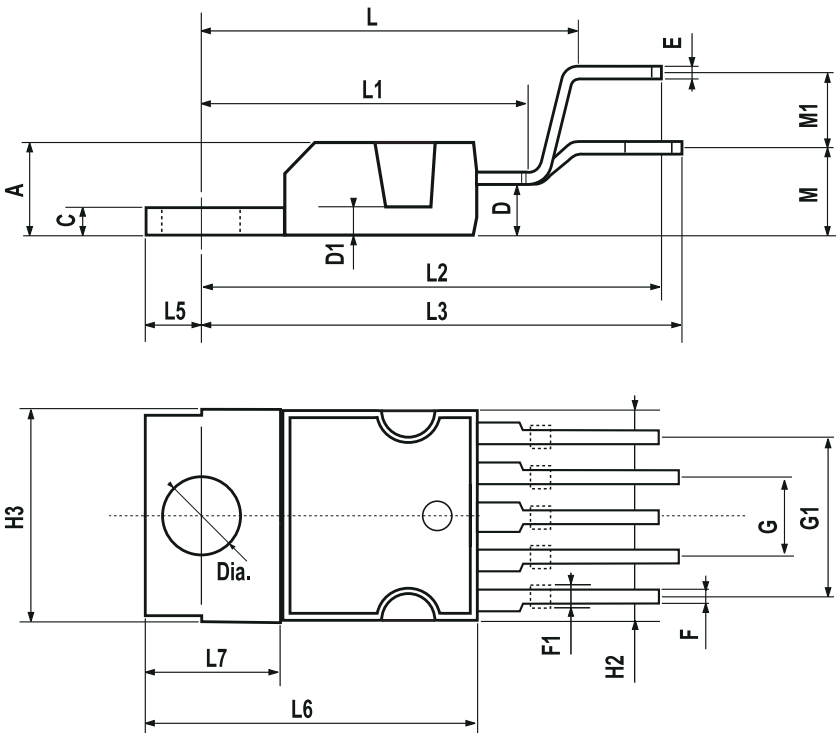
- Top View (Left):** Shows a cross-section with dimensions: 31.4 ± 0.2 (5), 5.5 (8), 16.3 ± 0.2 (7), 4.4 (3), 2.2 (2), 0.75 ± 0.1 (1), 5.9 ± 0.1 (4), 3.1 ± 0.05 (6), and a hole diameter of 3.1.
- Side View (Top):** Shows a long cylindrical part with dimensions: 532 ± 0.5 (11), 6.5 ± 0.2 (12), 6.5 ± 0.2 (13), and a hole diameter of 3.1 ± 0.2 (10). Callouts A and B indicate specific features.
- Front View (Bottom):** Shows a cross-section with dimensions: 113 (15), 56 (14), 94 (16), 10 (17), and 2 (18). Callouts A and B indicate specific features.

PRINTING AREA - SEE SPEC. DOC. Nr. 0062566
PRINT HEIGHT "A" = 3mm.

[illegible]

PENTAWATT (Vertical) mechanical data

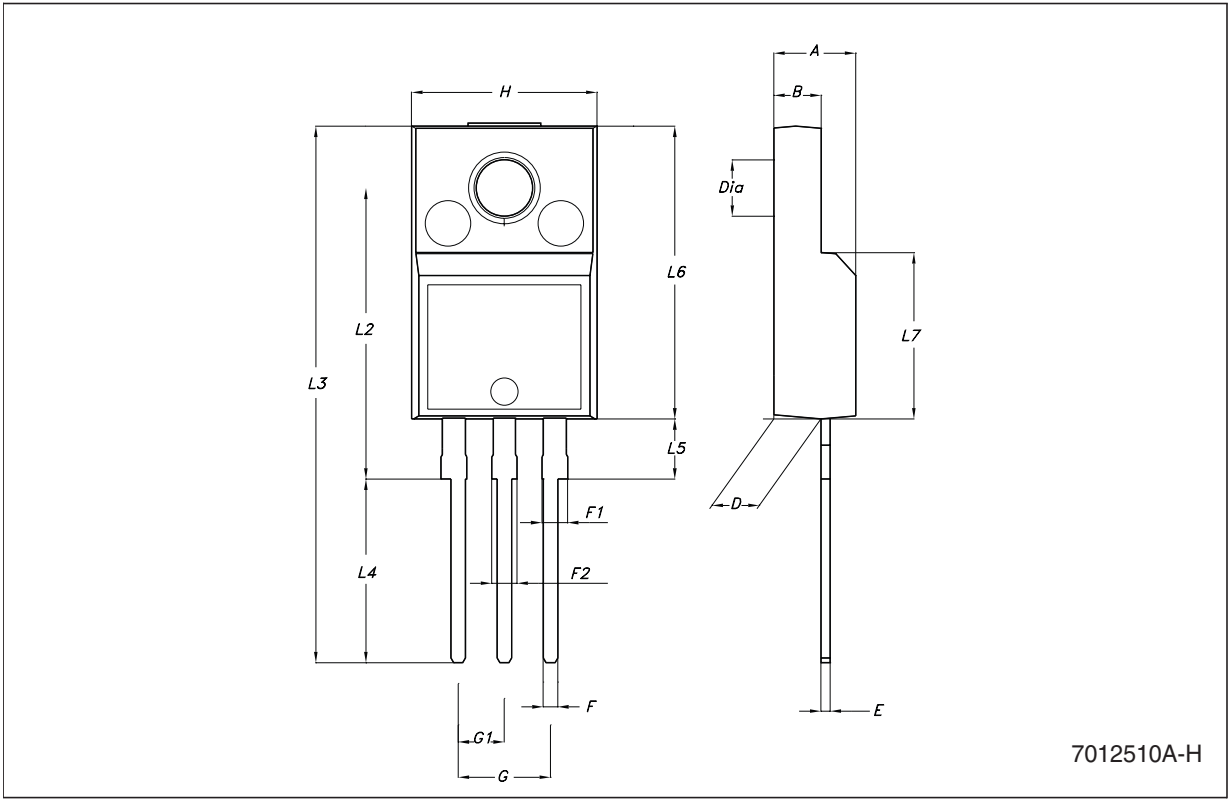
Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F1	1		1.4	0.039		0.055
G	3.2	3.4	3.6	0.126	0.134	0.142
G1	6.6	6.8	7	0.260	0.268	0.276
H2			10.4			0.409
H3	10.05		10.4	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-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

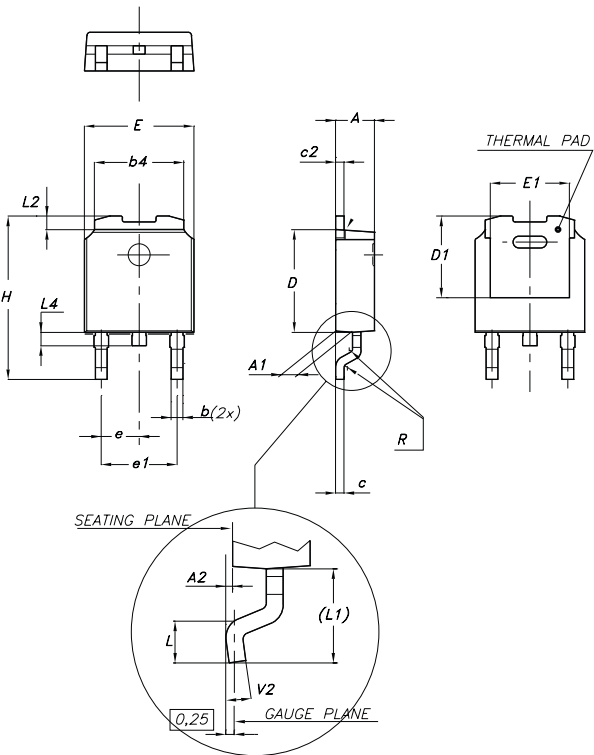


7012510A-H



DPAK mechanical data

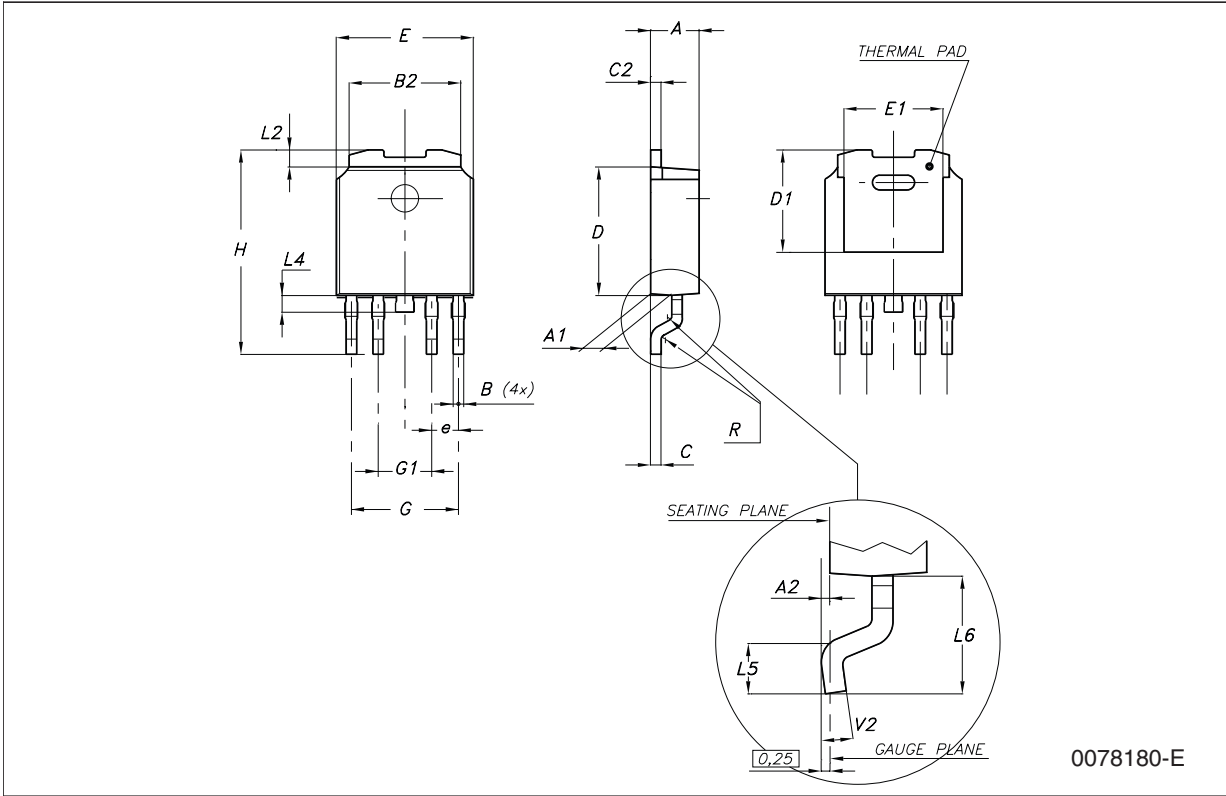
Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
b4	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.200	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
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

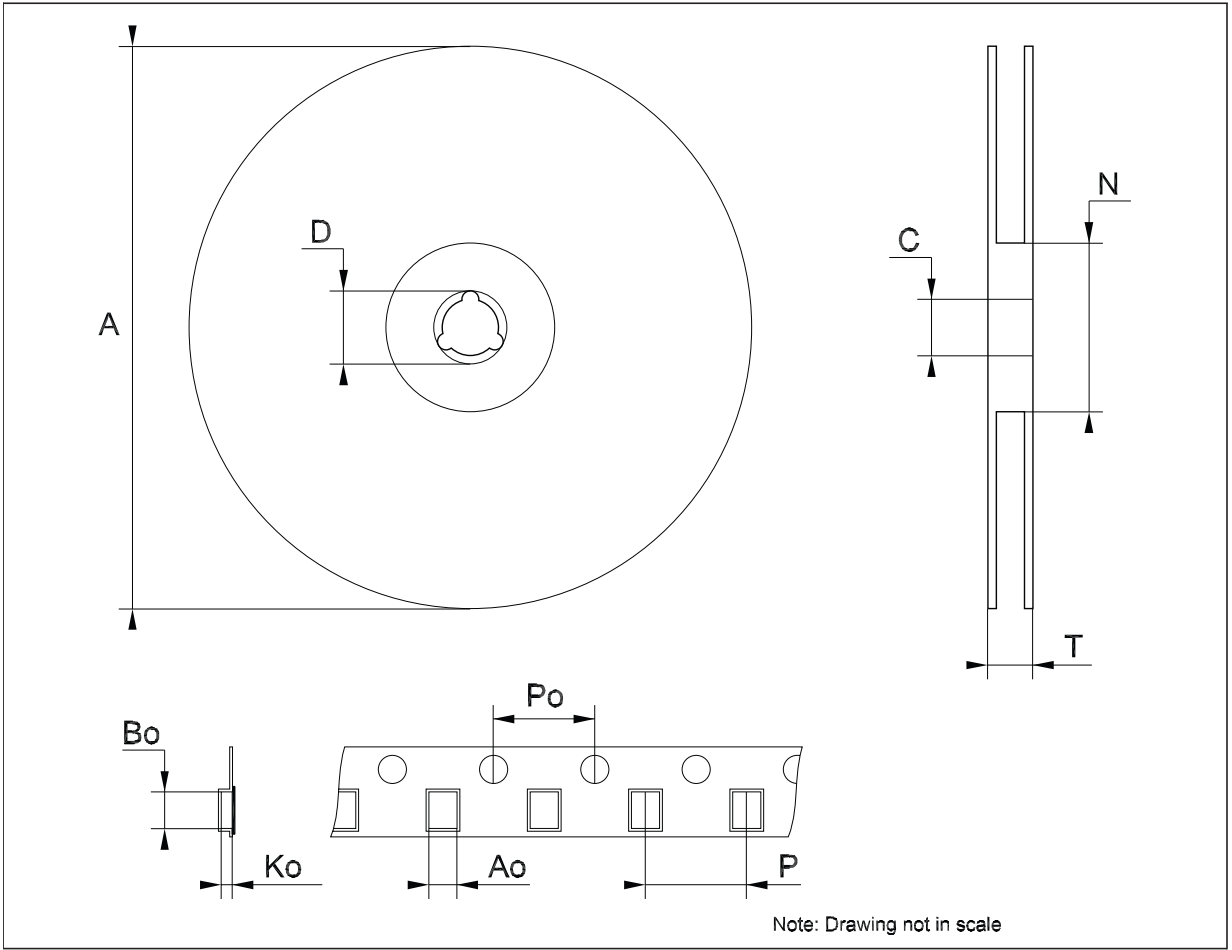
Dim.	mm.			inch.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.4		0.6	0.015		0.023
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.201	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
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	



0078180-E

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



7 Order codes

Table 32. Order codes

Packages					Output voltages
TO-220	TO-220FP	DPAK (tape and reel)	PPAK	PPAK (tape and reel)	
LF15ABV ⁽¹⁾	LF15ABP ⁽¹⁾	LF15ABDT-TR	LF15ABPT ⁽¹⁾		1.5 V
	LF18CP ⁽¹⁾	LF18CDT-TR		LF18CPT-TR	1.8 V
		LF18CDT-TRY ⁽²⁾			1.8 V
	LF18ABP ⁽¹⁾	LF18ABDT-TR		LF18ABPT-TR	1.8 V
	LF25CP ⁽¹⁾	LF25CDT-TR		LF25CPT-TR	2.5 V
		LF25CDT-TRY ⁽²⁾			2.5 V
	LF25ABP ⁽¹⁾	LF25ABDT-TR	LF25ABPT ⁽¹⁾		2.5 V
		LF25ABDT-TRY ⁽²⁾			2.5 V
LF33CV		LF33CDT-TR		LF33CPT-TR	3.3 V
LF33CV-DG ⁽³⁾		LF33CDT-TRY ⁽²⁾		LF33CPT-TRY ⁽²⁾	3.3 V
LF33ABV		LF33ABDT-TR			3.3 V
LF33ABV-DG ⁽³⁾					3.3 V
LF50CV		LF50CDT-TR		LF50CPT-TR	5 V
		LF50CDT-TRY ⁽²⁾		LF50CPT-TRY ⁽²⁾	5 V
LF50ABV	LF50ABP	LF50ABDT-TR		LF50ABPT-TR	5 V
LF50ABV-DG ⁽³⁾					5 V
		LF50ABDT-TRY ⁽²⁾			5 V
LF60CV	LF60CP ⁽¹⁾	LF60CDT-TR		LF60CPT-TR ⁽¹⁾	6 V
LF60ABV	LF60ABP ⁽¹⁾	LF60ABDT-TR	LF60ABPT ⁽¹⁾	LF60ABPT-TR ⁽¹⁾	6 V
LF80CV	LF80CP ⁽¹⁾	LF80CDT-TR			8 V
		LF80CDT-TRY ⁽²⁾			8 V
LF80ABV	LF80ABP ⁽¹⁾	LF80ABDT-TR			8 V
		LF85CDT-TR		LF85CPT-TR	8.5 V
		LF85CDT-TRY ⁽²⁾		LF85CPT-TRY ⁽²⁾	8.5 V
LF90CV	LF90CP ⁽¹⁾			LF90CPT-TR	9 V
	LF120CP ⁽¹⁾	LF120CDT-TR			12 V
LF120ABV		LF120ABDT-TR	LF120ABPT ⁽¹⁾		12 V

1. Available on request.

2. Automotive Grade products.

3. TO-220 Dual Gauge frame.

8 Revision history

Table 33. 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 32 .
16-Jan-2008	20	Added new order codes for Automotive grade products see Table 32 on page 48 .
12-Feb-2008	21	Modified: Table 32 on page 48 .
10-Jul-2008	22	Modified: Table 32 on page 48 .
05-May-2010	23	Added: Table 31 on page 39 , Figure 16 on page 40 , Figure 17 on page 41 , Figure 18 and Figure 19 on page 42 .
16-Nov-2010	24	Modified: R_{thJC} value for TO-220 Table 3 on page 7 .
10-Feb-2012	25	Added: order code LF33CV-DG and LF33ABV-DG Table 32 on page 48 .
09-Mar-2012	26	Added: order code LF50ABV-DG Table 32 on page 48 .

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