



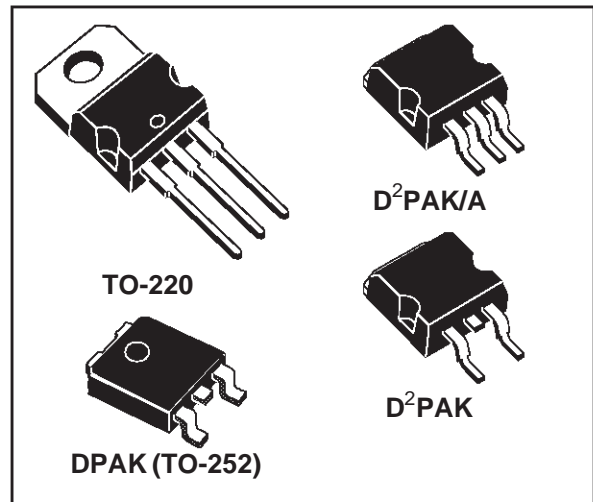
# LD1086 SERIES

## 1.5A LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

- TYPICAL DROPOUT VOLTAGE 1.3V AT 1.5A
- THREE TERMINAL ADJUSTABLE OR FIXED OUTPUT VOLTAGE 1.8V, 2.5V, 2.85V, 3.3V, 3.6V, 5V, 8V, 9V, 12V
- GUARANTEED OUTPUT CURRENT UP TO 1.5A
- OUTPUT TOLERANCE  $\pm 1\%$  AT  $25^{\circ}\text{C}$  AND  $\pm 2\%$  IN FULL TEMPERATURE RANGE
- INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE  $-40^{\circ}\text{C}$  TO  $125^{\circ}\text{C}$
- PACKAGE AVAILABLE: TO-220, D<sup>2</sup>PAK, D<sup>2</sup>PAK/A, DPAK,
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VOLTAGE REGULATORS

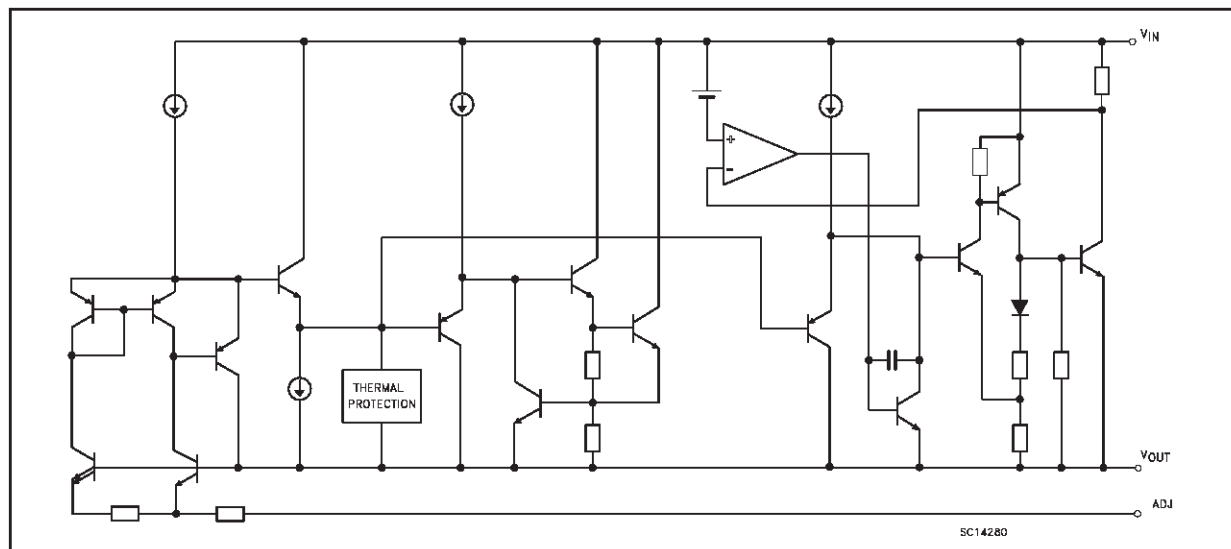
### DESCRIPTION

The LD1086 is a LOW DROP Voltage Regulator able to provide up to 1.5A of Output Current. Dropout is guaranteed at a maximum of 1.5V at the maximum output current, decreasing at lower loads. The LD1086 is a pin compatible with older 3-terminal adjustable regulators, but has better performances in term of drop and output tolerance. A 2.85V output version is suitable for SCSI-2 active termination. Unlike PNP regulators, where a part of the output



current is wasted as quiescent current, the LD1086 quiescent current flow into the load, so increase efficiency. Only a 10  $\mu\text{F}$  minimum capacitor is needed for stability. The device is supplied in TO-220, D<sup>2</sup>PAK, D<sup>2</sup>PAK/A and DPAK packages. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within  $\pm 1\%$  at  $25^{\circ}\text{C}$ .

### BLOCK DIAGRAM



# LD1086 SERIES

## ABSOLUTE MAXIMUM RATINGS

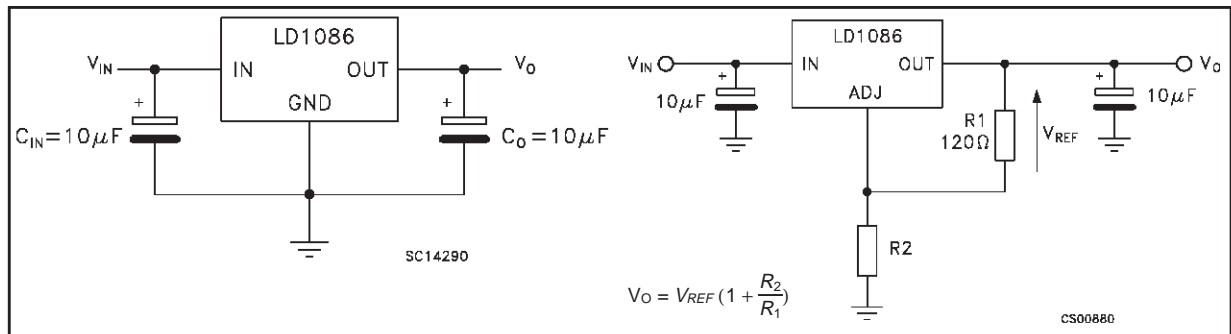
Symbol	Parameter	Value	Unit
V <sub>IN</sub>	DC Input Voltage	30	V
I <sub>OUT</sub>	Output Current	Internally Limited	mA
P <sub>tot</sub>	Power Dissipation	Internally Limited	mW
T <sub>stg</sub>	Storage Temperature Range	-50 to 150	°C
T <sub>op</sub>	Operating Junction Temperature Range	-40 to 125	°C

Absolute Maximum Ratings are those value beyond which damage to the device may occur. Functional operation under these condition is not implied. Over the above suggested Max Power Dissipation a Short Circuit could definitively damage the device.

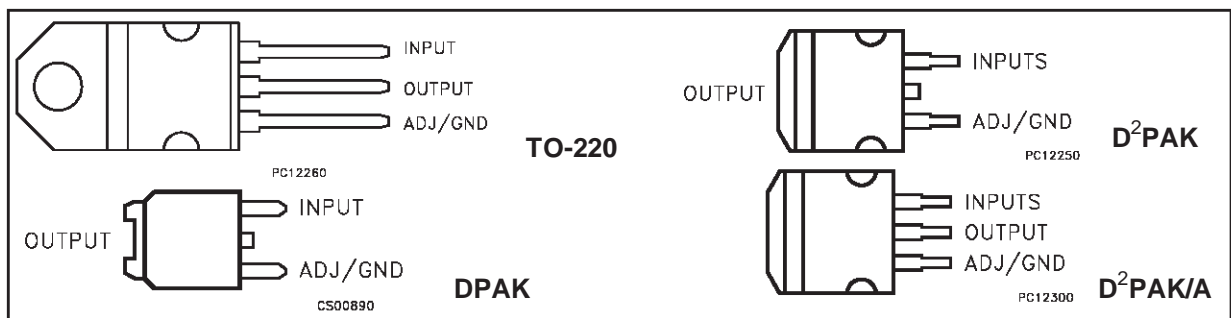
## THERMAL DATA

Symbol	Parameter	TO-220	D <sup>2</sup> PAK	DPAK	Unit
R <sub>thj-case</sub>	Thermal Resistance Junction-case	3	3	8	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	50	62.5		°C/W

## APPLICATION CIRCUIT FOR FIXED AND ADJUSTABLE VERSION



## CONNECTION DIAGRAM AND ORDERING NUMBERS (top view)



TO-220	D <sup>2</sup> PAK (**)	D <sup>2</sup> PAK/A (**)	DPAK (**)	Output Voltage
LD1086V18	LD1086D2T18	LD1086D2M18	LD1086DT18	1.8V
LD1086V25	LD1086D2T25	LD1086D2M25	LD1086DT25	2.5V
LD1086V28	LD1086D2T28	LD1086D2M28	LD1086DT28	2.85V
LD1086V33	LD1086D2T33	LD1086D2M33	LD1086DT33	3.3V
LD1086V36	LD1086D2T36	LD1086D2M36	LD1086DT36	3.6V
LD1086V50	LD1086D2T50	LD1086D2M50	LD1086DT50	5V
LD1086V80	LD1086D2T80	LD1086D2M80	LD1086DT80	8V
LD1086V90	LD1086D2T90	LD1086D2M90	LD1086DT90	9V
LD1086V120	LD1086D2T120	LD1086D2M120	LD1086DT120	12V
LD1086V	LD1086D2T	LD1086D2M	LD1086DT	1.25 to 28V

(\*\*) Available in Tape & Reel with the suffix "TR".

**ELECTRICAL CHARACTERISTICS FOR LD1086#18** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 4.8$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	1.782	1.8	1.818	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 3.4$ to $30$ V	1.764	1.8	1.836	V
$\Delta V_O$	Line Regulation	$V_{IN} = 3.4$ to $18$ V $I_O = 0$ mA $T_j = 25$ °C		0.2	4	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 3.4$ to $18$ V $I_O = 0$ mA		0.4	4	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		0.5	8	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		1	16	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 6.8 \pm 3$ V	60	82		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#25** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 5.5$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	2.475	2.5	2.525	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 4.1$ to $30$ V	2.45	2.5	2.55	V
$\Delta V_O$	Line Regulation	$V_{IN} = 4.1$ to $18$ V $I_O = 0$ mA $T_j = 25$ °C		0.2	5	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 4.1$ to $18$ V $I_O = 0$ mA		0.4	5	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		0.5	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		1	18	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 7.5 \pm 3$ V	60	81		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

## LD1086 SERIES

**ELECTRICAL CHARACTERISTICS FOR LD1086#285** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 5.85$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	2.821	2.85	2.879	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 4.5$ to $30$ V	2.793	2.85	2.907	V
$\Delta V_O$	Line Regulation	$V_{IN} = 4.5$ to $18$ V $I_O = 0$ mA $T_j = 25$ °C		0.2	6	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 4.5$ to $18$ V $I_O = 0$ mA		0.5	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		1	12	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		2	20	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 7.85 \pm 3$ V	60	80		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#33** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 6.3$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	3.267	3.3	3.333	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 4.9$ to $30$ V	3.234	3.3	3.366	V
$\Delta V_O$	Line Regulation	$V_{IN} = 4.9$ to $18$ V $I_O = 0$ mA $T_j = 25$ °C		0.5	10	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 4.9$ to $18$ V $I_O = 0$ mA		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		3	15	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		7	25	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 8.3 \pm 3$ V	60	79		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#36** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 6.6$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	3.564	3.6	3.636	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 5.2$ to $30$ V	3.528	3.6	3.672	V
$\Delta V_O$	Line Regulation	$V_{IN} = 5.2$ to $18$ V $I_O = 0$ mA $T_j = 25$ °C		0.5	10	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 5.2$ to $18$ V $I_O = 0$ mA		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		3	15	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		7	25	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 8.6 \pm 3$ V	60	78		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#50** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 8$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	4.95	5	5.05	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 6.6$ to $30$ V	4.9	5	5.1	V
$\Delta V_O$	Line Regulation	$V_{IN} = 6.6$ to $20$ V $I_O = 0$ mA $T_j = 25$ °C		0.5	10	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 6.6$ to $20$ V $I_O = 0$ mA		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		5	20	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		10	35	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 10 \pm 3$ V	60	75		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

## LD1086 SERIES

**ELECTRICAL CHARACTERISTICS FOR LD1086#80** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 11$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	7.92	8	8.08	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 9.8$ to $30$ V	7.84	8	8.16	V
$\Delta V_O$	Line Regulation	$V_{IN} = 9.8$ to $20$ V $I_O = 0$ mA $T_j = 25$ °C		1	18	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 9.8$ to $20$ V $I_O = 0$ mA		2	18	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		8	30	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		12	60	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{sc}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 13 \pm 3$ V	54	71		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#90** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 12$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	8.91	9	9.09	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 11$ to $30$ V	8.82	9	9.18	V
$\Delta V_O$	Line Regulation	$V_{IN} = 11$ to $20$ V $I_O = 0$ mA $T_j = 25$ °C		1	20	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 11$ to $20$ V $I_O = 0$ mA		2	20	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		8	30	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		12	60	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{sc}$	Short Circuit Current	$V_{IN} - V_O = 5$ V	1.5	2		A
		$V_{IN} - V_O = 25$ V	0.05	0.2		
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_O = 25$ $\mu$ F $V_{IN} = 14 \pm 3$ V	54	70		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086#120** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 15$  V,  $C_{IN} = C_O = 10$   $\mu$ F unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_j = 25$ °C	11.88	12	12.12	V
$V_O$	Output Voltage (Note 1)	$I_O = 0$ to $1.5$ A $V_{IN} = 13.8$ to $30$ V	11.76	12	12.24	V
$\Delta V_O$	Line Regulation	$V_{IN} = 13.8$ to $25$ V $I_O = 0$ mA $T_j = 25$ °C		1	25	mV
$\Delta V_O$	Line Regulation	$V_{IN} = 13.8$ to $25$ V $I_O = 0$ mA		2	25	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A $T_j = 25$ °C		12	36	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $1.5$ A		24	72	mV
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_d$	Quiescent Current	$V_{IN} \leq 30$ V		5	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V $V_{IN} - V_O = 25$ V	1.5 0.05	2 0.2		A
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_{OUT} = 25$ $\mu$ F $V_{IN} = 17 \pm 3$ V	54	66		dB
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

**ELECTRICAL CHARACTERISTICS FOR LD1086** (refer to the test circuits,  
 $T_j = -40$  to  $125$  °C,  $V_{IN} = 4.75$  V,  $C_I = C_O = 10$   $\mu$ F unless otherwise specified)

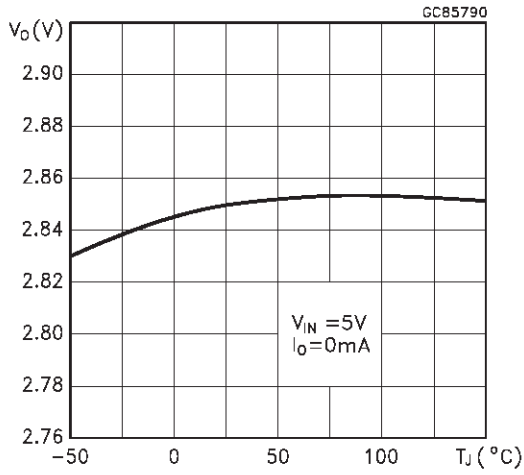
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 10$ mA $T_j = 25$ °C	1.237	1.25	1.263	V
$V_O$	Output Voltage (Note 1)	$I_O = 0.01$ to $1.5$ A $V_{IN} = 2.8$ to $30$ V	1.225	1.25	1.275	V
$\Delta V_O$	Line Regulation	$V_{IN} = 2.8$ to $16.5$ V $I_O = 10$ mA $T_j = 25$ °C		0.015	0.2	%
$\Delta V_O$	Line Regulation	$V_{IN} = 2.8$ to $16.5$ V $I_O = 10$ mA		0.035	0.2	%
$\Delta V_O$	Load Regulation	$I_O = 0.01$ to $1.5$ A $T_j = 25$ °C		0.1	0.3	%
$\Delta V_O$	Load Regulation	$I_O = 0.01$ to $1.5$ A		0.2	0.4	%
$V_d$	Dropout Voltage	$I_O = 1.5$ A		1.3	1.5	V
$I_{O(min)}$	Minimum Load Current	$V_{IN} = 30$ V		3	10	mA
$I_{SC}$	Short Circuit Current	$V_{IN} - V_O = 5$ V $V_{IN} - V_O = 25$ V	1.5 0.05	2 0.2		A
	Thermal Regulation	$T_a = 25$ °C 30ms Pulse		0.01	0.04	%/W
SVR	Supply Voltage Rejection	$I_O = 1.5$ A $f = 120$ Hz $C_{OUT} = 25$ $\mu$ F $C_{ADJ} = 25$ $\mu$ F $V_{IN} = 6.25 \pm 3$ V	60	88		dB
$I_{ADJ}$	Adjust pin Current	$I_O = 10$ mA $V_{IN} = 4.25$ V		40	120	$\mu$ A
$\Delta I_{ADJ}$	Adjust pin Current Change	$V_{IN} = 2.8$ to $16.5$ V $I_O = 0.01$ to $1.5$ A		0.2	5	$\mu$ A
eN	Output Noise Voltage	$B = 10$ Hz to $10$ KHz $T_a = 25$ °C		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	1000 hrs $T_a = 125$ °C		0.5		%

Note1: See short-circuit curve for available output current at fixed dropout.

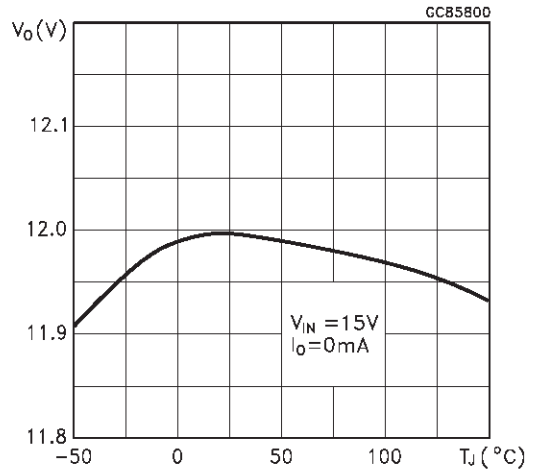
# LD1086 SERIES

**TYPICAL CHARACTERISTICS** (unless otherwise specified  $T_J=125^\circ\text{C}$ ,  $C_{IN}=C_O=10\mu\text{F}$ )

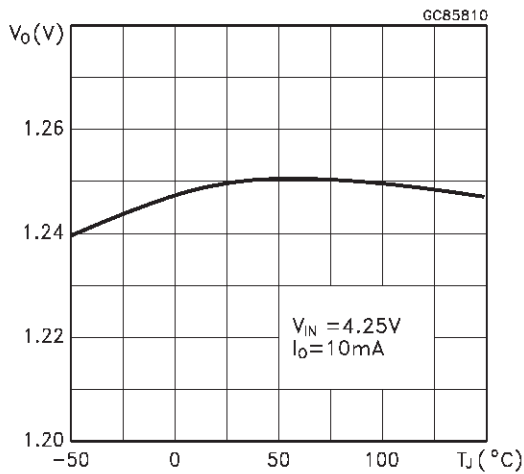
Output Voltage vs Temperature



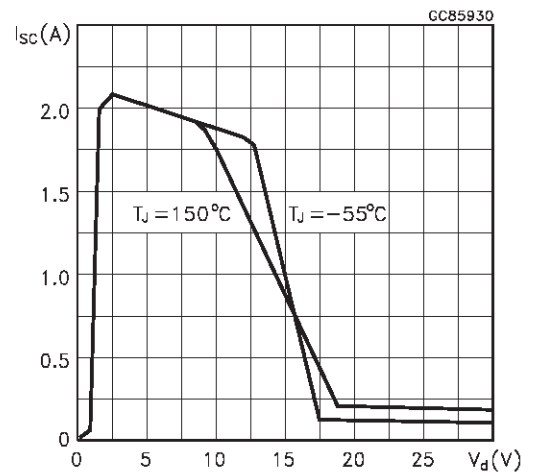
Output Voltage vs Temperature



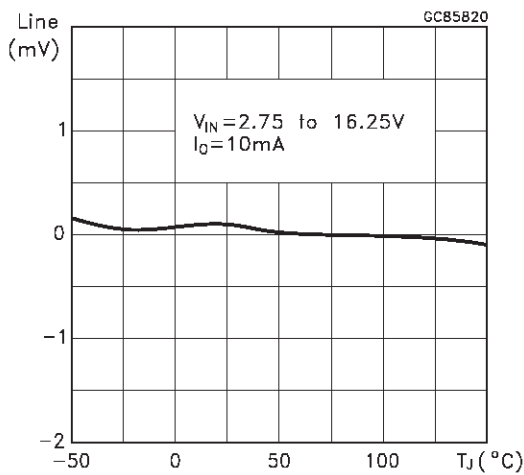
Output Voltage vs Temperature



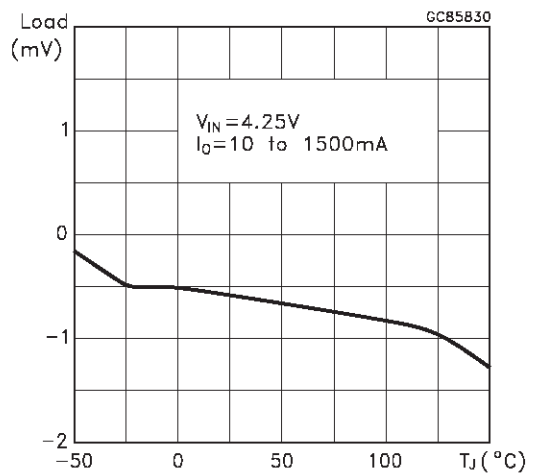
Short Circuit Current vs Dropout Voltage



Line Regulation vs Temperature



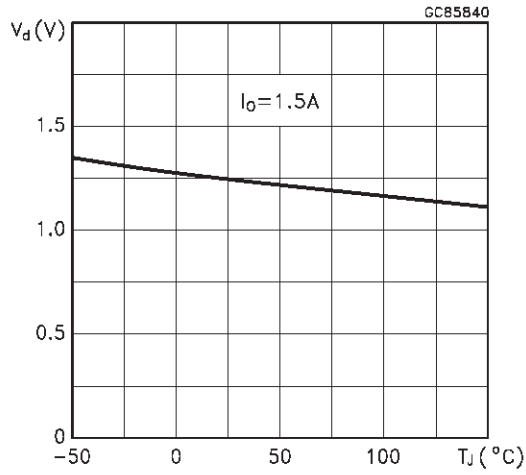
Load Regulation vs Temperature



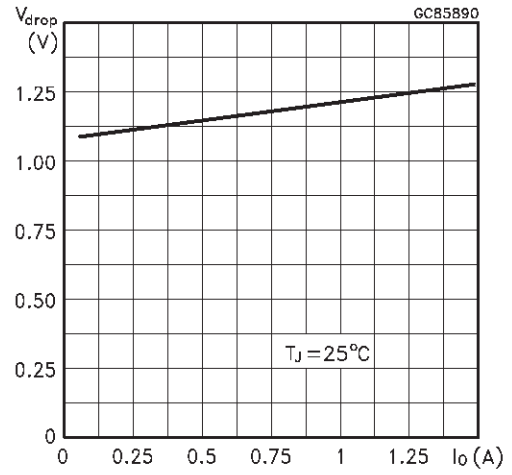


TYPICAL CHARACTERISTICS (Continued)

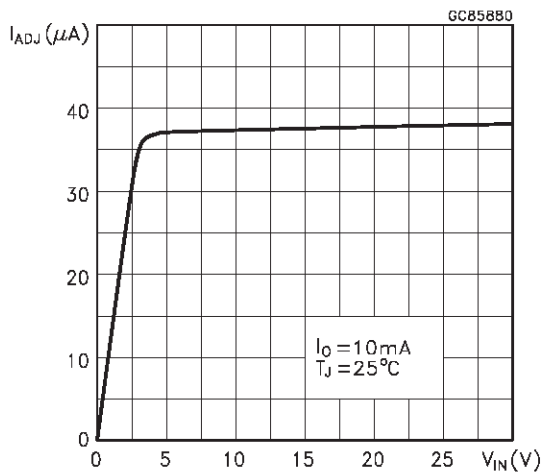
Dropout Voltage vs Temperature



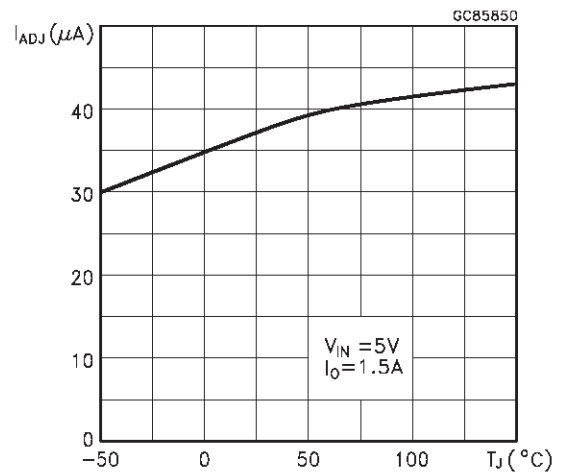
Dropout Voltage vs Output Current



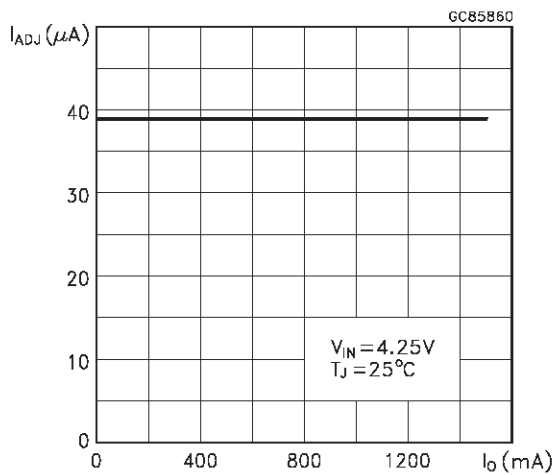
Adjust Pin Current vs Input Voltage



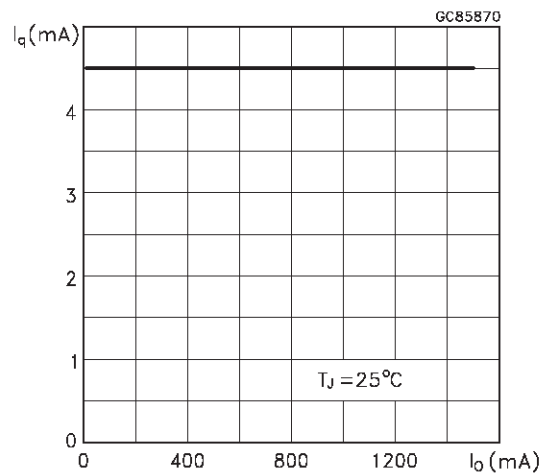
Adjust Pin Current vs Temperature



Adjust Pin Current vs Output Current



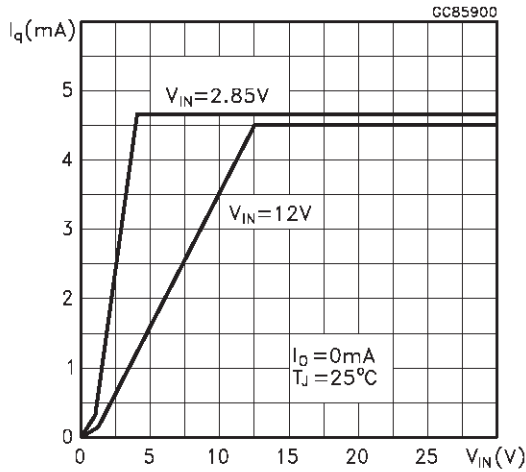
Quiescent Current vs Output Current



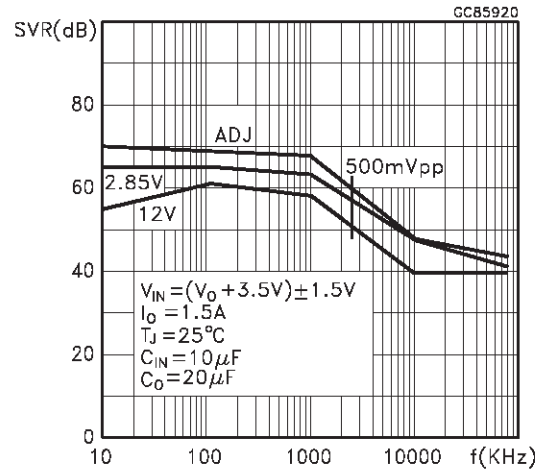
# LD1086 SERIES

## TYPICAL CHARACTERISTICS (Continued)

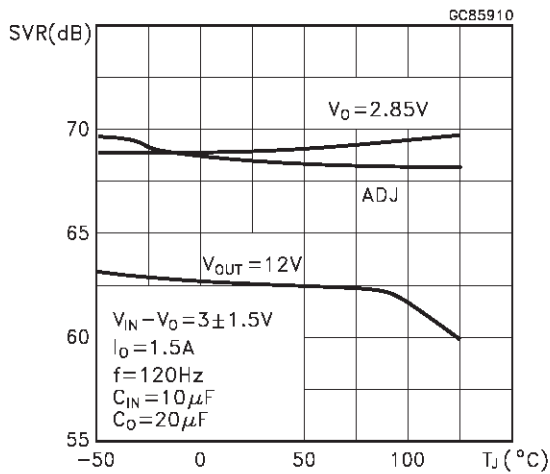
### Quiescent Current vs Input Voltage



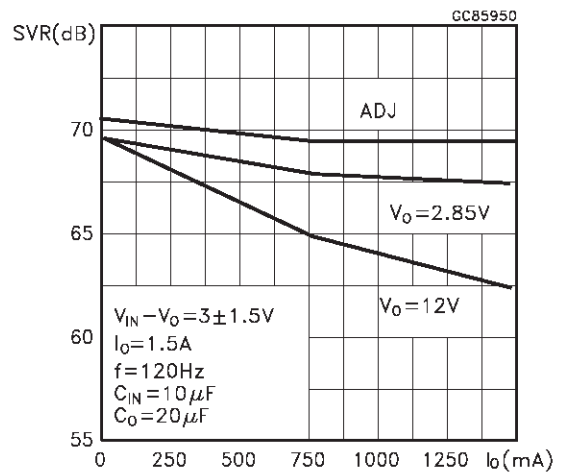
### Supply Voltage Rejection vs Frequency



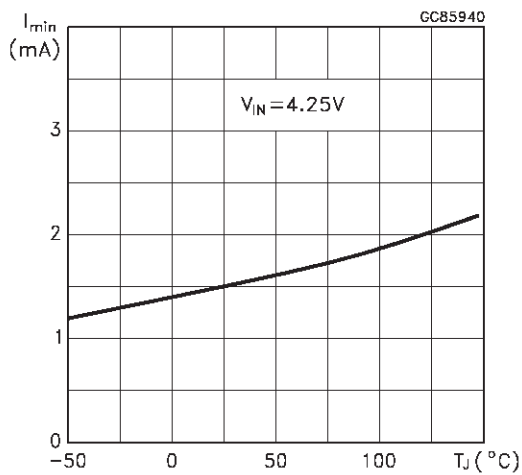
### Supply Voltage Rejection vs Temperature



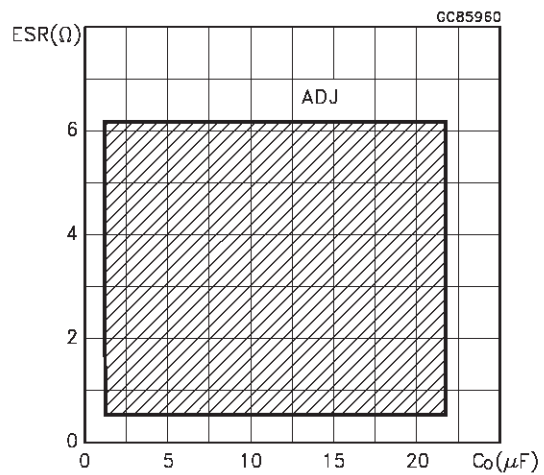
### Supply Voltage Rejection vs Output Current



### Minimum Load Current vs Temperature

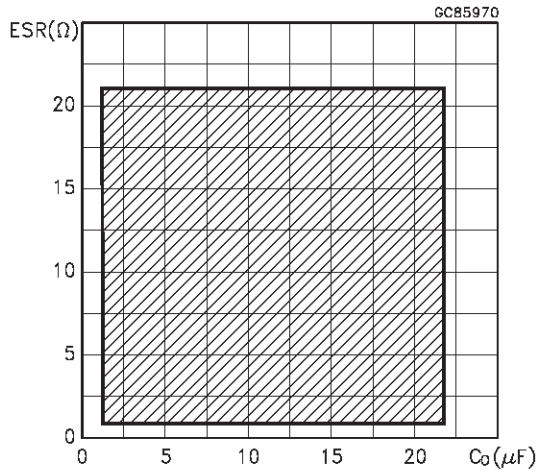


### Stability for Adjustable

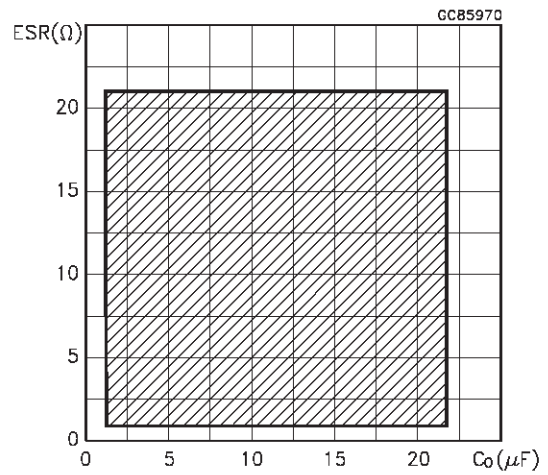


TYPICAL CHARACTERISTICS (Continued)

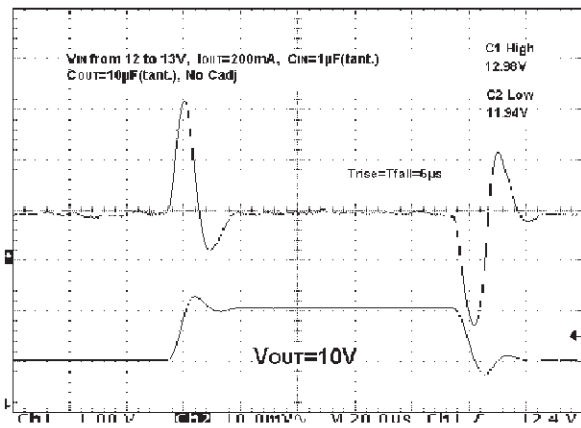
Stability for 2.85V



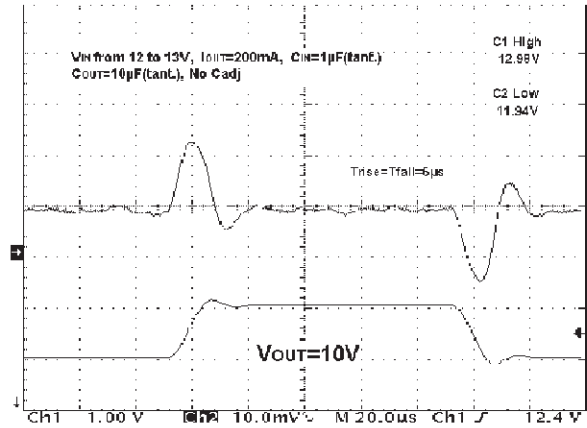
Stability for 12V



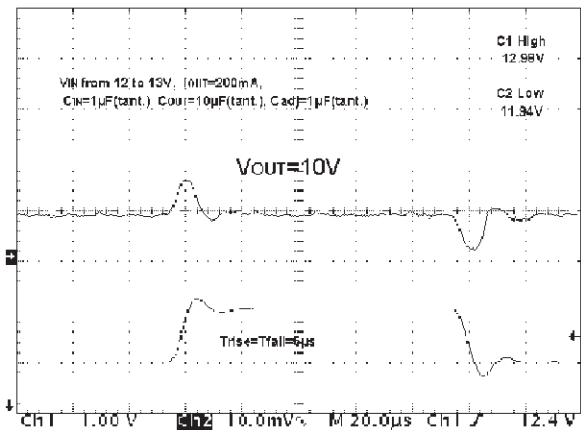
Line Transient



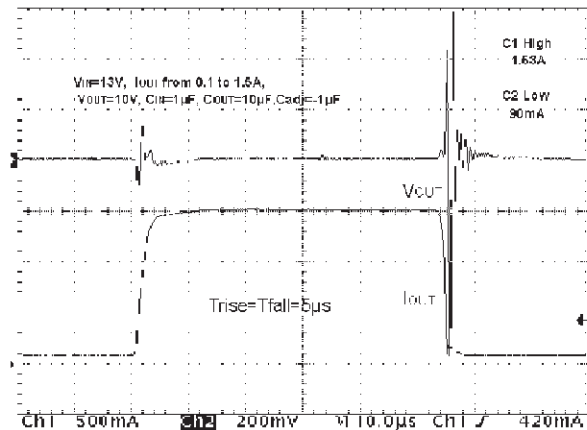
Line Transient



Line Transient



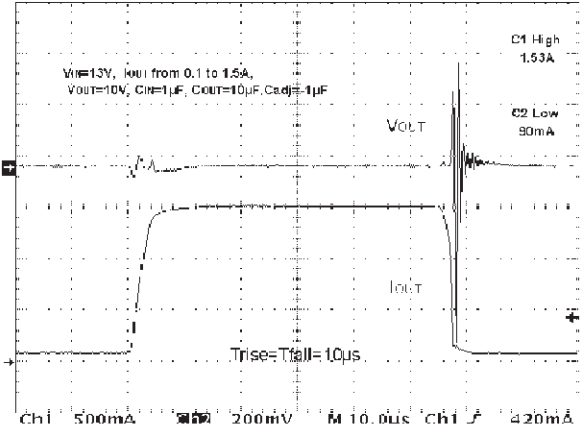
Load Transient



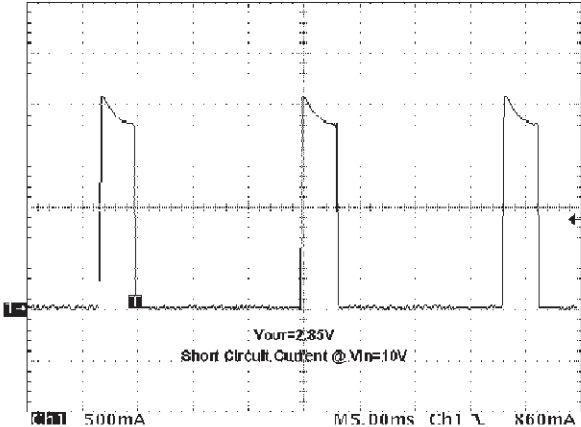
**LD1086 SERIES**

**TYPICAL CHARACTERISTICS (Continued)**

Load Transient

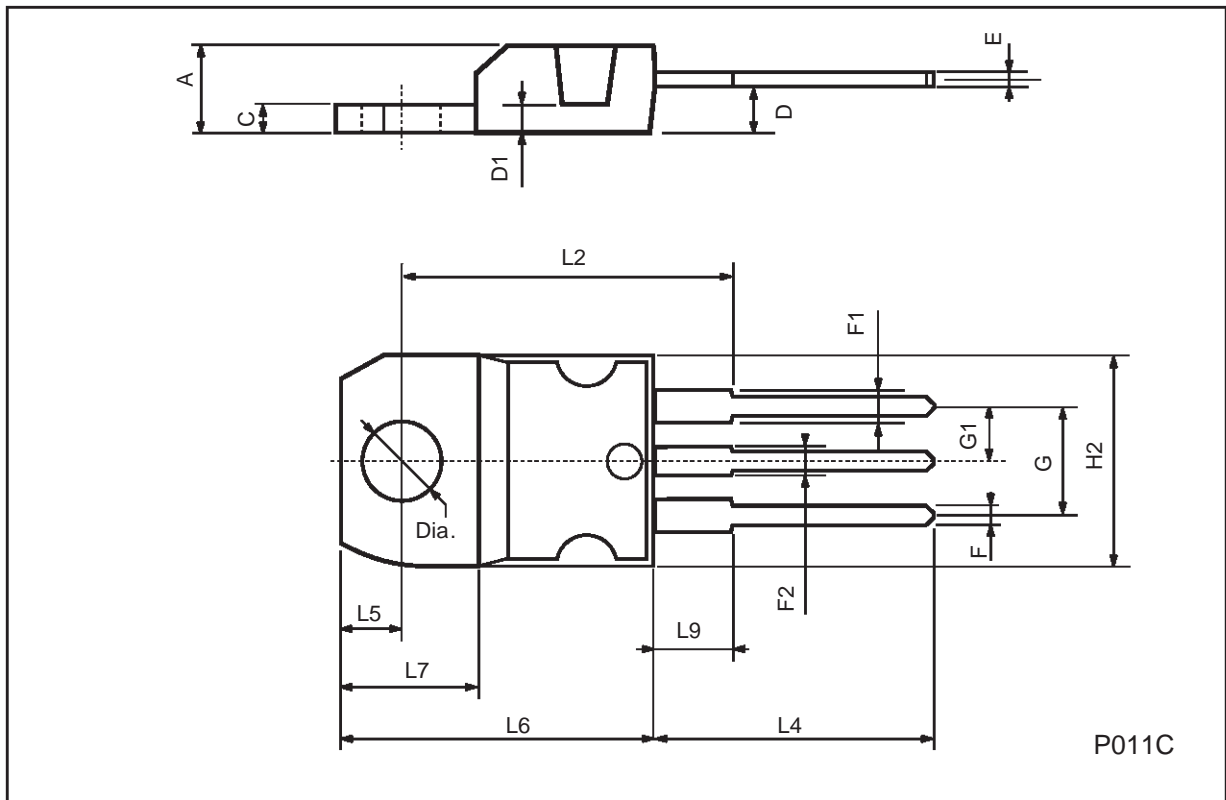


Thermal Protection



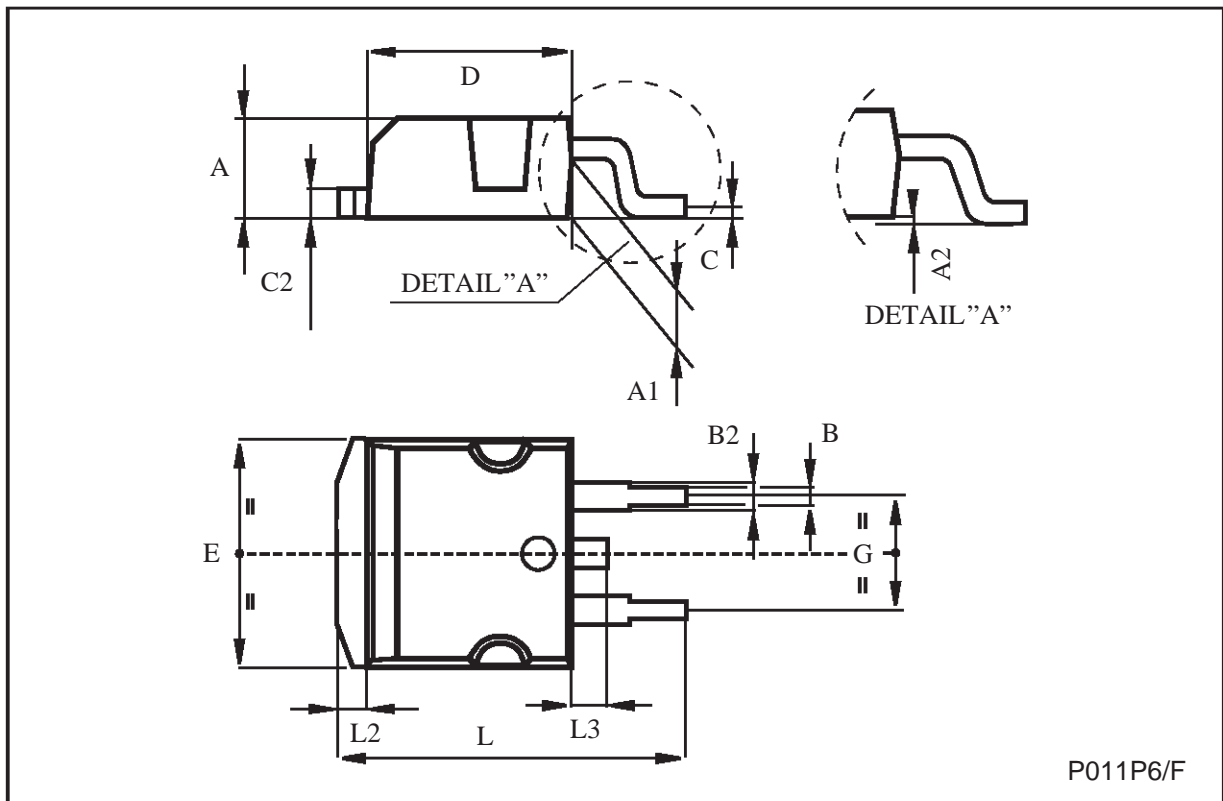
**TO-220 MECHANICAL DATA**

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



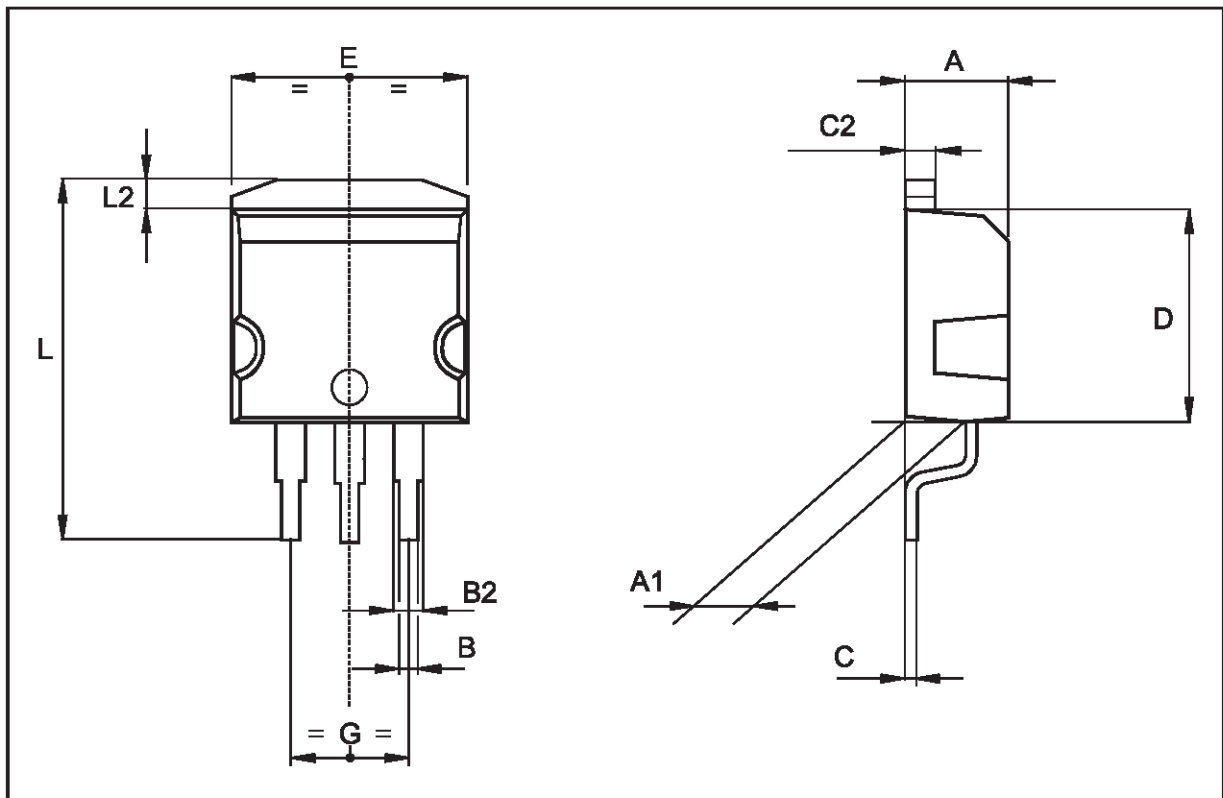
TO-263 (D<sup>2</sup>PAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
E	10		10.4	0.393		0.409
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.624
L2	1.27		1.4	0.050		0.055
L3	1.4		1.75	0.055		0.068



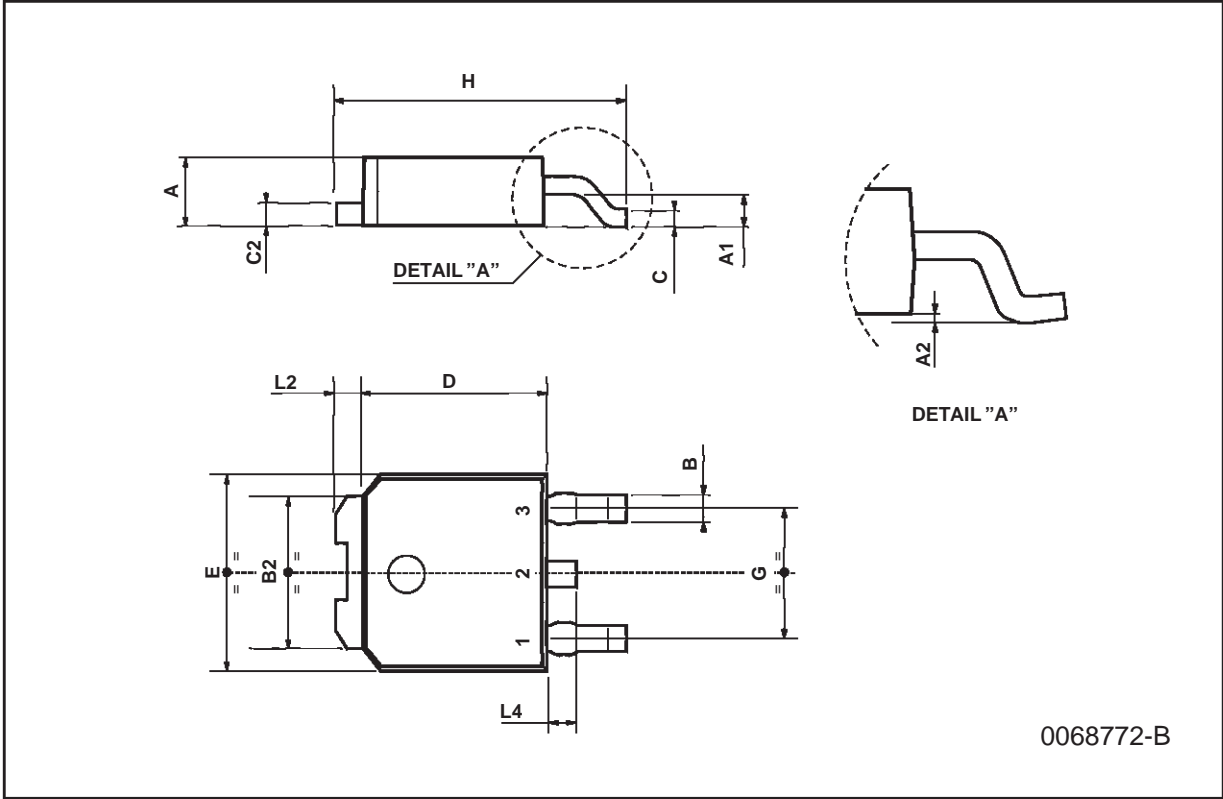
D<sup>2</sup>PAK/A MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.21		1.36	0.047		0.053
D	8.95		9.35	0.352		0.368
E	10		10.4	0.393		0.409
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.624
L2	1.27		1.4	0.050		0.055



**TO-252 (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
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
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L2		0.8			0.031	
L4	0.6		1	0.023		0.039





Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2000 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco  
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>