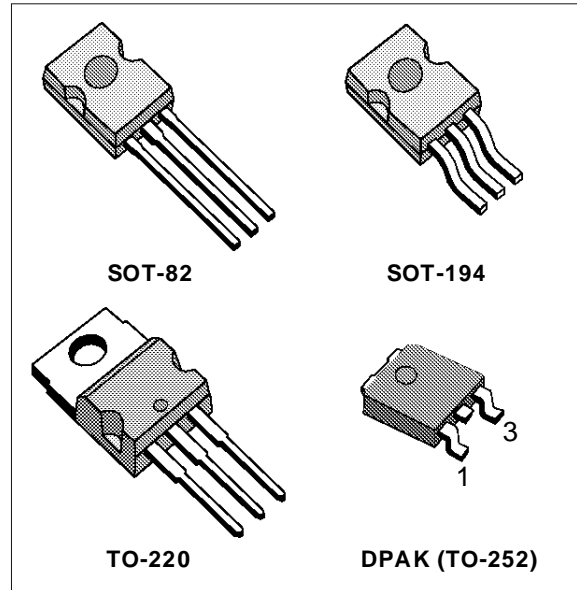


VERY LOW DROP 1A REGULATOR

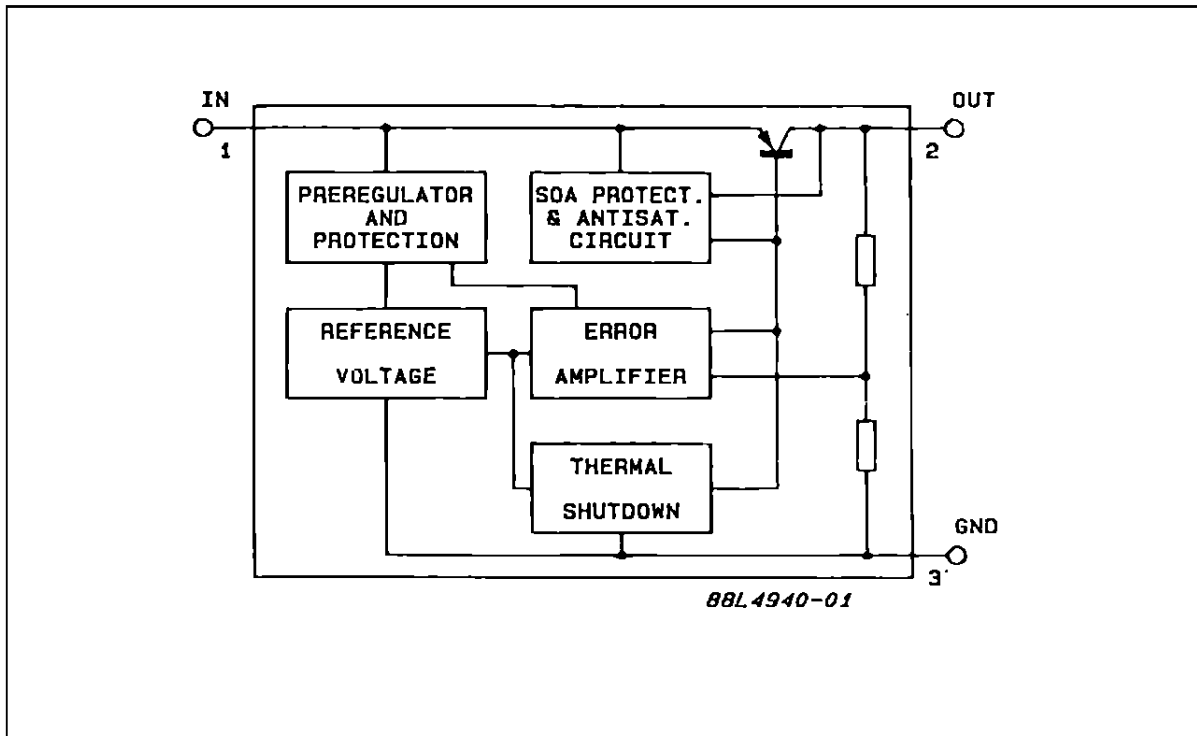
- LOW DROPOUT VOLTAGE (450 mV typ at 1A)
- VERY LOW QUIESCENT CURRENT
- THERMAL SHUTDOWN
- SHORT CIRCUIT PROTECTION
- REVERSE POLARITY PROTECTION

DESCRIPTION

The L4941 is a three terminal 5 V positive regulator available in TO-220, SOT-82, SOT-194 and DPAK packages, making it useful in a wide range of the industrial and consumer applications. Thanks to its very low input/output voltage drop, this device is particularly suitable for battery powered equipment, reducing consumption and prolonging battery life. It employs internal current limiting, antisaturation circuit, thermal shut-down and safe area protection.

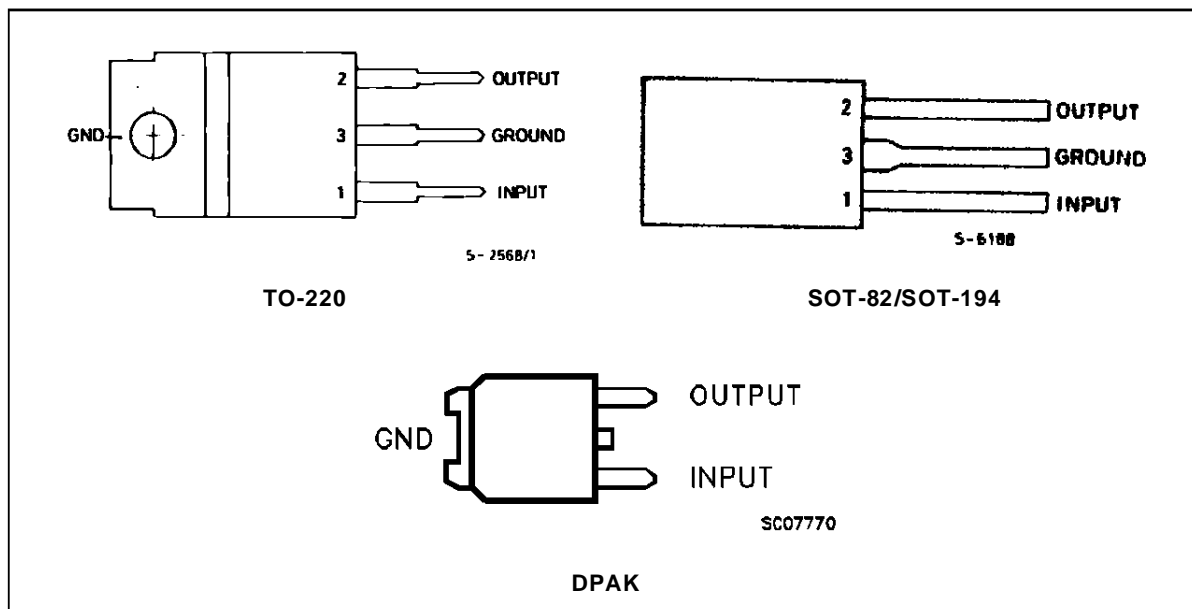


BLOCK DIAGRAM



L4941

PIN CONNECTIONS AND ORDERING NUMBER (top view)



ORDERING NUMBERS	OUTPUT VOLTAGE	PACKAGE
L4941BV	5V	TO-220
L4941BX	5V	SOT-82
L4941BS	5V	SOT-194
L4941BDT	5V	DPAK

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_i	Forward Input Voltage	30	V
V_{iR}	Reverse Input Voltage ($R_O = 100 \Omega$)	- 15	V
I_O	Output Current	Internally Limited	
P_{tot}	Power Dissipation	Internally Limited	
T_j, T_{stg}	Junction and Storage Temperature	- 40 to 150	°C

THERMAL DATA

			SOT-82 SOT-194 DPAK	TO-220	
$R_{thj-case}$	Thermal Resistance Junction-case	Max	8	3	°C/W
$R_{thj-amb}$	Thermal resistance Junction-ambient	Max	100	50	°C/W

TEST CIRCUITS

Figure 1 : DC Parameters.

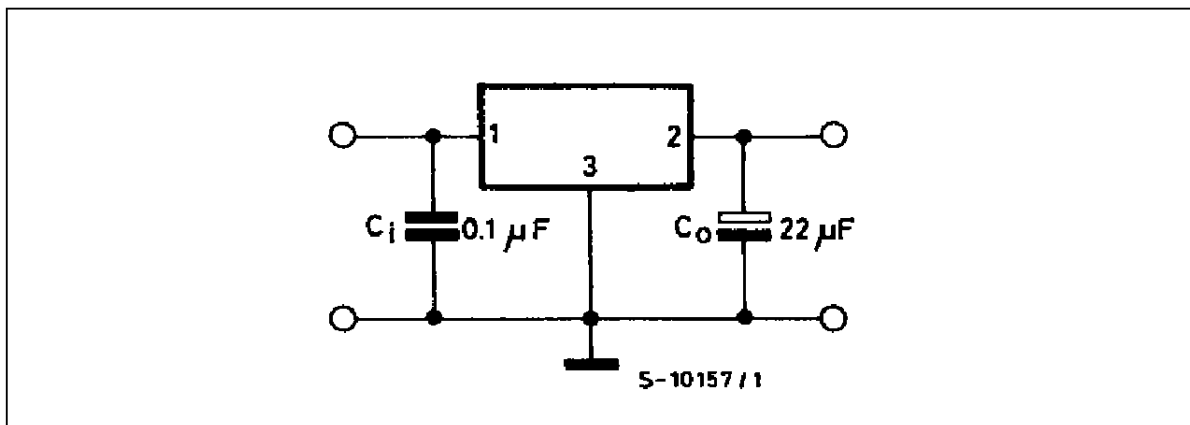


Figure 2 : Load Regulation.

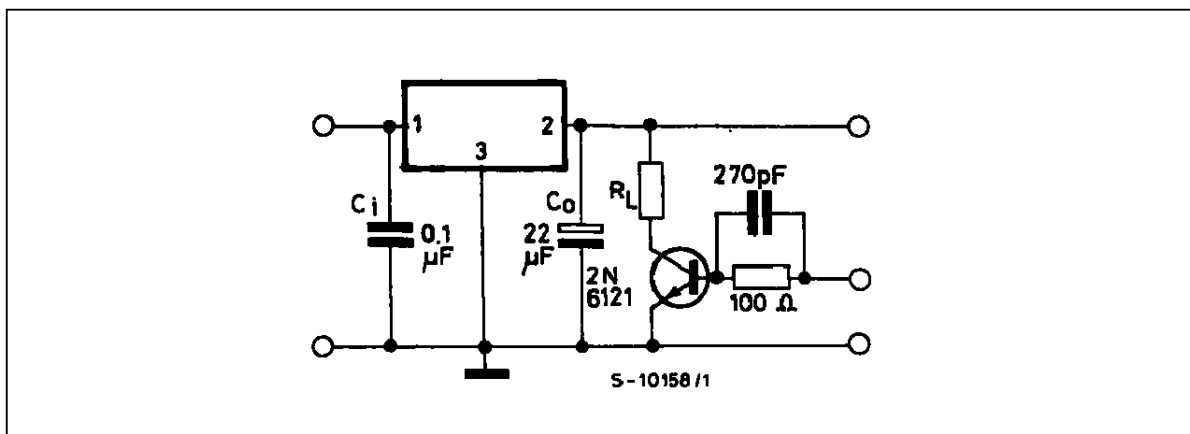
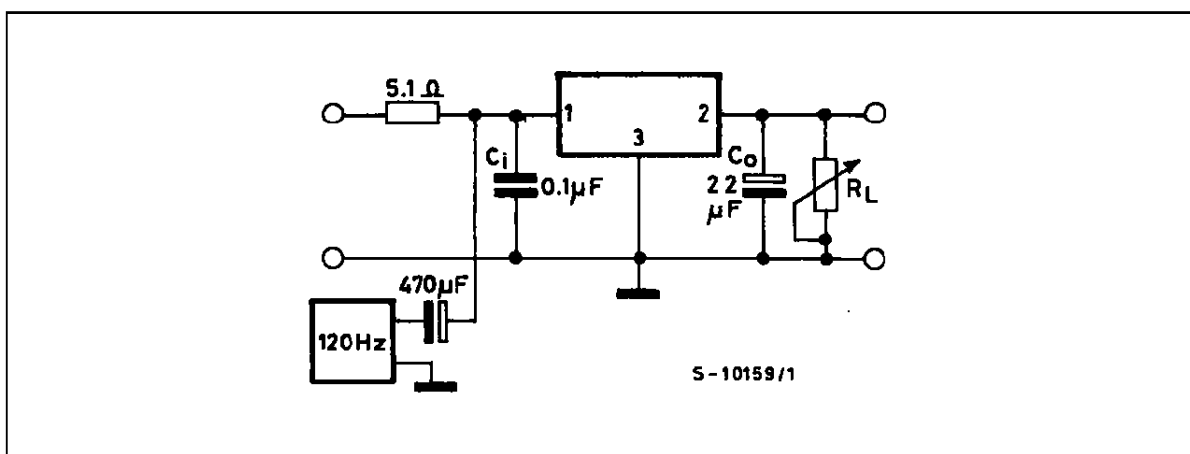


Figure 3 : Ripple Rejection.



ELECTRICAL CHARACTERISTICS (refer to the test circuits $T_j = 25\text{ }^\circ\text{C}$, $C_i = 0.1\text{ }\mu\text{F}$, $C_o = 22\text{ }\mu\text{F}$, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage			5			
Input Voltage (unless otherwise specified)			7			
V_o	Output Voltage	$I_o = 5\text{ mA to }1\text{ A}$ $V_i = 6\text{ V to }14\text{ V}$	4.8	5	5.2	V
V_i	Operating Input Voltage	$I_o = 5\text{ mA}$			16	V
ΔV_o	Line Regulation	$V_i = 6\text{ V to }16\text{ V}$ $I_o = 5\text{ mA}$		5	20	mV
ΔV_o	Load Regulation	$I_o = 5\text{ mA to }1\text{ A}$ $I_o = 0.5\text{ A to }1\text{ A}$		8 5	20 15	mV
I_Q	Quiescent Current	$V_i = 6\text{ V}$	$I_o = 5\text{ mA}$	4	8	mA
			$I_o = 1\text{ A}$	20	40	
ΔI_Q	Quiescent Current Change	$V_i = 6\text{ V to }14\text{ V}$	$I_o = 5\text{ mA}$		3	mA
			$I_o = 1\text{ A}$		- 10	
V_d	Dropout Voltage	$I_o = 0.5\text{ A}$		250	450	mV
		$I_o = 1\text{ A}$		450	700	
$\frac{\Delta V_o}{\Delta T}$	Output Voltage Drift			0.6		mV/°C
SVR	Supply Voltage Rejection	$f = 120\text{ Hz}$ $I_o = 0.5\text{ A}$	58	68		dB
I_{sc}	Short Circuit Current Limit	$V_i = 14\text{ V}$		1.6	2.0	A
		$V_i = 6\text{ V}$		1.8	2.2	
Z_o	Output Impedance	$f = 1\text{ kHz}$ $I_o = 0.5\text{ A}$		30		mΩ
e_N	Output Noise Voltage	$B = 100\text{ Hz to }100\text{ kHz}$		30		$\mu\text{V}/V_o$

Figure 4 : Dropout voltage vs. Output Current.

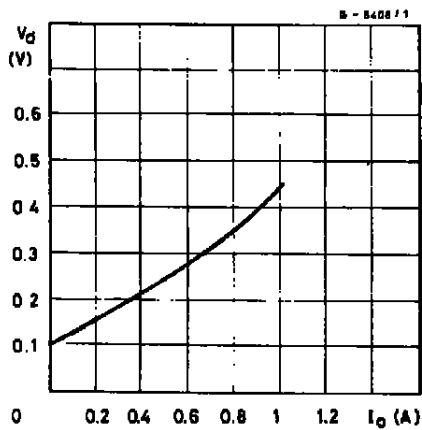


Figure 5 : Dropout Voltage vs. Temperature.

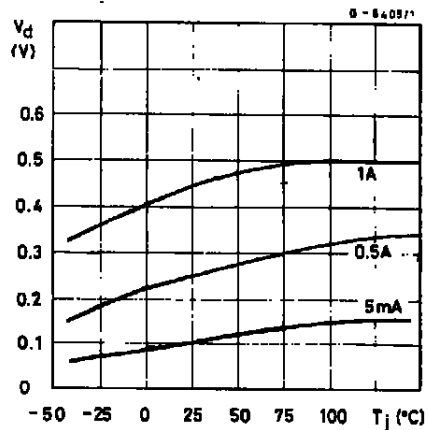


Figure 6 : Output voltage vs. Temperature.

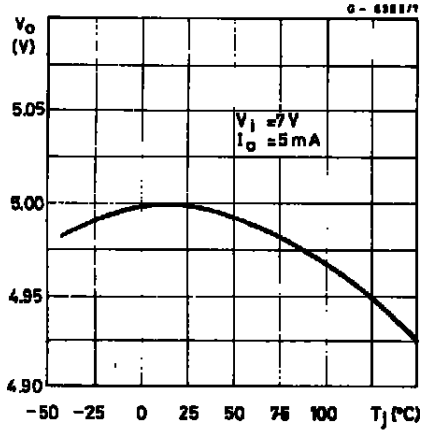


Figure 7 : Quiescent Current vs. Temperature

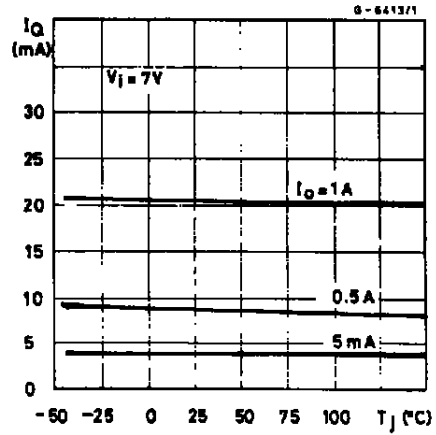


Figure 8 : Quiescent Current vs. Input Voltage.

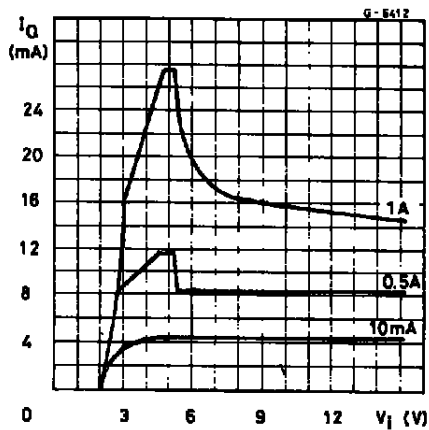


Figure 9 : Quiescent Current vs. Output Current

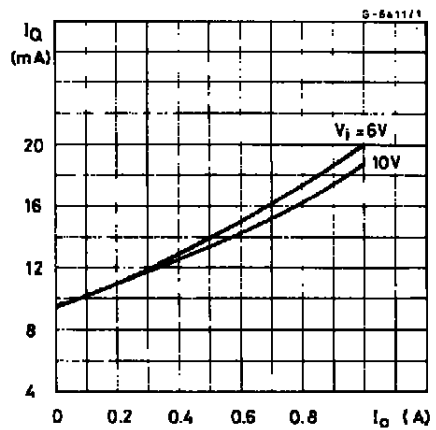


Figure 10 : Short-circuit Current vs. Temperature.

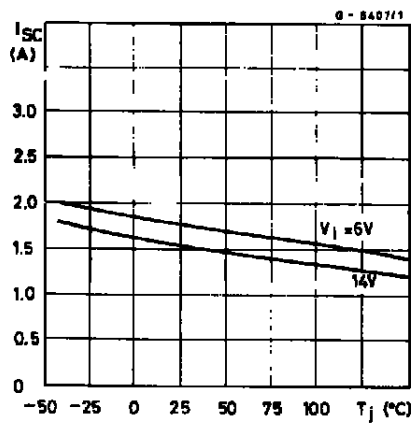


Figure 11 : Peak Output Current vs. Input/Output Differential Voltage.

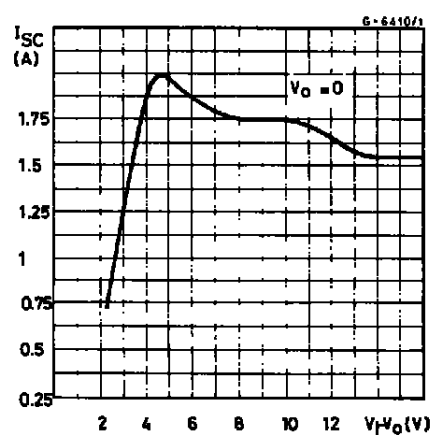


Figure 12 : Low Voltage Behavior.

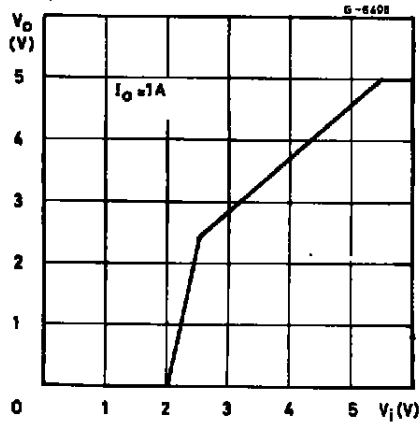


Figure 14 : Supply Voltage Rejection vs. Output Current.

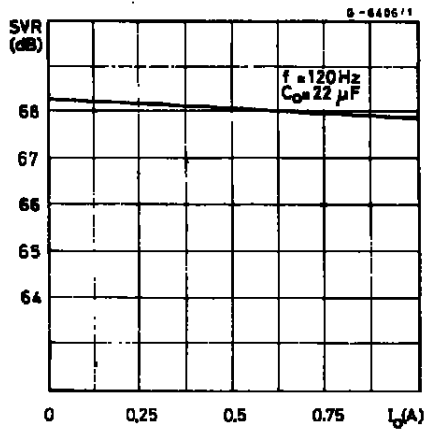


Figure 16 : Line Transient Response.

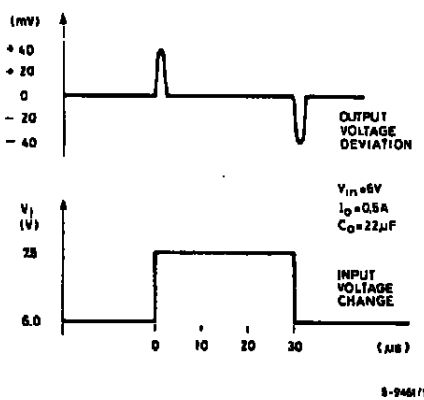


Figure 13 : Supply Voltage Rejection vs. Frequency.

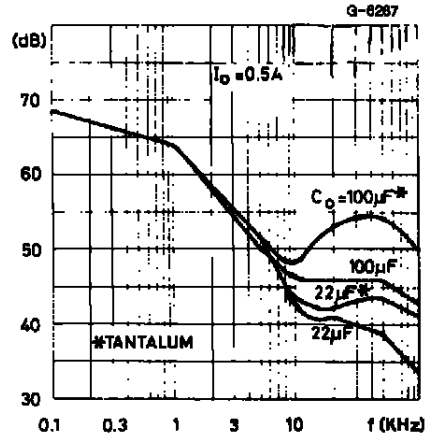


Figure 15 : Load Dump Characteristics.

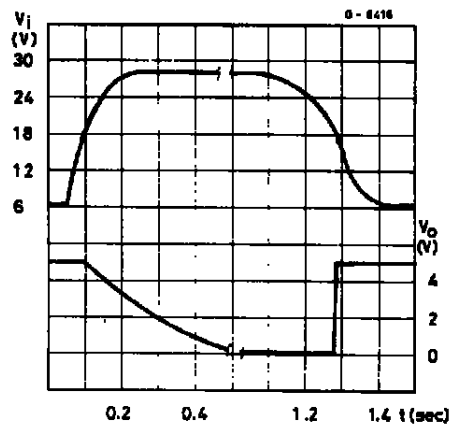


Figure 17 : Load Transient Response.

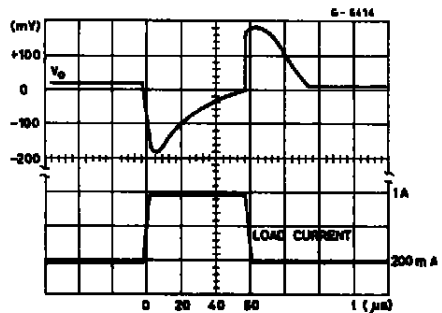


Figure 18 : Total Power Dissipation (TO-220).

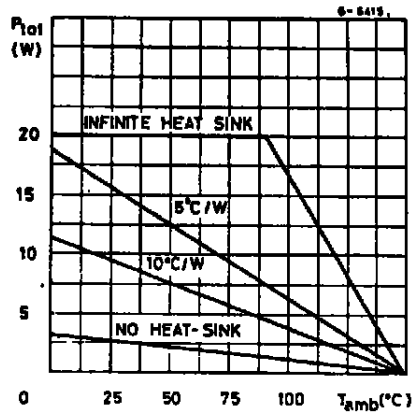
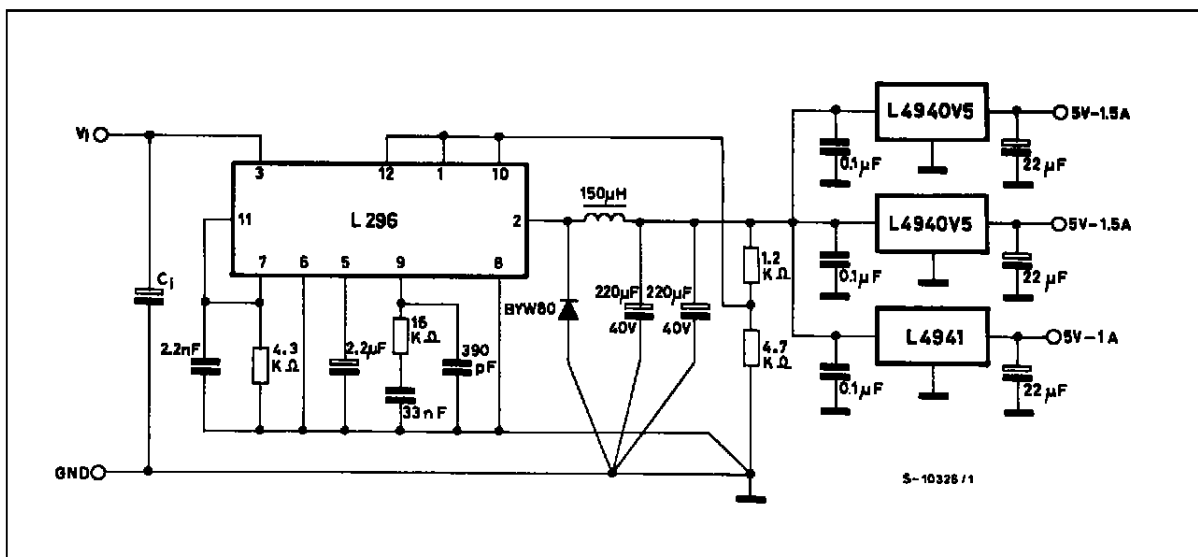


Figure 19 : Distributed Supply with On-card L4940 and L4941 Low-drop Regulators.

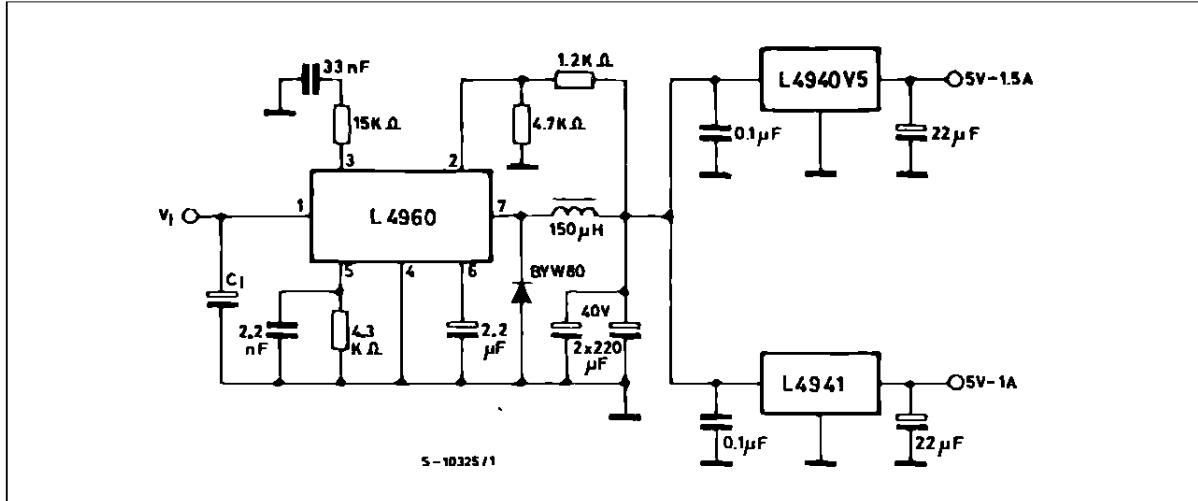


ADVANTAGES OF THESE APPLICATIONS ARE :

- On card regulation with short-circuit and thermal protection on each output.
- Very high total system efficiency due to the switching preregulation and very low-drop postregulations.

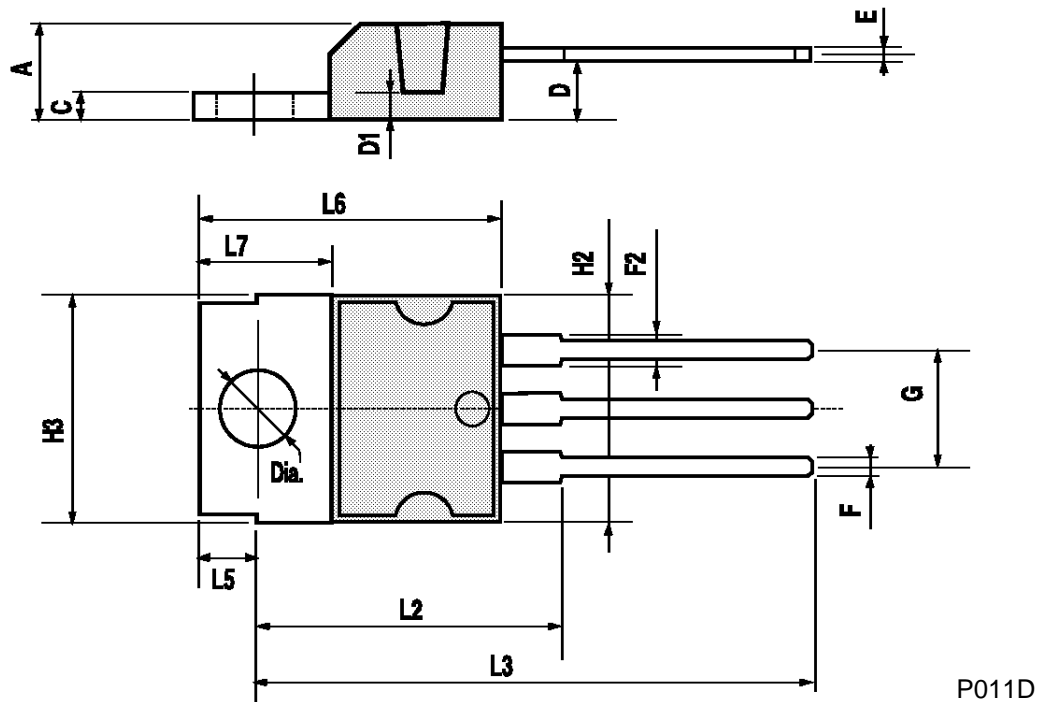
L4941

Figure 20 : Distributed Supply with On-card L4940 and L4941 Low-drop Regulators.



TO-220 MECHANICAL DATA

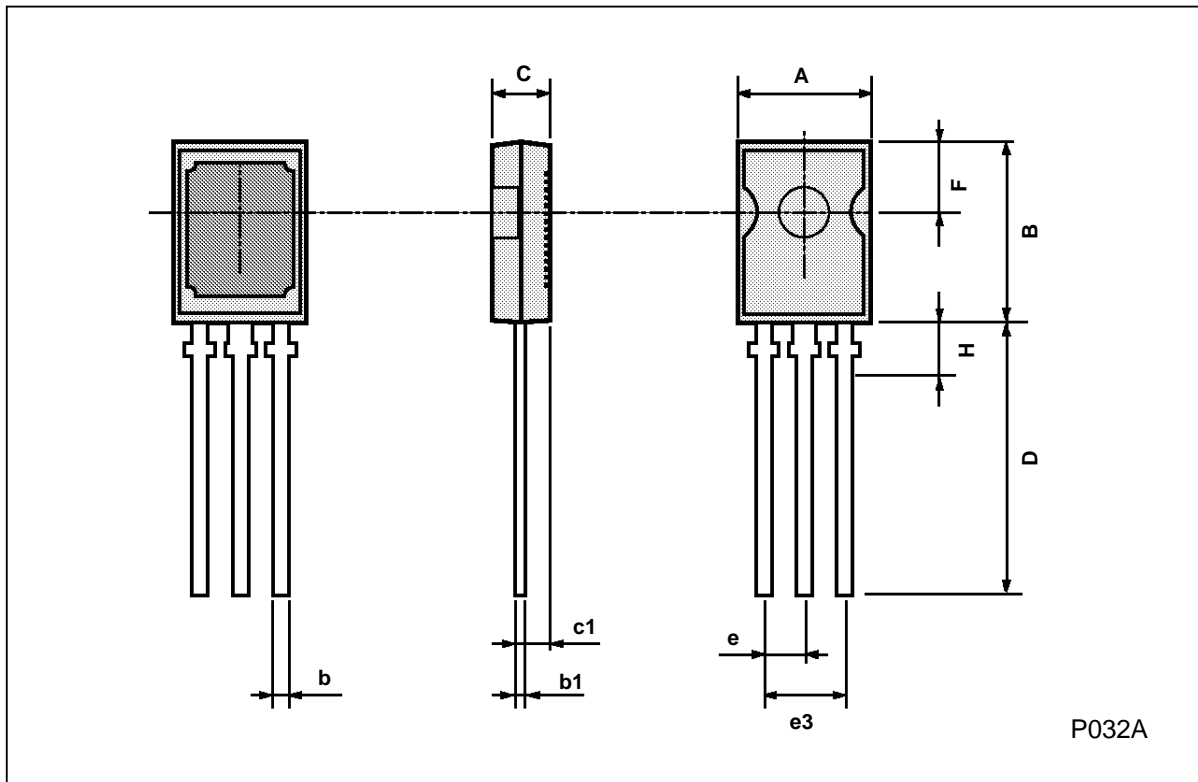
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F2	1.15		1.4	0.045		0.055
G	4.95	5.08	5.21	0.195	0.200	0.205
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L2		16.2			0.638	
L3	26.3	26.7	27.1	1.035	1.051	1.067
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
Dia.	3.65		3.85	0.144		0.152



P011D

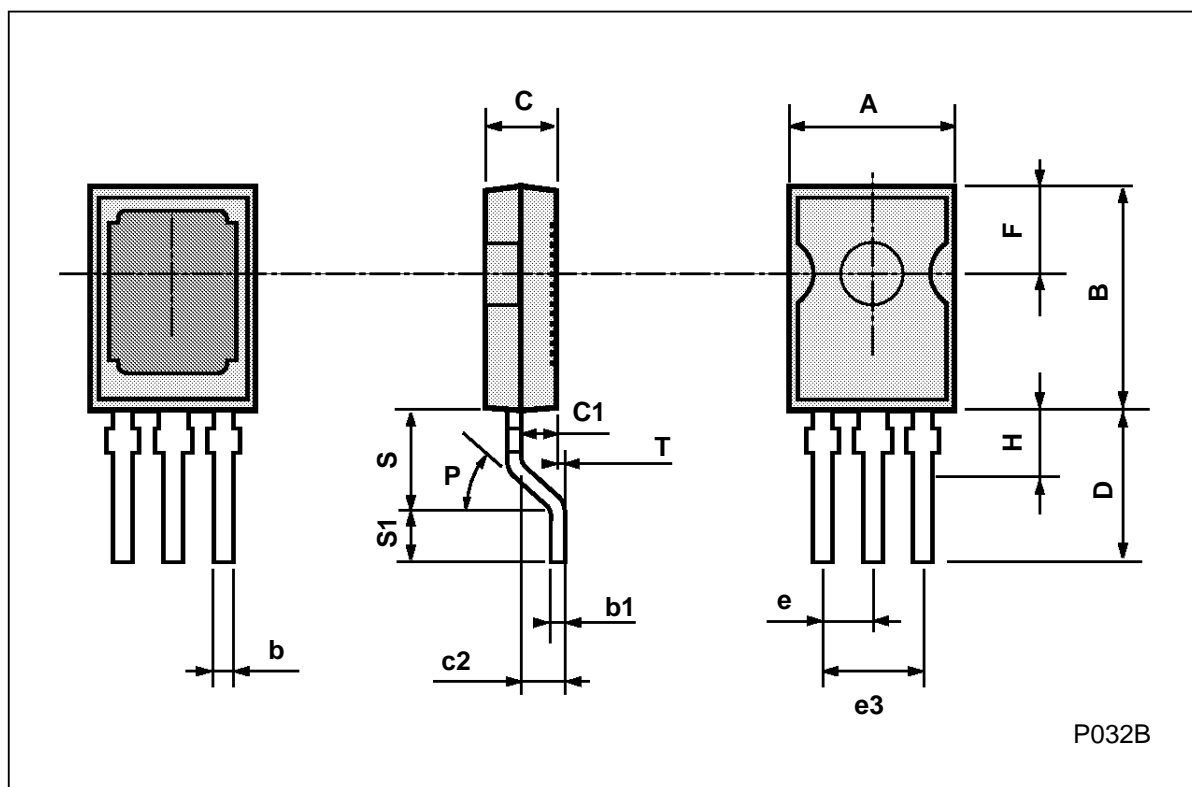
SOT-82 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		11.3	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54		0.100	



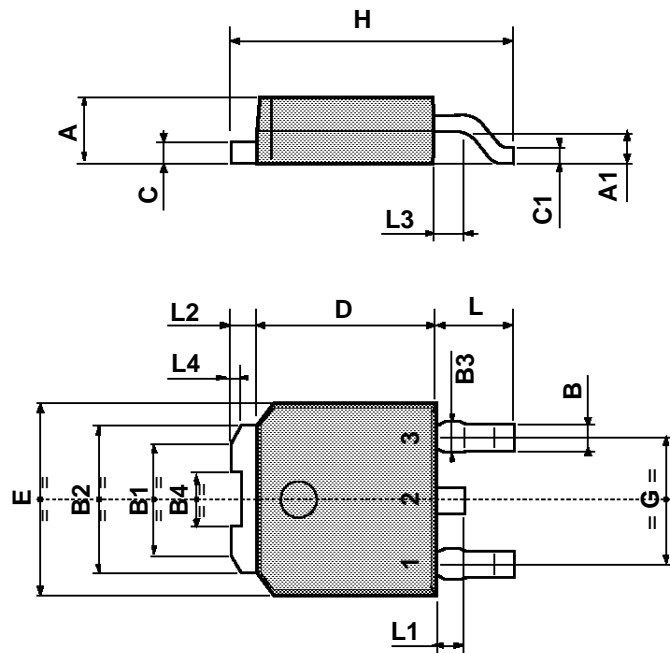
SOT-194 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		11.3	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.094		0.106
c1		1.2			0.047	
c2		1.3			0.051	
D		6			0.236	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54			0.100
P	45° (typ.)					
S		4			0.157	
S1		2			0.079	
T		0.1			0.004	



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
B	0.64		0.8	0.025		0.031
B1	3.4		3.6	0.133		0.141
B2	5.2		5.4	0.204		0.212
B3			0.9			0.035
B4	1.9		2.1	0.074		0.082
C	0.48		0.6	0.018		0.023
C1	0.45		0.6	0.017		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
L	2.55		3.05	0.100		0.120
L1	0.6		1	0.023		0.039
L2		0.8			0.031	
L3	0.8		1.2	0.031		0.047
L4	0.3		0.45	0.012		0.017



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