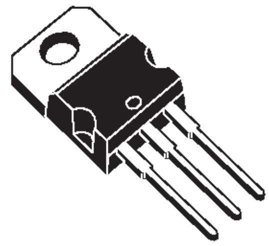
PB137

POSITIVE VOLTAGE REGUALTOR FOR BATTERY CHARGER

- REVERSE LEAKAGE CURRENT LESS THAN 120 μA
- THREE TERMINAL FIXED VERSION (13.7V) OUTPUT CURRENT IN EXCESS OF 1.5A
- AVAILABLE IN ± 1% (AC) SELECTION AT 25°C
- TYPICAL DROPOUT VOLTAGE 2V
- TEMPERATURE RANGE 0°C TO 150°C

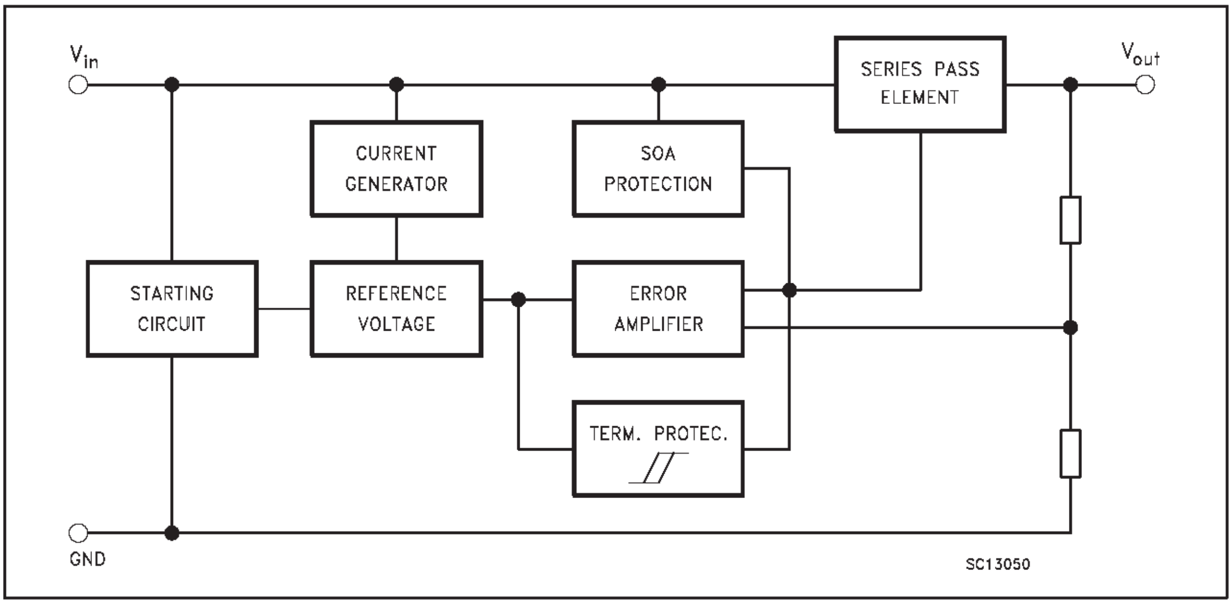


TO-220

DESCRIPTION

The PB137 is a positive voltage regulator able to provide 1.5A, at VOUT=13.7V and is intended as a charger for lead acid battery. The main feature is a reverse leakage current (Max 120μA at T_J =0 to 40°C V_{IN} = floating and V_{OUT} = 13.7V). it is available in TO-220 and it employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat-sinking is provided, they can deliver over 1A output current.

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

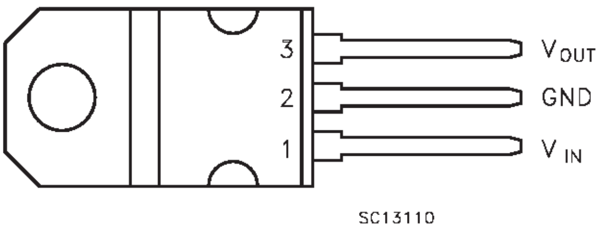
Symbol	Parameter	Value	Unit
V_i	DC Input Voltage	40	V
I_o	Output Current	Internally limited	mA
P_{tot}	Power Dissipation	Internally limited	mW
T_{stg}	Storage Temperature Range	- 65 to 150	^oC
T_{op}	Operating Junction Temperature Range	0 to 150	^oC

Absolute Maximum Rating are those values beyond wich damage to the device may occur. Functional operation under these conditions is not implied.

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	3	$^oC/W$
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	50	$^oC/W$

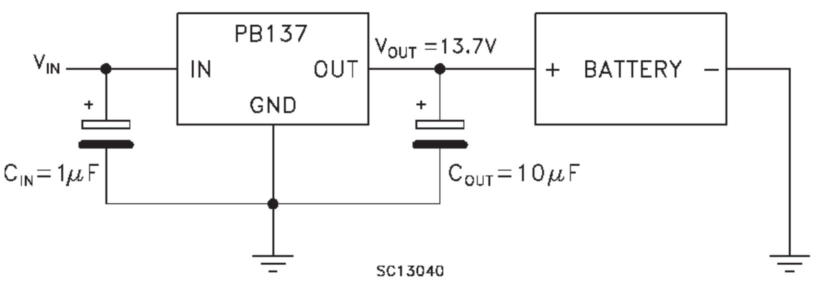
CONNECTION DIAGRAM (top view)



ORDERING NUMBERS

Type	Output Voltage
PB137ACV	13.7 V

APPLICATION CIRCUIT

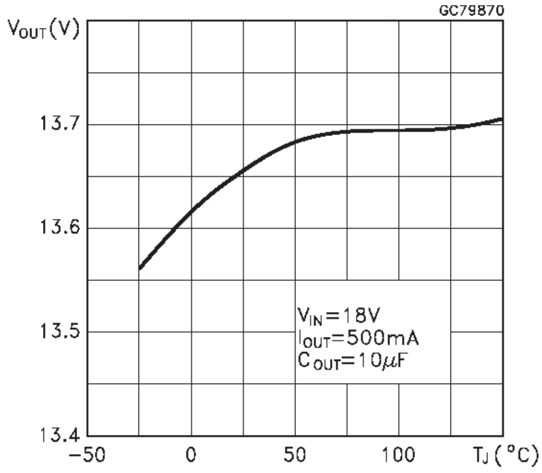


ELECTRICAL CHARACTERISTICS FOR PB137 (refer to the test circuits, V_I = 18 V, I_{OUT} = 500 mA, T_j = 0 to 150 °C, C_{OUT} = 10 µF unless otherwise specified)

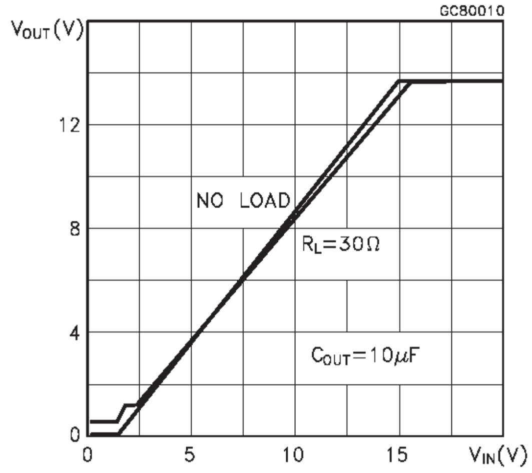
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	13.56 13.43	13.7 13.7	13.84 13.97	V V
ΔV_o	Line Regulation	V_i = 16 to 28.7 V, T_j = 25 °C		60	150	mV
ΔV_o	Load Regulation	I_o = 5 to 1500 mA, T_j = 25 °C		65	100	mV
I_d	Quiescent Current	T_j = 25 °C		4	8	mA
ΔI_d	Delta Quiescent Current vs Line	V_i = 16 to 28.7 V			4	mA
ΔI_d	Delta Quiescent Current vs Load	I_o = 5 to 1000 mA			1.2	mA
V_d	Dropout Voltage	I_o = 1 A, T_j = 25 °C		2.1	2.6	V
I_{SC}	Short Circuit Current	V_i - V_o = 5V, T_j = 25 °C		2.2		A
eN	Output Noise Voltage	B = 10 Hz to 10 KHz, T_j = 25 °C		300		µVrms
SVR	Supply Voltage Rejection	f = 120 Hz, T_j = 25 °C		58		dB
I_{REV}	Reverse Leakage Current	V_{OUT} = 13.7 V, V_{IN} = floating, T_j = 0 to 40 °C			120	µA
S	Long Term Stability	T_j = 125 °C, 1000hrs			0.5	%

TYPICAL PERFORMANCE CHARACTERISTICS (T_J=25^{o}C)

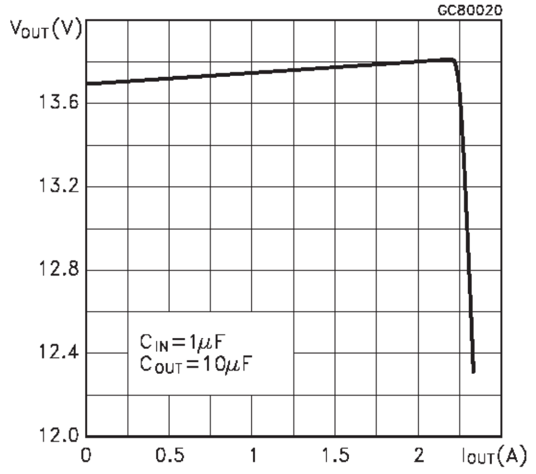
Output Voltage vs Temperature



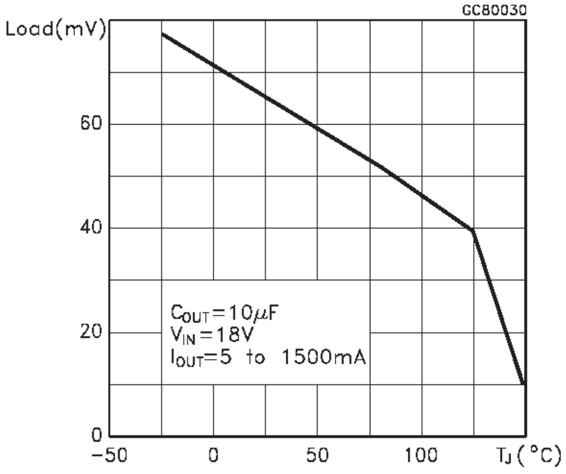
Output Voltage vs Input Voltage



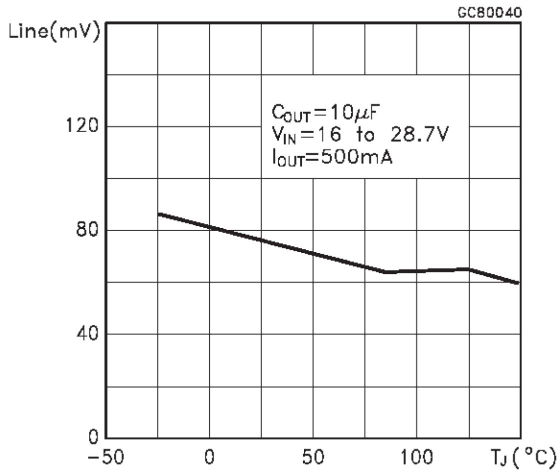
Output Voltage vs Output Current



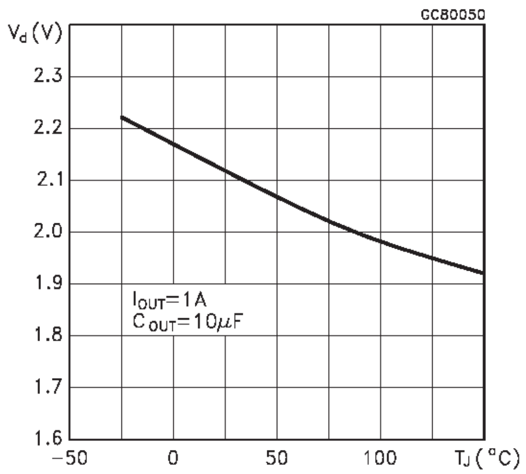
Load Regulation vs Temperature



Line Regulation vs Temperature

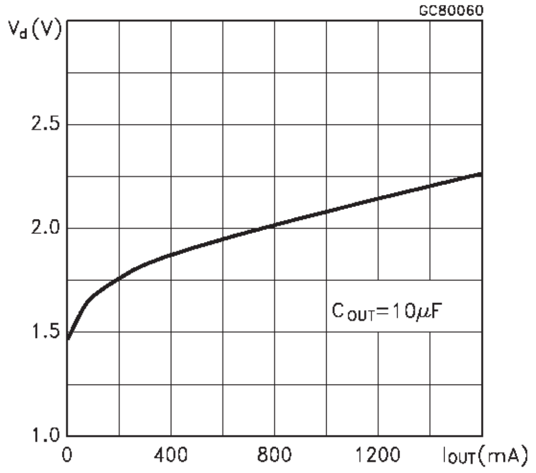


Dropout Voltage vs Temperature

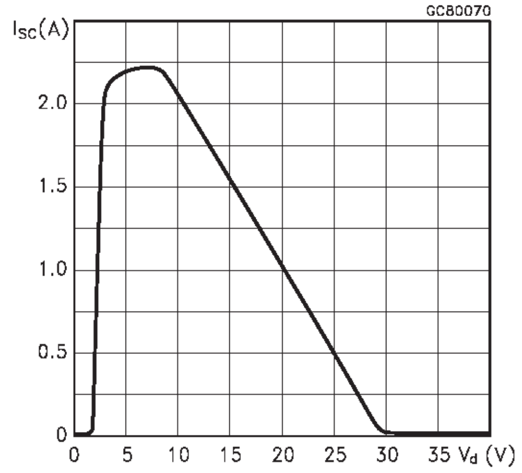


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

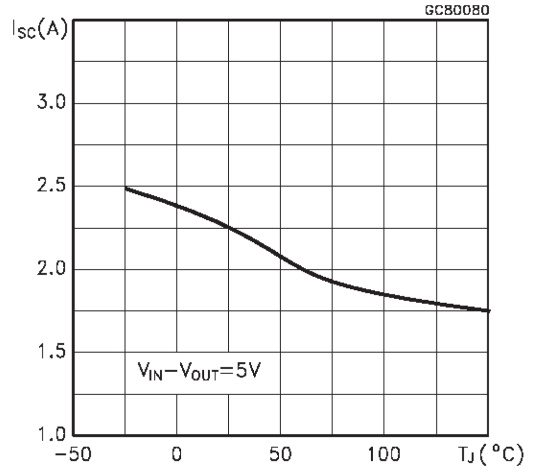
Dropout Voltage vs Output Current



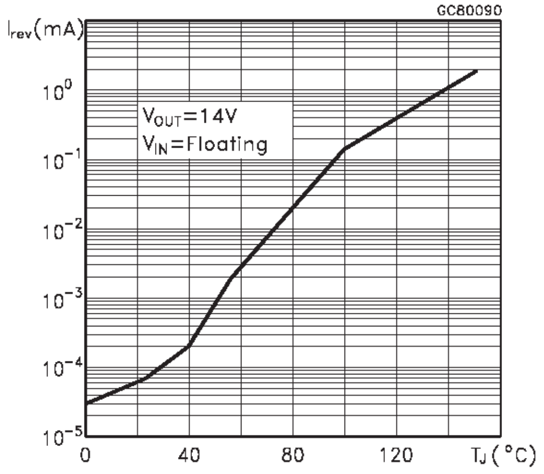
Short Circuit Current vs Dropout Voltage



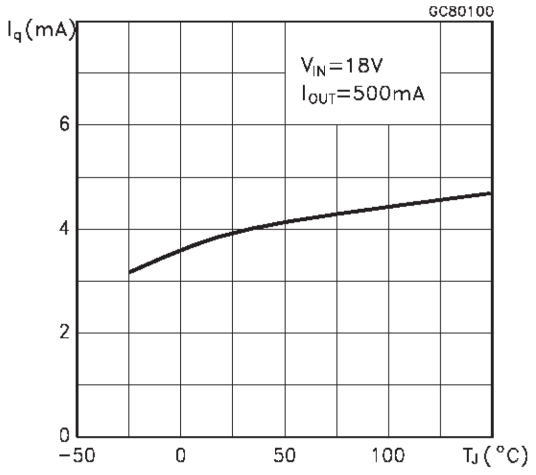
Short Circuit Current vs Temperature



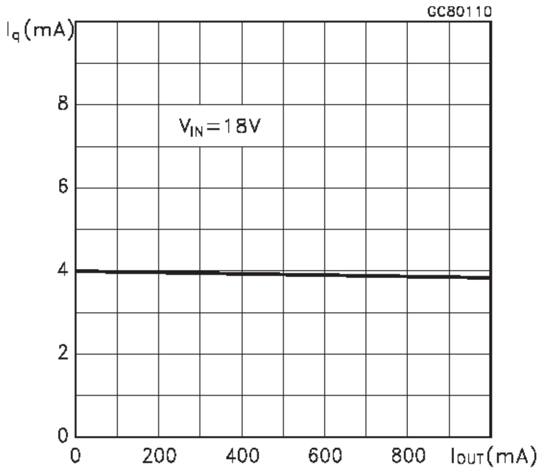
Reverse Leakage Current vs Temperature



Quiescent Current vs Temperature

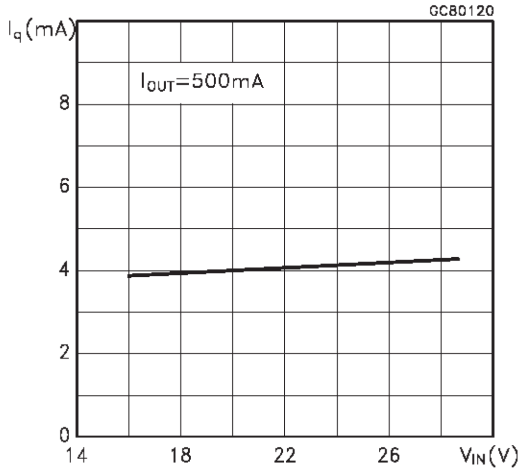


Quiescent Current vs Output Current

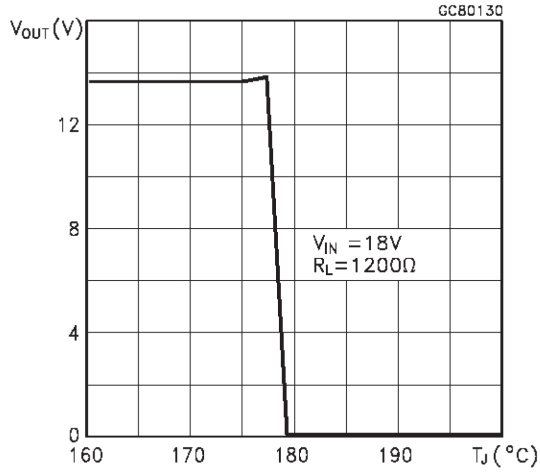


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

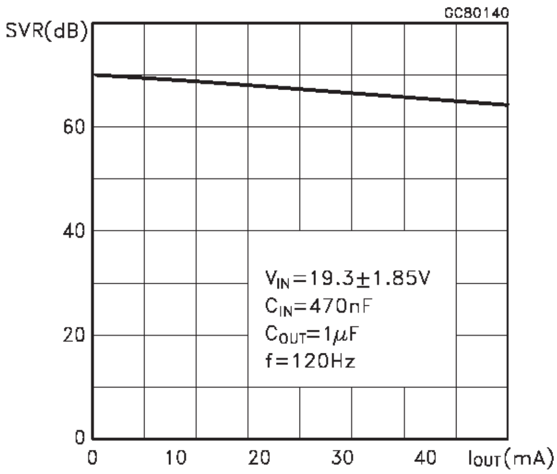
Quiescent Current vs Input Voltage



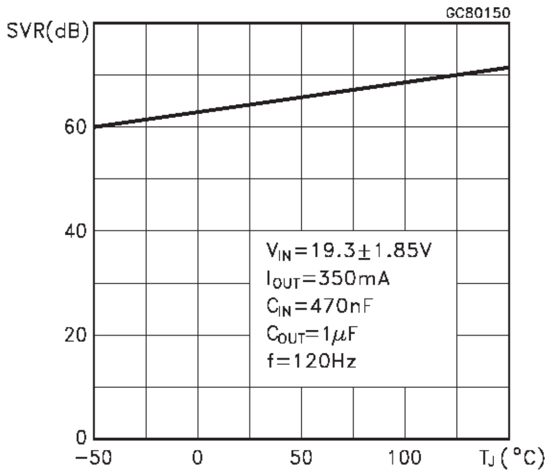
Thermal Protection



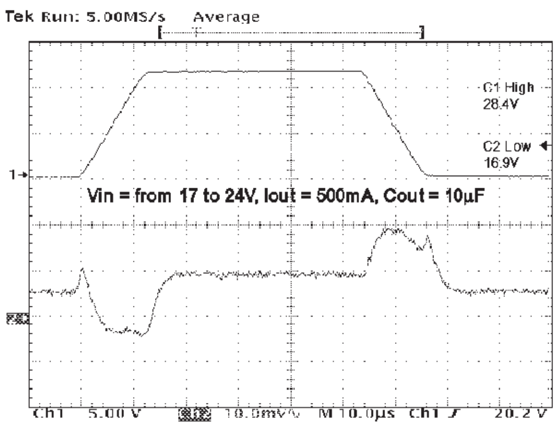
Supply Voltage Rejection vs Output Current



Supply Voltage Rejection vs Temperature

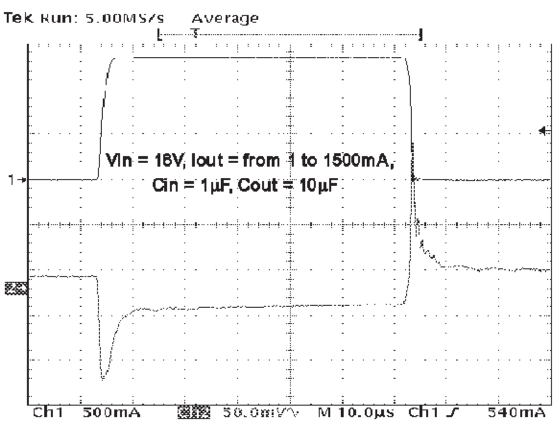


Line Transient Response



V_{IN} = 17 to 28.4V, I_{OUT} = 0.5A,C_{OUT} = 10µF

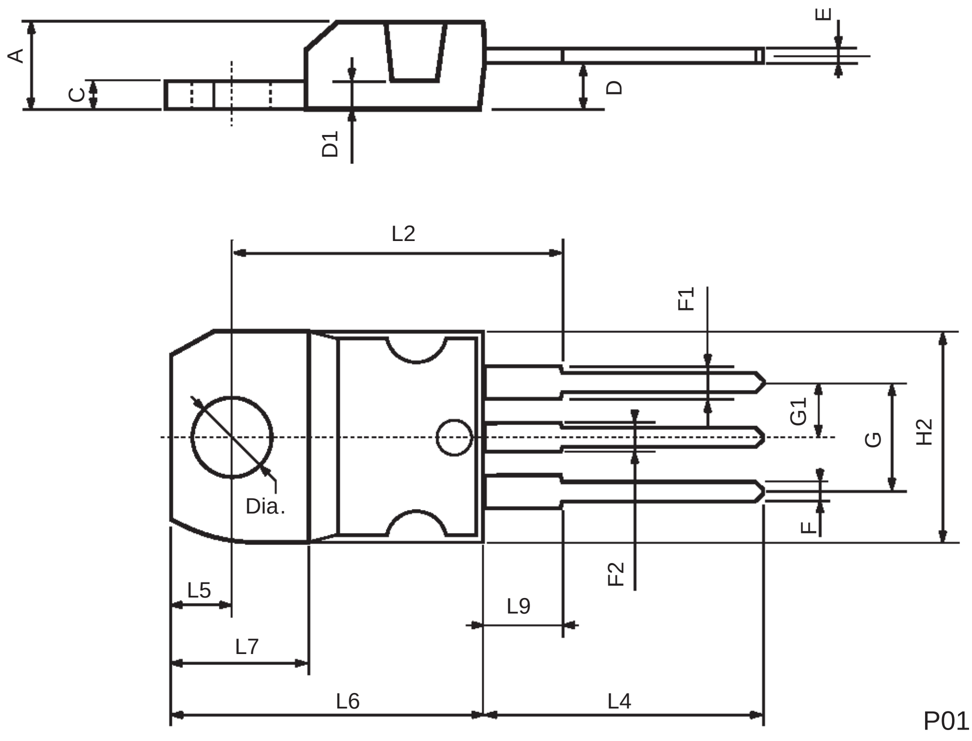
Load Transient Response



V_{IN} = 18V, I_{OUT} = 5 to 1.5A,C_{IN} = 1µF,C_{OUT} = 10µF

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



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