



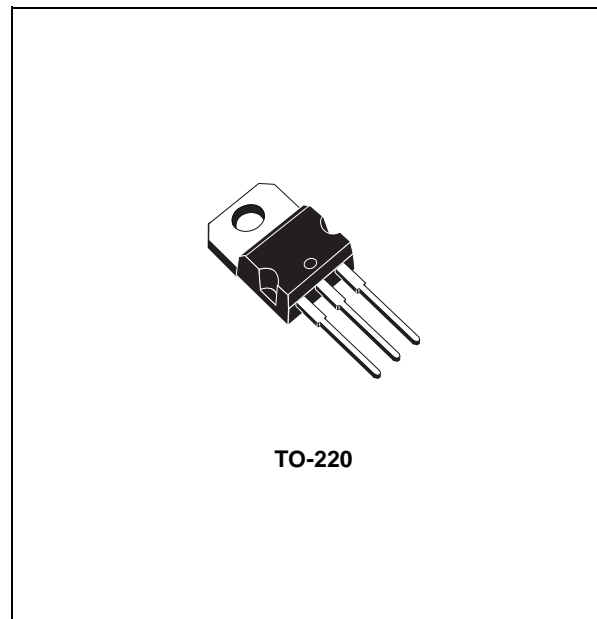
**PB137**

## POSITIVE VOLTAGE REGULATOR FOR BATTERY CHARGER

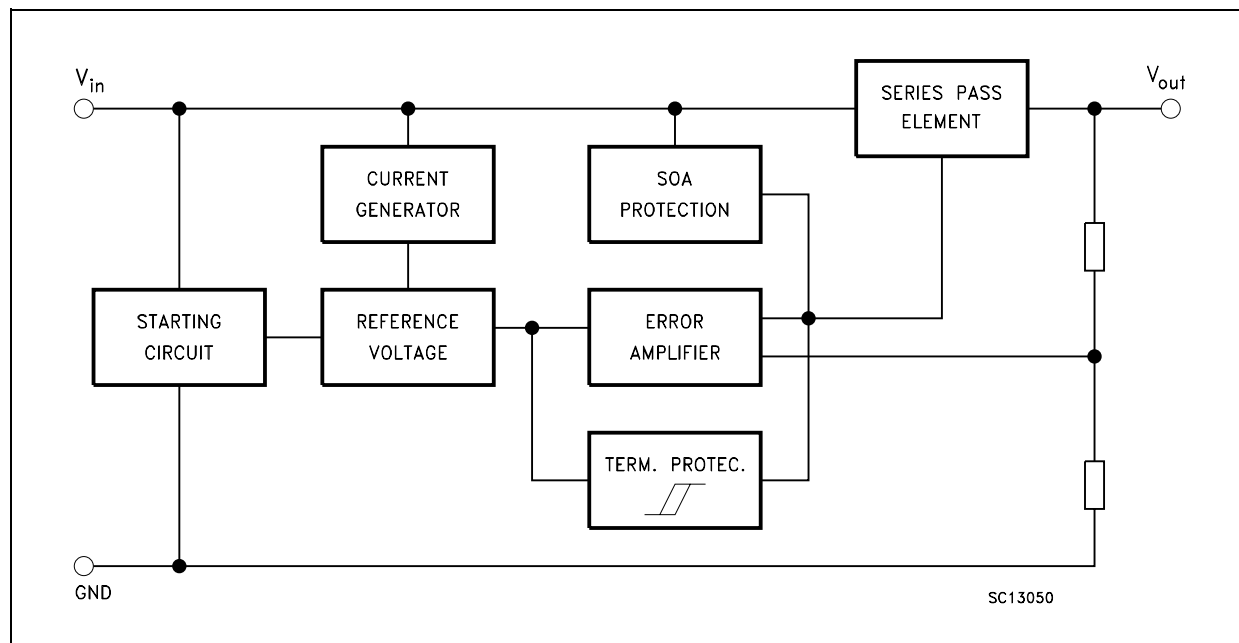
- REVERSE LEAKAGE CURRENT LESS THAN 10  $\mu\text{A}$
- THREE TERMINAL FIXED VERSION (13.7V) OUTPUT CURRENT IN EXCESS OF 1.5A
- AVAILABLE IN  $\pm 1\%$  (AC) SELECTION AT 25°C
- TYPICAL DROPOUT VOLTAGE 2V
- TEMPERATURE RANGE 0°C TO 150°C

### DESCRIPTION

The PB137 is a positive voltage regulator able to provide 1.5A, at  $V_O = 13.7\text{V}$  and is intended as a charger for lead acid battery. The main feature is a reverse leakage current (Max 10 $\mu\text{A}$  at  $T_J = 0$  to 40°C  $V_I = \text{floating}$  and  $V_O = 13.7\text{V}$ ). 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**

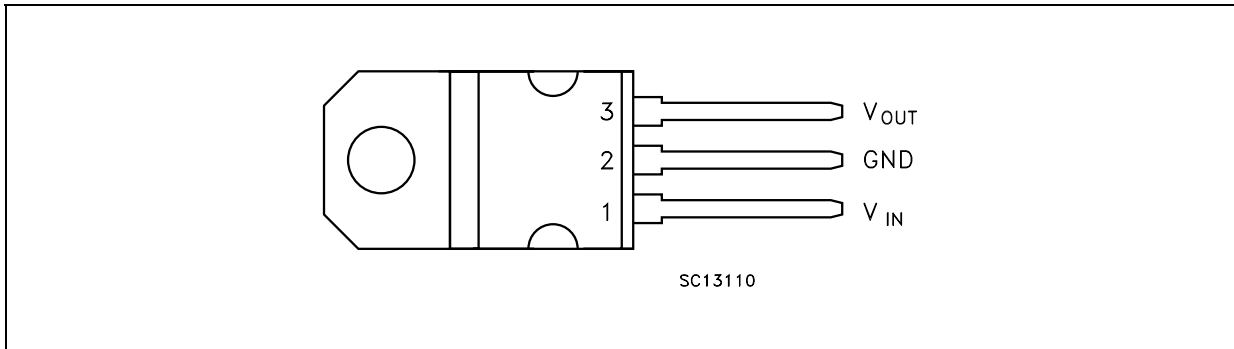
Symbol	Parameter <sup>2</sup>	Value	Unit
$V_I$	DC Input Voltage	40	V
$I_O$	Output Current	Internally Limited	mA
$P_{tot}$	Power Dissipation	Internally Limited	mW
$T_{stg}$	Storage Temperature Range	-65 to 150	°C
$T_{op}$	Operating Junction Temperature Range	0 to 150	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

**THERMAL DATA**

Symbol	Parameter	TO-220	Unit
$R_{thj-case}$	Thermal Resistance Junction-case	3	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	50	°C/W

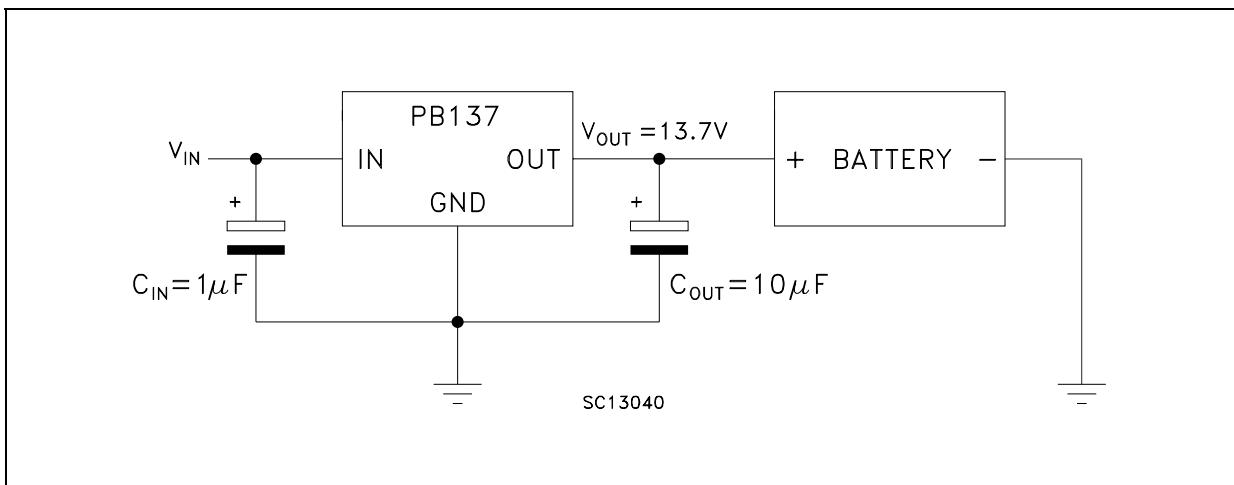
**CONNECTION DIAGRAM (top view)**



**ORDERING CODES**

TYPE	OUTPUT VOLTAGE
PB137ACV	1.5 V

**APPLICATION CIRCUIT**



**ELECTRICAL CHARACTERISTICS OF PB137** (refer to the test circuits,  $V_I = 18V$ ,  $I_O = 500mA$ ,  $T_J = 0$  to  $150^\circ C$ ,  $C_O = 10\mu F$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$T_J = 25^\circ C$	13.56	13.7	13.84	V
			13.43	13.7	13.97	
$\Delta V_O$	Line Regulation	$V_I = 16$ to $28.7$ V, $T_J = 25^\circ C$		60	150	mV
$\Delta V_O$	Load Regulation	$I_O = 5$ to $1500$ mA, $T_J = 25^\circ C$		65	100	mV
$I_d$	Quiescent Current	$T_J = 25^\circ C$		4	8	mA
$\Delta I_d$	Delta Quiescent Current vs Line	$V_I = 16$ to $28.7$ V			4	mA
$\Delta I_d$	Delta Quiescent Current vs Load	$I_O = 5$ to $1000$ mA			1.2	mA
$V_d$	Dropout Voltage	$I_O = 1$ A $T_J = 25^\circ C$		2.1	2.6	V
$I_{sc}$	Short Circuit Current	$V_I - V_O = 5V$ $T_J = 25^\circ C$		2.2		A
eN	Output Noise Voltage	B = 10Hz to 10KHz, $T_J = 25^\circ C$		300		$\mu V_{rms}$
SVR	Supply Voltage Rejection	f = 120 Hz, $T_J = 25^\circ C$		58		dB
$I_{REV}$	Reverse Leakage Current	$V_O = 13.7$ V, $V_I =$ floating $T_J = 0$ to $40^\circ C$		0.1	10	$\mu A$
S	Long Term Stability	$T_J = 125^\circ C$ 1000Hrs			0.5	%

TYPICAL PERFORMANCE CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ )

Figure 1 : Output Voltage vs Temperature

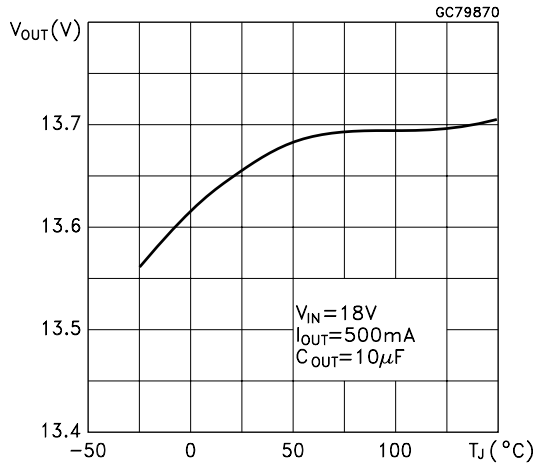


Figure 2 : Output Voltage vs Input Voltage

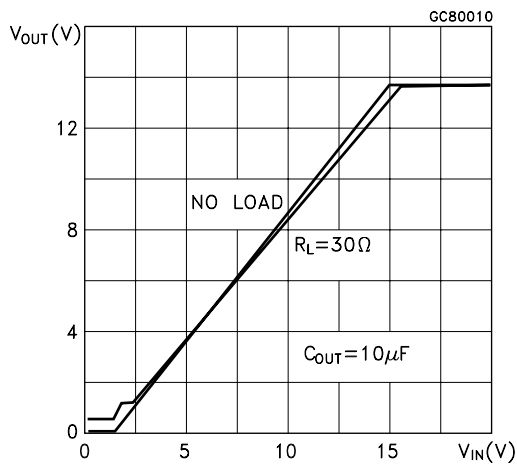


Figure 3 : Output Voltage vs Output Current

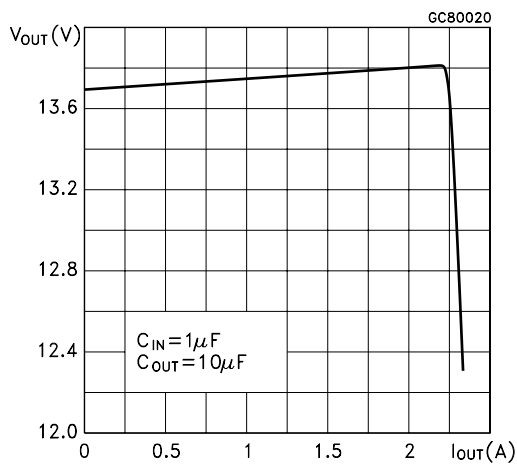


Figure 4 : Load Regulation vs Temperature

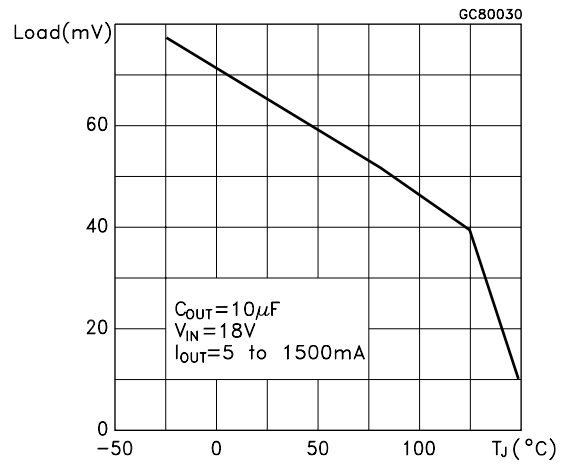


Figure 5 : Line Regulation vs Temperature

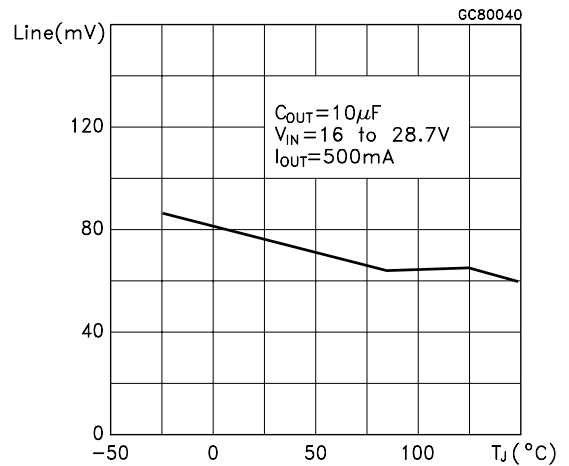
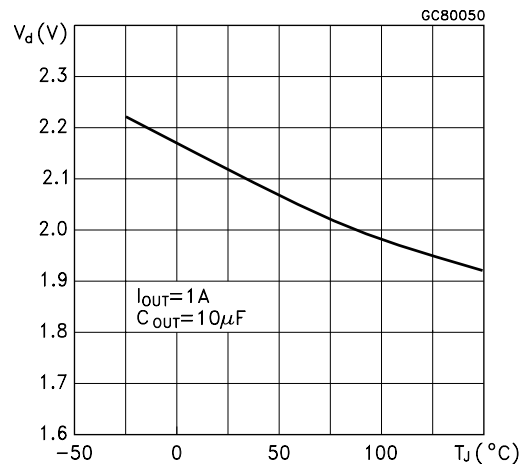
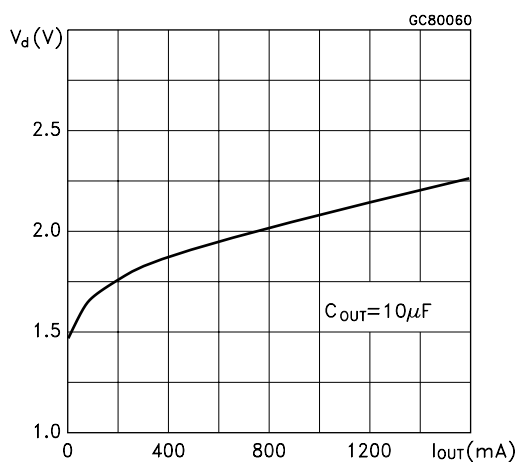


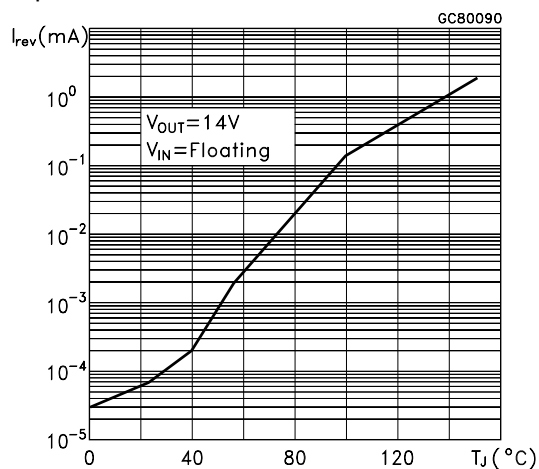
Figure 6 : Dropout Voltage vs Temperature



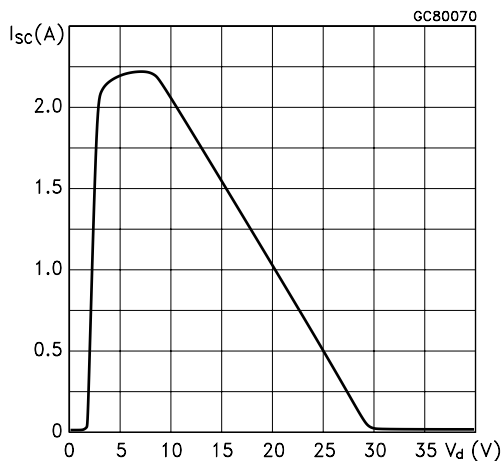
**Figure 7 : Dropout Voltage vs Output Current**



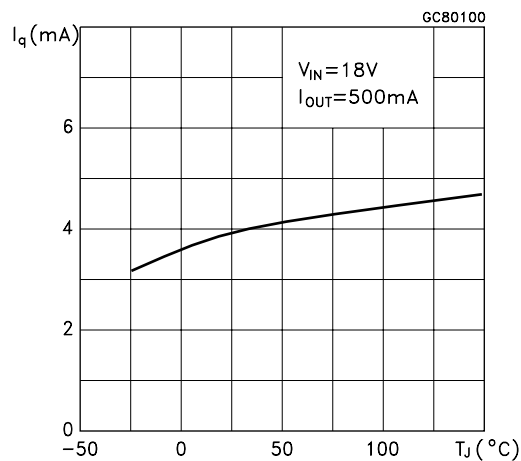
**Figure 10 : Reverse Leakage Current vs Temperature**



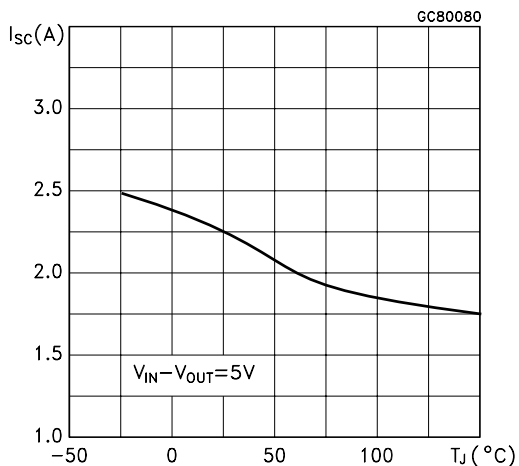
**Figure 8 : Short Circuit Current vs Dropout Voltage**



**Figure 11 : Quiescent Current vs Temperature**



**Figure 9 : Short Circuit Current vs Temperature**



**Figure 12 : Quiescent Current vs Output Current**

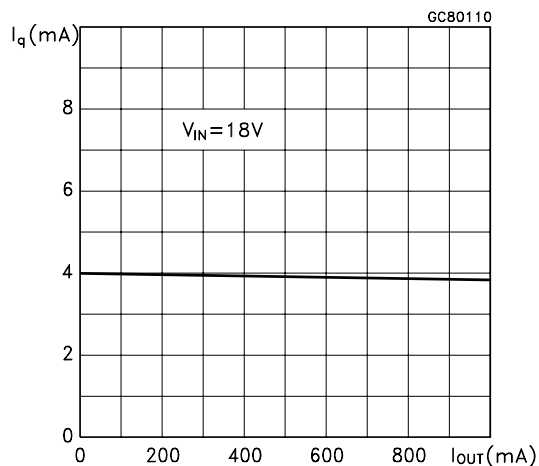


Figure 13 : Quiescent Current vs Input Voltage

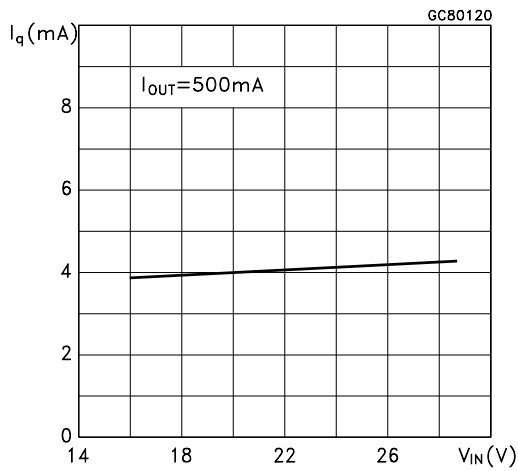


Figure 14 : Thermal Protection

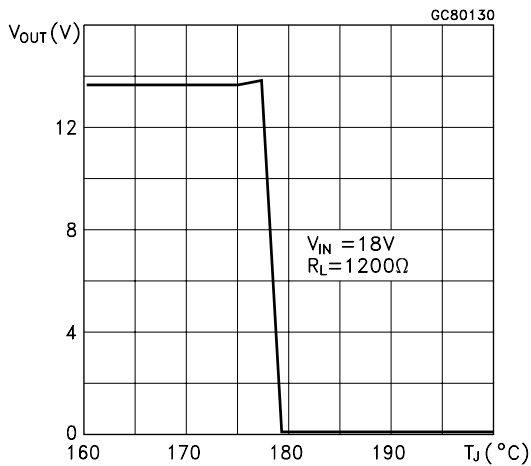


Figure 15 : Supply Voltage Rejection vs Output Current

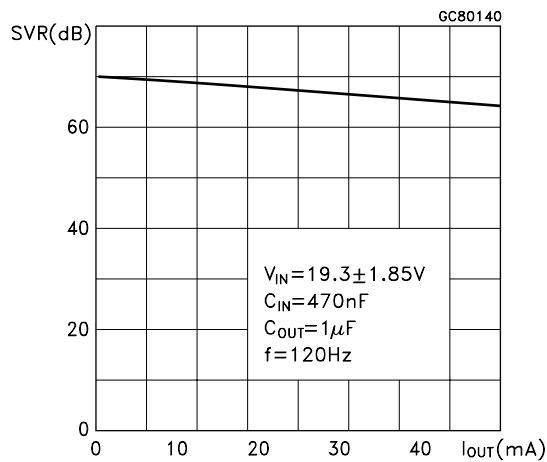


Figure 16 : Supply Voltage Rejection vs Temperature

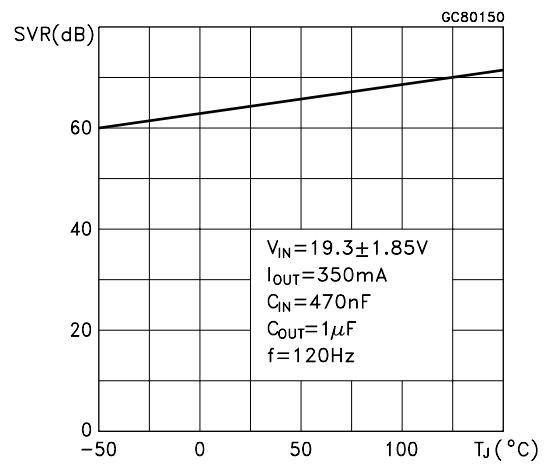


Figure 17 : Line Transient Response

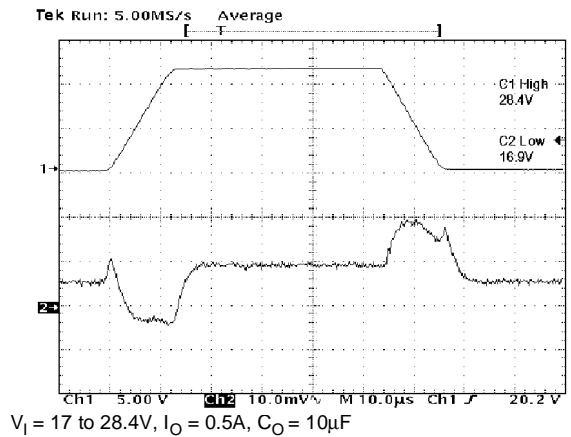
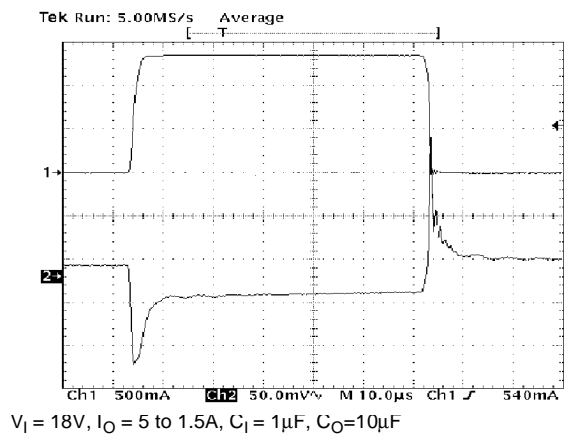
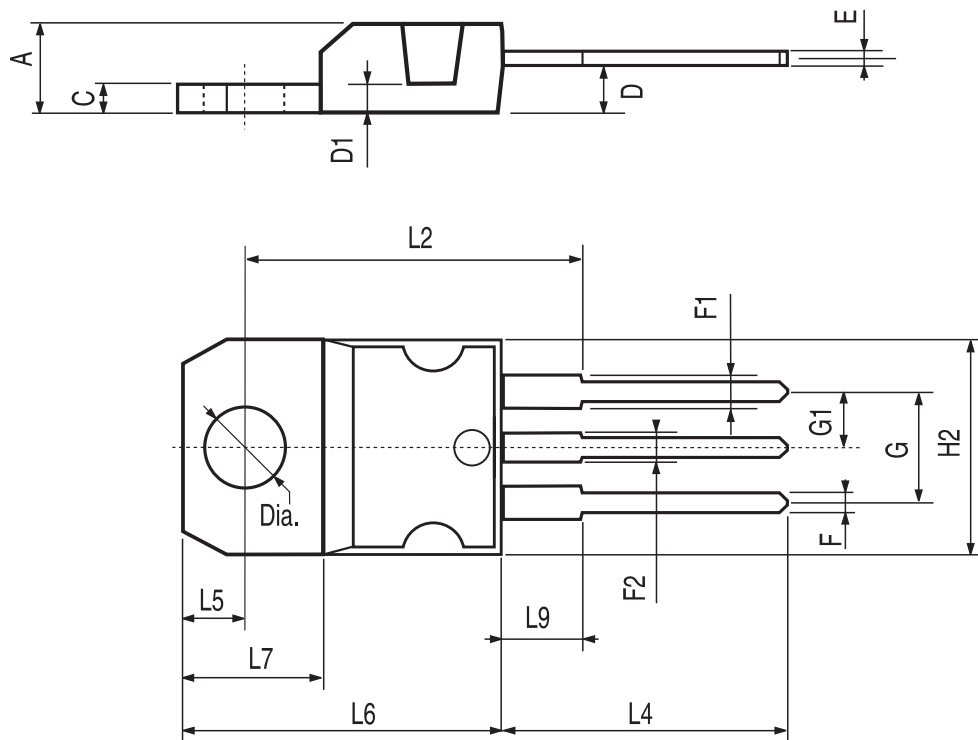


Figure 18 : Load Transient Response



## 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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