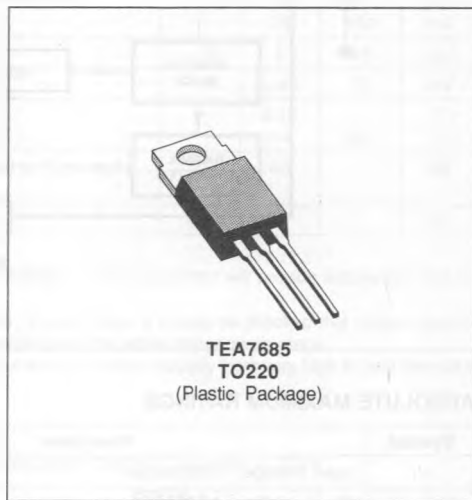
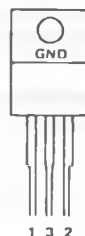


LOW-DROP VOLTAGE REGULATOR

- $V_o = 8.5V \pm 4\%$ ($I_o = 5mA$)
- $I_o = 5$ TO $500mA$
- $V_i - V_o = 0.6V$ ($I_o = 500mA$)
- V_i (surge) = $\pm 80V$
- THERMAL AND SHORT CIRCUIT PROTECTION



PIN CONNECTIONS



E88TEA7685-02

DESCRIPTION

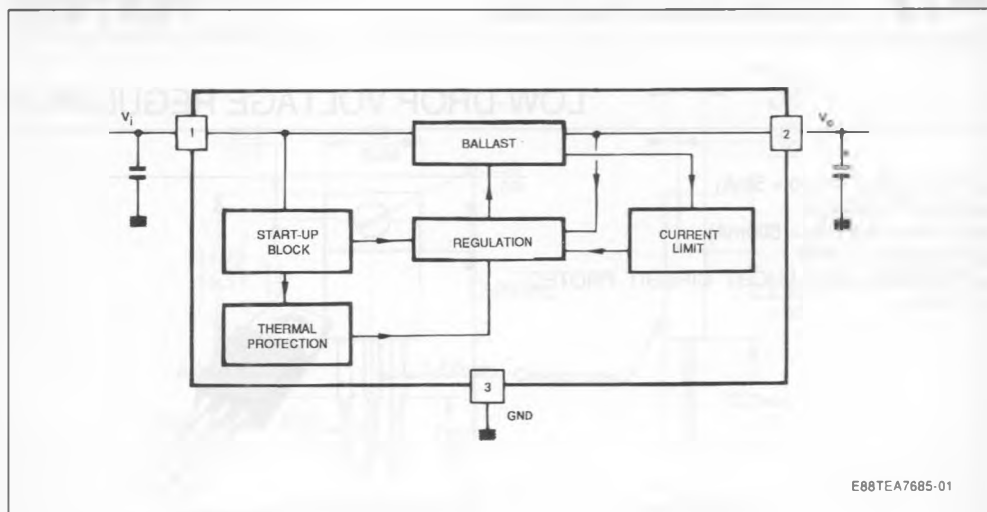
TEA 7685 is a low-drop 8.5V regulator well suited to supplying stabilized voltage to μP s in harsh industrial environment.

Special care was taken to keep :

- Lowest possible output capacitor ($1\mu F$).

1 = V_i
2 = V_o
3 = GND

BLOCK DIAGRAM



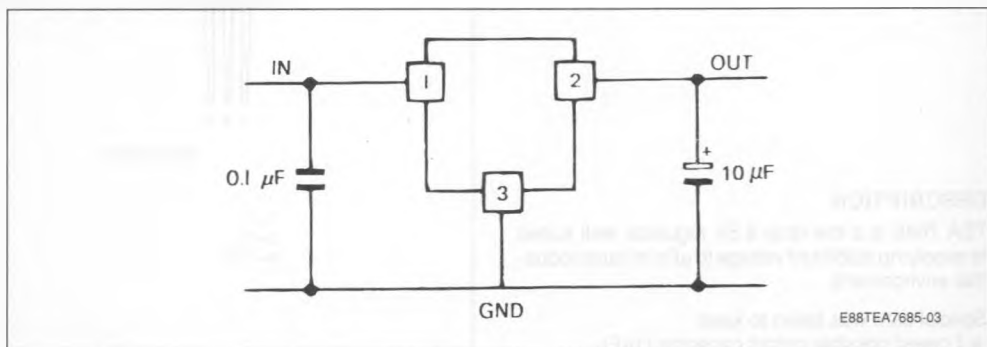
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_i	Input Voltage - Continuous	30	V
	- $\tau = 300\text{mS}$	80	V
V_i	Reverse Input Voltage - Continuous	- 18	V
	- $\tau = 120\text{mS}$	- 80	V
T_{oper}	Operating Junction Temperature	45 to + 150	°C
T_{stg}	Storage Temperature	- 55 to + 150	°C

THERMAL DATA

$R_{\text{th(j-c)}}$	Maximum Junction-case Thermal Resistance	3	°C/W
$R_{\text{th(j-a)}}$	Maximum Junction-ambient Thermal Resistance	70	°C/W

APPLICATION DIAGRAM



ELECTRICAL OPERATING CHARACTERISTICS

$T_j = 25^\circ\text{C}$, $V_i = 14.4\text{V}$ (unless otherwise specified) Output Capacitor = $10\mu\text{F}$ (note)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_o	Output Voltage ($I_o = 5$ to 500mA)	8.26	8.5	8.74	V
V_i	Input Supply Voltage (permanent)			28	V
I_{cc}	Current Consumption $I_o = 0\text{mA}$ $I_o = 150\text{mA}$ $I_o = 500\text{mA}$		1.5 10 75	2 20 100	mA mA mA
kV_i	Line Regulation ($V_i = 6$ to 26V ; $I_o = 5\text{mA}$)	- 15	5	15	mV
kV_o	Load Regulation ($I_o = 5$ to 500mA)	- 70	- 40	70	mV
$V_i - V_o$	Drop-out Voltage $I_o = 150\text{mA}$ $I_o = 500\text{mA}$		0.18 0.4	0.6	V V
SVRR	Supply Voltage Rejection ($I_o = 350\text{mA}$, $f = 120\text{Hz}$, $C_o = 1\mu\text{F}$, $V_i = 12 \pm 5\text{V}$)		60		dB
I_{os}	Short-circuit Output Current	0.5	0.7		A

NOTE : APPLICATION HINTS

The output capacitor has a direct influence on output voltage stability. A $10\mu\text{F}$ capacitor will provide satisfactory results : there is no upper limit.

If necessary, this value can be reduced down to $1\mu\text{F}$; however, in such case, it should be checked that output capacitor keeps sufficiently high capacitance and low equivalent series resistance in the whole temperature range.

Such low capacitor value is not recommended either, if output current is to switch abruptly from very high to very low values (for instance 400mA to $< 1\text{mA}$).

ELECTRICAL OPERATING CHARACTERISTICS

$T_j = -45^\circ\text{C}$ to $+125^\circ\text{C}$, $V_i = 14.4\text{V}$ (unless otherwise specified) Output Capacitor = $10\mu\text{F}$

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_o	Output Voltage ($I_o = 5$ to 500mA)	8.16	8.5	8.84	V
d_{V_o} d_t	Output Voltage Drift - 45 to 25°C 25 to 125°C	- 1 - 1.2		0 0	mV/ $^\circ\text{C}$
I_{cc}	Current Consumption $I_o = 0\text{mA}$ $I_o = 150\text{mA}$ $I_o = 500\text{mA}$			2.5 25 120	mA mA mA
kV_i	Line Regulation ($V_i = 6$ to 26V ; $I_o = 5\text{mA}$)	- 25		25	mV
kV_o	Load Regulation ($I_o = 5$ to 500mA)	- 90		90	mV
$V_i - V_o$	Drop-out Voltage $I_o = 150\text{mA}$ $I_o = 500\text{mA}$		0.20	0.8	V V
I_{os}	Short-circuit Output Current	0.5			A

PACKAGE MECHANICAL DATA

TO220 – PLASTIC PACKAGE

