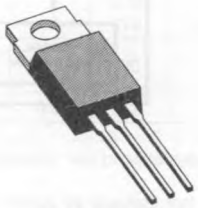
SGS-THOMSON
MICROELECTRONICS

TEA7610

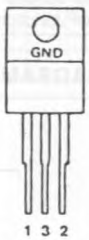
LOW-DROP VOLTAGE REGULATOR

- Vo = 10V ± 4% (Io = 5mA)
- Io = 5 TO 500mA
- Vi - Vo = 0.6V (Io = 500mA)
- Vi (surge) = ± 80V
- THERMAL AND SHORT CIRCUIT PROTECTION



TEA7610 SP
TO220
(Plastic Package)

PIN CONNECTIONS



E88TEA7610-02

1 = V_I
2 = V_O
3 = GND

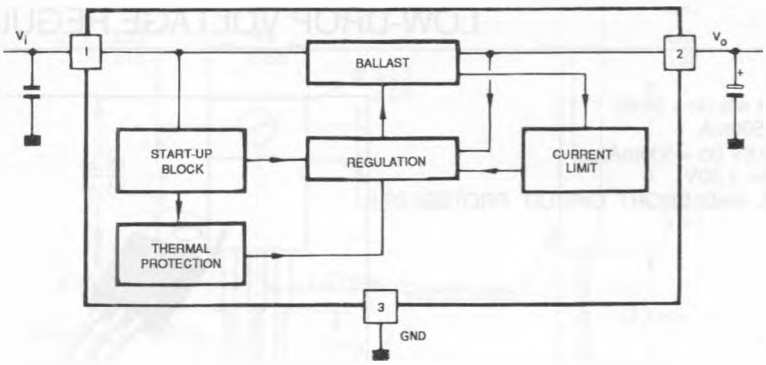
DESCRIPTION

TEA 7610 is a low-drop regulator well suited to supplying stabilized voltage to µPs in harsh industrial environment.

Special care was taken to keep :

- Lowest possible output capacitor (1µF).

BLOCK DIAGRAM



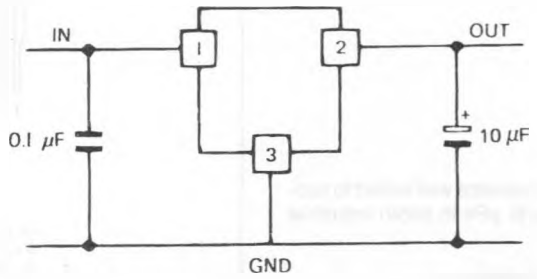
ABSOLUTE MAXIMUM RATINGS

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

THERMAL DATA

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

APPLICATION DIAGRAM



ELECTRICAL OPERATING CHARACTERISTICS

T_j = 25°C, V_i = 14.4V (unless otherwise specified), Output Capacitor = 10µF (note)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_o	Output Voltage (I_o = 5 to 500mA)	9.7	10	10.3	V
V_i	Input Supply Voltage (permanent)			28	V
I_{CC}	Current Consumption I_o = 0mA I_o = 150mA I_o = 500mA		1.5 10 75	2 20 100	mA mA mA
kV_i	Line Regulation (V_i = 6 to 26V ; I_o = 5mA)		5	20	mV
kV_o	Load Regulation (I_o = 5 to 500mA)		40	80	mV
$V_i - V_o$	Drop-out Voltage I_o = 150mA I_o = 500mA		0.18 0.4	 0.6	V V
SVRR	Supply Voltage Rejection (I_o = 350mA, f = 120Hz, C_o = 1µF, V_1 = 12 ± 5V)		60		dB
I_{os}	Short-circuit Output Current	0.5	0.7		A

NOTE : APPLICATION HINTS

The output capacitor has a direct influence on ouptut voltage stability. A 10µF capacitor will provide satisfactory results ; there is no upper limit.

If necessary, this value can be reduced down to 1µF ; 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 < 1mA).

ELECTRICAL OPERATING CHARACTERISTICS

T_j = – 45°C to 125°C, V_i = 14.4V (unless otherwise specified), Output Capacitor = 10µF

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_o	Output Voltage (I_o = 5 to 500mA)	9.6	10	10.4	V
d_{Vo} d_t	Output Voltage Drift – 45 to 25°C 25 to 125°C	– 1 – 1.2		0 0	mV/°C
I_{CC}	Current Consumption I_o = 0mA I_o = 150mA I_o = 500mA			2.5 25 120	mA mA mA
kV_i	Line Regulation (V_i = 6 to 26V ; I_o = 5mA)			30	mV
kV_o	Load Regulation (I_o = 5 to 500mA)			100	mV
$V_i - V_o$	Drop-out Voltage I_o = 150mA I_o = 500mA		0.20	 0.8	V V
I_{os}	Short-circuit Output Current	0.5			A

PACKAGE MECHANICAL DATA

TO220 – PLASTIC PACKAGE