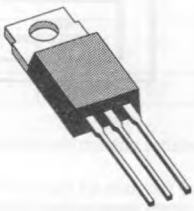
SGS-THOMSON
MICROELECTRONICS

TEA7605

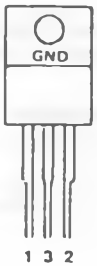
LOW-DROP VOLTAGE REGULATOR

- V_O = 5 V ± 4 % (I_O = 5 mA)
- I_{OS} ≥ 500 mA
- $V_I - V_O \leq 0.6$ V (I_O = 500 mA)
- V_I (surge) = ± 80 V
- THERMAL AND SHORT-CIRCUIT PROTECTION



TEA7605 SP
TO220
(Plastic Package)

PIN CONNECTIONS



E88TEA7605-02

1 = V_I
2 = V_O
3 = GND

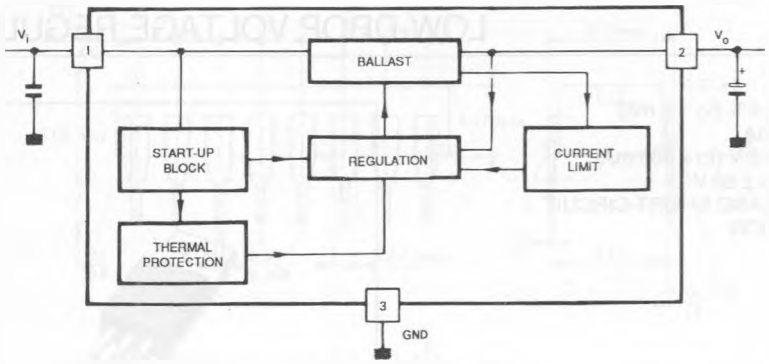
DESCRIPTION

TEA7605 is a low-drop 5 V regulator well suited to supplying stabilized voltage to µPs in harsh industrial environment.

Special care was taken to keep :

- Lowest possible quiescent current (250 µA).
- Lowest possible output capacitor (1 µF).

BLOCK DIAGRAM



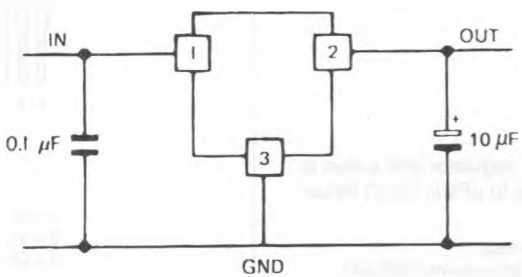
ABSOLUTE MAXIMUM RATINGS

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

THERMAL DATA

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

APPLICATION DIAGRAM



ELECTRICAL OPERATING CHARACTERISTICS

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

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_o	Output Voltage (I_o = 5 to 500 mA)		4.875	5	5.125	V
V_i	Input Supply Voltage (permanent)				28	V
I_{CC}	Current Consumption	I_o = 0 mA I_o = 150 mA I_o = 500 mA		0.25 10 75	0.35 20 100	mA mA mA
kV_i	Line Regulation (V_i = 6 to 26 V ; I_o = 5 mA)			5	10	mV
kV_o	Load Regulation (I_o = 5 to 500 mA)			40	60	mV
$V_i - V_o$	Drop-out Voltage	I_o = 150 mA I_o = 500 mA		0.18 0.4	 0.6	V V
SVRR	Supply Voltage Rejection (I_o = 350 mA, f = 120 Hz, C_o = 1 µF, V_i = 12 ± 5 V)			60		dB
I_{os}	Short-circuit Output Current		0.5	0.7		A

NOTE : APPLICATIONS HINTS

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

If necessary, this value can be reduced down to 1 µF ; 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, 400 mA to < 1 mA).

ELECTRICAL OPERATING CHARACTERISTICS

T_j = − 45 °C to + 125 °C, V_i = 14 .4 V (unless otherwise specified) Output Capacitor = 10 µF

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_o	Output Voltage (I_o = 5 to 500 mA)		4.8	5	5.2	V
$\frac{dV_o}{dt}$	Output Voltage Drift	− 45 to 25 °C 25 to 125 °C	− 0.4 − 0.6			mV/°C
I_{CC}	Current Consumption	I_o = 0 mA I_o = 150 mA I_o = 500 mA			0.4 25 120	mA mA mA
KV_i	Line Regulation	(V_i = 6 to 26 V I_o = 5 mA)			20	mV
KV_o	Load Regulation (I_o = 5 to 500 mA)				80	mV
$V_i - V_o$	Drop-out Voltage	I_o = 150 mA I_o = 500 mA		0.2	 0.8	V V
I_{os}	Short Circuit Output Current		0.5			A

PACKAGE MECHANICAL DATA

TO220 – PLASTIC PACKAGE