

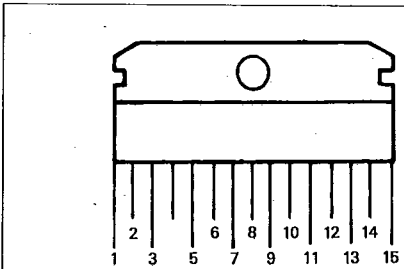


PIN CONNECTIONS

SGS-THOMSON

30E D

T-52-13-90



- 1-Oscillator
- 2-V<sub>(aux)</sub>
- 3-Input 2
- 4-Delay 2
- 5-Alarm 2
- 6-Reference
- 7-Output 2
- 8-Ground
- 9-V<sub>cc</sub>
- 10-Output 1
- 11-Alarm 1
- 12-Delay 1
- 13-Input 1
- 14-Reset
- 15-Strobe

**ABSOLUTE MAXIMUM RATINGS**

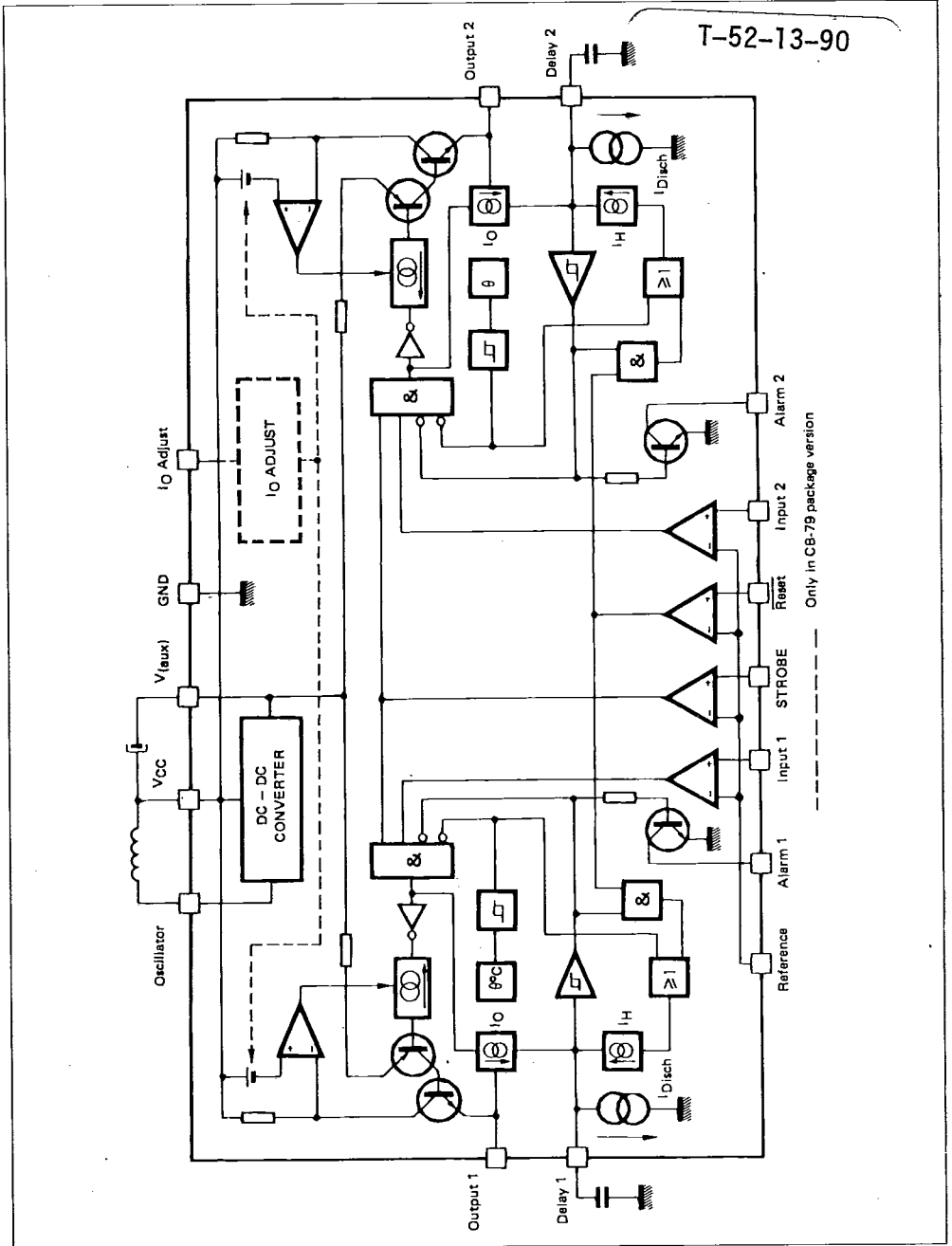
Symbol	Parameter	Value	Unit
V <sub>CC</sub> (*)	Supply Voltage	+ 35	V
V <sub>I1</sub> V <sub>I2</sub> V <sub>reset</sub> V <sub>strobe</sub>	Input Voltages	30 to + 55	V
I <sub>O</sub>	Output Current	Internally Limited	A
I <sub>L</sub>	Current In DC/DC Converter Inductance	0.4	A
P <sub>tot</sub>	Total Power Dissipation	Internally Limited	W
T <sub>oper</sub>	Operating Free-air Temperature Range	- 40 to + 85	°C
T <sub>J</sub>	Junction Temperature	+ 150	°C

\* + 60 V (10 mS)

**THERMAL DATA**

R <sub>th(j-c)</sub>	Maximum Junction-case Thermal Resistance	DIP.16	25	°C/W
		Multiwatt	2.5	
R <sub>th(j-a)</sub>	Maximum Junction-ambient Thermal Resistance	DIP.16	70	°C/W
		Multiwatt	40	

BLOCK DIAGRAM



Only in CB-79 package version

## ELECTRICAL CHARACTERISTICS

T-52-13-90

 $V_{CC} = +24\text{ V}$ ,  $-40\text{ }^{\circ}\text{C}$ ,  $\leq T_{amb} \leq +85\text{ }^{\circ}\text{C}$  (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{CC}$	Supply Voltage	8		32	V
$I_{CC}$	Supply Current Input 1 = Input 2 : Low Input 1 = Input 1 : High, $I_O = 2 \times 2\text{ A}$	-	7 25	32	mA
$I_I$	Input Current (all inputs) $V_I > V_{ref}$ $V_I < V_{ref}$		15 0	50	
$I_{OHA}$	High Level Alarm Output Leakage Current ( $V_A = +10\text{ V}$ )		0	10	$\mu\text{A}$
$V_{OLA}$	Low Level Alarm Output Voltage ( $I_A = +10\text{ mA}$ )		1.1	1.3	V
$V_{CC} - V_O$	Power Outputs Dropout Voltage $I_O = 0.5\text{ A}$ $I_O = 1\text{ A}$ $I_O = 2\text{ A}$		0.15 0.3 0.6	0.25 0.4 0.7	V
$I_{OL}$	Power Outputs Leakage Current			100	$\mu\text{A}$
$t_{reset}$	Reset Pulse Duration ( $C_1 = C_2 = 1\text{ }\mu\text{F}$ )		400		mS
$t_d$	Delay Time before Desaturation Monitoring Unit Becomes Active ( $C_1 = C_2 = 1\text{ }\mu\text{F}$ ) $V_{CC} - V_O = +12\text{ V}$ $V_{CC} - V_O = +24\text{ V}$ $V_{CC} - V_O = +32\text{ V}$		20 10 5		mS
$V_{ref}$	Reference Input Voltage	1.4		55	V
$I_{ref}$	Reference Input Current ( $V_{ref} = 1.4\text{ V}$ ) All Inputs $< V_{ref}$ All Inputs $> V_{ref}$	-1	80 0	150 +1	$\mu\text{A}$
$I_O$	Available Output Current UAF1780DP $R_O = \infty$ $R_O = 2\text{ K}\Omega$ UAF1780SP UAF1781DP $R_O = \infty$ $R_O = 2\text{ K}\Omega$ UAF1782SP	2.5 1 2.5 2 1 2			A
$V_{CC} - V_O$	Maximum Output Voltage Swing		-	50	V
$V_{aux} - V_{CC}$	DC/DC Output Voltage $0.5\text{ A} < I_O < 2\text{ A}$ (each output) $CO = 47\text{ }\mu\text{F}$ , $L = 100\text{ }\mu\text{H}$	-	1.25	-	V

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Fig. 1 - DIP. 16 PACKAGE.

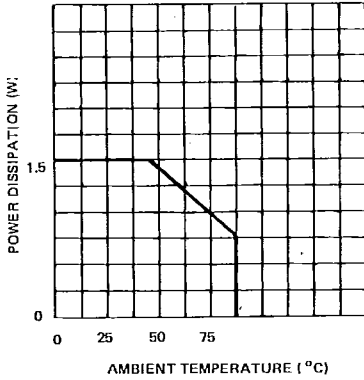


Fig 2 - MULTIWATT PACKAGE.

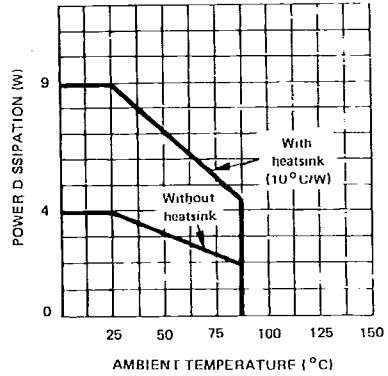


Fig. 3 - AVAILABLE OUTPUT CURRENT VS EXTERNAL RESISTANCE VALUE DIP. 16 PACKAGE.

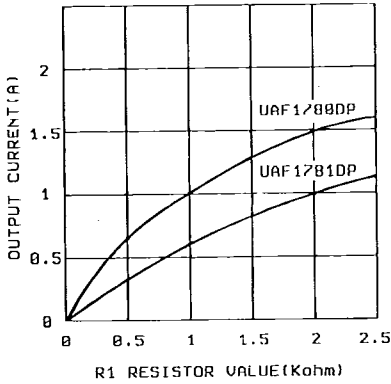


Fig 4 - SATURATION VOLTAGE VS OUTPUT CURRENT.

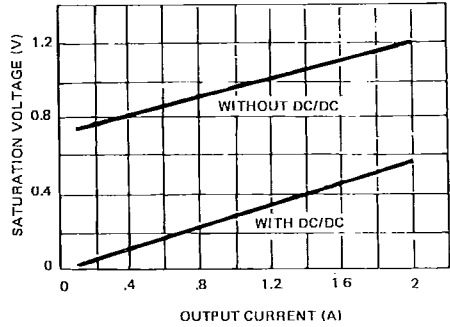


Fig. 5 - RESPONSE TIME.

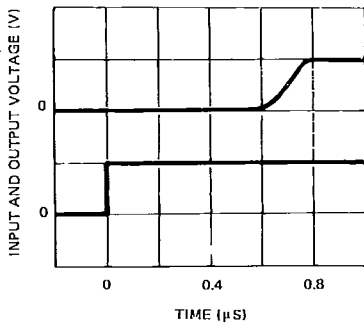


Fig. 6 RESPONSE TIME.

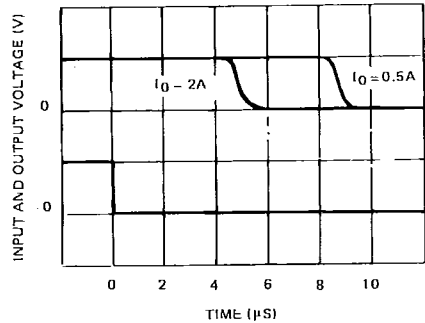
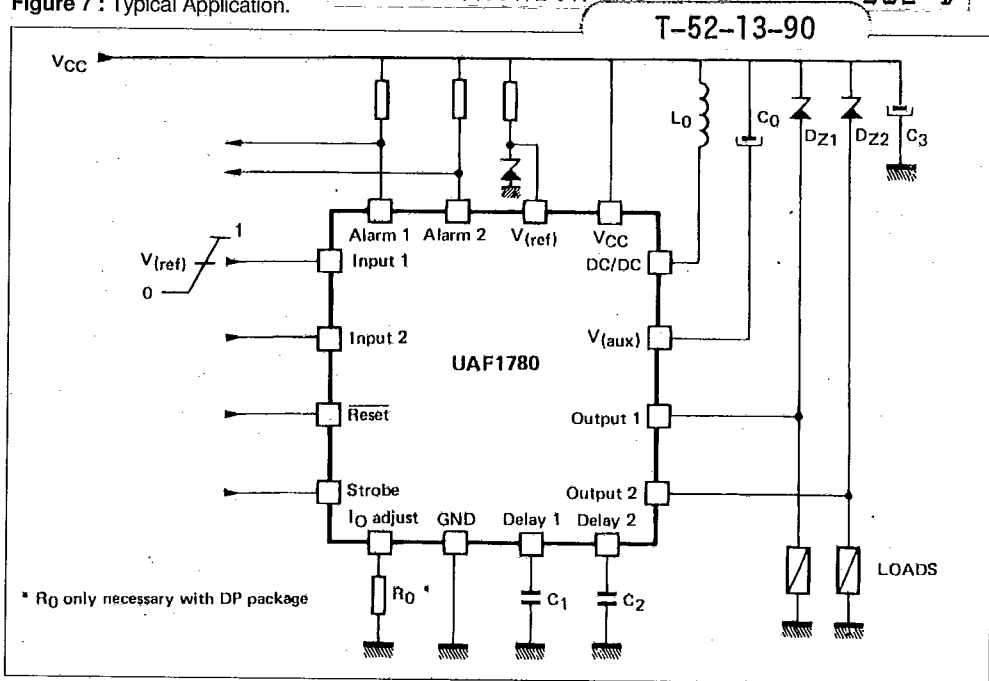


Figure 7 : Typical Application.

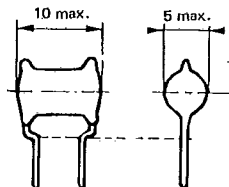


- L<sub>0</sub> and C<sub>0</sub> are the external elements of the dc/dc converter. Typical values and characteristics of these components are as follows :  
 For L<sub>0</sub> : - inductance = 100 μH (tolerance ± 10%)  
 - maximal current ≥ 400 mA

- C<sub>1</sub> and C<sub>2</sub> implement two distinct functions :
  - response time required by the desaturation monitoring unit to become active.
  - time delay imposed on each power output prior to conduction.

$$t_d = \frac{C \cdot 3.5 V}{7 \mu A}$$

**Size Evaluation For dc/dc Inductance**



For C<sub>0</sub> : The value of this capacitor is not critical, a capacitor of C<sub>1</sub> ≥ 47 F, V<sub>n</sub> ≥ 6.3 V will be suitable for the majority of the applications.

With C<sub>2</sub> = C<sub>3</sub> = 1 μF, the outputs are protected against voltage transients of as high as + 32 V and the response time of the desaturation monitoring unit is 400 ms.

- The on-chip dc/dc converter can be disabled by connecting V<sub>(aux)</sub> terminal to V<sub>cc</sub> and leaving "Oscillator" pin floating.

- Dz<sub>1</sub> and Dz<sub>2</sub> Zener Diodes are required in the case of inductive loads. V<sub>z</sub> of these diodes should be < 60 V.

- R<sub>0</sub> determines the value of maximum output current (DIP package). Its value is given in curve 3, where output current values are plotted against the corresponding values of this resistor.