MOS INTEGRATED CIRCUITS

M 087

TONE GENERATOR

- 12 TONE OUTPUTS TTL COMPATIBLE
- HIGH ACCURACY OF OUTPUT FREQUENCIES: ERROR LESS THAN ± 0.069%
- LOW IMPEDANCE PUSH-PULL OUTPUTS
- LOW POWER DISSIPATION: < 400 mW
- INPUT PROTECTED AGAINST STATIC CHARGES
- LOW INTERMODULATION

The M 087 is a monolithic tone generator specifically designed for electronic organs.
Constructed on a single chip using low threshold P-channel silicon gate technology it is supplied in a 16-lead dual in-line plastic package.

ABSOLUTE MAXIMUM RATINGS

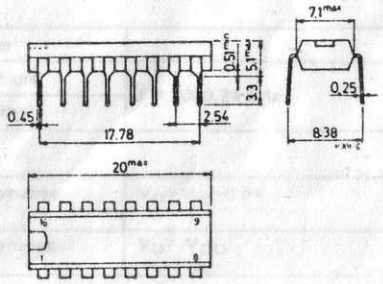
V_{GG} *	Source supply voltage	-20 to 0.3	V
V_i *	Input voltage	-20 to 0.3	V
I_o	Output current (at any pin)	3	mA
T_{stg}	Storage temperature	-65 to 150	°C
T_{op}	Operating temperature	0 to 70	°C

* This voltage is referred to V_{SS} pin voltage

ORDERING NUMBER: M 087 B1 for dual in-line plastic package

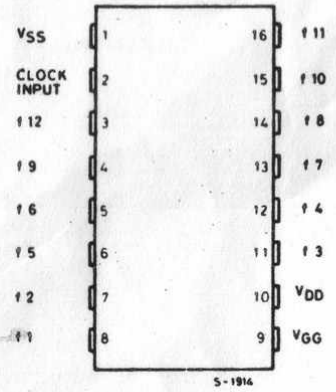
MECHANICAL DATA

Dimensions in mm



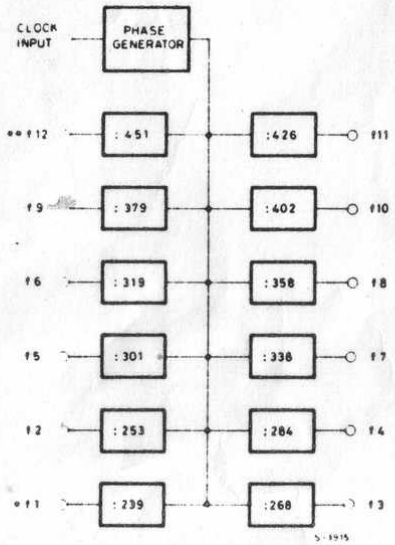
M 087

CONNECTION DIAGRAM



BLOCK DIAGRAM

239 : 128 + 64 + 3



* f1 is the highest output frequency and its musical equivalent is : C
** f12 is the lowest output frequency and its musical equivalent is: C #

STATIC ELECTRICAL CHARACTERISTICS (positive logic, V_{GG}= V_{SS} -16.15 to -18.75V, V_{DD}=V_{SS}-9 to -10V, V_{SS}= 4.75 to 5.25V, T_{amb}= 0 to 70°C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
CLOCK INPUT						
V_{IH}	Clock high voltage		V_{SS}-0.5		V_{SS}	V
V_{IL}	Clock low voltage		V_{SS}-6		V_{SS}-4.5	V
DATA OUTPUTS						
V_{OL}	Output low voltage	I_L= 0 mA	V_{DD}			V
V_{OH}	Output high voltage	I_L= 1 mA	V_{SS}-0.5		V_{SS}	V
I_{LO}	Output leakage current	V_O=V_{SS}-10V T_{amb}= 25°C			10	µA
POWER DISSIPATION						
I_{GG}	Supply current	T_{amb}= 25°C		11	13	mA
I_{DD}	Supply current	T_{amb}= 25°C		13	16	mA

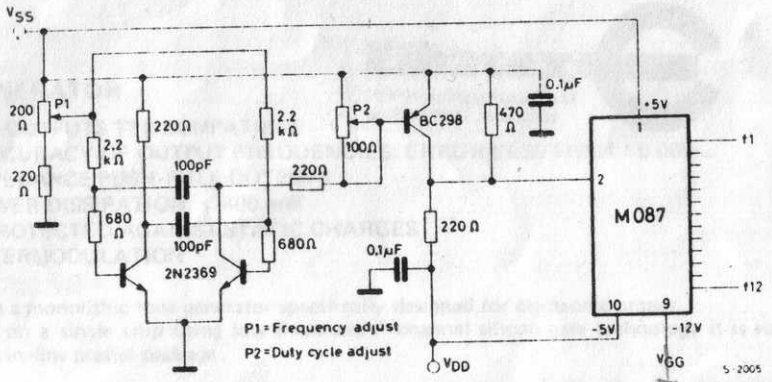
2+1

DYNAMIC ELECTRICAL CHARACTERISTICS (positive logic, V_{GG}=V_{SS}-16.15 to -18.75V, V_{DD}=V_{SS}-9 to -10V, V_{SS}= 4.75 to 5.25V, T_{amb}= 0 to 70°C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
CLOCK INPUT						
f	Clock repetition rate		15	2000.24		kHz
t_{pw}*	Pulse width (clock high)	f = 2000.24 kHz	170			ns
t_{pw}**	Pulse width (clock low)		150			ns
DATA OUTPUTS						
R_{DH}	High level output dynamic impedance	V_O=V_{SS}-0.5V		1		kΩ
R_{DL}	Low level output dynamic impedance	V_O V_{DD}		1		kΩ

* Measured at 90% of the swing.
** Measured at 10% of the swing.

TYPICAL APPLICATION



272Ω
11mA ≈ 0,011A −15V
(1,36kΩ)

SGS-ATES GROUP OF COMPANIES
Italy – France – Germany – Singapore – Sweden – United Kingdom – U.S.A.