



M 087

MOS INTEGRATED CIRCUITS



STONE GENERATOR

- 12 TONE OUTPUTS TTL COMPATIBLE
- HIGH ACCURACY OF OUTPUT FREQUENCIES: ERROR LESS THAN $\pm 0.069\%$
- 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	$^{\circ}$ C
T_{op}	Operating temperature	0 to 70	$^{\circ}$ C

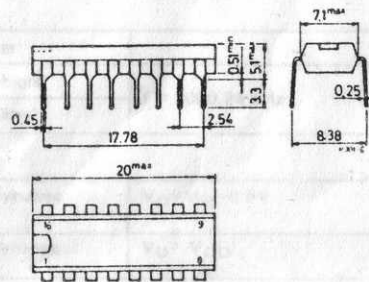
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* This voltage is referred to V_{SS} pin voltage

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

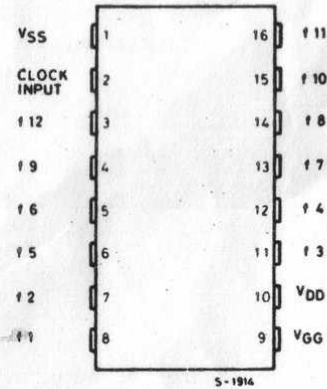
MECHANICAL DATA

Dimensions in mm



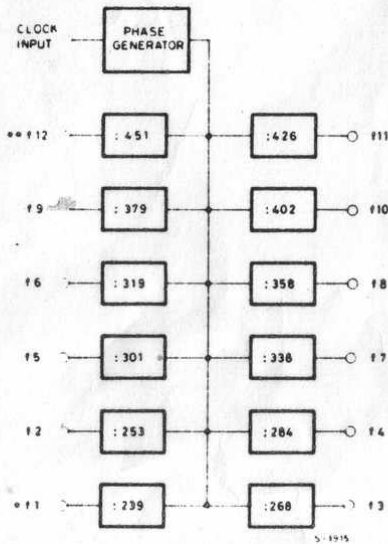
M 087

CONNECTION DIAGRAM



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BLOCK DIAGRAM



$299 = 128 + 64 + 3$

- * 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 $70^{\circ}C$ 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	$V_O = V_{SS} - 10V$ $T_{amb} = 25^{\circ}C$			10	μA
POWER DISSIPATION					
I_{GG} Supply current	$T_{amb} = 25^{\circ}C$		11	13	mA
I_{DD} Supply current	$T_{amb} = 25^{\circ}C$		13	16	mA

2+1

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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 $70^{\circ}C$ 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		k Ω
R_{DL} Low level output dynamic impedance	$V_O = V_{DD}$		1		k Ω

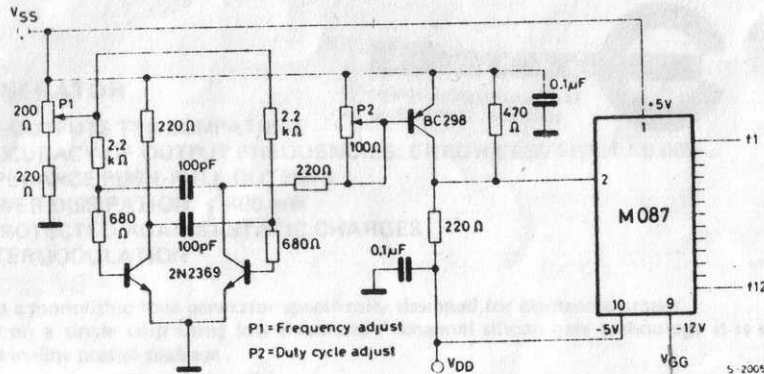
* Measured at 90% of the swing.

** Measured at 10% of the swing.

M087



TYPICAL APPLICATION



ABSOLUTE MAXIMUM RATINGS

V_{DD}	Source supply voltage
V_I	Input voltage
I_O	Output current (at any pin)
T_{stg}	Storage temperature
T_{op}	Operating temperature

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

Handwritten notes:
 272Ω
 $I_{mA} \approx 0,011 A$
 $-15V$
 $(1,36 k\Omega)$

Handwritten calculation:
 $R = \frac{V}{I} = \frac{15V}{0,011A} = 1363,6 \Omega$
 $\approx 1,36 k\Omega$

ORDERING NUMBER: M087 01 for dual in-line plastic package

MECHANICAL DATA

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