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EPSON

CRYSTAL OSCILLATOR
SG-8000 Series

1997

SEIKO EPSON CORP.

SELKS019

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Short Lead Time Crystal Oscillator
EPSON's solution is SG-8000 to just in time (JIT)

Lead Time will be 1/3 compare to the previous, and 2 weeks lead times (ex. J)

Why? ..... What we have to do after receiving P/O is only to write the data to generic oscillator, it needs very short time. Our PLL & P•ROM technology makes it possible.

Where? ..... All our sells offices can program to meet customer's request for the immediate samples.

Who? ..... Professional operator is assigned for this job.

What? ..... The data required from customers such as frequency, output level, and operating voltage.

When? ..... Immediate response after receiving a inquiry.

How? ..... Specific P•ROM writer and generic oscillators are provided at sales office and factory in advance.

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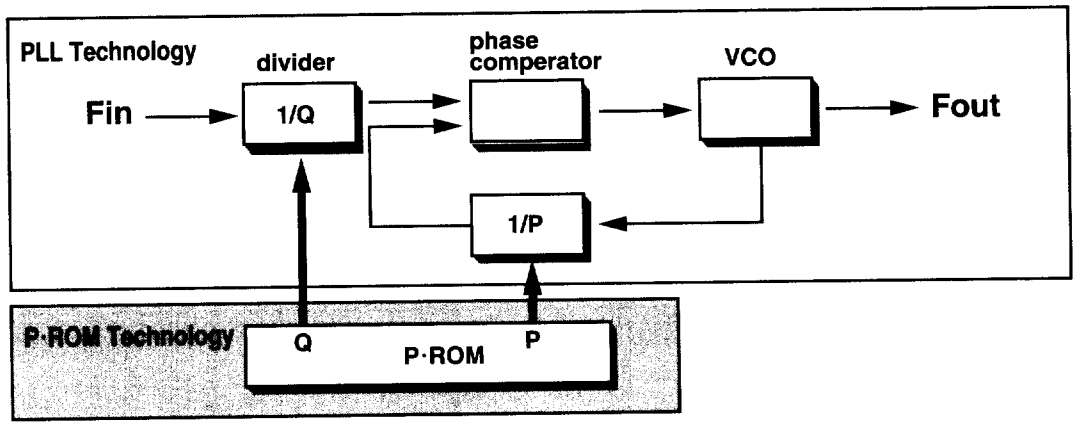
I SG-8000 is a most latest programmable oscillator.

1. Can program the frequency



Fin/Q=Fout/P
i,e,
Fout=P/Q×Fin

← If variable P or Q value are programmed in to the P·ROM, variable Fout can be generated.

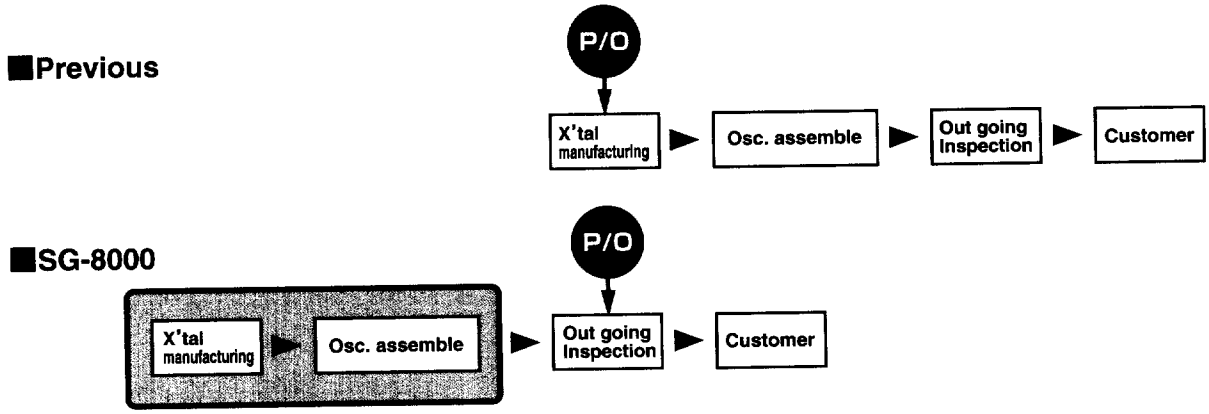
2. Can program the output level (i, e, C-MOS level or TTL level)

3. Can program the operating voltage (i, e, 5 volt or 3.3 volt)

●Valuable packages are available (JA or JC is available now, Dip type coming soon)

II EPSON can deliver SG-8000 when you need, what frequency you need with short lead time.

Flow chart from the receiving P/O to export.



III SG-8000 consist of fundamental X'tal and custom IC including a PLL and P·ROM circuit.

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Programmable Clock Oscillator

SG - 8001JA (PH, PT, PC)

- Using PLL technology and P·ROM programmability for quick-turn custom version.
- Reflowable and high density mounting type SMD package compatible with SG-615.
- Operable 3.3V or 5.0V and out put frequencies from 2.5 MHz to 100 MHz at 5V (up to 80 MHz at 3.3V).
- Output enable function allow more low current consumption.

Specifications

1. Absolute Maximum Ratings

Item	Symbol	PH type	PT type	PC type	Remarks
Storage Temperature	TSTG	- 55 to 125℃			
Maximum supply voltage	VDD	- 0.5 to 7.0V			
Maximum input voltage	VIN	- 0.5 to VDD+0.5V			
Soldering condition	TSOL	Twice at under 260℃ within 10sec. or under 230℃ within 3min.			

2. Operating Conditions

Item	Symbol	PH type	PT type	PC type	Remarks
Operating Temperature	TOPR	- 10 to 70℃			
Operating voltage	VDD	4.5 to 5.5V		3.0 to 3.6V	
Input voltage	VIN	GND to VDD			
Output load condition	CL	30 pF	- - -	- - -	2.5 to 40MHz
		15 pF	- - -	- - -	2.5 to 100MHz
		- - -	2TTL+15pF	- - -	2.5 to 100MHz
		- - -	- - -	15pF	2.5 to 80MHz

3. Frequency Characteristics

Item	Symbol	PH type	PT type	PC type	Remarks
Output frequency range*	fo	2.5 to 100MHz		2.5 to 80MHz	
Frequency stability	f / fo	+/- 100 ppm			-10 to 70℃
Aging	fa	+/- 5ppm max.			

*Note :
Please contact to EPSON about Standard frequency.

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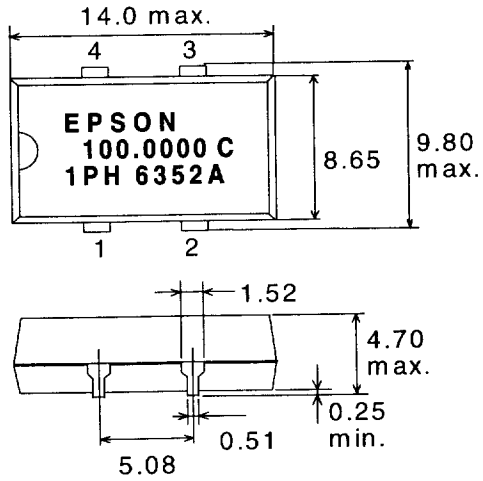
4. Characteristics

Item		Symbol	PH type	PT type	PC type	Remarks
Current consumption		IOP	45 mA max.		23 mA max.	
Disable current		IOE	30 mA max.		16 mA max.	
OE input voltage		VIH	2.0 V min.		70%VDD	
		VIL	0.8 V max.		20%VDD	
OE input current		IIH	2.0 µA max.		2.0 µA max.	OE= VDD
		IIL	16.0 µA max.		7.0 µA max.	OE=GND
Duty		TW/T	40 to 60% - - -	- - - 45 to 55% 40 to 60%	- - - - - - - - - 40 to 60% 35 to 55%	50%VDD 1.4V, 2TTL (up to 80M) 1.4V, 2TTL (80 to 100M) 50%VDD (up to 66.67M) 50%VDD (66.67 to 80M)
Output voltage	C-MOS	VOH	VDD-0.4	- - -	VDD-0.4	
		VOL	0.4V	- - -	0.4V	
	TTL	VOH	- - -	VDD-0.4	- - -	
		VOL	- - -	0.4V	- - -	
Output rise time	C-MOS	tr	3.5 nS 7.0 nS	- - - - - -	3.5 nS - - -	20% to 80%VDD CL=15pF 20% to 80%VDD CL=30pF
	TTL		- - - - - -	2.5 nS 5.0 nS	- - - - - -	0.4V to 2.4V 2TTL+15pF 0.4V to 2.4V 30pF
Output fall time	C-MOS	tf	2.5 nS 5.0 nS	- - - - - -	2.5 nS - - -	20% to 80%VDD CL=15pF 20% to 80%VDD CL=30pF
	TTL		- - - - - -	2.0 nS 4.0 nS	- - - - - -	0.4V to 2.4V 2TTL+15pF 0.4V to 2.4V 30pF
Oscillation start up time		tOSC	10 mSec. max.			

**Note :
Output wave form is not compatible with C-MOS level and TTL level.
Programmable wave form only for C-MOS level or TTL level.

5. External Dimensions (Unit : mm)



No.	Pin terminal
1	OE
2	GND
3	OUT
4	VDD

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Programmable Clock Oscillator

SG - 8001JC (PH, PT, PC)

- Using PLL technology and P-ROM programmability for quick-turn custom version.
- Reflowable and high density mounting type SMD package compatible with SG-636.
- Operable 3.3V or 5.0V and out put frequencies from 2.5 MHz to 80 MHz.
- Output enable function allow more low current consumption.

Specifications

1. Absolute Maximum Ratings

Item	Symbol	PH type	PT type	PC type	Remarks
Storage Temperature	TSTG	- 55 to 100℃			
Maximum supply voltage	VDD	- 0.5 to 7.0V			
Maximum input voltage	VIN	- 0.5 to VDD+0.5V			
Soldering condition	TSOL	Twice at under 260℃ within 10sec. or under 230℃ within 3min.			

2. Operating Conditions

Item	Symbol	PH type	PT type	PC type	Remarks
Operating Temperature	TOPR	- 10 to 70℃			
Operating voltage	VDD	4.5 to 5.5V		3.0 to 3.6V	
Input voltage	VIN	GND to VDD			
Output load condition	CL	30 pF	- - -	- - -	2.5 to 40MHz
		15 pF	- - -	- - -	2.5 to 80MHz
		- - -	2TTL+15pF	- - -	2.5 to 80MHz
		- - -	- - -	15pF	2.5 to 80MHz

3. Frequency Characteristics

Item	Symbol	PH type	PT type	PC type	Remarks
Output frequency range*	F0	2.5 to 80MHz			
Frequency stability	F/F0	+/- 100 ppm			-10 to 70℃
Aging	fa	+/- 5ppm max.			

*Note :
Please contact to EPSON about Standard Frequency.

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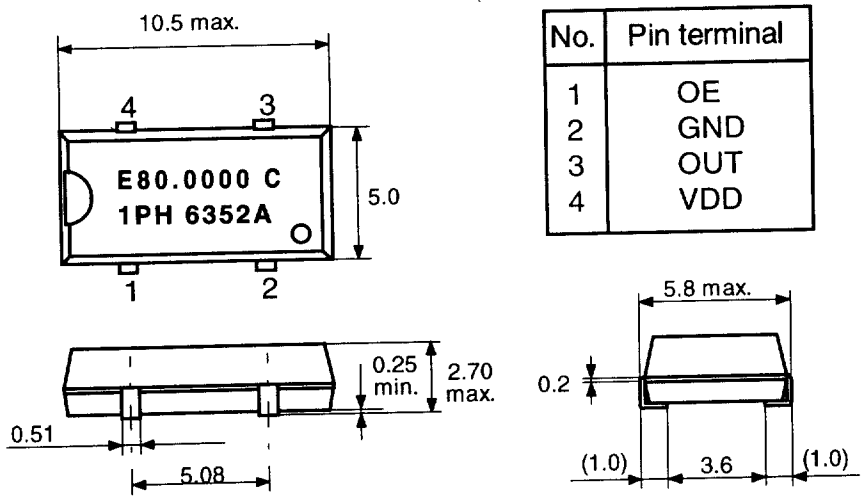
4. Characteristics

Item		Symbol	PH type	PT type	PC type	Remarks
Current consumption		IOP	40 mA max.		23 mA max.	
Disable current		IOE	27 mA max.		16 mA max.	
OE input voltage		VIH	2.0 V min.		70%VDD	
		VIL	0.8 V max.		20%VDD	
OE input current		IIH	2.0 µA max.		2.0 µA max.	OE= VDD
		IIL	16.0 µA max.		7.0 µA max.	OE=GND
Duty		TW/T	40 to 60% - - - - - - - - -	- - - 45 to 55% - - - - - -	- - - - - - 40 to 60% 35 to 55%	50%VDD 1.4V, 2TTL+15pF 50%VDD (up to 66.67M) 50%VDD (66.67 to 80M)
Output voltage	C-MOS	VOH	VDD-0.4	- - -	VDD-0.4	
		VOL	0.4V	- - -	0.4V	
	TTL	VOH	- - -	VDD-0.4	- - -	
		VOL	- - -	0.4V	- - -	
Output rise time	C-MOS	tr	3.5 nS 7.0 nS	- - - - - -	3.5 nS - - -	20% to 80%VDD CL=15pF 20% to 80%VDD CL=30pF
	TTL		- - - - - -	2.5 nS 5.0 nS	- - - - - -	0.4V to 2.4V 2TTL+15pF 0.4V to 2.4V 30pF
Output fall time	C-MOS	tf	2.5 nS 5.0 nS	- - - - - -	2.5 nS - - -	20% to 80%VDD CL=15pF 20% to 80%VDD CL=30pF
	TTL		- - - - - -	2.0 nS 4.0 nS	- - - - - -	0.4V to 2.4V 2TTL+15pF 0.4V to 2.4V 30pF
Oscillation start up time		tOSC	10 mSec. max.			

**Note :
Output wave form is not compatible with C-MOS level and TTL level.
Programmable wave form only for C-MOS level or TTL level.

5. External Dimensions (Unit : mm)



No.	Pin terminal
1	OE
2	GND
3	OUT
4	VDD

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SG-8001JA vs SG-615

	SG-8001JA PH	SG-8001JA PT	SG-8001JA PC	SG-615P	SG-615PTJ	SG-615PH	SG-615PCV
Output Frequency Range	2.5 ~ 100.0MHz		2.5 ~ 80.0MHz	1.025 ~ 26.0MHz	26.0 ~ 66.6667MHz		40.0 ~ 125.0MHz
Maximum Supply Voltage	- 0.5 ~ + 7.0V			- 0.3 ~ + 7.0V			- 0.5 ~ + 7.0V
Storage Temperature	- 55 ~ + 125℃						
Soldering Temperature	260℃ x 10sec x 2 times or 230℃ x within 3 minute						
Operating Voltage	4.5 ~ 5.5 V		3.0 ~ 3.6V	4.5 ~ 5.5 V			
Operating Temperature	-10 ~ +70℃						
Frequency Stability	C: ± 100 ppm			B: ± 50 ppm C: ± 100 ppm			C: ± 100 ppm
Current Consumption	45 mA		23 mA	23 mA	35 mA		50 mA
Output Disable Current	30 mA		16 mA	12 mA	28 mA	20 mA	27 mA
DUTY	40% ~ 60%	45% ~ 55% (up t0 80M) 40% ~ 60% (80 to 100M)	40% ~ 60% (up to 66.7M) 35% ~ 55% (66.7 to 80M)	40% ~ 60% (C-MOS) 45% ~ 55% (TTL)	45% ~ 55%	40% ~ 60%	35% ~ 60%
Output Voltage(Voh)	VDD-0.4 V			VDD-0.4 V	2.4 V	VDD-0.4 V	VDD-0.5 V
Output Voltage(Vol)	0.4 V						
Output Load Condition	15 pF	2 TTL	15 pF	50 pF 10TTL	5 TTL	50 pF	25 pF
Input Voltage (High)	2.0 V		70%VDD	2.0 V	3.5 V	2.0 V	70%VDD
Input Voltage (Low)	0.8 V		20%VDD	0.8 V	1.5 V	0.8 V	20%VDD
Output Rise Time	3.5 nSec	2.5 nSec	3.5 nSec	8.0 nSec	5.0 nSec	7.0 nSec	4.0 nSec
Output Fall Time	2.5 nSec	2.0 nSec	2.5 nSec	8.0 nSec	5.0 nSec	7.0 nSec	4.0 nSec
Oscillation Start Time	10 mSec			4 mSec	10 mSec		
Aging	± 5 ppm						

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SG-8001JC vs SG-636

	SG-8001JC PH	SG-8001JC PT	SG-8001JC PC	SG-636PTF	SG-636PTJ	SG-636PH	SG-636PCV
Output Frequency Range	2.5 ~ 80.0MHz			2.2167 ~ 41.0MHz	41.0 ~ 70.0MHz		40.0 ~ 80.0MHz
Maximum Supply Voltage	- 0.5 ~ + 7.0V			- 0.3 ~ + 7.0V	- 0.5 ~ + 7.0V	- 0.3 ~ + 7.0V	- 0.5 ~ + 7.0V
Storage Temperature	- 55 ~ + 100℃						
Soldering Temperature	260℃ x 10sec x 2 times or 230℃ x within 3 minute						
Operating Voltage	4.5 ~ 5.5 V		3.0 ~ 3.6V	4.5 ~ 5.5 V			2.7 ~ 5.5 V
Operating Temperature	-10 ~ +70℃						
Frequency Stability	C: ± 100 ppm						
Current Consumption	40 mA		23 mA	17 mA	35 mA		35 mA
Output Disable Current	27 mA		16 mA	10 mA	28 mA	20 mA	25 mA
DUTY	40% ~ 60%	45% ~ 55%	40% ~ 60% (up to 66.7M) 35% ~ 55% (66.7 to 80M)	40% ~ 60% (C-MOS) 45% ~ 55% (TTL)	45% ~ 55%	40% ~ 60%	40% ~ 60%
Output Voltage(Voh)	VDD-0.4 V			VDD-0.4 V	2.4 V	VDD-0.4 V	VDD-0.5 V
Output Voltage(Vol)	0.4 V						
Output Load Condition	15 pF	2 TTL	15 pF	50 pF 10TTL	5 TTL	15 pF	25 pF
Input Voltage (High)	2.0 V		70%VDD	2.0 V	3.5 V	2.0 V	70%VDD
Input Voltage (Low)	0.8 V		20%VDD	0.8 V	1.5 V	0.8 V	20%VDD
Output Rise Time	3.5 nSec	2.5 nSec	3.5 nSec	7.0 nSec	5.0 nSec	5.0 nSec	4.0 nSec
Output Fall Time	2.5 nSec	2.0 nSec	2.5 nSec	7.0 nSec	5.0 nSec	5.0 nSec	4.0 nSec
Oscillation Start Time	10 mSec			4 mSec	10 mSec		
Aging	± 5 ppm						

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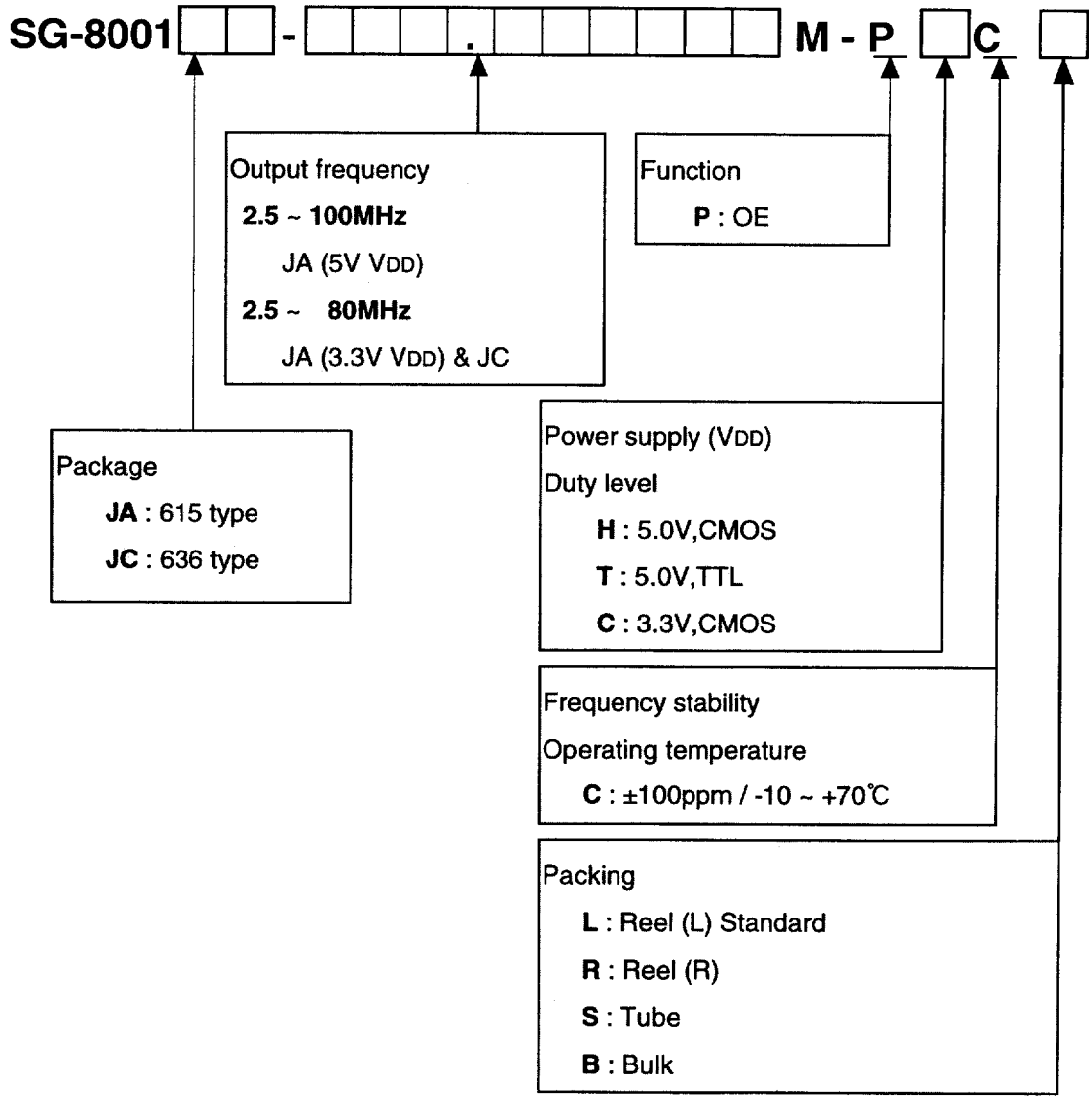

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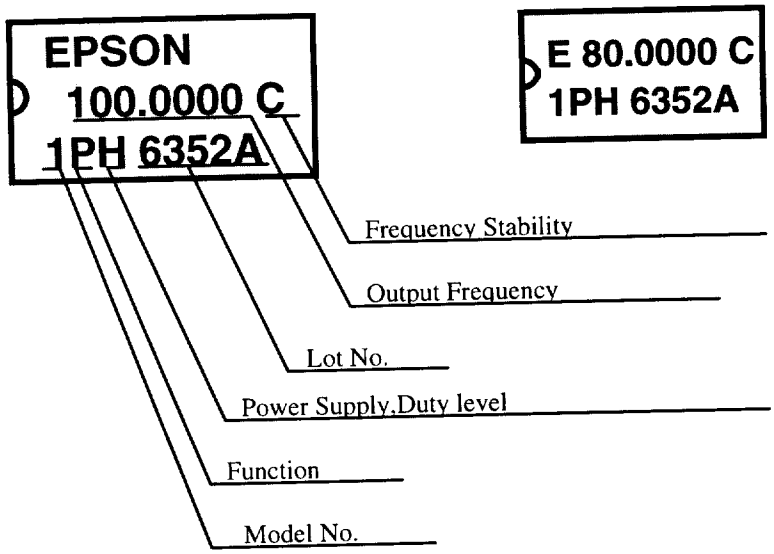
Marking

JA



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EPSON

1997 New Product Catalog

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