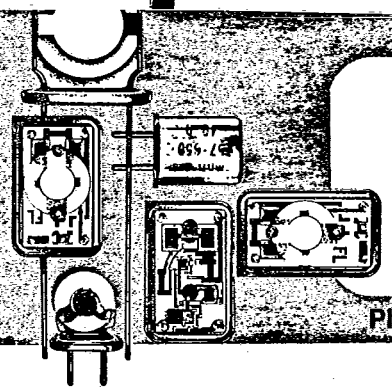
Competitive Excellence in Quality Hybrid Products, Clock Oscillators, and Quartz Crystals.

M-tron

PO Box 630, Yankton, SD 57078

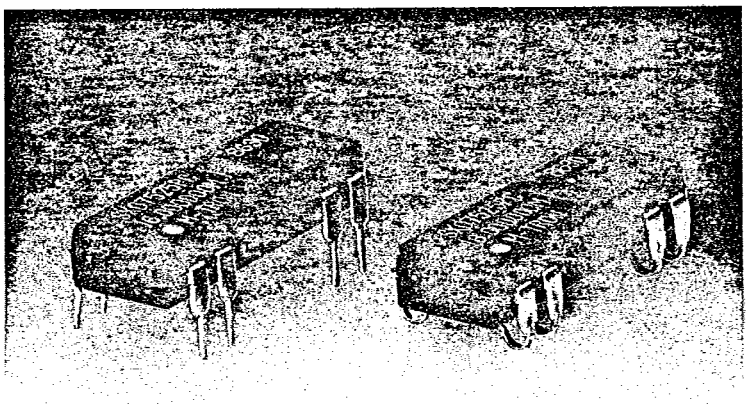


SX07525PC Series
Plastic DIP and Surface Mount
CMOS Crystal Clock Oscillators

Phone (605) 665-9321 TWX 910-668-3603

Engineered For High-Speed Auto-Insertion and Surface Mounting

M-tron SX07525PC crystal clock oscillators combine the intrinsic superiority of advanced strip AT-cut quartz crystal technology, advanced CMOS logic design, and high-temperature epoxy packages for use with high speed auto-insertion equipment and surface mount technologies. Their ruggedness and resistance to corrosives and aromatic hydrocarbons ideally suit them for airborne, marine, automotive, and industrial applications. Hermeticity, required to maintain crystal stability and minimize aging, is achieved by installing finished, hermetically sealed crystals within the package enclosure. The lowest fundamental frequency currently achievable with the new AT strip technology is 4 MHz. However, the SX07525 contains an integral five-stage binary divider; low frequency outputs down to 62.5 KHz is thus available as a wire bonding option by binary division.



Performance: If your requirements do not fall within printed specifications, contact the M-tron representative in your area or call M-tron Applications Engineering at (800) 762-8800.

Specifying and Ordering Information

Product Designation: SX07525PC crystals are available in four versions:

Designation	Configuration
SX07525PC-D	14-pin DIP
SX07525PC-J	Surface Mount J-Lead
SX07525PC-G	Surface Mount Gull Wing
SX07525PC-B	Surface Mount Butt Lead

Frequencies: Available fundamental frequencies are shown below. Additional fundamental frequencies are also available with longer leadtime. Output frequencies which are binary divisions down to fundamental x 2^{-5} may also be specified. To facilitate the fastest possible service, all orders and requests for fundamental frequencies not mentioned should be specific for each of the parameters listed on the next page.

4.000000	4.032000	4.096000	4.189520	4.194304
4.380000	4.400000	4.659200	4.915200	5.000000
5.529600	6.000000	6.144000	6.750000	7.372800
8.000000	10.000000	10.050000	10.215000	10.219406
10.227273	11.059200	12.000000	14.318180	14.745600
15.000000	16.000000	16.202000	17.734475	20.000000

Quality Assurance Specification: Manufacturing process is subject to M-tron Statistical Process Control **(SPC)**, details of which are available on request. Final audit inspections include frequency, resistance, insulation resistance, package dimensions, marking information, and fine leak tests per MIL-STD-105 General Inspection Level II, **0.4 AQL** Single Sample Plan unless otherwise specified by customer.

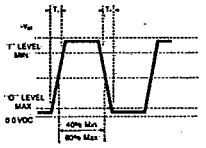
Quantity: Once a product is in full production, M-tron maintains high-volume production capacity for handling large annual requirements. Just-In-Time **(JIT)** delivery may be arranged. Initial deliveries can normally begin 6-8 weeks ARO. M-tron also maintains inventories of popular frequencies at its facilities in Yankton, SD. M-tron also regularly supplies evaluation and qualification samples for new applications either from stock or within 4 weeks of request.

Maximum Guaranteed Ratings*

Operating temperature range ..... -10° C to +70° C
Storage temperature range ..... -30° C to +100° C
Lead temperature soldering, 5 sec. ..+232° C to ±6° C
Positive voltage, any pin to ground ..... +8V
Negative voltage, any pin to ground ..... -0.3V

*Stresses above those listed may permanently damage device. This is a stress rating only and does not imply functional operation of these devices at these or any other condition above those indicated in the operational sections of this specification. These devices are static sensitive and should be packaged and handled accordingly.

Wave Shape

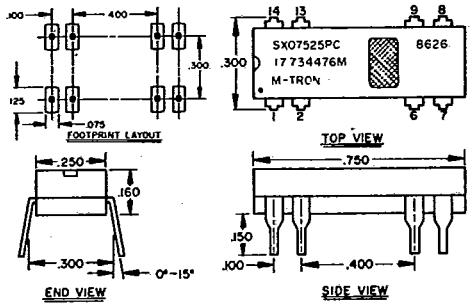


Electrical Specifications

Operating Conditions 0° to 70° C

Parameters	Values	Conditions
Frequency	as listed	exclusive of binary division
Frequency Stability	±100 ppm	over operating temperature
Aging	±5 ppm per year	
Output Symmetry	60/40 to 40/60% ½V_{dd}	
Output Tr and Tf		
62.5 - 999 KHz	45 ns max.	
1.0 - 3.99 MHz	40 ns max.	
4.0 - 20.0 MHz	25 ns max.	
Logic 0 Level	0.5V max.	V_{cc} = 5.0 VDC
Logic 1 Level	4.5V min.	V_{cc} = 5.0 VDC
Logic 0 Sink Current	0.4 ma max.	V_{cc} = 5.0 VDC
Logic 1 Source Current	-0.25 ma max.	V_{cc} = 5.0 VDC
Supply Voltage	4.5 - 5.5 VDC	
Supply Current	6.0 ma max.	Load = 1 LSTTL or 15 pf
Output Load	1 LSTTL or 15 pf	
Operating Temperature	0° to +70° C	
Storage Temperature	-30° to +80° C	

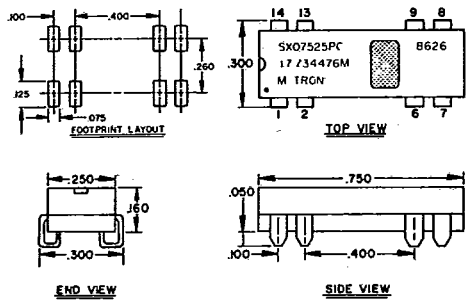
SX07525PC-DIP



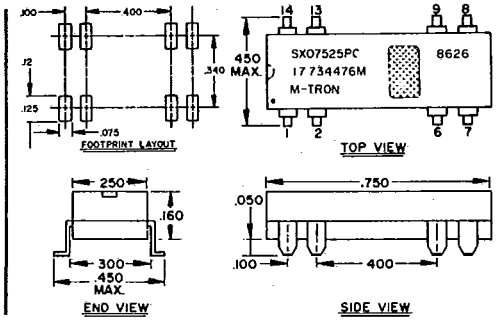
Dual In-Line Package

PINS 1, 2, 6, 8, 9, - NC
PIN 7 - GROUND (Vss)
PIN 8 - OUTPUT
PINS 13, 8, 14 - (Vdd)

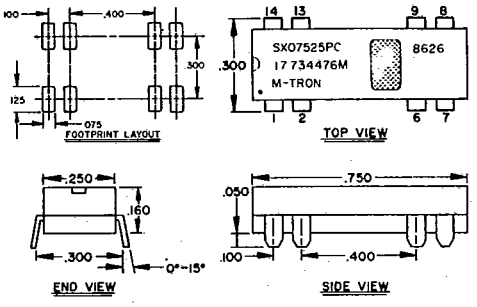
SX07525PC-J-Lead



SX07525PC-Gull Wing



SX07525PC-Butt Lead



Solderability Specifications

Methods: Manual soldering, wave soldering, conductive belt reflow, vapor phase reflow, focused infrared
Solder: Must be selected for specific soldering technique to be used
Flux: Should be selected for specific soldering technique to be used; RMA type recommended
Max Temp.: 230° ± 5° C, dipped 5 seconds; 350° ±5° C dipped, 3 seconds
Preheat: For mass soldering, preheat at 120° C for 10-20 sec. recommended
Inspection: Joints free of bridging, webbing, cracks, solder balls, slivers or whiskers and should have at least 95% continuous surface. The other 5% may exhibit only pinholes, voids, and rough spots which are not concentrated in one area.

Environmental Specifications

Thermal Shock: ±5 ppm max., 0° to 120° C, 3 cycles, 2 hours max. each cycle, 25° C ±2° C ref.
Shock: 100Gs, 6 ms, ½ sine wave, 3 shocks per plane
Vibration: 10-55 Hz .060" D.A., 55-2000 Hz, 10Gs. Duration, 12 hours.

Mechanical Specifications

Hermetic Seal: Mass spectrometer leak rate less than 1×10^{-8} atmos. cc/sec.
Marking Ink: Epoxy, heat cured
Solvent Resistance: Alcohol, gasoline (fair), salt spray, Freon TMC. No marking, seal destruction 1 min. *at* 25° C ±5° C in solvent.

Distributed by:

Competitive Excellence in Quality Hybrid Products, Clock Oscillators, and Quartz Crystals.

M-TRON INDUSTRIES, INC., P.O. Box 630, Yankton, SD 57078 • Phone (605) 665-9321 • FAX (605) 665-9324 • TWX 910-668-3603