```
function K = MTGP_covPeriodiciso(hyp, x, z, i)
% Stationary covariance function for a smooth periodic function, with period p
%
% Based on the covPeriodiciso.m function of the GPML Toolbox -
%   with the following changes:
%       - only elements of x(:,1:end-1)/z(:,1:end-1) will be analyzed,
%       - x(:,end)/z(:,end) will be ignored, as it contains only the label information
%       - independent of the label all x values will have the same hyp
%
% k(x,y) = sf2 * exp( -2*sin^2( pi*||x-y||/p )/ell^2 )
%
% where the hyperparameters are:
%
% hyp = [ log(ell)
%         log(p)
%         log(sqrt(sf2)) ]
%
% by Robert Duerichen
% 04/02/2014


if nargin<2, K = '3'; return; end                  % report number of parameters
if nargin<3, z = []; end                                    % make sure, z exists
xeqz = numel(z)==0; dg = strcmp(z,'diag') && numel(z)>0;        % determine mode

n = size(x,1);
ell = exp(hyp(1));
p   = exp(hyp(2));
sf2 = exp(2*hyp(3));

% precompute distances
if dg                                                               % vector kxx
  K = zeros(size(x(:,1:end-1),1),1);
else
  if xeqz                                                % symmetric matrix Kxx
    K = sqrt(sq_dist(x(:,1:end-1)'));
  else                                                  % cross covariances Kxz
    K = sqrt(sq_dist(x(:,1:end-1)',z(:,1:end-1)'));
  end
end

K = pi*K/p;
if nargin<4                                                       % covariances
    K = sin(K)/ell; K = K.*K; K =   sf2*exp(-2*K);
else                                                              % derivatives
  if i==1
    K = sin(K)/ell; K = K.*K; K = 4*sf2*exp(-2*K).*K;
  elseif i==2
    R = sin(K)/ell; K = 4*sf2/ell*exp(-2*R.*R).*R.*cos(K).*K;
  elseif i==3
    K = sin(K)/ell; K = K.*K; K = 2*sf2*exp(-2*K);
  else
    error('Unknown hyperparameter')
  end
end
```