

---

# **eSA/eSB/eSC Oscillator Auto-Detect Application Notes**

**ELAN MICROELECTRONICS CORP.**

Document Number : **AP-eSB-0033E-V1**

Date of Issue : **November 2005**

Issue Version : **1.0**

Supported Chips : **eSA015 ~ eSA120  
eSB015 ~ eSB320  
eSC015 ~ eSC320**


Applicable Software : **eSA/eSB/eSC IDE,  
V 3.41 and later**

---



## Trademark Acknowledgments:

IBM is a registered trademark and PS/2 is a trademark of IBM.  
Windows is a trademark of Microsoft Corporation.

ELAN and ELAN logo  are trademarks of ELAN Microelectronics Corporation.

Copyright © 2005 by ELAN Microelectronics Corporation

All Rights Reserved

Printed in Taiwan

The contents of this document are subject to change without further notice. ELAN Microelectronics assumes no responsibility concerning the accuracy, adequacy, or completeness of this document. ELAN Microelectronics makes no commitment to update, or to keep current the information and material contained in this document. Such information and material may change to conform to actual needs of the concerned product.

In no event shall ELAN Microelectronics be made responsible for any claims attributed to errors, omissions, or other inaccuracies in the information or material contained in this document. ELAN Microelectronics shall not be liable for direct, indirect, special incidental, or consequential damages arising from the use of such information or material.

The software (if any) described in this document is furnished under a license or nondisclosure agreement, and may be used or copied only in accordance with the terms of such agreement.

ELAN Microelectronics products are not intended for use in life support appliances, devices, or systems. Use of ELAN Microelectronics product in such applications is not supported and is prohibited.

NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF ELAN MICROELECTRONICS.



## ELAN MICROELECTRONICS CORPORATION

### Headquarters:

No. 12, Innovation Road 1  
Hsinchu Science Park  
Hsinchu, Taiwan 30077  
Tel: +886 3 563-9977  
Fax: +886 3 563-9966  
<http://www.emc.com.tw>

### Hong Kong:

**Elan (HK) Microelectronics Corporation, Ltd.**  
Rm. 1005B, 10/F Empire Centre  
68 Mody Road, Tsimshatsui  
Kowloon, HONG KONG  
Tel: +852 2723-3376  
Fax: +852 2723-7780  
[elanhk@emc.com.hk](mailto:elanhk@emc.com.hk)

### USA:

**Elan Information Technology Group (USA)**  
1821 Saratoga Ave., Suite 250  
Saratoga, CA 95070  
USA  
Tel: +1 408 366-8225  
Fax: +1 408 366-8220

### Europe:

#### Elan Microelectronics Corp. (Europe)

Siewerdtstrasse 105  
8050 Zurich, SWITZERLAND  
Tel: +41 43 299-4060  
Fax: +41 43 299-4079  
<http://www.elan-europe.com>

### Shenzhen:

#### Elan Microelectronics Shenzhen, Ltd.

SSMEC Bldg., 3F, Gaoxin S. Ave.  
Shenzhen Hi-Tech Industrial Park  
Shenzhen, Guangdong, CHINA  
Tel: +86 755 2601-0565  
Fax: +86 755 2601-0500

### Shanghai:

#### Elan Microelectronics Shanghai, Ltd.

23/Bldg. #115 Lane 572, Bibo Road  
Zhangjiang Hi-Tech Park  
Shanghai, CHINA  
Tel: +86 21 5080-3866  
Fax: +86 21 5080-4600

# 1 Oscillator Auto-Detect Function

The eSA, eSB, & eSC series bodies support Oscillator Auto-Detect function in Normal mode frequency under IDE Version 3.41 and later. The function auto detects whether the chip's main frequency uses Crystal type or R type oscillator at chip power-on.

When changing oscillator type from Crystal to R oscillator or vice versa, the chip power must be OFF. At power-on after oscillator change, the chip will auto-detect and operates according to the newly installed oscillator type. There is no need to reconstruct the mask nor wait for days to get new chips.

**NOTE**  
*Under Green mode operation, only R type oscillator is applicable.*

## 1.1 Using Crystal (or Resonator) Type Oscillator

If a crystal or resonator is connected between OSCI & OSCO pin (see sample circuit below), the chip will automatically use Crystal type oscillator and achieve a more accurate frequency.

Example:

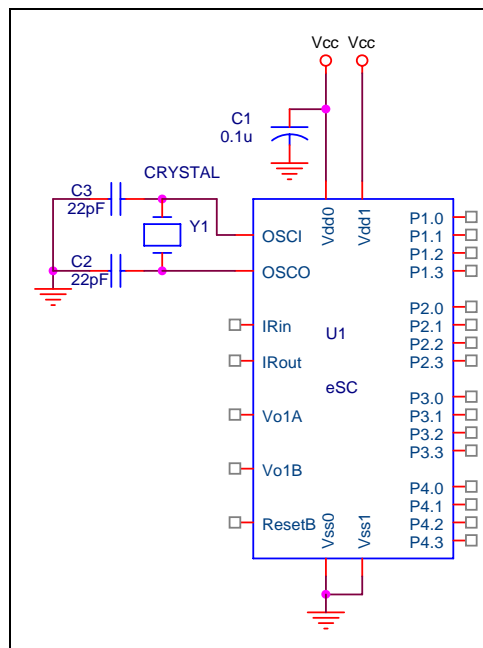


Figure 1-1 Sample Circuit of Using Crystal (or Resonator) Type Oscillator

## 1.2 Using Crystal R Type Oscillator

If a resistor is connected between the OSCI pin and Vcc, the chip will automatically detect and use R type oscillator and attain a cost down general frequency oscillation.

Example:

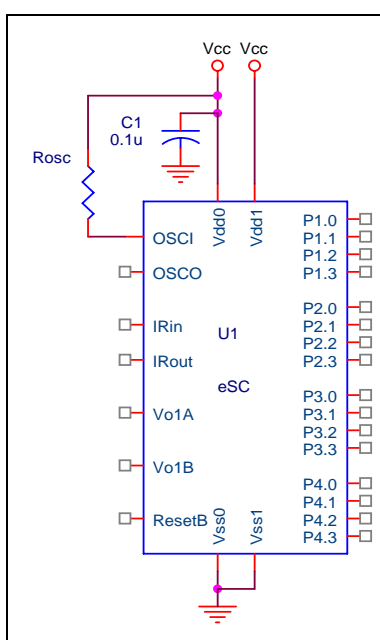


Figure 1-2 Sample Circuit of Using R Type Oscillator

## 2 Oscillator Application with Kernel Chip & eSP Series

The Oscillator Auto-Detect function does NOT support Kernel chip and eSP series IC's, which includes ICEeSA, ICEeSA-U, ICEeSC-U, EMMeSA, EMMeSC, EMFeSA, EMFeSC modules, eSAZ000, eSCZ000, eSP020, eSP040, and eSP080 chips. With these chips, you must use the correct oscillator type as defined and set in your project under IDE.

### NOTE

*With eSA, eSB and eSC series chip that support Oscillator Auto-Detect function, you must also select the desired oscillator type in your IDE project. Otherwise the Auto-Detect feature will not function.*