Converting STK15C68 to STK12C68

Introduction

This document provides guidance on converting a design that is currently using the STK15C68 to the Simtek recommended part STK12C68.

Feature set and limitations of theSTK15C68

Function Category	STK15C68	STK12C68
Autostore	Yes, by slow VCC fall rate	Wire for immunity from ramp rate by using a 68uf capacitor
Software store	Yes	Yes
Software recall	Yes	Yes

Package Comparison

The 600 mil dip package is available in the STK12C68 and the STK15C68.
Other packages that take less PCB area also exist such as 300 mil CDIP/PDIP and the 350 mil SOIC.

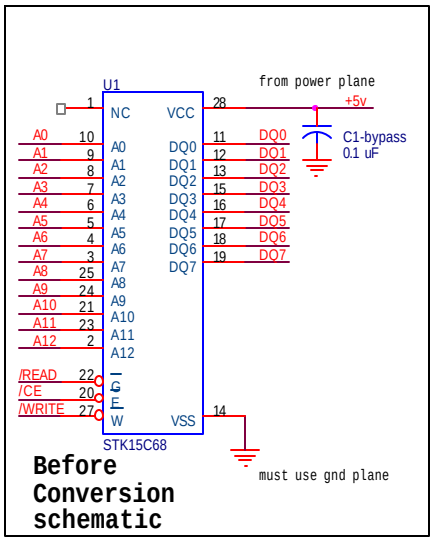
Package	PKG Code	STK15C68	STK12C68	Notes
350 mil SOIC – 28 pin	S	Available	Available	Surface mount – smallest PCB area
600 mil pdip -- 28 pin	W	Available	Available	Through hole
300 mil pdip -- 28 pin	P	Available	Available	Through hole
300 mil cdip -- 28 pin	C	Not available	Available	Through hole

Issues to consider during the conversion

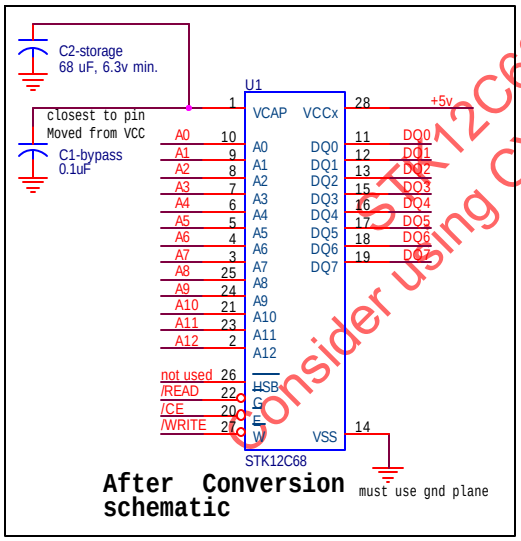
The key difference is that the STK15C68 has been internally configured to autostore function but does not use a 68uf capacitor. This means there is no protection from power that falls too fast. This is no longer a recommended application and is no longer supported by Simtek. The STK12C68 will be wired using the normal power storage capacitor on the VCAP pin. This will then improve the robustness and eliminate a now unsupported operational mode. The converted STK12C68 application will then be fully immune from the minimum ramp rate requirement. This application will process an autostore on power stored on a 68uf capacitor. Also, the new HSB signal is unused. All other pins have the same function.

Schematic changes for conversion:

This is a feature upgrade and conversion of the STK15C68 to the mainstream STK12C68. Applications requireming a minimum ramp rate are no longer supported or recommended. So, this conversion is to the full featured STK12C68 application with autostore being powered from a storage capacitor. This requires the addition of a 68uf capacitor and wired to VCAP pin 1. Also, the bypass capacitor moves to the VCAP pin. The choice of package is open with the “S” package being the most area efficient surface mount choice.



In this conversion, old bypass capacitor C1 is moved from +5v on pin 28 to pin 1. The storage capacitor C2 is added to pin 1 and system power is connected to pin 28. The new signal /HSB is left open and unused.



On the next page, pin by pin comparisons of the two show all pins are the same except for the bypass capacitor moving to pin 1 and connected to system power, +5v.

Corresponding pin Connections

Pin for pin comparison of the two parts is given in the table below:

STK15C68 NAME	STK12C68 NAME	Pin	Comments
VCAP	VCAP	1	Must connect 0.1UF BYPASS and 68uf, 6.3v min.
A12	A12	2	NO CHANGE
A7	A7	3	“
A6	A6	4	“
A5	A5	5	“
A4	A4	6	“
A3	A3	7	“
A2	A2	8	“
A1	A1	9	“
A0	A0	10	“
DQ0	DQ0	11	“
DQ1	DQ1	12	“
DQ2	DQ2	13	“
VSS	VSS	14	“
DQ3	DQ3	15	“
DQ4	DQ4	16	“
DQ5	DQ5	17	“
DQ6	DQ6	18	“
DQ7	DQ7	19	“
E#	E#	20	“
A10	A10	21	“
G#	G#	22	“
A11	A11	23	“
A9	A9	24	“
A8	A8	25	“
NC	HSB	26	LEAVE OPEN UNUSED
W#	W#	27	No change
VCC	VCCX	28	This pin now must continue to be connected to +5v, bypass of 0.1uF is ok but unneeded.