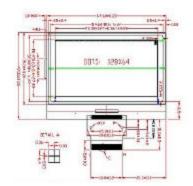# AZ DISPLAYS, INC.

TECHNICAL BRIEF

BY: AZD ENGINEERING

COG and TAB LCD Controllers

Just like other types of graphic displays, COG and TAB LCDs are offered either in a "driver-only" configuration or with a built-in LCD controller (LSI chip). However only COG and TAB LCD controllers offer such unique low power features as an ability to read/write to memory without an external oscillator and a built-in charge pump.

Built-In Charge Pumps And Other Features

Low Voltage LCD controller ICs can be found in many COG and TAB displays. These gold bumped driver IC's (which usually operate at about 3V), are bonded directly to the glass. Internally they contain a unique internal booster circuit that provides enough contrast for the LCD glass. This increased voltage for contrast adjustment comes from a built-in DC/DC converter (charge pump). The levels for an increase in voltage are usually 2, 3, and even 4 times the operational voltage of the IC. Such levels are selected through connection of a series of external capacitors mounted on the customer's board making their entire interface flexible, compact and power saving.
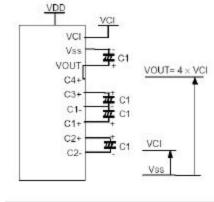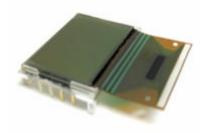

Figure 13. Four Times Boosting Circuit

New Product Release

AGM1064B-MLB-FBW is a cell phone size monochrome display of 100x64 resolution with Blue LED Backlight (blue background / white characters). As described above, this model contains a controller (large scale integration chip) with built-in charge pump from a Novatek p/n NT7532H, which makes this LCD operate at 3V and suitable for many hand-held applications

www.azdisplays.com