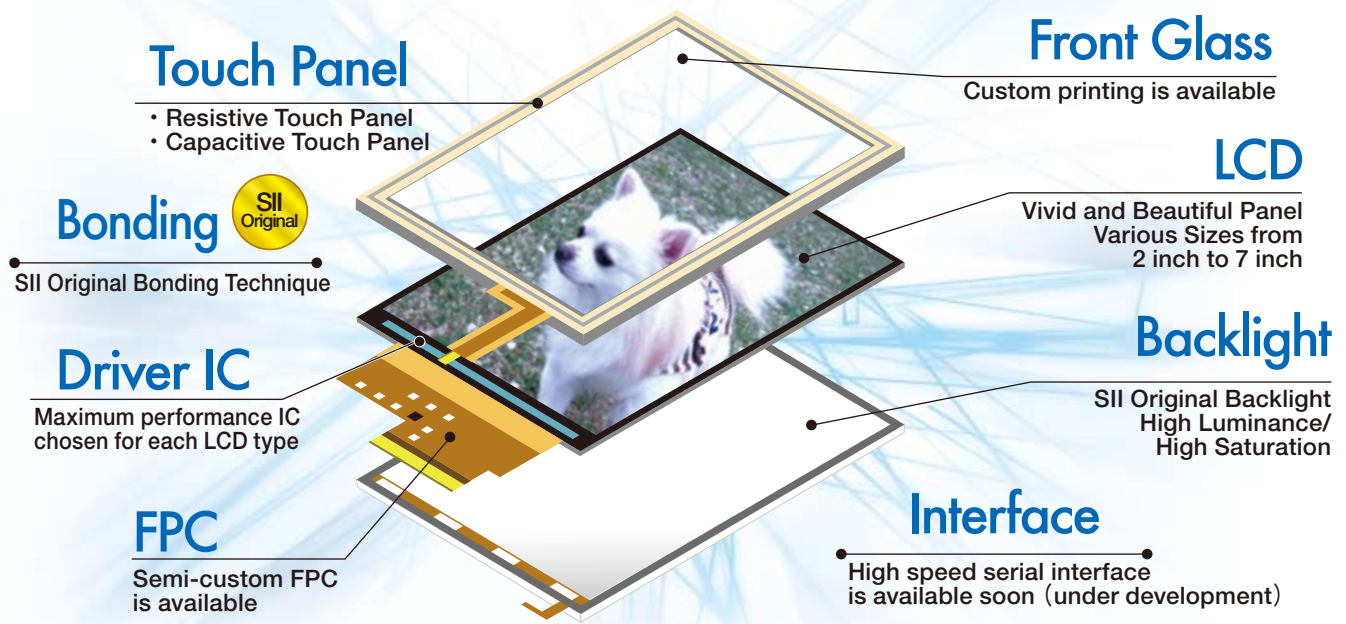


TFT 
STANDARD MODULE

SII's TFT Modules

SII develops, produces and markets TFT standard modules for a broad range of customer applications!



Standard Products Spec List







OPTION : Options are available (Please see the Remarks for details) **FFS** : FFS Panel **E-mode** : E-mode **M-DANNY** : M-DANNY **Develop** : Under development

Panel Size	2.0"	2.4"		2.8"	3.0"	
Product name	20QVF0H	24QVF1H	24QVW1H Develop	28QVF1H	30WQF0H	32WQF0H Develop
						Preliminary
General Specification	OPTION FFS	OPTION FFS	OPTION M-DANNY	OPTION FFS	FFS	FFS
Number of Pixel	240(RGB) x 320 Stripe	240(RGB) x 320 Stripe	240(RGB) x 320 Stripe	240(RGB) x 320 Stripe	240(RGB) x 400 Stripe	240(RGB) x 400 Stripe
Display Mode	a-Si TFT (FFS) Transmissive, Normally Black	a-Si TFT (FFS) Transmissive, Normally Black	a-Si TFT (TN), Transmissive, Normally White	a-Si TFT (FFS) Transmissive, Normally Black	a-Si TFT (FFS) Transmissive, Normally Black	a-Si TFT (FFS) Transmissive, Normally Black
Number of Color	262K colors	262K colors	262K colors	262K colors	262K colors	262K colors
Active Area (W x H) mm	30.6 x 40.8	36.72 x 48.96	36.72 x 48.96	43.2 x 57.6	39.24 x 65.4	41.76 x 69.6
Dot Pitch (W x H) mm	0.1275 (RGB)x 0.1275	0.153(RGB)x 0.153	0.153(RGB)x 0.153	0.180(RGB) x 0.180	0.1635(RGB)x 0.1635	0.174(RGB)x 0.174
Module Size (W x H x T) mm	35.8 x 54.12 x 1.75	42.72 x 60.4 x 1.93	42.06 x 60.26 x 2.71	49.0 x 69.0 x 2.06	44.5 x 77.1 x 1.882	47.66 x 82.1 x 1.9
Interface	RGB(16/18bit)+SPI	CPU (8/9/16/18 bit)	CPU (8/9/16/18 bit)	CPU (8/9/16/18 bit)	CPU (8/9/16/18bit) RGB(16/18bit)+SPI	RGB(16/18bit)+SPI
Backlight	3LEDs Serial	4LEDs Serial	3LEDs Serial	4LEDs Serial	5LEDs Serial	6LEDs Serial
Module Surface	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat
Operating Temp. (°C)	-20 to +70	-20 to +70	-20 to +70	-20 to +70	-20 to +70	-20 to +70
Storage Temp. (°C)	-30 to +80	-30 to +80	-30 to +80	-30 to +80	-30 to +80	-30 to +80
Optical & Electrical Specification						
Contrast Ratio (Typ.)	800 : 1	800 : 1	400 : 1	800 : 1	800 : 1	800 : 1
Luminance cd/m² (IL=20mA)	350	350	350	350	450	350
NTSC Ratio (Typ.)	70%	72%	50%	72%	68%	68%
Viewing Angle (U/D/R/L) CR>10	80/80/80/80	80/80/80/80	70/60/70/70	80/80/80/80	80/80/80/80	80/80/80/80
Input Voltage	VDD (Digital)V 1.65 to 3.3 VCI (Analog)V 2.5 to 3.3	1.65 to 3.3 2.5 to 3.3	1.65 to 3.3 2.5 to 3.3	1.65 to 3.3 2.5 to 3.3	1.65 to 3.3 2.5 to 3.3	1.65 to 3.3 2.5 to 3.3
Remarks	Other Interface: 20QVF1H (CPU I/F)	Other Interface: 24QVF2H (RGB+SPI I/F) With Touch Panel: 24QVF1J/2J	Other Interface: 24QVW2H (RGB+SPI I/F)	Other Interface: 28QVF2H (RGB+SPI I/F) With Touch Panel : 28QVF1J/2J	—	—

Standard Product Selection Guide

Size & Number of Pixel	TN	E-mode	FFS	With Touch Panel	Portrait	Landscape
2.0" QVGA			20QVF0H/1H			
2.4" QVGA	24QVW1H/2H		24QVF1H/2H	24QVF1J/2J		
2.8" QVGA			28QVF1H/2H	28QVF1J/2J		
3.0" WQVGA			30WQF0H			
3.2" WQVGA			32WQF0H			
3.2" nHD			32NHFOH			
3.2" WVGA			32WVFOH			
3.5" QVGA	35QVW1H			35QVW1T		
3.5" HVGA		35HVE0H/1H	35HVF0H			
3.5" WVGA			35WVFOH/1H/2H			
3.7" WVGA			37WVFOH			
4.3" WQVGA	43WQW3H/4H			43WQW3T/4T		
4.3" WVGA			43WV2H			
7.0" WVGA	70WVW1A/2A/3A/4A/5A			70WVW1T/2T/3T		

development

3.2"		3.5"				3.7"
32NHFOH	32WVFOH	35QVW1H	35HVE0H Develop	35HVF0H	35WVFOH	37WVFOH Develop
						
FFS	FFS	OPTION	OPTION E-mode	FFS	OPTION FFS	FFS
360(RGB) x 640 Stripe a-Si TFT (FFS) Transmissive, Normally Black 16.7M colors	480 (RGB)x800 stripe a-Si TFT (FFS) Transmissive, Normally Black 16.2M colors	320(RGB) x 240 Stripe a-Si TFT (FFS) Transmissive, Normally White 262K colors	320(RGB) x 480 Stripe a-Si TFT (FFS) Transmissive, Normally White 262K colors	320(RGB) x 480 Stripe a-Si TFT (FFS) Transmissive, Normally Black 262K colors	480 (RGB)x800 stripe a-Si TFT (FFS) Transmissive, Normally Black 16.2M colors	480 (RGB)x800 stripe a-Si TFT (FFS) Transmissive, Normally Black 16.2M colors
39.96 x 71.04	41.76 x 69.6	70.08 x 52.56	48.96 x 73.44	49.44 x 74.16	45.36 x 75.6	48.24 x 80.44
0.111(RGB)x0.111	0.087(RGB)x0.087	0.219(RGB)x0.219	0.153 (RGB)x0.153	0.1545(RGB)x0.1545	0.0945(RGB)x0.0945	0.1005(RGB)x0.1005
45.3 x 83.3 x 1.9	47.3 x 80.0 x 2.0	76.9 x 63.9 x 3.2	54.96 x 85.94 x 2.1	55.34 x 84.55 x 2.08	51.46 x 90.55 x 2.0	53.84 x 95.1 x 2.0
CPU(8/16bit)	RGB(24bit)+SPI	RGB(24bit)+SPI	RGB(18bit)+SPI	RGB(18bit)+SPI	RGB(18/24bit) + SPI	RGB(18/24bit) + SPI
6LEDs Serial	6LEDs Serial	6 LEDs Serial	5 LEDs Parallel	5LEDs Serial	6LEDs Serial	6LEDs Serial
Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat	Clear Hard Coat
-20 to +70	-20 to +70	-20 to +60	-20 to +70	-20 to +70	-20 to +70	-20 to +70
-30 to +80	-30 to +80	-30 to +70	-30 to +80	-30 to +80	-30 to +80	-30 to +80
800 : 1	800 : 1	400 : 1	600 : 1	800 : 1	800 : 1	800 : 1
300	350	450	350	350	300	(350)
72%	70%	60%	60%	70%	70%	(69%)
80/80/80/80	80/80/80/80	50/65/70/70	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80
1.65 to 1.95	1.7 to 1.9	1.8 to 3.6	1.7 to 1.9	1.7 to 1.9	1.7 to 1.9	1.7 to 1.9
2.7 to 3.0	2.7 to 2.9	2.5 to 3.6	2.7 to 2.9	2.7 to 2.9	2.7 to 2.9	2.7 to 2.9
—	—	With Touch Panel : 35QVW1T	Other Interface: 35HVE1H (CPU I/F)	—	Other Interface: 35WV1H (CPU I/F) 35WV2H (MIPI I/F)	—

Custom and Semi-custom

SII works with custom and semi-custom requests. Speak with your SII representative for details.

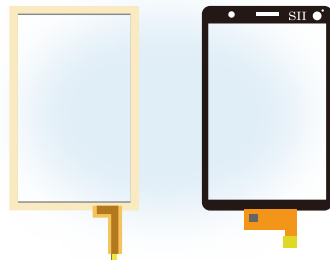
FPC/Connector

- Interface
-RGB, CPU, RGB-SPI, YUV
(Under development : LVDS, MDDI, MIPI)
- Pin Arrangement
- Connector Type
- Shape



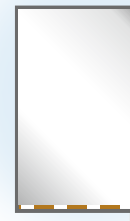
Touch Panel

- Resistive Touch Panel
- Capacitive Touch Panel



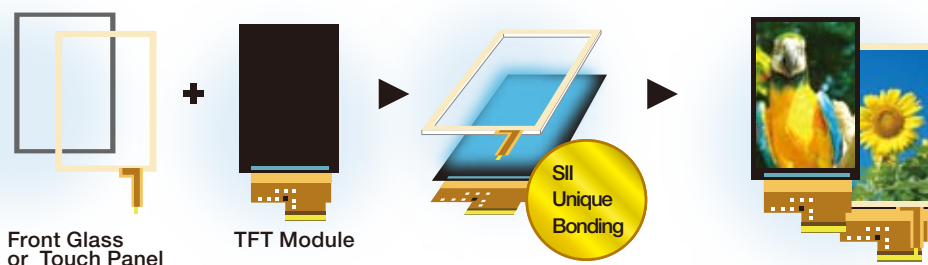
Backlight

- Luminance
- Frame Shape



Bonding

SII has a unique bonding technique (ADB: Airless Direct Bonding) which enables better optical and mechanical performance. We also offer custom bonding with client specific touch panels or front glass overlays.



SII's High quality TFT modules

4.3"		7.0"				Panel Size
43WQW3H/4H	43WVF2H Develop	70WVW1A	70WVW2A/3A	70WVW4A	70WVW5A Develop	Product name
OPTION	FFS	OPTION	OPTION			General Specification
480(RGB) x 272 Stripe a-Si TFT (TN) Transmissive, Normally White 16.2M colors	480(RGB) x 800 Stripe a-Si TFT (FFS) Transmissive, Normally Black 16.2M colors	800(RGB) x 480 Stripe a-Si TFT (TN) Transmissive, Normally White 16.2M colors	800(RGB) x 480 Stripe a-Si TFT (TN) Transmissive, Normally White 262K colors	800(RGB) x 480 Stripe a-Si TFT (TN) Transmissive, Normally White 262K colors	800(RGB) x 480 Stripe a-Si TFT (TN) Transmissive, Normally White 262K colors	Number of Pixel
95.04 x 53.856	56.16 x 93.60	152.4 x 91.44	152.4 x 91.44	152.4 x 91.44	152.4 x 91.44	Active Area (W x H) mm
0.198(RGB) x 0.198	0.117 (RGB) x 0.117	0.1905(RGB) x 0.1905	0.1905(RGB) x 0.1905	0.1905(RGB) x 0.1905	0.1905(RGB) x 0.1905	Dot Pitch (W x H) mm
105.5 x 67.2 x 3.2	61.66 x 108.2 x 2.0	165.0 x 105.8 x 3.35	165.0 x 105.8 x 3.35	165.2 x 105.9 x 4.85	TBD	Module Size (W x H x T) mm
RGB(24bit) + SPI	RGB(18/24bit) + SPI	RGB(24bit)	RGB(18bit)	RGB(18bit)	LVDS(6bit or 8bit)	Interface
4 LEDs Serial x 2	8 LEDs Serial	8 LEDs Serial x 3	8 LEDs Serial x 3	7 LEDs Serial x 3	TBD	Backlight
Clear Hard Coat	Clear Hard Coat	Anti Glare Coat	Anti Glare Coat	Anti Glare Coat	Anti Glare Coat	Module Surface
-20 to +60	-20 to +70	-20 to +70	-20 to +70	-20 to +70	-20 to +70	Operating Temp. (°C)
-30 to +70	-30 to +80	-30 to +80	-30 to +80	-30 to +80	-30 to +80	Storage Temp. (°C)
						Optical & Electrical Specification
400 : 1	800 : 1	400 : 1	400 : 1	400 : 1	400 : 1	Contrast Ratio (Typ.)
250/350	450	450	450/350	350	TBD	Luminance cd/m ² (L=20mA)
50%	72%	45%	45%	45%	45%	NTSC Ratio (Typ.)
50/65/70/70	80/80/80/80	55/65/70/70	55/65/70/70	55/65/70/70	55/65/70/70	Viewing Angle (U/D/R/L) CR>10
1.7 to 3.6	1.7 to 1.9	Vcc : 3.0 to 3.6	Vcc : 3.0 to 3.6	Vcc : 3.0 to 3.6	Vcc : (3.0 to 3.6)	VDD (Digital)V
2.5 to 3.6	2.7 to 2.9					VCI (Analog)V
With Touch Panel: 43WQW3T/4T	—	With Touch Panel: 70WVW1T	With Touch Panel: 70WVW2T/3T	Long-life LED backlight	—	Remarks

Thin package, High brightness, High saturation SII's eco-friendly LCD Module

Advanced Technical Information

LCD

LCD panel type

SII manufactures a variety of LCD module types – providing clients the best options for their intended applications.

LCD Panel Type	TN	TN-W	E-mode	FFS
	Twisted Nematic	TN-Wide View	TN E-mode	Fringe Field Switching
Contrast	Better	Better	Better	Best
Thickness	Best	Good	Better	Best
Viewing Angle	Good	Good	Better	Best

TN and FFS : Difference of Viewing Angle

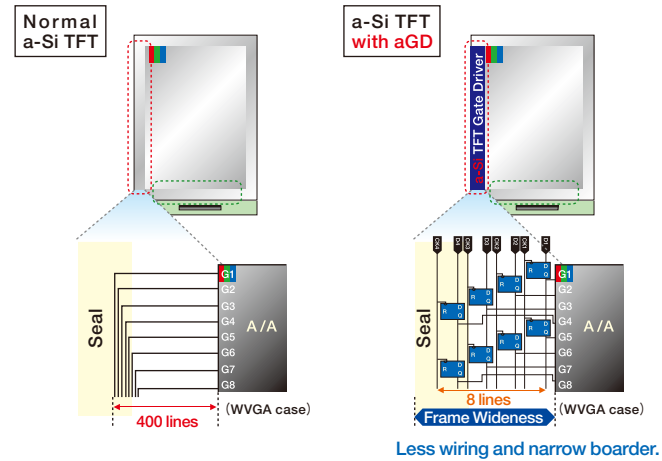
*They might be different from the LCDs actually seen.



The wide viewing angle and enhanced contrast ratio of the FFS technology displays offer minimal color-shifting at the outer boundaries of the display's viewing angle.

aGD (a-Si Gate Driver)

aGD (a-Si Gate Driver) enables high definition and compact LCD module.



Less wiring and narrow boarder.

Unique Bonding

SII has a unique bonding technique ADB (Airless Direct Bonding). ADB enables low-cost but high-quality bonding. We also offer custom bonding with client specific touch panels or front glass overlays.

Features High Sunlight Readability

SII's LCD direct bonding process ensures very good sunlight readability by effectively managing reflectivity.

Slim

SII's Bonding process enables both a thin and strong LCD module.

High Reliability /Durability

SII's Bonding process increases the impact strength of the LCD Module.

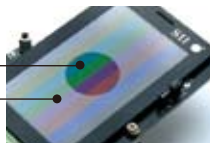
Dust-less

SII's Bonding process eliminates dust between the LCD and front glass/touch panel.

High Sunlight Readability

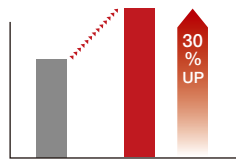
Enhanced Visibility

Bonded Area
Non-Bonded Area



↑LCD panel with SII's original bonding (Center Area)

Strength Tested by SII



Without Bonding With ADB

Capacitive Touch Panel

SII develops, produces and markets capacitive touch panel modules – either integrated with one of our LCD Modules or as a stand-alone product offering.

Features

Controller IC Mounting

SII prepares the most suitable controller IC for client's application. Multi-touch or gesture is available depend on the controller IC.

Shape Customizing

SII processes the glass shape according to client's request.

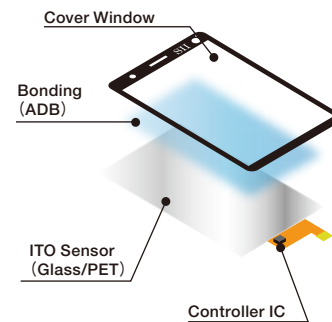
Bonding Option

Bonding is available with SII's LCD or client specific LCD.

Matching Support with LCD

SII supports the matching with LCD including noise cancellation.

Capacitive Touch Panel Structure

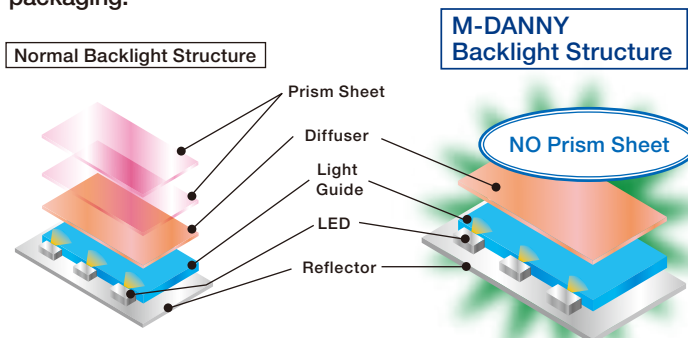


Backlight

Choose best LCD with SII's original backlight "M-DANNY" and "Ti-SOL"!

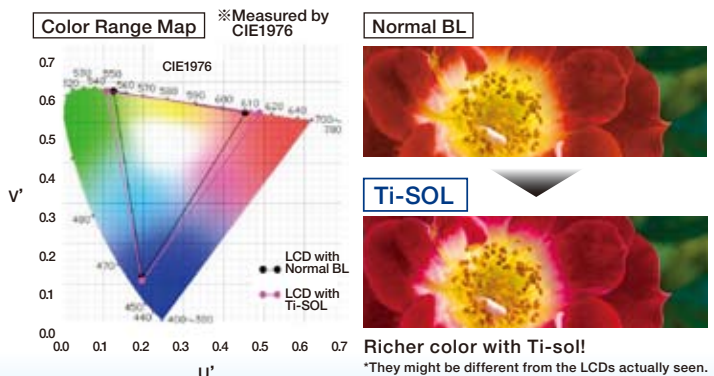
M-DANNY

Simple structure without a prism sheet. M-DANNY enables an even light distribution and clear LCD panel, while offering slim packaging.



Ti-SOL

SII's original Ti-SOL film widens the NTSC ratio more than 100%*.



Richer color with Ti-sol!

*They might be different from the LCDs actually seen.

Environmental Activities

SII Group Environmental Policy

Environmental Concept

As a good corporate citizen, the SII Group will continue to harmonize its corporate activities with the global environment, protect and improve the environment, and contribute to the establishment of a sustainable society that can coexist with all nature.

[SII LCD Environmental Policy]

SII LCD Device is implementing the energy-saving actions, the reduction of waste, the reduction of hazardous materials, the effective use of paper resources and the development of environmental friendly products based on the SII Group Environmental Policy.

[Four Specific Actions to Protect the Environment from SII LCD Device]

1. Energy Saving

- **Energy Saving in Manufacturing Process**
Our factories, which manufacture our products, are implementing energy saving procedures in their manufacturing process.
- **Energy Saving through Low Power Consumption**
By design, LCD Device is an energy saving product. We are continuously improving. Our products for lower current consumption, resulting in further energy saving.



This mark means that the product complies with SII's own environmental standards.

2. Resource Saving

We set the resource saving targets and control the amount of raw materials, water used in processing, office resource and indirect materials in both the factory and our administrative offices.

3. Manufacturing an Environmentally Friendly Product

- **RoHS Compliance*1 and other nations' directive (including REACH: Registration, Evaluation, Authorization and restriction of Chemicals)**
Before adopting new materials or processes, we make sure the material or process is not using any prohibited or restricted materials including RoHS designation. (The RoHS Directive has some exemptions. Some materials might be applied to them.)
*1 The RoHS Directive stands for: [The Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment]
This is a directive which the EU (European Union) set for the restriction of the use of certain hazardous substances in electrical and electronic device and equipment, and it was issued in February 2003 together with the WEEE Directive. Accordingly, the directive has banned the use of the certain 6 substances in EU member nations since July 2006.
- **Halogen free**
Incinerating Plastics with halogen elements (which also include bromine or chlorine) produce poisonous gases (dioxin). We are addressing the demand for Halogen free products and aim to manufacture these eco-friendly products. (Halogen free products are presently custom only)
- **Compliant with SII Green Product Label**
To raise public awareness of our eco-friendly products, SII introduced the SII Green Product Label System. All the LCD Device products satisfy certain criteria and are certified as SII Green Products.

4. Green Purchase

We promote "Green Purchase" along with "Green Purchase Guidelines". These are two innovative programs established by SII Group.



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