

# Electro-Optical Characteristics (Ta=25°C)

MiscIO: 4, Pin: 70, Low  
 [Reflective 75 dpi Settings]  
 MiscIO: 4, Type: Output, State: Low  
 Total: Pixels: 5489  
 Maximum Integration Time: Highamps: 2.75, High  
 Maximum Integration Time: Lowamps: 2.75, High  
 Maximum Integration Time: Lowamps: 2.75, High  
 MiscIO: 4, Type: Output, State: High  
 MiscIO: 4, Type: Output  
 MiscIO: 4, Type: Input

IMPORTANT>>  
 Before attempting to repair files, it is best to first try to determine if you have a hardware problem.  
 Here is a set of steps to follow if you find files are getting checksum errors

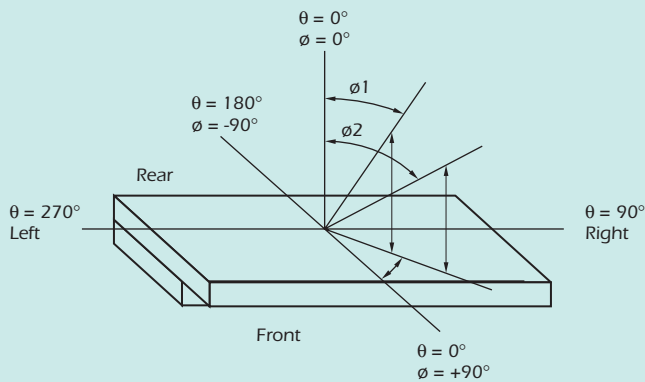
## TN Type

Item	Symbol	Condition	Min	Type	Max	Unit
View Angle	$\Delta \Phi$	$\theta = 0^\circ, 0^\circ < \Phi 1, \Phi 2 < 90^\circ$	25	30	—	deg
Contrast Ratio	Cr	$\Phi = 15^\circ, \theta = 0^\circ$	3	4	—	—
Response Time	Tr (rise)	$\Phi = 15^\circ, \theta = 0^\circ$	—	150	200	ms
	Tf (fall)		—	200	250	ms

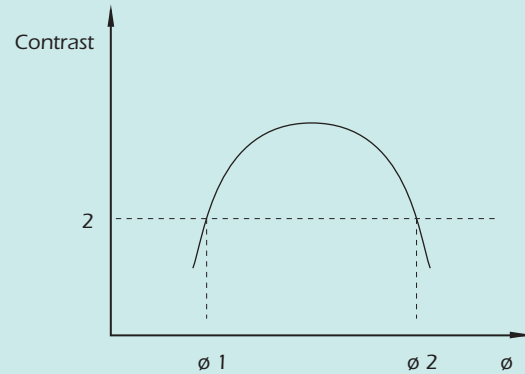
## STN Type

Item	Symbol	Condition	Min	Type	Max	Unit
View Angle	$\Delta \Phi$	$\theta = 0^\circ, 0^\circ < \Phi 1, \Phi 2 < 90^\circ$	30	40	—	deg
Contrast Ratio	Cr	$\Phi = 15^\circ, \theta = 0^\circ$	3	5	—	—
Response Time	Tr(rise)	$\Phi = 15^\circ, \theta = 0^\circ$	—	250	350	ms
	Tf(fall)		—	250	350	ms

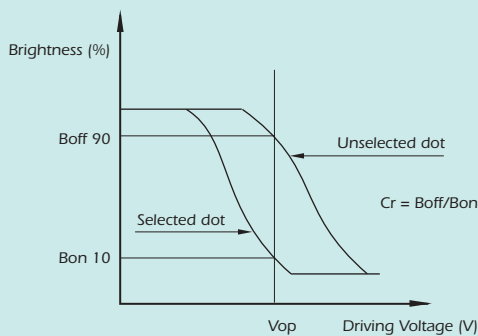
Note 1: Definition of Viewing Angle  $\theta, \Phi$



Note 2: Definition of Viewing Angle Range:  $\Delta \Phi = |\Phi 2 - \Phi 1|$



Note 3: Definition of Contrast Ratio Cr



Note 4: Definition of Response Time

