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物料测试对比报告

Neotec driver 7108C and 7108T Test Comparison Report

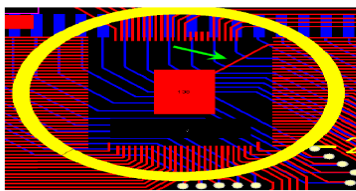
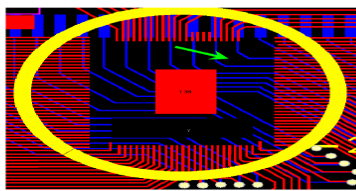
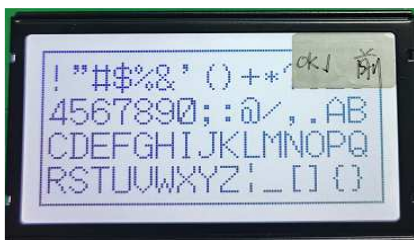
date: 2023/4/6

Description		Neotec driver 7108C version is going to EOL, need to move to the alternative 7108T version																																																																																																																																																																																																																																		
Affected Models		WG12864A 、WG12864AB 、WG12864B 、WG12864B1 WG12864BP1 、WG12864C 、WG12864C1 、WG12864E WG12864E1 、WG12864E2 、WG12864EP2 、WG12864I WG12864IA 、WG12864K 、WG12864M 、WG19264A WG19264C 、WG19264D 、WG19264E 、WG19264F				comparison																																																																																																																																																																																																																														
Material#	Before Change	NT7108C		After Change	NT7108T																																																																																																																																																																																																																															
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2. Parameters	NEOTEC SEMICONDUCTOR LTD. NT7108C MAXIMUM ABSOLUTE LIMIT <table><tr><th>Characteristic</th><th>Symbol</th><th>Value</th><th>Unit</th><th>Note</th></tr><tr><td>Operating voltage</td><td>V_{DD}</td><td>-0.3 to +7.0</td><td></td><td>(1)</td></tr><tr><td>Supply voltage</td><td>V_{EE}</td><td>V_{DD}-19.0 to V_{DD}+0.3</td><td>V</td><td>(4)</td></tr><tr><td>Driver supply voltage</td><td>V_B</td><td>-0.3 to V_{DD}+0.3</td><td></td><td>(1),(3)</td></tr><tr><td></td><td>V_{LCD}</td><td>V_{EE}-0.3 to V_{DD}+0.3</td><td></td><td>(2)</td></tr><tr><td>Operating temperature</td><td>T_{OPR}</td><td>-30 to +85</td><td>℃</td><td></td></tr><tr><td>Storage temperature</td><td>T_{STG}</td><td>-55 to +125</td><td></td><td></td></tr></table> NEOTEC SEMICONDUCTOR LTD. NT7108T MAXIMUM ABSOLUTE LIMIT <table><tr><th>Characteristic</th><th>Symbol</th><th>Value</th><th>Unit</th><th>Note</th></tr><tr><td>Operating voltage</td><td>V_{DD}</td><td>-0.3 to +7.0</td><td></td><td>(1)</td></tr><tr><td>Supply voltage</td><td>V_{EE}</td><td>V_{DD}-19.0 to V_{DD}+0.3</td><td>V</td><td>(4)</td></tr><tr><td>Driver supply voltage</td><td>V_B</td><td>-0.3 to V_{DD}+0.3</td><td></td><td>(1),(3)</td></tr><tr><td></td><td>V_{LCD}</td><td>V_{EE}-0.3 to V_{DD}+0.3</td><td></td><td>(2)</td></tr><tr><td>Operating temperature</td><td>T_{OPR}</td><td>-30 to +85</td><td>℃</td><td></td></tr><tr><td>Storage temperature</td><td>T_{STG}</td><td>-55 to +125</td><td></td><td></td></tr></table>				Characteristic	Symbol	Value	Unit	Note	Operating voltage	V _{DD}	-0.3 to +7.0		(1)	Supply voltage	V _{EE}	V _{DD} -19.0 to V _{DD} +0.3	V	(4)	Driver supply voltage	V _B	-0.3 to V _{DD} +0.3		(1),(3)		V _{LCD}	V _{EE} -0.3 to V _{DD} +0.3		(2)	Operating temperature	T _{OPR}	-30 to +85	℃		Storage temperature	T _{STG}	-55 to +125			Characteristic	Symbol	Value	Unit	Note	Operating voltage	V _{DD}	-0.3 to +7.0		(1)	Supply voltage	V _{EE}	V _{DD} -19.0 to V _{DD} +0.3	V	(4)	Driver supply voltage	V _B	-0.3 to V _{DD} +0.3		(1),(3)		V _{LCD}	V _{EE} -0.3 to V _{DD} +0.3		(2)	Operating temperature	T _{OPR}	-30 to +85	℃		Storage temperature	T _{STG}	-55 to +125			the same																																																																																																																																																									
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NEOTEC SEMICONDUCTOR LTD. NT7108T

MAXIMUM ABSOLUTE LIMIT

Characteristic	Symbol	Value	Unit	Note
Operating voltage	V _{DD}	-0.3 to +7.0		(1)
Supply voltage	V _{EE}	V _{DD} -19.0 to V _{DD} +0.3	V	(4)
Driver supply voltage	V _B	-0.3 to V _{DD} +0.3		(1)/(3)
	V _{LCD}	V _{EE} -0.3 to V _{DD} +0.3		(2)
Operating temperature	T _{OPR}	-30 to +85	℃	
Storage temperature	T _{STG}	-55 to +125		

4. AC Characteristics	NEOTEC SEMICONDUCTOR LTD. NT7108C Display Control Timing <table><thead><tr><th>Characteristic</th><th>Symbol</th><th>Min</th><th>Type</th><th>Max</th><th>Unit</th></tr></thead><tbody><tr><td>FRM delay time</td><td>t_{DF}</td><td>-2</td><td>-</td><td>2</td><td rowspan="4">μs</td></tr><tr><td>M delay time</td><td>t_{DM}</td><td>-2</td><td>-</td><td>2</td></tr><tr><td>CL "low" level width</td><td>t_{WL}</td><td>35</td><td>-</td><td>-</td></tr><tr><td>CL "high" level width</td><td>t_{WH}</td><td>35</td><td>-</td><td>-</td></tr></tbody></table>	Characteristic	Symbol	Min	Type	Max	Unit	FRM delay time	t _{DF}	-2	-	2	μs	M delay time	t _{DM}	-2	-	2	CL "low" level width	t _{WL}	35	-	-	CL "high" level width	t _{WH}	35	-	-	NEOTEC SEMICONDUCTOR LTD. NT7108T AC CHARACTERISTICS (V_{DD}=+5V±10%, V_{SS}=0V, T_a=30℃ to +85℃) Display Control Timing <table><thead><tr><th>Characteristic</th><th>Symbol</th><th>Min</th><th>Type</th><th>Max</th><th>Unit</th></tr></thead><tbody><tr><td>FRM delay time</td><td>t_{DF}</td><td>-2</td><td>-</td><td>2</td><td rowspan="4">μs</td></tr><tr><td>M delay time</td><td>t_{DM}</td><td>-2</td><td>-</td><td>2</td></tr><tr><td>CL "low" level width</td><td>t_{WL}</td><td>35</td><td>-</td><td>-</td></tr><tr><td>CL "high" level width</td><td>t_{WH}</td><td>35</td><td>-</td><td>-</td></tr></tbody></table>	Characteristic	Symbol	Min	Type	Max	Unit	FRM delay time	t _{DF}	-2	-	2	μs	M delay time	t _{DM}	-2	-	2	CL "low" level width	t _{WL}	35	-	-	CL "high" level width	t _{WH}	35	-	-	the same																																																																										
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CL "high" level width	t _{WH}	35	-	-																																																																																																																															
5. Timing characteristics	NEOTEC SEMICONDUCTOR LTD. NT7108C MPU Interface <table><thead><tr><th>Characteristic</th><th>Symbol</th><th>Min</th><th>Type</th><th>Max</th><th>Unit</th></tr></thead><tbody><tr><td>E cycle</td><td>t_C</td><td>1000</td><td>-</td><td>-</td><td rowspan="4">ns</td></tr><tr><td>E high level width</td><td>t_{WH}</td><td>450</td><td>-</td><td>-</td></tr><tr><td>E low level width</td><td>t_{WL}</td><td>450</td><td>-</td><td>-</td></tr><tr><td>E rise time</td><td>t_R</td><td>-</td><td>-</td><td>25</td></tr><tr><td>E fall time</td><td>t_F</td><td>-</td><td>-</td><td>25</td><td rowspan="4">ns</td></tr><tr><td>Address set-up time</td><td>t_{ASU}</td><td>140</td><td>-</td><td>-</td></tr><tr><td>Address hold time</td><td>t_{AH}</td><td>10</td><td>-</td><td>-</td></tr><tr><td>Data set-up time</td><td>t_{DSU}</td><td>140</td><td>-</td><td>-</td></tr><tr><td>Data delay time</td><td>t_D</td><td>-</td><td>-</td><td>320</td><td rowspan="3">ns</td></tr><tr><td>Data hold time (write)</td><td>t_{DHW}</td><td>10</td><td>-</td><td>-</td></tr><tr><td>Data hold time (read)</td><td>t_{DHR}</td><td>20</td><td>-</td><td>-</td></tr></tbody></table> Figure 3. MPU Write Timing	Characteristic	Symbol	Min	Type	Max	Unit	E cycle	t _C	1000	-	-	ns	E high level width	t _{WH}	450	-	-	E low level width	t _{WL}	450	-	-	E rise time	t _R	-	-	25	E fall time	t _F	-	-	25	ns	Address set-up time	t _{ASU}	140	-	-	Address hold time	t _{AH}	10	-	-	Data set-up time	t _{DSU}	140	-	-	Data delay time	t _D	-	-	320	ns	Data hold time (write)	t _{DHW}	10	-	-	Data hold time (read)	t _{DHR}	20	-	-	NEOTEC SEMICONDUCTOR LTD. NT7108T MPU Interface <table><thead><tr><th>Characteristic</th><th>Symbol</th><th>Min</th><th>Type</th><th>Max</th><th>Unit</th></tr></thead><tbody><tr><td>E cycle</td><td>t_C</td><td>1000</td><td>-</td><td>-</td><td rowspan="4">ns</td></tr><tr><td>E high level width</td><td>t_{WH}</td><td>450</td><td>-</td><td>-</td></tr><tr><td>E low level width</td><td>t_{WL}</td><td>450</td><td>-</td><td>-</td></tr><tr><td>E rise time</td><td>t_R</td><td>-</td><td>-</td><td>25</td></tr><tr><td>E fall time</td><td>t_F</td><td>-</td><td>-</td><td>25</td><td rowspan="4">ns</td></tr><tr><td>Address set-up time</td><td>t_{ASU}</td><td>140</td><td>-</td><td>-</td></tr><tr><td>Address hold time</td><td>t_{AH}</td><td>10</td><td>-</td><td>-</td></tr><tr><td>Data set-up time</td><td>t_{DSU}</td><td>200</td><td>-</td><td>-</td></tr><tr><td>Data delay time</td><td>t_D</td><td>-</td><td>-</td><td>320</td><td rowspan="3">ns</td></tr><tr><td>Data hold time (write)</td><td>t_{DHW}</td><td>10</td><td>-</td><td>-</td></tr><tr><td>Data hold time (read)</td><td>t_{DHR}</td><td>20</td><td>-</td><td>-</td></tr></tbody></table> Figure 3. MPU Write Timing	Characteristic	Symbol	Min	Type	Max	Unit	E cycle	t _C	1000	-	-	ns	E high level width	t _{WH}	450	-	-	E low level width	t _{WL}	450	-	-	E rise time	t _R	-	-	25	E fall time	t _F	-	-	25	ns	Address set-up time	t _{ASU}	140	-	-	Address hold time	t _{AH}	10	-	-	Data set-up time	t _{DSU}	200	-	-	Data delay time	t _D	-	-	320	ns	Data hold time (write)	t _{DHW}	10	-	-	Data hold time (read)	t _{DHR}	20	-	-	Data set- up time is different
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6. Photo	NEOTEC SEMICONDUCTOR LTD. NT7108T For the application, let the substrate floating is the optimum choice. The floating substrate layout can fit for both P and N substrate IC. <table><thead><tr><th>Type</th><th>NO.</th><th>VDD</th><th>VEE</th><th>Floating</th></tr></thead><tbody><tr><td>P-substrate</td><td>NT7108T</td><td>X</td><td>O</td><td>O</td></tr><tr><td>N-substrate</td><td>NT7108/7108C</td><td>O</td><td>X</td><td>O</td></tr></tbody></table> O: OK, X: NG   Remove substrate connected wire	Type	NO.	VDD	VEE	Floating	P-substrate	NT7108T	X	O	O	N-substrate	NT7108/7108C	O	X	O	NT7108T P-substrate need to connect to VEE or Floating。 If P-Substrate connecto to VDD, will generate surge current .																																																																																																																		
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Summary	1. There's differences in IC dimension and specification, but the PIN definition is consistent 2. NT7108T P-substrate should be connected to VEE or Floating 3. IC Package change, it is needed to modify the PCB board (only modify IC PAD to Floating, the rest is not changed) 4. No difference in IC function verification, the display effect is the same.																																																																																																																																		
核准：	冯素梅	审核：	胡君	制作：	赵肖影																																																																																																																														

