



Display Drivers

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TFT Driver Series

Drivers for Large LCD Panels

6bit RSDS™ Source Drivers							
Part No.	Function	Gray Scale	Number of Outputs	Driver Output Voltage (V) Max.	Max.Clock Frequency (MHz) Max.	Logic Power Supply Voltage (V)	Package
BU95306	RSDS™ I/F R-DAC Type	6bit	600/618/630/642	13.5	85	2.7 to 3.6	COF

Note : RSDS™ is the trademark of signal interface technology proposal by National Semiconductor Corporation of the U.S.A

Drivers for Small to Medium LCD Panels

(LAPIS Semiconductor products)

TFT-LCD Driver								
Part No.	Type	Logic Supply Voltage (V)	LCD Voltage (V)	Number of Driver Outputs	I/F	Operating Temperature (°C)	for Automotive	Package
ML9860B	Source	2.1 to 3.6	10.0 to 14.6	480	RSDS	-40 to +95	Yes	Au bump chip
ML9863A	Source	2.4 to 3.6	8.0 to 14.6	960/804/792/768	CMOS/RSDS	-40 to +95	Yes	Au bump chip
ML9881	Source	2.7 to 3.6	8.0 to 14.6	1440/1284/1278/1260/1200/1080/1026/1020	RSDS/mini-LVDS	-40 to +95	Yes	Au bump chip
ML9872	Gate	2.7 to 3.6	Less than 40	540/480/400/384/360/300/240	CMOS	-40 to +95	Yes	Au bump chip

TN/STN LCD Driver Series

LCD Segment Drivers

Low Duty LCD Segment Drivers																
Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	Interface	EVR	GPO	Independent Blink	LED Dr	PWM Gen.	Keyscan	Package
		SEG	COM	I/F Power Supply (VDD)	LCD Power Supply (VLCD)											
BU9796AMUV	48	12	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	2wire serial	-	-	-	-	-	-	VQFN024V4040
BU9796AFS	80	20	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	2wire serial	-	-	-	-	-	-	SSOP-A32
BU9795AFV	108	27	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	SSOP-B40
BU9795AGUW	124	31	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	VBGA048W040
New BU9795BGUW	124	31	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	VBGA049W040A
BU9795AKV	140	35	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	VQFP48C
BU9795ZKS2	140	35	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	SQFP-T52
BU9797FUV	144	36	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	2wire serial	-	-	-	-	-	-	TSSOP-C48V
BU9794AKV	200	50	4	2.5 to 5.5	2.5 to 5.5	-40 to +85	1/4	1/2,1/3	3wire serial	-	-	-	-	-	-	VQFP64
BU9799KV	200	50	4	2.5 to 5.5	2.5 to 5.5	-40 to +85	1/4	1/2,1/3	2wire serial	✓	-	-	-	-	-	VQFP64
BU97950FUV	280	35	8	2.5 to 5.5	2.5 to 5.5	-40 to +85	1/8	1/4	2wire serial	✓	-	-	-	-	-	TSSOP-C48V
BU97941FV	104	26	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4,1/3 Static	1/3 Static	3wire serial	-	-	-	4port	-	-	SSOP-B40
BU97930MUUV	108	27	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4,1/3 Static	1/3 Static	3wire serial	-	4port	✓	1port	1ch 8bit	-	VQFN040V6060
BU97931FV	112	28	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4,1/3 Static	1/3 Static	3wire serial	-	5port	✓	1port	1ch 8bit	-	SSOP-B40
BU97981MUUV	168	42	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4,1/3 Static	1/3 Static	3wire serial	-	27port	✓	3port	2ch 12bit	-	VQFN56AV8080
BU97981KV	196	49	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4,1/3 Static	1/3 Static	3wire serial	-	31port	✓	3port	2ch 12bit	-	VQFP64
BU97981GU	196	49	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4,1/3 Static	1/3 Static	3wire serial	-	31port	✓	3port	2ch 12bit	-	VBGA064T050A
BU97501KV	204	51	4	2.7 to 6.0	4.5 to 6.0	-40 to +85	1/4,1/3	1/2,1/3	4wire serial	-	4port	-	-	-	5 × 6 Max. 30Key	VQFP64
BU97530KVT	445	89	5	2.7 to 6.0		-40 to +85	1/5,1/4,1/3 Static	1/2,1/3 Static	4wire serial	✓	9port (9ch PWM)	-	-	9ch 8bit	5 × 6 Max. 30Key	TQFP100V

Low Duty LCD Segment Drivers for Automotive application

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	Interface	EVR	GPO	Independent Blink	LED Dr	PWM Gen.	Keyscan	Package	Automotive Grade	AEC-Q100
		SEG	COM	I/F Power Supply (V _{DD})	LCD Power Supply (VLCD)													
BU9797FUV-M	144	36	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	2wire serial	—	—	—	—	—	—	TSSOP-C48V	YES	YES
BU97510CKV-M	216	54	4	2.7 to 6.0		-40 to +85	1/4,1/3	1/2,1/3	3wire serial	—	6port (6ch PWM)	—	—	6ch 6bit	—	VQFP64	YES	YES
BU97520AKV-M	276	69	4	2.7 to 6.0		-40 to +85	1/4,1/3	1/2,1/3	4wire serial	—	6port (6ch PWM)	—	—	6ch 8bit	5 × 6 Max. 30Key	VQFP80	YES	YES
BU97530KVT-M	445	89	5	2.7 to 6.0		-40 to +85	1/5,1/4,1/3 Static	1/2,1/3 Static	4wire serial	✓	9port (9ch PWM)	—	—	9ch 8bit	5 × 6 Max. 30Key	TQFP100V	YES	YES
BU97540KV-M	335	67	5	2.7 to 6.0		-40 to +85	1/5,1/4,1/3 Static	1/2,1/3,4/1 Static	4wire serial	✓	9port (9ch PWM)	—	—	9ch 9bit	5 × 6 Max. 30Key	VQFP80	YES	YES
BU97550KV-M	528	66	8	2.7 to 6.0		-40 to +85	1/8,1/7,1/5 1/4,1/3,Static	1/2,1/3,4/1 Static	4wire serial	✓	9port (9ch PWM)	—	—	9ch 9bit	5 × 6 Max. 30Key	VQFP80	YES	YES
BU91600FV-M	116	29	4	2.7 to 6.0		-40 to +105	1/4,1/3,1/2 Static	1/2,1/3 Static	4wire serial	✓	16port (16ch PWM)	—	—	6ch 9bit	4 × 5 Max. 20Key	SSOP-B40	YES	YES
BU91600FUV-M	148	37	4	2.7 to 6.0		-40 to +105	1/4,1/3,1/2 Static	1/2,1/3 Static	4wire serial	✓	16port (16ch PWM)	—	—	6ch 9bit	4 × 5 Max. 20Key	TSSOP-C48V	YES	YES
BU91501KV-M	204	51	4	2.7 to 6.0	4.5 to 6.0	-40 to +105	1/4,1/3	1/2,1/3	4wire serial	—	4port	—	—	—	5 × 6 Max. 30Key	VQFP64	YES	YES
BU91510KV-M	216	54	4	2.7 to 6.0		-40 to +105	1/4,1/3	1/2,1/3	3wire serial	—	6port (6ch PWM)	—	—	6ch 6bit	—	VQFP64	YES	YES
New BU91520KV-M	276	69	4	2.7 to 6.0		-40 to +105	1/4,1/3	1/2,1/3	4wire serial	—	6port (6ch PWM)	—	—	6ch 8bit	5 × 6 Max. 30Key	VQFP80	YES	YES
BU91530KVT-M	445	89	5	2.7 to 6.0		-40 to +105	1/5,1/4,1/3 Static	1/2,1/3 Static	4wire serial	✓	9port (9ch PWM)	—	—	9ch 8bit	5 × 6 Max. 30Key	TQFP100V	YES	YES
New BU91796MUF-M	80	20	4	2.5 to 6.0		-40 to +105	1/4	1/2,1/3	2wire serial	—	—	✓	—	—	—	VQFN32FV5050	YES	YES
New BU91797MUF-M	144	36	4	2.5 to 6.0		-40 to +105	1/4	1/2,1/3	2wire serial	—	—	✓	—	—	—	VQFN48FV7070	YES	YES
New BU91799KV-M	200	50	4	2.5 to 6.0	2.5 to 6.0	-40 to +105	1/4	1/2,1/3	2wire serial	✓	—	✓	—	—	—	VQFP64	YES	YES
New BU91R63CH-M3BW	176	44	4	2.7 to 6.0	2.7 to 6.0	-40 to +105	1/4,1/3,1/2 Static	1/2,1/3 Static	2wire serial	✓	—	✓	—	—	—	Au Bump	YES	YES

Low Duty LCD Segment Drivers for Industrial application

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	Interface	EVR	GPO	Independent Blink	LED Dr	PWM Gen.	Keyscan	Package
		SEG	COM	I/F Power Supply (V _{DD})	LCD Power Supply (VLCD)											
BU97941FV-LB	104	26	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4,1/3 Static	1/3 Static	3wire serial	—	—	—	4port	—	—	SSOP-B40
BU9795AFV-LB	108	27	4	2.5 to 5.5		-40 to +85	1/4	1/2,1/3	3wire serial	—	—	—	—	—	—	SSOP-B40
BU97931FV-LB	112	28	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4,1/3 Static	1/3 Static	3wire serial	—	5port	✓	1port	1ch 8bit	—	SSOP-B40

Common/Segment Driver for Dot Matrix LCD

(LAPIS Semiconductor products)

LCD Driver

Part No.	No. of Driver Output	Max. Driving Display Size	Logic Supply Voltage(V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	for Automotive	Package
ML9460	240	320 × 240 (QVGA)	2.5 to 5.5	Less than 43	-30 to +75	Output change 240/200/160/120	—	Au bump chip
ML9461B	320		2.5 to 5.5	2.6 to 5.5	-30 to +75	Output change 320/240/200	—	Au bump chip

Controller Driver for Graphic LCD

(LAPIS Semiconductor products)

LCD Controller Driver

Part No.	Max. No. of Segment Outputs	Max. Driving Display Size	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	for Automotive	Package
ML9058E	132	132 × 65 dots	3.7 to 5.5	6 to 18	-40 to +85	Integrated RAM/ Boost circuit	Yes	Au bump chip
ML9059E	132	132 × 49 dots	3.7 to 5.5	6 to 18	-40 to +85	Integrated RAM/ Boost circuit	Yes	Au bump chip
ML9445	180	180 × 65 dots	2.7 to 5.5	6 to 18.5	-40 to +105	Integrated RAM/ Boost circuit	Yes	Au bump chip
ML9092-01	56	56 × 10 dots	4.5 to 5.5	4.5 to 16.5	-40 to +85	Integrated RAM/ Boost circuit/PWM	Yes	TQFP100
ML9092-02	60	60 × 10 dots	4.5 to 5.5	4.5 to 16.5	-40 to +85	Integrated RAM/ Boost circuit	Yes	TQFP100
ML9092-03						Integrated RAM		
ML9092-04						Integrated RAM/PWM		

Controller Driver for Character LCD

(LAPIS Semiconductor products)

LCD Controller Driver

Part No.	Max. No. of Segment Outputs	Digits/Lines	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	for Automotive	Package
ML9042-0x	100	5 × 8 dots, 20 characters × 2 lines	2.7 to 5.5	2.7 to 5.5	-40 to +85	Built-in bias register 2K Ω / Supports custom fonts	—	Au bump chip
ML9042-1x	100	5 × 8 dots, 20 characters × 2 lines	2.7 to 5.5	2.7 to 5.5	-40 to +85	Built-in bias register 4K Ω / Supports custom fonts	—	Au bump chip
ML9042-2x	100	5 × 8 dots, 20 characters × 2 lines	2.7 to 5.5	2.7 to 5.5	-40 to +85	Built-in bias register 10K Ω / Supports custom fonts	—	Au bump chip

Controller Driver for Low Duty LCD

(LAPIS Semiconductor products)

LCD Controller Driver (Package Product)													
Part No.	Max. No. of Segment Outputs	Max. No. of Driving Segments					Internal Oscillation Frame Frequency (Hz)	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	for Automotive	Package
		static	1/2	1/3	1/4	1/5							
ML9470-12	80	80	160	—	—	—	—	3.0 to 5.5 (single)	—	-40 to +105	Supports external clock input	Yes	QFP100
ML9471	80	—	—	240	320	400	—	3.0 to 5.5 (single)	—	-40 to +105	Supports external clock input	Yes	TQFP100
ML9472	60	60	120	—	—	—	—	3.0 to 5.5 (single)	—	-40 to +105	Supports external clock input	Yes	P-TQFP80-1212-0.50
ML9473	60	—	—	180	240	300	—	3.0 to 5.5 (single)	—	-40 to +105	Supports external clock input	Yes	P-TQFP80-1212-0.50
ML9475	40	—	—	120	160	—	—	3V ± 10%/5V ± 10%	3.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	Yes	QFP56
ML9476	16	—	—	48	64	—	—	3V ± 10%/5V ± 10%	3.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	Yes	TQFP48
ML9477	32	—	—	96	128	—	—	3V ± 10%/5V ± 10%	3.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	Yes	TQFP48
ML9484	50	50	100	150	200	—	—	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in	Yes	TQFP64
LCD Controller Driver (Gold Bump Product)													
ML9480	40	40	80	120	160	—	65/75/85/95/ 130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Yes	Au bump chip
ML9478C	80	80	160	240	320	—	65/75/85/95 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Yes	Au bump chip
ML9479E	160	160	320	480	640	—	65/75/85/95 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Yes	Au bump chip
ML9488	80	80	160	240	320	—	130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in	Yes	Au bump chip
ML9489	160	160	320	480	640	—	130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in	Yes	Au bump chip

VFD Driver Series
Anode/ Grid Driver for VFD

(LAPIS Semiconductor products)

VFD Driver								
Part No.	No. of Driver Output	Driving Target	VFD Driving Voltage (V)	Power Supply Type	Operating Temperature (°C)	Feature	for Automotive	Package
ML9271	48	Anode/Grid	18	Positive supply	-40 to +105	Cascade connection	Yes	QFP64-P-1414-0.80
ML9272	40	Anode/Grid	65	Positive supply	-40 to +105	Cascade connection	Yes	SSOP60

Controller Driver for Character VFD

(LAPIS Semiconductor products)

VFD Controller Driver							
Part No.	Display Pixels	VFD Driving Voltage (V)	Power Supply Type	Operating Temperature (°C)	Feature	for Automotive	Package
ML9208-xxGA	5 × 7 dots	VDD-42	Negative supply	-40 to +85	3-bit gradation	—	P-QFP64-1414-0.80, SSOP64
ML9208-xxMB	5 × 7 dots	VDD-42	Negative supply	-40 to +85	3-bit gradation	—	SSOP64
ML9208A-xxGA	5 × 7 dots	VDD-42	Negative supply	-40 to +85	4-bit gradation	—	QFP64
ML9208A-xxTB	5 × 7 dots	VDD-42	Negative supply	-40 to +85	4-bit gradation	—	TQFP64
ML9209-xxGA	16 segs	VDD-42	Negative supply	-40 to +85	4-bit gradation	—	QFP44
ML9289-xxGA	16 segs	42	Positive supply	-40 to +85	4-bit gradation	—	QFP44
ML9289-xxTB	16 segs	42	Positive supply	-40 to +85	4-bit gradation	—	TQFP48
ML9286-xxGA	5 × 7 dots	80	Positive supply	-40 to +105	Multigrad function/ 8-bit gradation/ Cascade connection	—	TQFP80
ML9286-xxTB	5 × 7 dots	80	Positive supply	-40 to +105	Multigrad function/ 8-bit gradation/ Cascade connection	Yes	QFP80

Controller Driver for Low Duty VFD

(LAPIS Semiconductor products)

VFD Controller Driver							
Part No.	Max. No. of Driving Segments	VFD Driving Voltage (V)	Power Supply Type	Operating Temperature (°C)	Feature	for Automotive	Package
ML9212GA	64 (1/2Duty) 96 (1/3Duty)	18	Positive supply	-40 to +85	10-bit gradation/ Cascade connection	Yes	QFP56
ML9213GP	112 (1/2Duty) 168 (1/3Duty)	18	Positive supply	-40 to +85	10-bit gradation/ Cascade connection	Yes	P-QFP80-1414-0.65

Car Clock Drivers

(LAPIS Semiconductor products)

Car Clock								
Part No.	Display Duty	VFD Driving Voltage (V)	Logic Supply Voltage (V)	Operating Temperature (°C)	Supply Current (Max.)	No. of Digit	for Automotive	Package
ML9298	1/2	4.0 to 18	No need	-40 to +85	0.6mA	4digits × 1line and col.	Yes	SSOP32
ML9098B	Static, 1/2	3.0 to 5.5	3.0 to 5.5	-40 to +105	0.6mA	4digits × 1line and col., AM, PM	Yes	TQFP48