

# SED17A2 Series

## High Duty LCD Driver

- Suitable for Color STN-LCD
- 240 Output Segment Driver
- Ultra Super Slim TCP (5.5mm)

### ■ DESCRIPTION

SED17A2 is a 240/160 output segment (column) LCD driver suitable for driving of colored STN dot-matrix LCD panels of a larger capacity, for use in combination with SED1743 or SED1753.

Contributing to making clearer LCD picture quality, this IC employs the high speed enable chain method and is slim-chip configuration which is more advantageous for miniaturization of the LCD panel. SED17A2 is also capable of low-voltage and high-speed logic operations and fits to a wide range of applications.

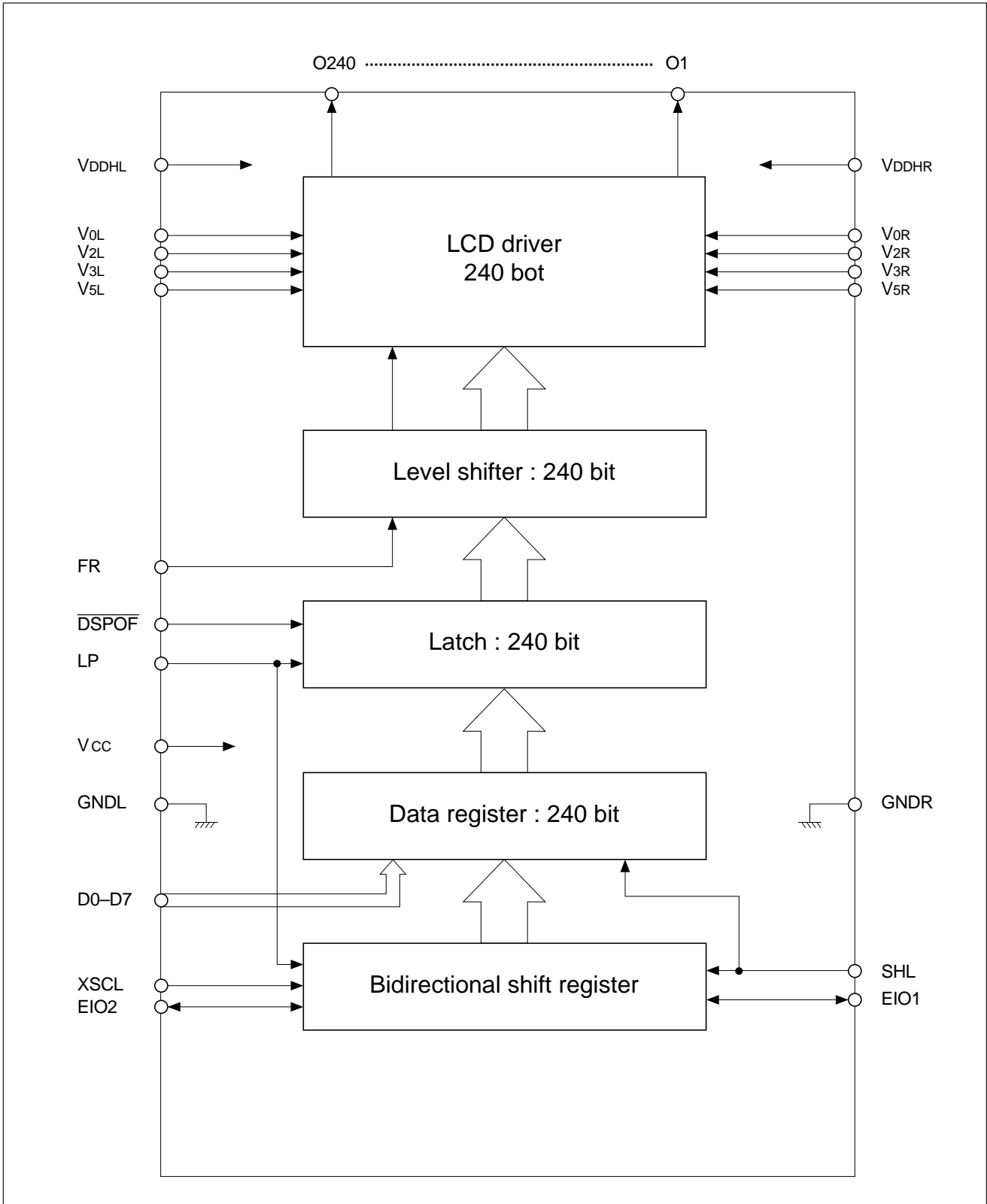
### ■ FEATURES

- Number of LCD drive output segments: 240 (SED17A2)
- Low voltage operation: 2.7V Min.
- High duty drive: 1/500
- Wide LCD drive voltage range: + 8 to + 42V ( $V_{DD} = 3$  to 5.5V)
- High speed and low power consumption data transfer is possible by adoption of the 8-bit bus enable chain method:
 

Shift clock frequencies:	30.0 MHz	(5V $\pm$ 10%)
	20.0 MHz	(2.7V)
- Slim-chip configuration
- Non-bias display off function
- Pin-selection of the output shift direction is available
- Offset bias regulation of LCD power for respective  $V_{DDH}$  and GND levels is possible
- Logic operation power supply: 2.7 to 5.5V
- Shipped status: TCP  
SED17A2T\*\*
- This IC is not radiation resistant

# SED17A2 Series

## ■ BLOCK DIAGRAM (SED17A2T)



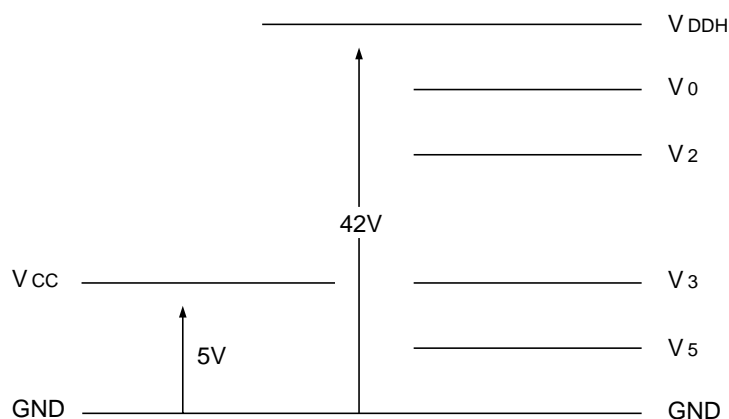
## ■ ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply voltage (1)	V <sub>CC</sub>	−0.3 to +7.0	V
Supply voltage (2)	V <sub>DDH</sub>	−0.3 to +45.0	V
Supply voltage (3)	V <sub>0</sub> , V <sub>2</sub> , V <sub>3</sub> , V <sub>5</sub>	−0.3 to V <sub>DDH</sub> + 0.3	V
Input voltage	V <sub>I</sub>	−0.3 to V <sub>CC</sub> + 0.3	V
Output voltage	V <sub>O</sub>	−0.3 to V <sub>CC</sub> + 0.3	V
EIO output current	I <sub>O1</sub>	20	mA
Working temperature	T <sub>opr</sub>	−30 to +85	°C
Storage temperature	T <sub>stg</sub>	−55 to +100	°C

(Note 1) All the voltage ratings are based on GND = 0V.

(Note 2) The storage temperature 1 is applicable to independent chips and the storage temperature 2 is applicable to the TCP modular state.

(Note 3) V<sub>0</sub>, V<sub>2</sub>, V<sub>3</sub> and V<sub>5</sub> should always be in the order of V<sub>DDH</sub> ≥ V<sub>0</sub> ≥ V<sub>2</sub> ≥ V<sub>3</sub> ≥ V<sub>5</sub> ≥ GND.



(Note 4) If the logic operation power goes into a floating state or if V<sub>CC</sub> drops to 2.6V or below while the LCD driving power is being applied, the LSI may be damaged. Therefore, keep from occurrence of the aforementioned status.

Specifically, pay close attention to the power supply sequence at times of turning the system power on and off.

# SED17A2 Series

## ■ ELECTRICAL CHARACTERISTICS

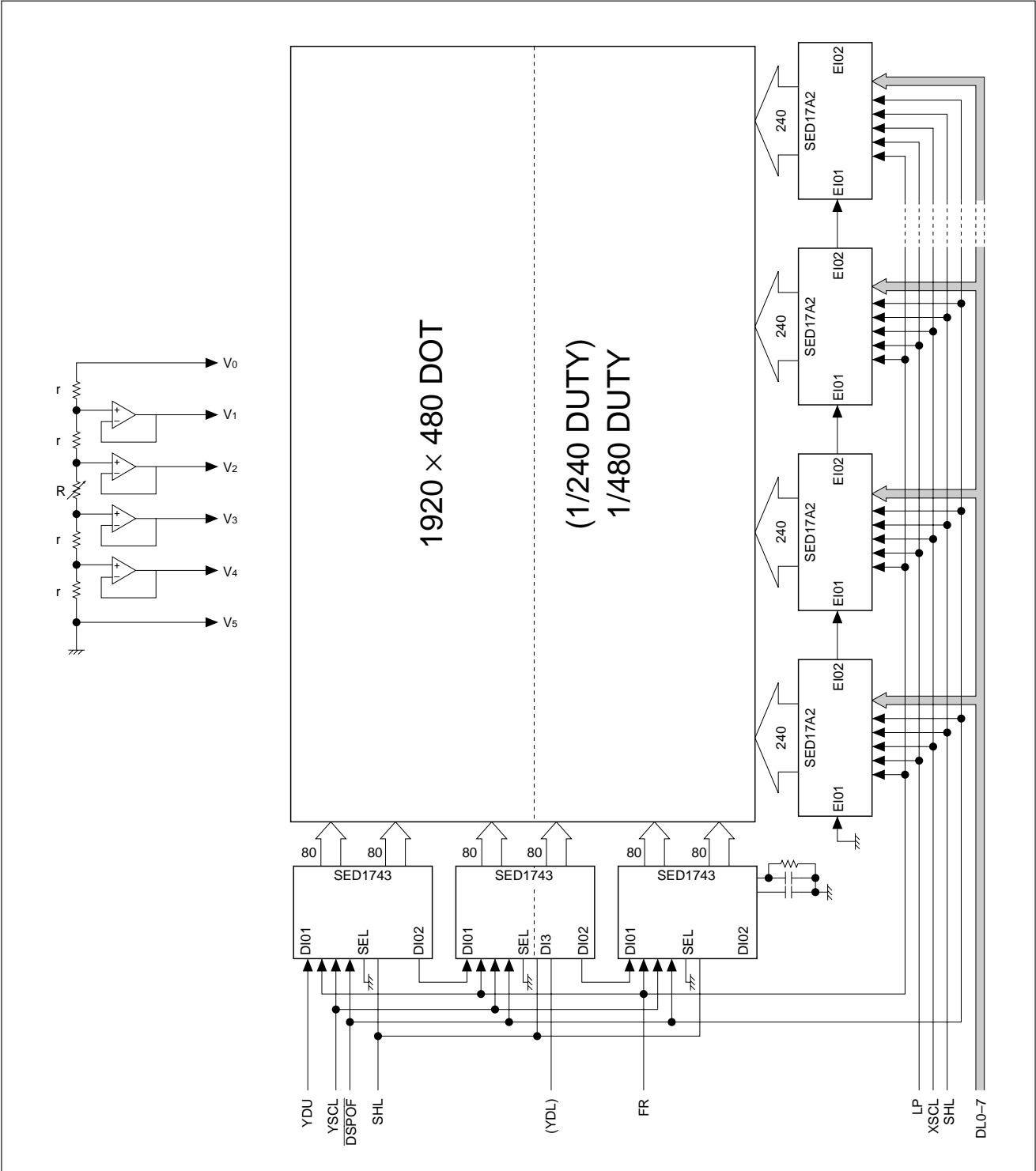
### ● DC characteristics

(Unless otherwise specified, GND = 0V, V<sub>CC</sub> = +5.0 V ±10%, T<sub>a</sub> = -30 to 85°C)

Characteristic	Symbol	Condition		Applicable pin	Min.	Typ.	Max.	Unit
Supply voltage (1)	V <sub>CC</sub>	—		V <sub>CC</sub>	2.7	—	5.5	V
Recommended working voltage	V <sub>0</sub>	—		V <sub>0L</sub> , V <sub>DDHL</sub>	14.0	—	40.0	V
Workable voltage	V <sub>0</sub>	Function only		V <sub>0R</sub> , V <sub>DDHR</sub>	8.0	—	42.0	V
Supply voltage (2)	V <sub>2</sub>	Recommended value		V <sub>2L</sub> , V <sub>2R</sub>	7/9 V <sub>0</sub>	—	V <sub>0</sub>	V
Supply voltage (3)	V <sub>3</sub>	Recommended value		V <sub>3L</sub> , V <sub>3R</sub>	GND	—	2/9 V <sub>0</sub>	V
High level input voltage	V <sub>IH</sub>	V <sub>DD</sub> = 2.7 to 5.5V		EIO1, EIO2, FR D0~D7, XSCL SHL, LP, DSPOF	0.8V <sub>CC</sub>	—	—	V
Low level input voltage	V <sub>IL</sub>				—	—	0.2V <sub>CC</sub>	V
High level output voltage	V <sub>OH</sub>	V <sub>CC</sub> = 2.7 to 5.5V	I <sub>OH</sub> = −0.6mA	EIO1, EIO2	V <sub>CC</sub> −0.4	—	—	V
Low level output voltage	V <sub>OL</sub>		I <sub>OL</sub> = 0.6mA		—	—	0.4	V
Input leak current	I <sub>LI</sub>	GND ≤ V <sub>IN</sub> ≤ V <sub>CC</sub>		D0~D7, LP, FR XSCL, SHL DSPOF	—	—	2.0	μA
I/O leak current	I <sub>LI/O</sub>	GND ≤ V <sub>IN</sub> ≤ GND		EIO1, EIO2	—	—	5.0	μA
Static current	I <sub>GND</sub>	V <sub>0</sub> = 14.0 to 42.0V V <sub>IH</sub> = GND, V <sub>IL</sub> =GND		GND	—	—	25	μA
Output resistance	R <sub>SEG</sub>	ΔV <sub>ON</sub> =0.5V Recom- mended condition	V <sub>0</sub> =+36.0V, 1/24	O1– O240	—	0.65	0.85	KΩ
			V <sub>0</sub> =+26.0V, 1/20		—	0.70	1.0	
In-chip deviation of output resistance	ΔR <sub>SEG</sub>	ΔV <sub>ON</sub> =0.5V V <sub>0</sub> = +36.0V, 1/24		O1– O240	—	—	95	Ω
Mean working current consumption (1)	I <sub>CC</sub>	V <sub>CC</sub> = +5.0V, V <sub>IH</sub> = V <sub>CC</sub> V <sub>IL</sub> = GND, f <sub>XSCL</sub> = 5.38MHz f <sub>LP</sub> = 33.6kHz, f <sub>FR</sub> = 70Hz Input data: Checkered indication, no-load		V <sub>CC</sub>	—	0.75	1.7	mA
		V <sub>CC</sub> = +3.0V Other conditions are the same as those when V <sub>CC</sub> = 5V.			—	0.3	0.9	
Mean working current consumption (2)	I <sub>O</sub>	V <sub>0</sub> = +30.0V V <sub>CC</sub> = +5.0V, V <sub>3</sub> = +4.0V V <sub>2</sub> = +26.0V, V <sub>5</sub> = +0.0V Other conditions are the same as those in the I <sub>CC</sub> column.		V <sub>0L</sub> , V <sub>0R</sub>	—	0.25	1.4	mA
Input terminal capacity	C <sub>I</sub>	Freq. = 1 MHz Ta = 25°C Independent chips		D0~D7, LP, FR XSCL, SHL, DSPOF	—	—	8	pF
I/O terminal capacity	C <sub>I/O</sub>			EIO1, EIO2	—	—	15	pF

■ LCD PANEL CONNECTION EXAMPLE

Block diagram of a large-plane LCD



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