EPSON

SED17A2 Series

High Duty LCD Driver

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

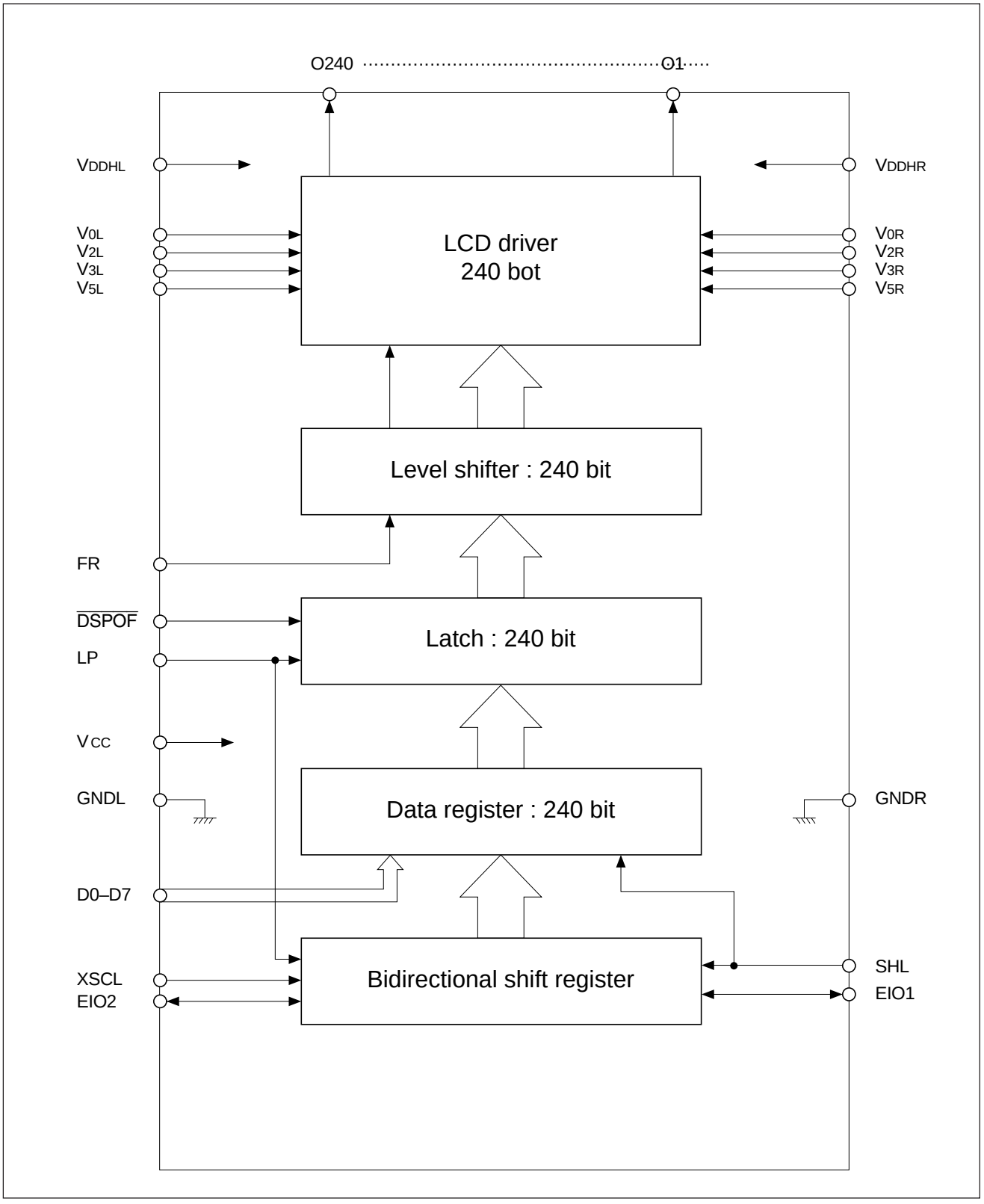
■ DESCRIPTION

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 ±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

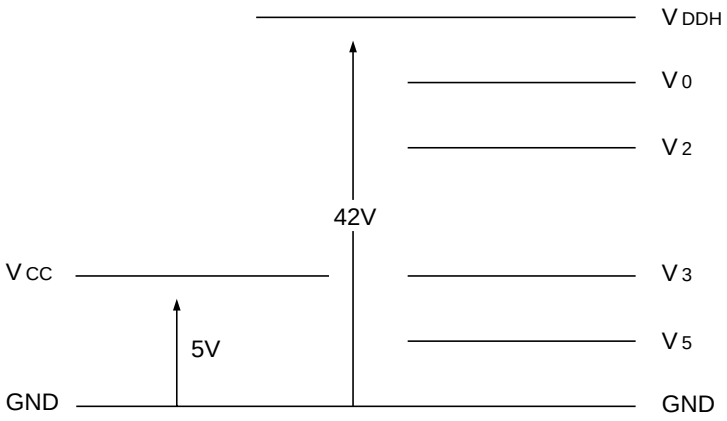
■ BLOCK DIAGRAM (SED17A2T)



■ ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply voltage (1)	V_{CC}	–0.3 to +7.0	V
Supply voltage (2)	V_{DDH}	–0.3 to +45.0	V
Supply voltage (3)	V_0, V_2, V_3, V_5	–0.3 to V_{DDH} + 0.3	V
Input voltage	V_I	–0.3 to V_{CC} + 0.3	V
Output voltage	V_O	–0.3 to V_{CC} + 0.3	V
EIO output current	I_{O1}	20	mA
Working temperature	Topr	–30 to +85	°C
Storage temperature	Tstg	–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_0, V_2, V_3 and V_5 should always be in the order of $V_{DDH} \geq V_0 \geq V_2 \geq V_3 \geq V_5 \geq$ GND.



(Note 4) If the logic operation power goes into a floating state or if V_{CC} 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.

■ ELECTRICAL CHARACTERISTICS

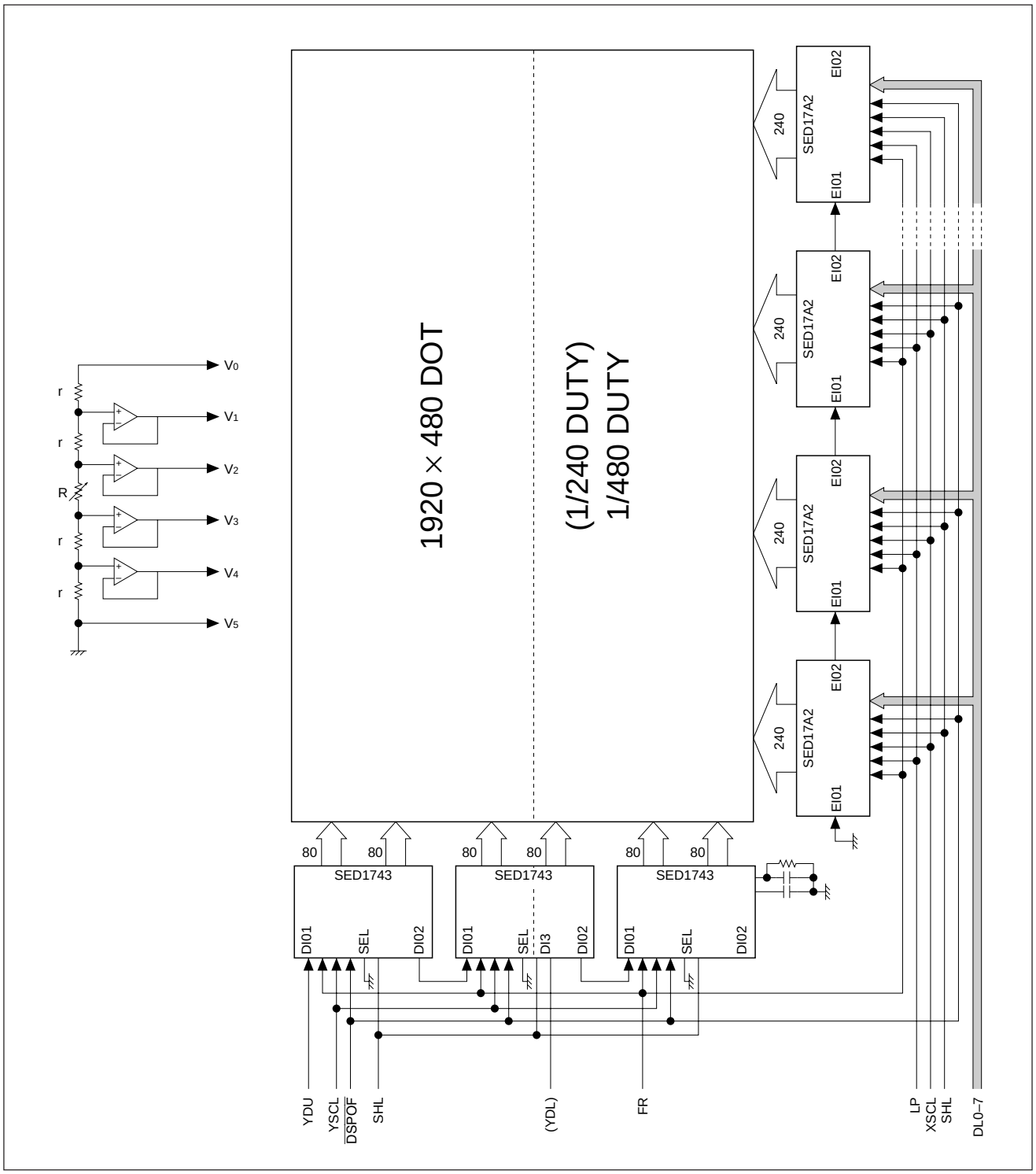
● DC characteristics

(Unless otherwise specified, GND = 0V, V_{CC} = +5.0 V ±10%, Ta = –30 to 85°C)

Characteristic	Symbol	Condition		Applicable pin	Min.	Typ.	Max.	Unit
Supply voltage (1)	V_{CC}	—		V_{CC}	2.7	—	5.5	V
Recommended working voltage	V_0	—		V_{0L},V_{DDHL}	14.0	—	40.0	V
Workable voltage	V_0	Function only		V_{0R},V_{DDHR}	8.0	—	42.0	V
Supply voltage (2)	V_2	Recommended value		V_{2L}, V_{2R}	7/9 V_0	—	V_0	V
Supply voltage (3)	V_3	Recommended value		V_{3L}, V_{3R}	GND	—	2/9 V_0	V
High level input voltage	V_{IH}	V_{DD} = 2.7 to 5.5V		EIO1,EIO2,FR D0–D7,XSCL SHL,LP,$\overline{DSPOF}$	0.8V_{CC}	—	—	V
Low level input voltage	V_{IL}				—	—	0.2V_{CC}	V
High level output voltage	V_{OH}	V_{CC}= 2.7 to 5.5V	I_{OH} = –0.6mA	EIO1, EIO2	V_{CC}–0.4	—	—	V
Low level output voltage	V_{OL}		I_{OL} = 0.6mA		—	—	0.4	V
Input leak current	I_{LI}	GND ≤ V_{IN} ≤ V_{CC}		D0~D7,LP,FR XSCL, SHL $\overline{DSPOF}$	—	—	2.0	µA
I/O leak current	$I_{LI/O}$	GND ≤ V_{IN} ≤ GND		EIO1, EIO2	—	—	5.0	µA
Static current	I_{GND}	V_0 = 14.0 to 42.0V V_{IH} = GND, V_{IL}=GND		GND	—	—	25	µA
Output resistance	R_{SEG}	△V_{ON} =0.5V	V_0 =+36.0V, 1/24	O1–O240	—	0.65	0.85	KΩ
		Recom-mended condition	V_0 =+26.0V, 1/20		—	0.70	1.0	
In-chip deviation of output resistance	△R_{SEG}	△V_{ON}=0.5V V_0 = +36.0V, 1/24		O1–O240	—	—	95	Ω
Mean working current consumption (1)	I_{CC}	V_{CC} = +5.0V, V_{IH} = V_{CC} V_{IL} = GND, f_{XSCL} = 5.38MHz f_{LP} = 33.6kHz, f_{FR} = 70Hz Input data: Checkered indication, no-load		V_{CC}	—	0.75	1.7	mA
		V_{CC} = +3.0V Other conditions are the same as those when V_{CC} = 5V.			—	0.3	0.9	
Mean working current consumption (2)	I_O	V_0 = +30.0V V_{CC} = +5.0V, V_3 = +4.0V V_2 = +26.0V, V_5 = +0.0V Other conditions are the same as those in the I_{CC} column.		V_{0L}, V_{0R}	—	0.25	1.4	mA
Input terminal capacity	C_I	Freq. = 1 MHz Ta = 25°C Independent chips		D0–D7, LP, FR XSCL, SHL, $\overline{DSPOF}$	—	—	8	pF
I/O terminal capacity	$C_{I/O}$			EIO1, EIO2	—	—	15	pF

■ LCD PANEL CONNECTION EXAMPLE

Block diagram of a large-plane LCD



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