Surface-mount power supply unit for LCD drivers

BP5317

The BP5317 is a DC / DC converter unit designed for driving liquid crystal displays (LCDs). The unit supplies a positive voltage for LCDs from a logic circuit power supply (+5V). Being in a compact and light surface-mount package, the IC can be built into an LCD panel.

●Applications

LCD panels of personal computers, word processors, and copiers

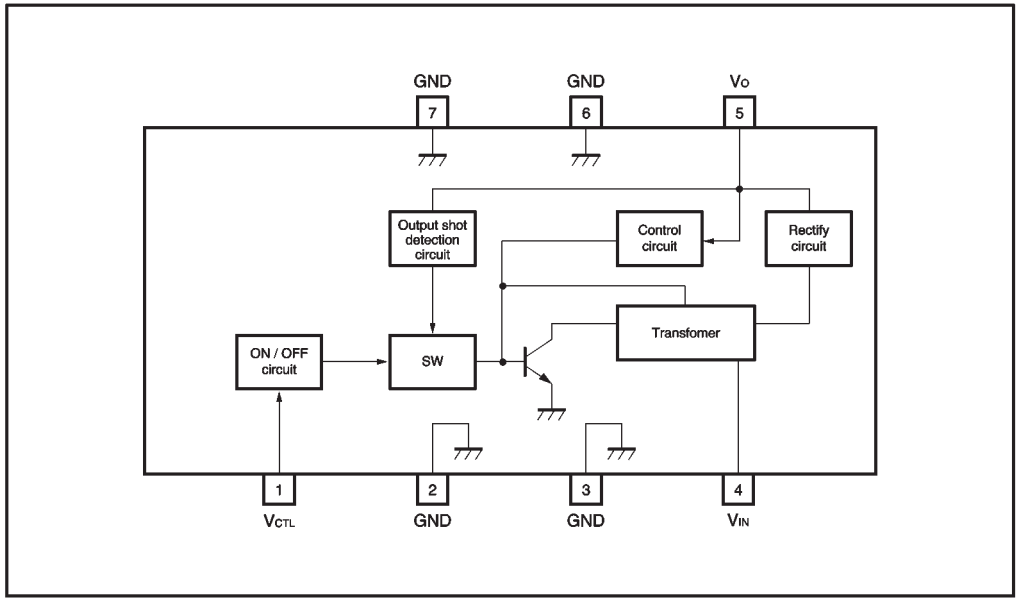
●Features

1) Automatic mounting and reflow soldering supported.
2) Compact size and thin design enable internal installation in LCD panels.
3) Internal short-circuit protection.

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{IN}	7.0	V
Operating temperature	Topr	0～+60	℃
Storage temperature	Tstg	−20～+85	℃

●Block diagram



●Pin descriptions

Pin No.	Pin name	Function
1	V_{CTL}	Outpout ON / OFF control ; output starts when the pin is HIGH level, and stops at LOW level
2,3,6,7	GND	Ground
4	V_{IN}	Input ; connect a low-impedance capacitor with a recommended capacitance of 100 μF between this pin and GND
5	V_O	Output ; connect a low-impedance capacitor with a recommended capacitance of 47 μF between this pin and GND

●Electrical characteristics (unless otherwise noted, Ta = 25°C and V_{CTL} = 5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V_{IN}	4.5	5.0	5.5	V	
Output current	I_{OUT}	—	—	30	mA	
Output voltage	V_{OUT}	28.0	30.0	32.0	V	V_{IN}=4.5～5.5V, I_{OUT}=0～30mA
Ripple noise voltage	ν 1	—	100	200	mV_{P-P}	V_{IN}=5V, I_{OUT}=30mA*
Efficiency	η	65	73	—	%	V_{IN}=5V, I_{OUT}=30mA
ON / OFF CTL voltage when ON	V_{CTL}	2.5	—	5.5	V	V_{IN}=5V, V_O>28V
ON/OFF CTL voltage when OFF	V_{CTL}	—	—	1.0	V	V_{IN}=5V, V_O<0.3V

* Output ripple voltage does not include spike noise.

●Measurement circuit

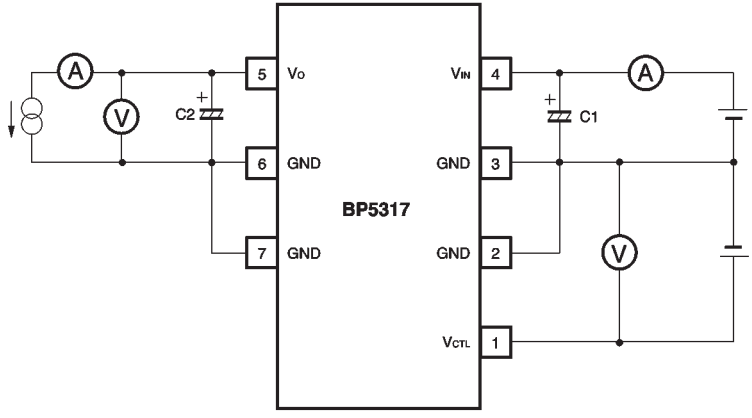


Fig.1

C1: 100 μF / 16 V (NICHICON PL-series or equivalent)
C2: 47 μF / 35 V (NICHICON PL-series or equivalent)

●Electrical characteristic curve

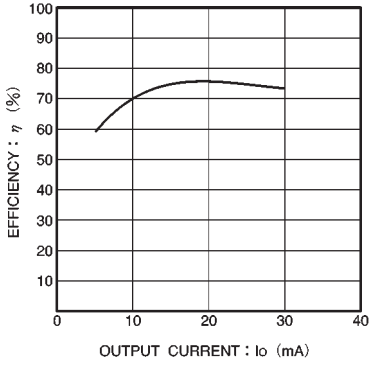


Fig. 2 Efficiency

●Recommended pad dimensions

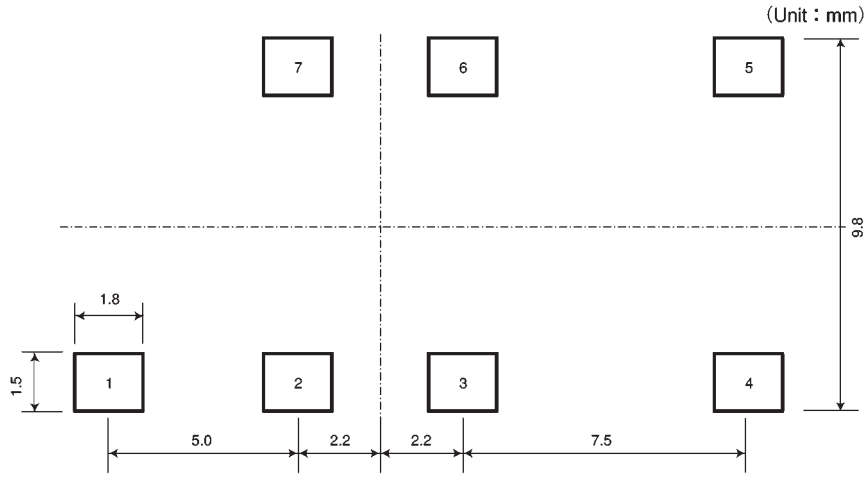


Fig.3

●Operation notes

The soldering used inside the unit is equivalent to H63 solder, so it will remelt during reflow.

●External dimensions (Units: mm)