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BU2082FV

4 Ch LED constant current driver

The BU2082FV is a 4 channel constant current driver that is designed to be used to drive the four auto focus sensors of a still or video camera. Since each driver has its own enable terminal, each channel can be switched individually.
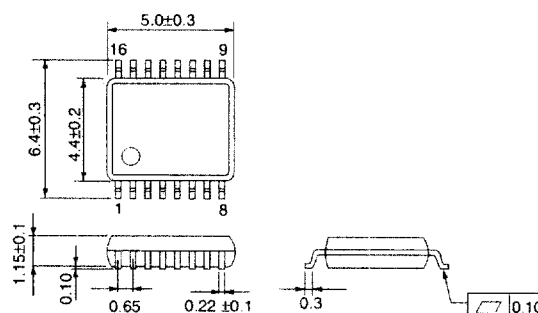
Features

- SSOP B-16 package
- With 4 separate channels in a single package, it has a very small mounting area
- output current is very stable and constant
- each channel can be individually controlled

Applications

- still cameras, video camera, LED drivers

Dimensions (Units : mm)

SSOP B-16

Absolute maximum ratings ($T_a = 25°C$)

Parameter	Symbol	Limits	Unit	Conditions
Power supply voltage	V_{DD}	−0.3 ~ +7.0	V	
Power dissipation	P_d	350	mW	Reduce power by 3.5 mW/°C for each degree above 25°C
		400		When mounted on 50 x 50 x 1 mm glass epoxy board, reduce power by 4.0 mW/°C for each degree above 25°C
Operating temperature	T_{opr}	−25 ~ +75	°C	
Storage temperature	T_{stg}	−55 ~ +125	°C	
Input voltage	V_{IN}	$V_{SS} - 0.3$ ~ $V_{DD} + 0.3$	V	
Output current	I_O	0 ~ 60	mA	

Note: Absolute maximum values can be applied without damaging the unit. These values do not guarantee operation.
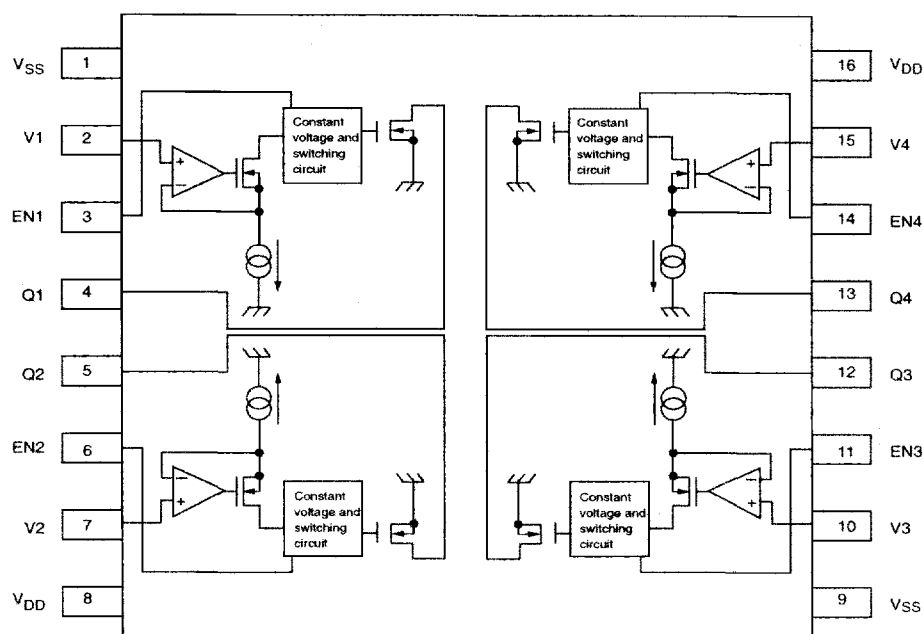
Recommended operational power supply ($V_{SS} = 0$ V)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	+4.5 ~ +5.5	V

Note: Not designed for radiation resistance

Block diagram

Pin description (Sheet 1 of 2)

Pin #	Symbol	I/O	Description
1	V_{SS}		GND
2	V_1	I	Ch 1 output current setting pin
3	EN1	I	Ch 1 enable/disable pin: Enabled with pin "H"
4	Q1	O	Ch1 driver output
5	Q2	O	Ch 2 driver output
6	EN2	I	Ch 2 enable/disable pin: Enabled with pin "H"
7	V2	I	Ch 2 output current setting
8	V_{DD}		Power supply
9	V_{SS}		GND
10	V3	I	Ch 3 output current setting
11	EN3	I	Ch 3 enable/disable pin: Enabled with pin "H"
12	Q3	O	Ch 3 driver output
13	Q4	O	Ch 4 driver output

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Pin description (Sheet 2 of 2)

Pin #	Symbol	I/O	Description
14	EN4	I	Ch 4 enable/disable pin: Enabled with pin "H"
15	V4	I	Ch 4 output current setting
16	V_{DD}		Power supply

Figure 1 Input/output circuits

A) IN BUFFER (EN1 ~ EN4)   **B)** IN BUFFER (V1 ~ V4)   **C)** OUT PUT (Q1 ~ Q4)
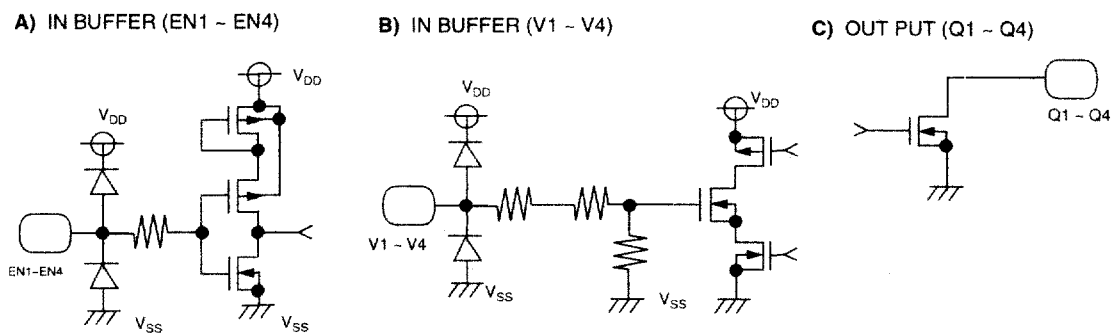
Figure 2 Recommended circuit

Be sure to attach RL to prevent over currents
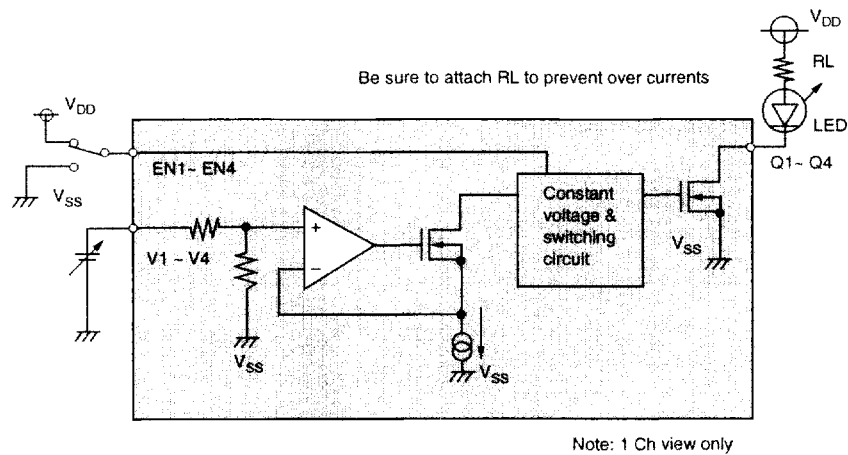
Note: 1 Ch view only

DC characteristics (unless otherwise noted, $V_{DD} = 5$ V, $V_{SS} = 0$ V, $T_a = 25°C$) (Sheet 1 of 2)

Parameter	Pin Name	Symbol	Rating			Units	Notes
			Min	Typ	Max		
"H" input voltage	EN1 ~ 4	V_{IH}	2.2	–	–	V	
"L" input voltage	EN1 ~ 4	V_{IL}	–	–	0.8	V	
"H" input current	EN1 ~ 4	I_{IH}	–	–	0.5	μA	
"L" input current	EN1 ~ 4	I_{IL}	–0.5	–	–	μA	

DC characteristics (unless otherwise noted, $V_{DD} = 5$ V, $V_{SS} = 0$ V, $T_a = 25°C$)   (Sheet 2 of 2)

Parameter	Pin Name	Symbol	Rating			Units	Notes
			Min	Typ	Max		
"H" input current	V1 ~ V4	I_{IH}	10	35	75	μA	
"L" input current	V1 ~ V4	I_{IL}	−0.5	−	−	μA	
"L" output current	Q1 ~ Q4	I_O	60.0	−	−	mA	V1 ~ V4 = V_{DD} Q1 ~ Q4 = 3.0 V
			10.0	−	−		V1 ~ V4 = 1 V Q1 ~ Q4 = 3.0 V
"L" output current	Q1 ~ Q4	I_O	−	78.0	−	mA	V1 ~ V4 = V_{DD} Q1 ~ Q4 = 2.0 V
			−	17.0	−		V1 ~ V4 = 1 V Q1 ~ Q4 = 2.0 V
"H" output current disable	Q1 ~ Q4	I_{OZH}	−	−	10.0	μA	EN1 ~ EN4 = V_{SS}
Current consumption	V_{DD}	I_{DD}	−	−	0.6	mA	V1 ~ V4 = V_{SS}
			−	−	7.0		V1 ~ V4 = V_{DD}

Switching characteristics (unless otherwise noted, $V_{DD} = 5$ V, $V_{SS} = 0$ V, $T_a = 25°C$)

Parameter	Symbol	Rating			Units	Notes
		Min	Typ	Max		
Output disable time (EN$_X$ OUTPUT Q$_X$	t_{PLZ}	−	200	−	ns	RL = 1 kΩ CL = 10 pF
		−	200	−		RL = 1 kΩ CL = 10 pF

DC characteristics

Current consumption/measurement circuit

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Figure 3 Output current/measurement circuit
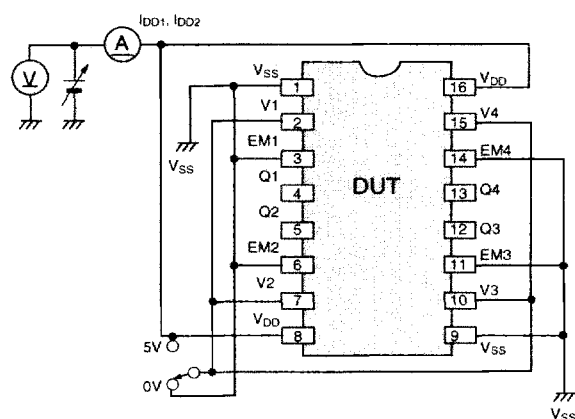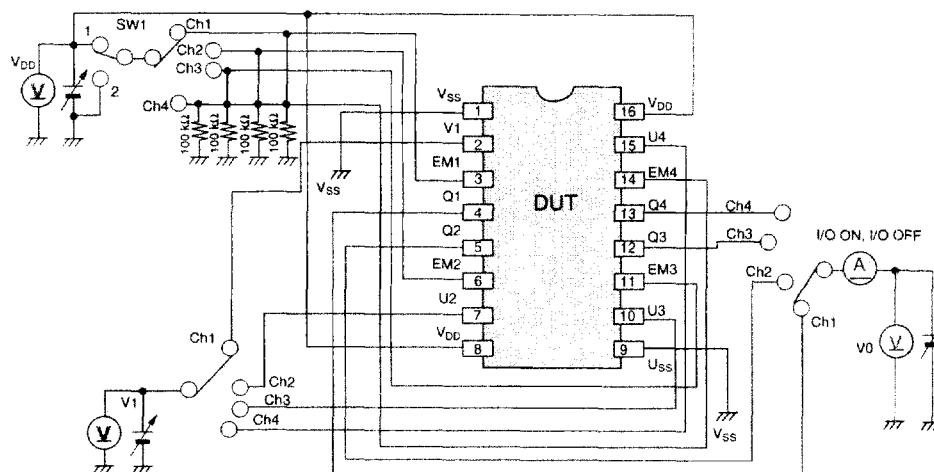
Figure 4 Input voltage/ measurement circuit

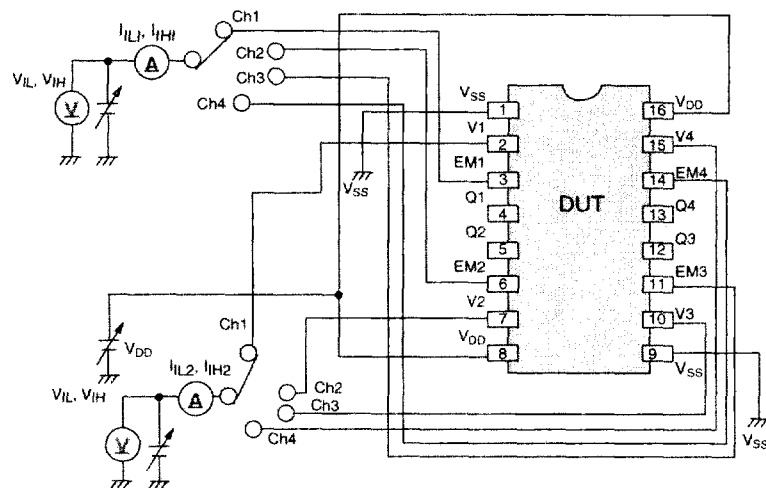**Figure 5 Input current/measurement circuit**

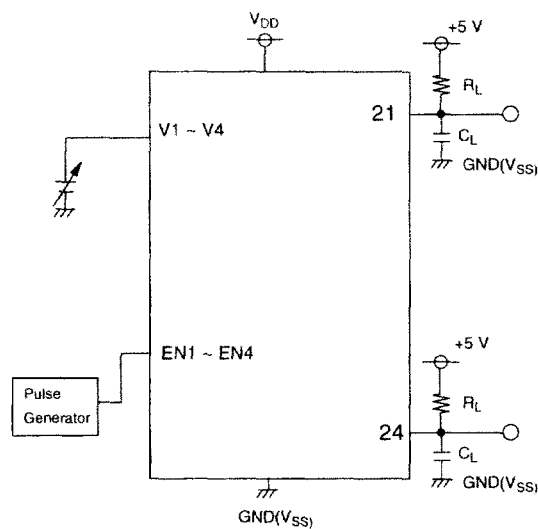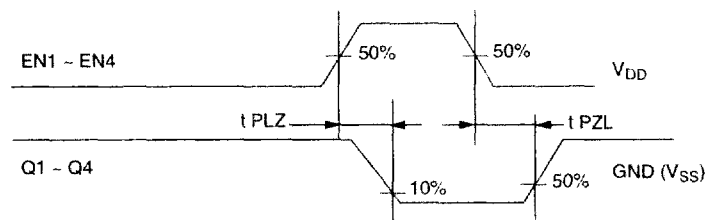**Figure 6 Switching time/measurement circuit**

Figure 7 Switching characteristics/measurement circuit

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Precautions

Give ample consideration to power dissipation requirements @ $T_a = 25^\circ C$, for a single unit.

$P_d < 350 \text{ mW}$

P_d = [Current consumption x supply voltage]

[Ch1 I_O x Q_1 Volt]

+[Ch2 I_O x Q_2 Volt]

+[Ch3 I_O x Q_3 Volt]

+[Ch 4 I_O x Q_4 Volt]

Set the current value of each channel and the applied voltage so that the above power dissipation equation is satisfied.

Ordering information
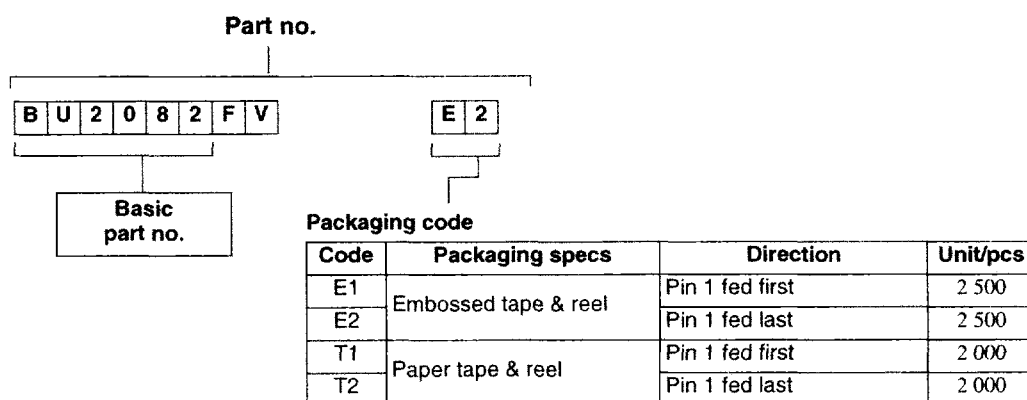
When ordering these parts, ROHM requires the following information:

- Basic part number
- Taping code (the device may be available in a number of different tape formats on a reel, ammo box, or tube, or it may be available in bulk form packaged in a bag).

The part number that ROHM gives your device is constructed as follows. When reordering parts, please keep this number in your records so that you can be assured of receiving the correct products on each order:

Part no.

| B | U | 2 | 0 | 8 | 2 | F | V |

Basic part no.

| E | 2 |

Packaging code

Code	Packaging specs	Direction	Unit/pcs
E1	Embossed tape & reel	Pin 1 fed first	2 500
E2		Pin 1 fed last	2 500
T1	Paper tape & reel	Pin 1 fed first	2 000
T2		Pin 1 fed last	2 000

Disclaimer

The parts listed in this technical data sheet are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, and electrical appliances).

Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers, or other safety devices), please be sure to consult with our sales representatives in advance.

Application circuit diagrams and circuit constants contained in this technical data sheet are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.

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The product(s) described in this technical data sheet are not designed to be X-ray proof.