

- STRUCTURE Silicon Monolithic Integrated Circuit
- NAME OF PRODUCT Strobe Charge Control IC
- TYPE BD4211FV
- FUNCTION 1. The power transistor off time can be controlled with the RT pin,
 allowing the average current to be set externally.
2. The third stages switching transformer primary-side peak current
 with the ISEL pin.
3. Built-in power transistor
4. Standby mode switching with the START pin

○ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limit	Unit
Supply voltage	VCC	7	V
PVC pin (DC characteristics)	PVDC	36	V
PVC pin (PULSE characteristics)*1	PVCPULSE	50	V
FULL pin	VFULL	7	V
START pin	VSTART	7	V
Operating temperature range	Topr	-35~+85	°C
Storage temperature range	Tstg	-55~+150	°C
Junction temperature	Tjmax	150	°C
Power dissipation *2	Pd	437	mW

*1: Pulse width of 100 μs or less.

*2: Reduced by 4.37 mW/°C over Ta = 25°C. (When mounted on 70 mm × 70 mm × 1.6 mm, glass epoxy)

○ Recommended Operating Ranges

Parameter	Symbol	Limit	Unit
VCC pin supply voltage range	VCC	2.5~6.0	V

◎ This product is not designed for protection against radioactive rays.

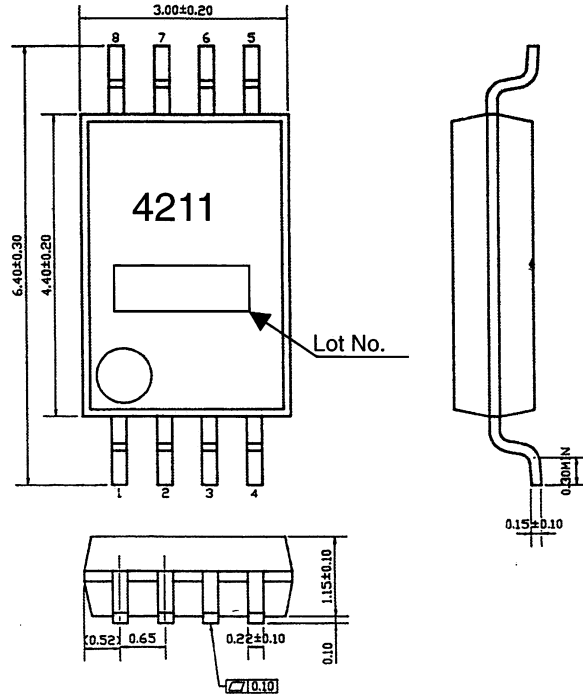
○Electrical Characteristics (Ta=25°C ,VCC=5.0V, RT=100kΩ ,ISEL=GND)

Parameter	Symbol	Limit			Unit	Conditions
		Min.	Typ.	Max.		
【Overall device】						
Average operating current consumption 1	Icca1	—	17	30	mA	Vbat=5V RT=56kΩ VC=0.5V ISEL="L"
Average operating current consumption 2	Icca2	—	30	60	mA	Vbat=5V RT=56kΩ VC=0.5V ISEL="H"
Circuit current during standby operation	ISTB	—	—	1	uA	START=0V
【Standby control pin】						
START pin high voltage	VSTH	2.0	—	—	V	
START pin low voltage	VSTL	—	—	0.4	V	
START pin sink current	ISTART	90	130	170	uA	START=5V
【Protection circuit block】						
UVLO detection voltage	VUVLOTH	—	—	225	V	VCC detection
【Transformer primary-side driver block】						
Leak current when driver off	Ileak	—	—	1	uA	VPVC=30V
Peak current when driver on 1	Ipeak1	0.55	0.65	0.75	A	ISEL="L"
Peak current when driver on 2	Ipeak2	0.81	0.93	1.05	A	ISEL="M"
Peak current when driver on 3	Ipeak3	1.09	1.21	1.33	A	ISEL="H"
PVC saturation voltage (*1)	VPVCE	—	0.23	0.35	V	IPVC=0.5A
【charge characteristics reguration】						
ISEL pin Low input voltage range	VISELL	0	—	0.4	V	
ISEL pin Middle input voltage range (*2)	VISELM	2.4	2.5	2.6	V	
ISEL pin High input voltage range	VISELH	4.6	—	5	V	
ISEL sink current	IISEL	—	50	100	uA	ISEL=5V
RT pin opening voltage 1	VRT1	0.97	1.0	1.03	V	VC=1.0V, RT=100KΩ
RT pin opening voltage2	VRT2	0.2	0.3	0.4	V	VC=0V, RT=100KΩ
OFF time	Toff	3.6	4.5	5.4	uS	RT=100kΩ VC=0.5V
【Transformer secondary-side detection block】						
Full charge detection voltage	VVCTH	1.386	1.400	1.414	V	
FULL pin low voltage when charging	IFULLL	300	800	—	uA	FULL=0.5V
FULL pin leak current	IFULLH	—	—	1	uA	FULL=5V

(*1) Not all units are inspected

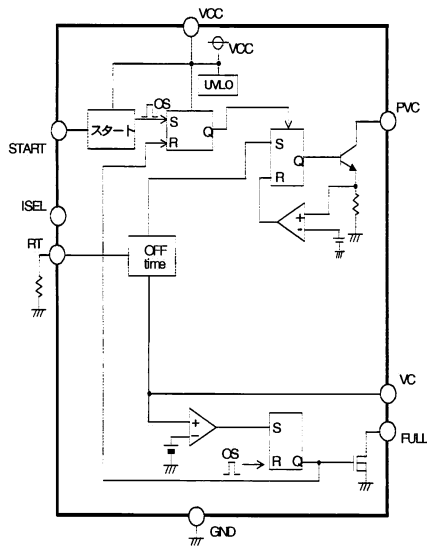
(*2) When ISEL pin is opened, it is fixed "Middle" in IC.

○PACKAGE



((UNIT:mm))

○Block Diagram



○Pin No.

Pin No.	Pin Name	Function
1	FULL	FULL charge detection Output pin
2	START	Standby control pin
3	GND	Ground pin
4	PVC	Built-in power transistor collector pin
5	ISEL	Peak current selection pin
6	VCC	Power supply pin
7	RT	OFFtime set pin
8	VC	FULL charge detection input pin

○ Operation Notes

1. Absolute maximum ratings

Use of the IC in excess of absolute maximum ratings such as the applied voltage or operating temperature range may result in IC deterioration or damage. Assumptions should not be made regarding the state of the IC (short mode or open mode) when such damage is suffered. A physical safety measure such as a fuse should be implemented when use of the IC in a special mode where the absolute maximum ratings may be exceeded is anticipated.

2. GND potential

Ensure a minimum GND pin potential in all operating conditions. In addition, ensure that no pins other than the GND pin carry a voltage less than or equal to the GND pin, including during actual transient phenomena.

3. Setting of heat

Use a thermal design that allows for a sufficient margin in light of the power dissipation (Pd) in actual operating conditions.

4. Protection circuit

The IC does not incorporate built-in malfunction protection such as overcurrent protection, short detection, or thermal shutdown circuitry. For this reason, the IC may be damaged if it is shorted or subjected to a load that exceeds the package power. The design of peripheral application circuits should reflect these potential risks.

5. Pin short and mistake fitting

Use caution when orienting and positioning the IC for mounting on PCBs. Improper mounting may result in damage to the IC. Shorts between output pins or between output pins and the power supply and GND pin caused by the presence of a foreign object may result in damage to the IC.

6. Mutual impedance

Power supply and ground wiring should reflect consideration of the need to lower mutual impedance and minimize ripple as much as possible (by making wiring as short and thick as possible or rejecting ripple by incorporating inductance and capacitance).

7. Voltage of START pin

The threshold voltages of START pin are 2.0V. STB state is set below 0.4V while action state is set beyond 2.0V. The region between 0.4V and 2.0V is not recommended and may cause improper operation.

8. thermal shutdown

there is a temperature protection circuit in the body ,for protect from heating damage, When thermal circuit moved, output is OFF condition. However it would be fixed automatically , If it return to regular temperature.

9. VC pin capacitor

It recommends insertion of capacitors to remove ripple for VC pin. If you do not insert capacitors, it is possible that it mistakes detecting full charge voltages , you should confirm enough with application and do guorum establishment.

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