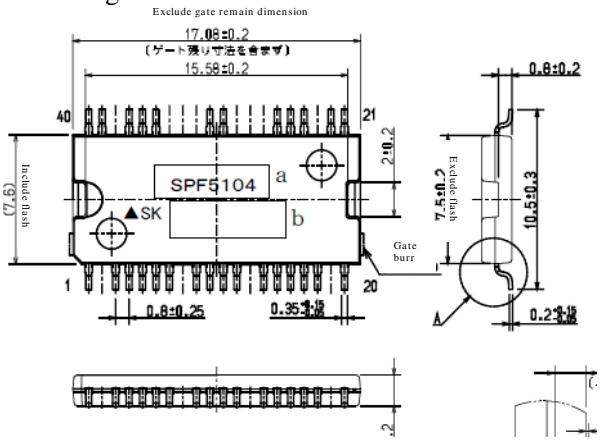
500V breakdown voltage Full bridge driver IC　SPF5104 (Positive driver system)

■ Features

- 500V breakdown voltage positive power supply drive system
- Adopt bootstrap circuit system
- Encapsulate MOSFET (4pieces) and a control MIC
- Compact type power surface mount package
- Suitable for inverter element for HID ballast unit

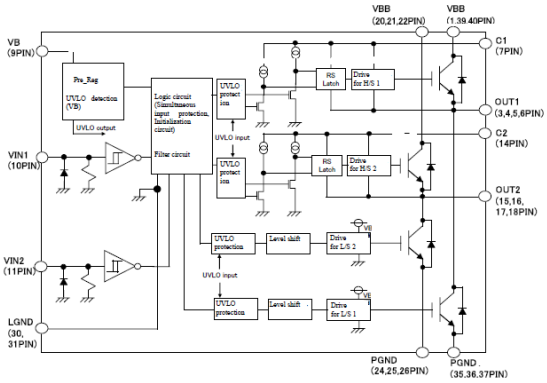
■ Package



■ Absolute maximum ratings

No.	Item	Symbol	Unit	Rating	Conditions
1	Power supply voltage 1	VBB	V	-0.3 ~ 500	between VBB and GND
2	Input voltage	VIN1	V	-0.3 ~ 6	
		VIN2	V	-0.3 ~ 6	
3	Power supply voltage 2	VB	V	-0.3 ~ 20	
4	Floating power supply voltage	VC1	V	-0.3 ~ 520	
		VC2	V	-0.3 ~ 520	
5	Output voltage	VOUT1	V	-0.3 ~ C1-20	between VOUT1 and GND
		VOUT2	V	-0.3 ~ C2-20	between VOUT2 and GND
6	Output current	IOUT(DC)	A	7 *1	Ta=25℃,VB=VC≧8V, VBB=10V
7	Total power dissipation	PD	W	27.2 *2	Tc=25℃
8	Storage temperature	Tstg	℃	-40 ~ +150	
9	Junction temperature	Tj	℃	150	

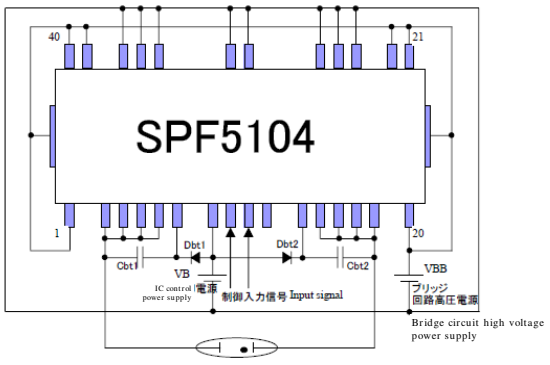
■ Circuit block diagram



■ Electrical characteristics

No.	Item		Symbol	Unit	Value Min.	Value Typ.	Value Max.	Conditions
1	IGBT output breakdown voltage		BVOUT	V	500			*3 IOUT=100uA, Tj=-40 ~ 150℃
					570			IOUT=100uA
2	IGBT output leakage current		IOUT(off)	uA			100	VOUT=500V
3	IGBT output on-state voltage		VOUT(on)	V		1.2	1.5	IOUT=1A, VIN=5V
						1.8	2.4	IOUT=3A, VIN=5V
4	Circuit current		IB1	mA		2	5	Tj=25℃,VIN1=VIN2=0V
						2	5	Tj=-40 ~ 150℃,VIN1=VIN2=0V
			IB2	mA		2	6	Tj=25℃,VIN1=5V(0V), VIN2=0V(5V)
						2	6	Tj=-40 ~ 150℃,VIN1=5V(0V), VIN2=0V(5V)
5	Floating power supply leakage current to GND		ILK	uA			100	VCx=VOUTx=400V
6	Floating power supply leakage current to output		ICOLK	uA		100	200	VCx-VOUTx=10V
7	Input threshold voltage		VINthH	V	3.5			VB=7 ~ 20V,Tj=-40 ~ 150℃
			VINthL	V			1.0	
8	Input bias current		IINH	uA			250	VIN1=VIN2=5V
			IINL	uA	-1		1	VIN1=VIN2=0V
9	Delay time	High side	td(on)	us		0.40	0.50	VBB=42V, I_O=0.8A VB=10V, VC=10V V_{IN}=5V(Out Stage=ON) V_{IN}=0V(Out Stage=OFF) ⊿td=H/S td(off) – L/S td(on) or L/S td(off) – H/S td(on)
			td(off)			1.60	2.10	
		Low side	td(on)			0.25	0.35	
			td(off)			1.10	1.60	
			⊿td				2.5 *4	
10	UVLO voltage		V_{UVLO}H	V	3.6	4.1	4.6	Release voltage
			V_{UVLO}L	V	3.4	3.9	4.4	Lockout voltage
11	UVLO start voltage hysteresis voltage		$⊿V_{UVLO}$	V		0.2	0.4	Δ UVLO=VULOH-UVLOL
12	UVLO start voltage between C and O		V_{UVLO}CO	V		3.0		There is no hysteresis.
13	Operating voltage		VB	V	6		20	Tj=-40 ~ +150℃

■ Typical connection diagram



■ Timing chart