

500V breakdown voltage Full bridge driver C SPF5103 (Negative drive system)

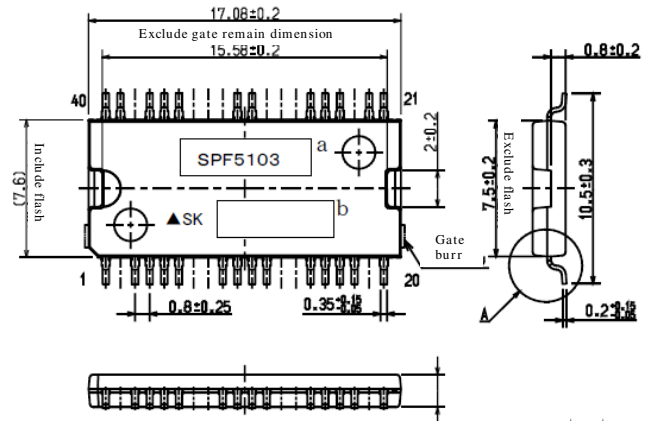
■ Features

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

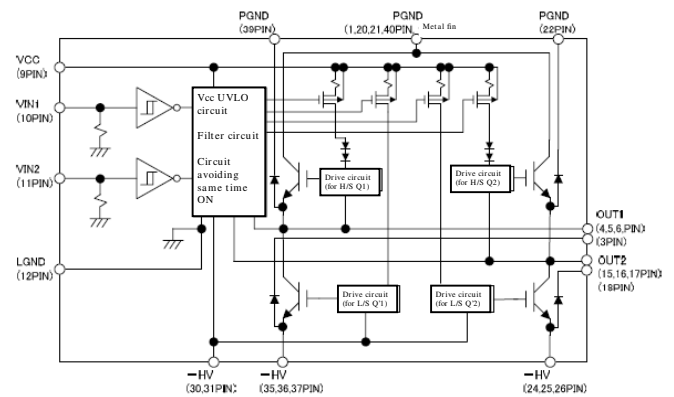
■ Absolute maximum ratings

No.	Item	Symbol	Unit	Rating	Conditions
1	Power Source Voltage	VM	V	500	between Power GND and -HV Ta=40°C - 150°C
2	Input Voltage	VIN	V	15	Ta=40°C - 150°C
3	Operating Voltage	Vcc	V	15	Ta=40°C - 150°C
4	Output Voltage	VOU	V	500	Ta=40°C - 150°C
5	Output Current (DC)	IOUT(DC)	A	7	Ta=25°C
6	Output current (pulse)	IOUT(pulse)	A	22	Ta=125°C, Pulse width = 15μs
7	Total Power Dissipation	PD	W	27.2	Tc=25°C
8	Thermal Resistance	θj-c	°C/W	4.6	Tc=25°C
9	Operation Temperature	Topr	°C	-40 ~ +105	
10	Storage Temperature	Tstg	°C	-40 ~ +150	
11	Junction Temperature	Tj	°C	150	

■ Package



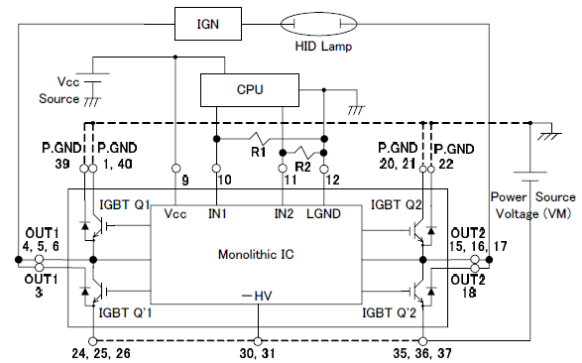
■ Circuit block diagram



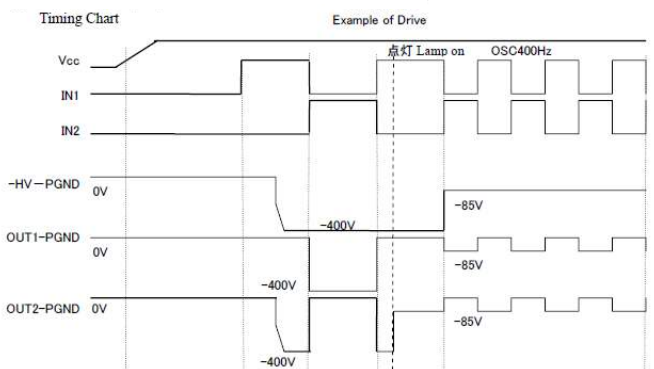
■ Electrical characteristics

No.	Item	Symbol	Unit	Value			Conditions		
				Min.	Typ.	Max.			
1	IGBT Output Breakdown Voltage	BVOUT	V	570			IOUT=100μA, Ta=25°C		
				500*			IOUT=100μA, Ta=40 ~ 150°C		
2	IGBT Output Leakage Current	IOUT(off)	μA	300*		100	VOUT=500V, Ta=40 ~ 150°C		
							IOUT=0.4A, VIN=10V		
3	IGBT Output On-State Voltage	VOUT(on)	V	1.0	1.2	1.8	IOUT=2.0A, VIN=10V		
4	Quiescent Circuit Current	Icc1	mA		3.0	4.5	Vcc=10V, VM=VIN=0V, Ta=25°C		
5	Operating Circuit Current	Icc3	mA		4.0	7.0	Vcc=9 ~ 15V, VM=VIN=0V, Ta=25°C		
6	Input Threshold Voltage	VIL	V	0.8 · Vcc		0.2 · Vcc	Vcc=9 ~ 15V		
7	Delay time	td	μs	High side	td(on)	2.0	2.3	VM=85V, Ig=0.41A	
					td(off)	2.4	2.8	Vcc=10V	
					Low side	td(on)	1.0	1.4	VIN=10V(Out Stage=ON)
					td(off)	1.6	2.1	VIN=0V(Out Stage=OFF)	
					Δtd		3.0		Δtd=H/S td(off) - L/S td(on) or L/S td(off) - H/S td(on)
8	UVLO Voltage	VUVLO+	V	5.7	6.2	6.7			
9	UVLO start voltage Hysteresis width	ΔVUVLO	V	0.1	0.2	0.4	ΔVUVLO = VUVLO+ - VUVLO-		
10	Operating Voltage	VCC	V	9		15	Ta=40 ~ +105°C		

■ Typical connection diagram



■ Timing chart



Recommended operation

No.	Item	Symbol	Unit	Value			Conditions
				Min.	Typ.	Max.	
1	Stable operation dV/dt	dV/dt	V/μs			30	Ta=40 ~ 150°C Vcc=9 ~ 15V, VM=400V
2	Recommended dead time	td	μs	3			Ta=40 ~ 150°C