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℃～150℃
2	Input Voltage	VIN	V	15	Ta=-40℃～150℃
3	Operating Voltage	Vcc	V	15	Ta=-40℃～150℃
4	Output Voltage	VOUT	V	500	Ta=-40℃～150℃
5	Output Current (DC)	IOUT(DC)	A	7	Ta=25℃
6	Output current (pulse)	IOUT(pulse)	A	22	Ta=125℃, Pulse width = 15μs
7	Total Power Dissipation	PD	W	27.2	Tc=25℃
8	Thermal Resistance	θj-c	℃/W	4.6	Tc=25℃
9	Operation Temperature	Topr	℃	-40～+105	
10	Storage Temperature	Tstg	℃	-40～+150	
11	Junction Temperature	Tj	℃	150	

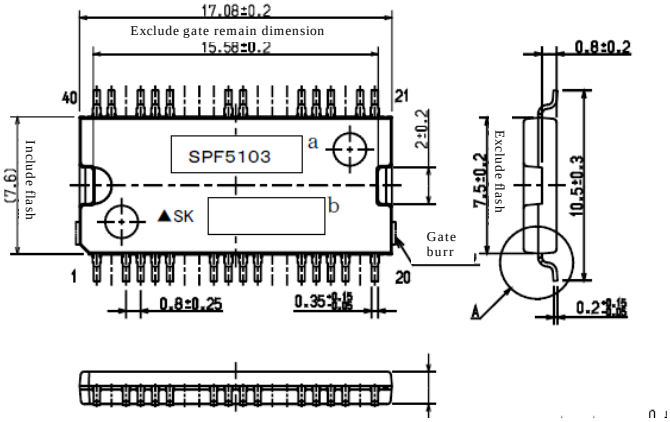
■Electrical characteristics

No.	Item		Symbol	Unit	Value Min.	Value Typ.	Value Max.	Conditions
1	IGBT Output Breakdown Voltage		BVOUT	V	570			IOUT=100μA, Ta=25℃
					500※			IOUT=100μA, Ta=-40～150℃
2	IGBT Output Leakage Current		IOUT(off)	μA			100	VOUT=500V, Ta=25℃
							300※	VOUT=500V, Ta=-40～150℃
3	IGBT Output On-State Voltage		VOUT(on)	V		1.0	1.2	IOUT=0.4A, VIN=10V
						1.3	1.8	IOUT=2.0A, VIN=10V
4	Quiescent Circuit Current		Icc1	mA			3.0	Vcc=10V, VM=VIN=0V, Ta=25℃
							4.5	Vcc=9～15V, VM=VIN=0V, Ta=-40～125℃
			Icc2	mA			4.0	Vcc=10V, VM=450V, VIN=0V Ta=25℃
							7.0	Vcc=9～15V, VM=450V, VIN=0V Ta=-40～125℃
5	Operating Circuit Current		Icc3	mA			4.0	Vcc=10V, VM=450V VIN1(orVIN2)=10V, Ta=25℃
							7.0	Vcc=10V, VM=450V VIN1(orVIN2)=10V Ta=-40～125℃
6	Input Threshold Voltage		VIH	V	0.8・Vcc			Vcc=9～15V
			VIL	V			0.2・Vcc	
7	Delay time	High side	td(on)	μs		2.0	2.3	VM=85V, I_O=0.41A
			td(off)			2.4	2.8	V_{CC}=10V
		Low side	td(on)			1.0	1.4	V_{IN}=10V(Out Stage=ON)
			td(off)			1.6	2.1	V_{IN}=0V(Out Stage=OFF)
			⊿td				3.0	⊿td=H/S td(off) – L/S td(on) or L/S td(off) – H/S td(on)
8	UVLO Voltage		V_{UVLO+}	V	5.7	6.2	6.7	
			V_{UVLO-}	V	5.3	5.9	6.6	
9	UVLO start voltage Hysteresis width		ΔV_{UVLO}	V	0.1	0.2	0.4	$\Delta V_{UVLO} = V_{UVLO+} - V_{UVLO-}$
10	Operating Voltage		VCC	V	9		15	Ta=-40～+105℃

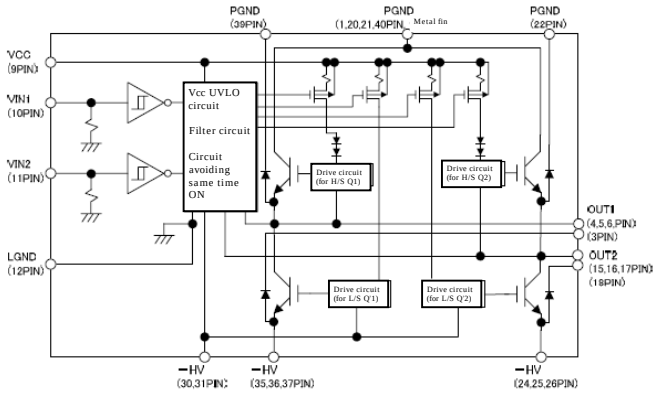
Recommended operation

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

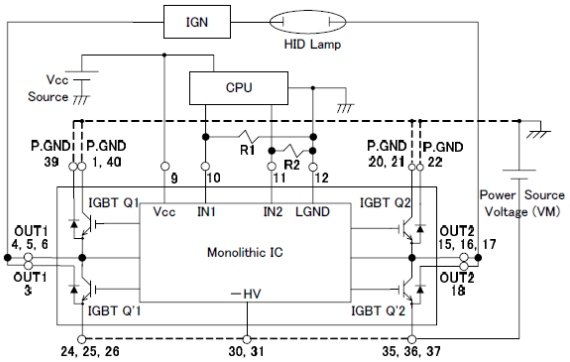
■Package



■Circuit block diagram



■Typical connection diagram



■Timing chart