150V breakdown voltage half bridge pre-driver IC　SPF6001 (Auxiliary power mounted)

■Features

●150V breakdown voltage bootstrap circuit drive system

●Charge pump circuit/ Auxiliary power mounted

●Sanken original power surface mount

■Absolute maximum ratings

Item	Symbol	Ratings	Unit	Remark
DC input voltage	VBB	-0.6 ～ 35	V	40V T<400mS
VREG Power supply voltage for gate pin control	VREG	-0.6 ～ 18	V	
Power supply voltage for logic circuit	VDD	-0.3 ～ 6	V	
Input pin control voltage	HI,LO,EN	-0.3 ～ 6	V	
L/S LS pin breakdown voltage	LS	-4 ～ 4	V	
L/S GL pin breakdown voltage	GL	-4 ～ 18	V	
H/S S pin breakdown voltage	S	-4 ～ 110	V	
H/S GH pin breakdown voltage	GH	-4 ～ 110	V	
H/S C pin breakdown voltage	C	-0.3 ～ 110	V	
FLT pin breakdown voltage	VFLT	-0.3 ～ 6	V	
CP1 pin breakdown voltage	CP1	-0.3 ～ 18	V	
CP2 pin breakdown voltage	CP2	-0.3 ～ 18	V	
Power dissipation	PD1	18.6	W	With infinite heat sink
	PD2	2.97	W	*1
Junction temperature	Tj	-40 ～ 150	℃	
Operating ambient temperature	Top	-40 ～ 105	℃	
Storage temperature	Tstg	-40 ～ 150	℃	
Thermal resistance (Junction to Case)	θj-c	6.7	℃/W	
Thermal resistance (Junction to Ambient)	θj-a	42	℃/W	

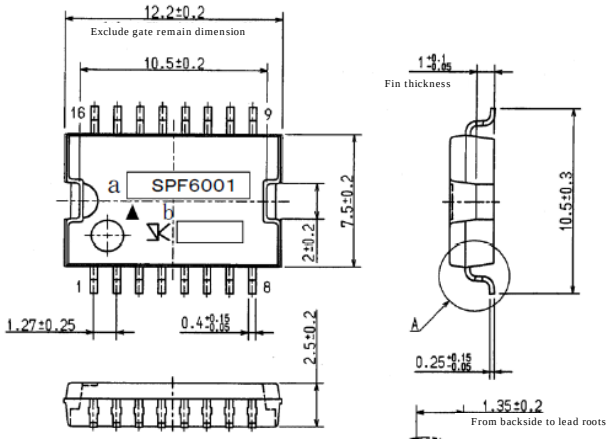
*1 When use glass epoxy + copper foil board (Size: 5.0×7.4cm, t: glass epoxy=1.6mm, copper foil=18μm)

■Electrical characteristics (Tj=25℃)

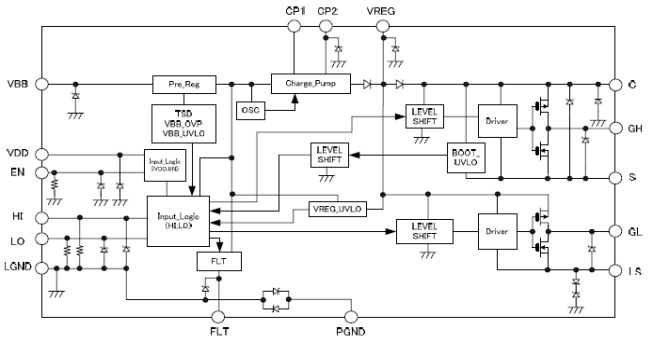
Tj=-30~125℃, VBB=14V,VDD=EN=5V,Creg=10μF, f PWM=22.5KHz,CP=0.1μF,CBOOT=0.1μF, unless otherwise specified

Characteristic	Symbol	Limits MIN	TYP	MAX	Unit	Tset Conditions
Input power supply voltage	VBB	7	14	18	V	–
	VDD	4.5	5	5.5	V	–
VBB input current	IBB1	-	3	-	mA	VDD=EN=0V, HI=LO=0V with steady state (No load)
	IBB2	-	4	-	mA	HI=LO=0V with steady state (No load)
VDD input current	IDD	-	1.0	5.0	mA	HI=LO=0V with steady state (No load)
C,GH,S-LGND current	ICL	-	-	100	μA	C=GH=S=90V
VREG output voltage	VREG1	10	12	18	V	7V＜VBB＜8V
	VREG2	12	15	18	V	8V≦VBB
EN pin・Input control voltage	VENH	2.0	-	-	V	HI=5V,LS=S=LGND After input E, LO=0V→5V (GL monitor)
	VENL	-	-	0.8	V	
	ΔVEN	-	0.15	-	V	
HI,LO pin・Input control voltage	VhiH	2.0	-	-	V	LO=5V,LS=S=LGND After input EN, HI=0V→5V (GH monitor)
	VhiL	-	-	0.8	V	
	Δvhi	-	0.15	-	V	
	VloH	2.0	-	-	V	HI=5V,LS=S=LGND After input EN, LO=0V→5V (GL monitor)
	VloL	-	-	0.8	V	
	Δvlo	-	0.15	-	V	
EN pin・Input control current	IENH	-	100	500	μA	EN=5V
	IENL	-100	-	-	μA	EN=0V
HI,LO pin・Input control current	IhiH	-	100	500	μA	HI=5V
	IhiL	-100	-	-	μA	HI=0V
	IloH	-	100	500	μA	LO=5V
	IloL	-100	-	-	μA	LO=0V
FLT pin・output saturation voltage	VFLT	-	-	0.4	V	IfltL=1mA
Boot Strap Di Vth	BDiVth	0.4	1.2	1.7	V	–
GH pin・Source RDS(ON)	RDSscGH	6	9	15	Ω	HI=5V,LO=0V,LS=S=LGND,C>10V,VREG>10V
GH pin・Sink RDS(ON)	RDSsiGH	4	6	10	Ω	HI=5V,LO=0V,LS=S=LGND,C>10V,VREG>10V
GH pin・start-up time	trGH	10	50	100	nS	VGH=20%⇒80%,Ciss=3300pF
GH pin・falling time	tfGH	10	50	100	nS	VGH=80%⇒20%,Ciss=3300pF
GL pin・Source RDS(ON)	RDSscGL	6	9	15	Ω	HI=0V,LO=5V,LS=S=LGND,C>10V,VREG>10V
GL pin・Sink RDS(ON)	RDSsiGL	4	6	10	Ω	HI=0V,LO=5V,LS=S=LGND,C>10V,VREG>10V
GL pin・start-up time	trGL	10	50	100	nS	VGL=20%⇒80%,Ciss=3300pF
GL pin・falling time	tfGL	10	50	100	nS	VGL=80%⇒20%,Ciss=3300pF
Output delay time	tonH	150	250	420	nS	VhiH⇒VGH=10%, Ciss=3300pF
	toffH	150	250	410	nS	VhiL⇒VGH=90%, Ciss=3300pF
	tonL	150	250	420	nS	VloH⇒VGH=10%, Ciss=3300pF
	toffL	150	250	410	nS	VloL⇒VGH=90%, Ciss=3300pF
VDD UVLO releasing voltage	VuvddH	3.5	4.0	4.5	V	(GH,GL,FLT monitor)
VDD UVLO activating voltage	VuvddL	3.3	3.8	4.3	V	
VDD UVLO hysteresis	ΔVuvdd	-	200	-	mV	
VBB OVP releasing voltage	VovbbH	24	28	32	V	(GH,GL,FLT monitor)
VBB OVP activating voltage	VovbbL	22	25	31	V	
VBB OVP hysteresis	ΔVovbb	-	3	-	V	
VBB UVLO releasing voltage	VuvbbH	6.0	6.5	7.0	V	(GH,GL,FLT monitor)
VBB UVLO activating voltage	VuvbbL	5.5	6.1	6.6	V	
VBB UVLO hysteresis	ΔVuvbb	-	400	-	mV	

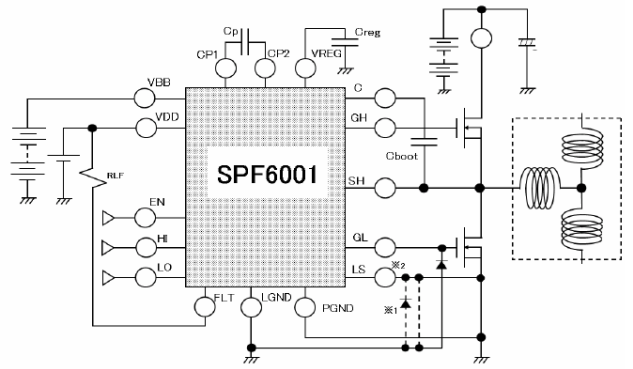
■Package



■Circuit block diagram



■Typical connection diagram



■Timing chart