MCZ5211ST

LLC Current Resonant Mode Controller

Feature

- Robust 600V direct gate driver
- HV Startup function
- Vcc(max)=35V
- Active Stand-by function
- Burst mode function
- Soft Starting function
- Operating frequency 500kHz is available
- Over current protection(OCP1)
- Over current protection for peak load(OCP2)
- Correction of OLP(OCP2) level based on the input voltage.
- Capacitive mode protection
- Two-step timer latch function
- Latching protection with external signal is possible
- Vc1 OVP(Latching protection) is possible
- Low input voltage protection(Vsen)
- Thermal Shutdown
- Halogen free
- Pb free
- RoHS:Yes

Outline

House Name: SOP18

1.絶対最大定格
Absolute Maximum Ratings

1-1.入出力定格
Input Output Ratings

特に指定なき場合はTj=25℃
Tj=25℃ unless otherwise specified

項目 Item	記号 Symbol	規格値 Value			単位 Unit
Vin入力電圧 Vin input voltage	Vin	−0.3	～	600	V
フローティングドライバ電圧 High side floating supply voltage	VB	−0.3	～	600	V
制御部電源電圧 Vc1 input voltage	Vc1	−0.3	～	35	V
ハイサイドドライバ電源電圧 VB input voltage	VB−VS	−0.3	～	16	V
ローサイドドライバ電源電圧 Vc2 input voltage	Vc2	−0.3	～	16	V
Vsen端子電圧 Vsen input voltage	V_{sen}	−0.3	～	10	V
ASTBY端子電圧 ASTBY input voltage	V_{ASTBY}	−0.3	～	6(*1)	V
BURST端子電流 BURST input current	I_{BURST}	−1	～	10	mA
SST端子電流 SST input current	I_{SST}	−1	～	10	mA
SSD端子電圧 SSD input voltage	V_{SSD}	−0.3	～	6(*1)	V
CSO端子電圧 CSO input voltage	V_{CSO}	−0.3	～	6	V
CS端子電圧 CS input voltage	V_{CS}	−3	～	6	V

*1 外部電圧印加の場合。ICからの出力電圧については不問とする。
In case of external supply voltage. Output voltage from IC is no object.

1-2.熱定格
Thermal Ratings

項目 Item	記号 Symbol	規格値 Value	単位 Unit
許容損失 Total power dissipation	Pt	2.4 (*2)	W
接合部温度 Junction temperature	Tj	150	℃
保存温度 Storage temperature	Tstg	−40 ～ 150	℃
熱抵抗 Thermal Resistance	θja	50 (*2)	℃/W

*2 4-layer Board
ガラエポ基板:114.3mm×76.2mm, 厚さ:1.6mm、内面銅箔サイズ:74.2mm×74.2mm, 厚さ:35μm
Glass-Epoxy Board :114.3mm×76.2mm , Thickness:1.6mm, Inside copper foil:74.2mm×74.2mm, Thickness:35μm

2.推奨動作条件
Recommended operation conditions

項目 Item	記号 Symbol	推奨値 Value	単位 Unit
Vin入力電圧 Vin input voltage	Vin	50 ～ 480	V
フローティングドライバ電圧 High side floating supply voltage	VB	−0.3 ～ 480	V
制御部電源電圧 Vc1 input voltage	Vc1	−0.3 ～ 28	V
ハイサイドドライバ電源電圧 VB input voltage	VB-VS	−0.3 ～ Vc2-Vf (*3)	V
ローサイドドライバ電源電圧 Vc2 input voltage	Vc2	−0.3 ～ Vc2 (*4)	V
接合部温度 Junction temperature	Tj	−20 ～ 120	℃

*3 Vf : ブートストラップ用ダイオードのVf
Vf is forward voltage of Boot strap diode.

*4 電気的特性(3ページ)のVc2(dkon)規格値を参照
Please refer to Drain-kick section Vc2(dkon) of 3 pages of this specification.

注意
Notes

推奨動作条件の範囲を超えて使用すると、信頼性に影響を及ぼす場合があります。
It might influence reliability when using it exceeding the range of recommended operating conditions.

本ICを御使用の際は絶対最大定格を越えないようにしてください。絶対最大定格を超えた場合、ICが破壊する可能性があります。破壊した場合、その破壊モード(オープンモード、ショートモード)は特定できませんので、ヒューズなど物理的な安全対策を施すようお願いします。
Do not use this IC beyond its absolute maximum ratings to prevent the IC from potential damage. Since the kind of destructive mode cannot be identified (open mode, short mode), take safety measures such as fusing.

3.電気的特性
Electrical characteristics

3-1.電気的特性(1/6)
Electrical characteristics (1/6)

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

＜Starter部＞

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	TYP	MAX	単位 Unit
不足電圧保護回路 Under voltage protection						
Vc2動作開始電圧 Vc2 startup threshold voltage	Vc2(st)		9.3	10.0	10.7	V
Vc2動作停止電圧 Vc2 shutdown threshold voltage	Vc2(sp)		6.8	7.5	8.2	V
Vc2動作開始/停止電圧差 Vc2 st/sp hysteresis voltage	Vc2(st/sp)hys		1.8	2.5	3.2	V
過熱保護 Thermal shutdown protection						
動作停止温度 Operating stop temperature	TSD		140 *5	–	–	℃
動作停止/復帰温度幅 Hysteresis temperature	⊿TSD		–	40 *5	–	℃
ラッチ保護 Stop latch section						
ラッチ解除電圧 Latch reset voltage of Vc2	Vc2(latch reset)		6.0	7.0	8.0	V
Vc2動作停止/ラッチ解除電圧差 Vc2(sp)-Vc2(latch reset) hysteresis	Vc2(splatrst)	Vc2(sp)- Vc2(latch reset)	0.1	0.5	1.0	V
Vc1過電圧保護電圧 Over voltage protection of Vc1	Vc1(ovp latch)		31.0	33.0	34.7	V
ドレインキック機能 Drain-kick section						
ドレインキック供給電流1 Drain-kick supply current 1	Idk(on)1	Vin=100V Vc2=1.0V	2.0	2.8	3.6	mA
ドレインキック供給電流2 Drain-kick supply current 2	Idk(on)2	Vin=100V Vc2=4.0V	27	33	40	mA
ドレインキック供給電流1,2切替Vc2電圧 Drain-kick supply current 1,2	Vc2(dkon12)	Vin=100V Idk=Idk(on)1→Idk(on)2	2.0	2.5	3.0	V
ドレインキックOFF時消費電流 Vin current of DK-off	Ivin(dkoff)	Vin=100V Vc1=16V	5	20	40	uA
ドレインキックON時Vc2電圧 Vc2 voltage of DK-on	Vc2(dkon)	Vin=100V Vc1=0V	12.1	12.8	13.5	V
ドレインキックOFF時Vc2電圧 Vc2 voltage of DK-off	Vc2(dkoff)	Vc1=16V	11.8	12.5	13.2	V
ドレインキック停止Vc1電圧 Vc1 voltage of DK-off	Vc1(dkoff)	Vin=100V	11.2	12.6	14.0	V
ドレインキック再起動Vc1電圧 Vc1 voltage of DK-on	Vc1(dkon)	Vin=100V	7.0	8.0	9.0	V
ドレインキック再起動Vc1,Vc2停止電圧差 Vc1(dkon)-Vc2(sp) hysteresis voltage	V1dkonV2sp	Vc1(dkon)-Vc2(sp)	0.05	0.5	1.5	V

*5 設計保証
Design assurance.

3-1.電気的特性(2/6)
Electrical characteristics (2/6)

＜Starter部＞

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	TYP	MAX	単位 Unit
消費電流 consumption current						
待機時Vin消費電流 Vin current of stand-by	Idk(stb)	Vin=100V Vc1=0V, Vsen=0V	500	600	700	uA
待機時Vc1消費電流(バースト停止) Vc1 current of stand-by (burst stop)	Ivc1(stb)	Vc1=16V, Vsen=6V BURST＞Vbst(H)	500	600	700	uA
動作時消費電流 Operating current	Ivc1(on)	Vc1=16V,Vsen=6V, VGL,VGH=220pF	11	14	17	mA
バースト機能 Burst section						
BURST端子出力停止電圧 BURST voltage of output off	Vbst(H)		1.8	2.0	2.2	V
BURST端子出力起動電圧 BURST voltage of output on	Vbst(L)		1.3	1.5	1.7	V
BURST端子出力停止/起動電圧差 Output off/on hysteresis voltage	Vbst(H/L)hys	Vbst(H)-Vbst(L)	0.3	0.5	0.7	V
BURST端子放電電流1 BURST discharge current 1	Ibst(dis)1	ASTBY＜Vastby(bston/off) BURST=1.0V	250	400	550	uA
BURST端子放電電流2(バーストモード) BURST discharge current 2 (burst mode)	Ibst(dis)2	ASTBY＞Vastby(bston/off) BURST=1.0V	-5	0	5	uA
入力監視機能						
入力電圧監視しきい値1 Input threshold voltage 1	Vsen1	ASTBY<Vas(stpoff)	2.80	3.00	3.20	V
入力電圧監視しきい値2 Input threshold voltage 2	Vsen2	ASTBY<Vas(stpoff)	2.55	2.75	2.95	V
入力電圧監視しきい値1,2電圧差 Input 1,2 hysteresis voltage	Vsen(1-2)hys	Vsen1(ss-reset)- Vsen2(ss-reset)	0.10	0.25	0.50	V
入力電圧監視しきい値3 Input threshold voltage 3	Vsen3	ASTBY>Vas(stpoff)	0.60	0.85	1.00	V
入力電圧監視しきい値4 Input threshold voltage 4	Vsen4	ASTBY>Vas(stpoff)	0.50	0.75	0.90	V
入力電圧監視しきい値3,4電圧差 Input 3,4 hysteresis voltage	Vsen(3-4)hys	Vsen3(ss-rese)- Vsen4(ss-reset)	0.02	0.10	0.20	V
Vsen端子停止時BURST端子放電電流 BURST discharge current at Vsen-OFF	Ibst(vsendis)	Vin=Vc1=16V Vsen=0V, BURST=1V	2.0	3.5	5.0	mA
Vsen端子停止時Vc1端子放電電流 Vc1 discharge current at Vsen-OFF	Ivc1(vsendis)	Vin=Vc1=16V Vsen=0V	2.0	3.0	4.0	mA

3-1.電気的特性(3/6)
Electrical characteristics (3/6)

＜LLC部＞

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	TYP	MAX	単位 Unit
ソフトスタート機能 Soft start section						
SST端子しきい値 Input threshold voltage	V_{SST}		1.3	1.5	1.7	V
SST充電電流1 SST charge current 1	Isst(chg)1	SST=0V	−110	−90	−70	uA
SST充電電流2 SST charge current 2	Isst(chg)2	SST=1.0V	−40	−30	−20	uA
SST充電電流3 SST charge current 3	Isst(chg)3	SST=1.0V Burst Restart	−110	−90	−70	uA
SST放電電流 SST discharge current	Isst(dischg)	SST=1.0V Vsen=0V	2.0	4.0	6.0	mA
SST端子開放電圧 SST open voltage	Vsst(open)		1.9	2.1	2.3	V
LLC動作開始SST電圧 SST voltage of LLC start	Vsst(st)		0.5	0.6	0.7	V
LLC動作停止SST電圧 SST voltage of LLC stop	Vsst(sp)		0.4	0.5	0.6	V
LLC動作開始/停止SST電圧差 SST hysteresis voltage of LLC st/sp	Vsst(st/sp)hys	Vsst(st)−Vsst(sp)	0.04	0.10	0.20	V
SSTラッチ停止電圧 SST latch stop voltage	Vsst(latch)		4.2	4.5	4.8	V
バースト間欠動作時SST端子保持電圧 SST voltage to burst operation	Vsst(bst)	BURST>Vbst(H)	0.4	0.5	0.6	V
タイマ機能 Timer section						
Timerしきい値1 Timer threshold voltage 1	Vtimer(set)		3.2	3.5	3.8	V
Timerしきい値2 Timer threshold voltage 2	Vtimer(reset)		0.25	0.40	0.55	V
Timer充電電流1 Timer charge current 1	Itimer(chg)1	CS > |Vocp1(±)|	−50	−40	−30	uA
Timer充電電流2 Timer charge current 2	Itimer(chg)2	|Vocp2(±)|<CS<|Vocp1(±)| Vcso(ocp2)<CSO<Vcso(tmr)	−2.4	−1.7	−1.0	uA
Timer充電電流3 Timer charge current 3	Itimer(chg)3	|Vocp2(±)|<CS<|Vocp1(±)| CSO>Vcso(tmr)	−50	−40	−30	uA
Timer放電電流(Refresh) Timer discharge current (Refresh)	Itimer(refresh)		375	600	825	uA
Timer放電電流(間欠) Timer discharge current (Intermittent)	Itimer(dischg)		4.0	6.5	9.0	uA

3-1.電気的特性(4/6)
Electrical characteristics (4/6)

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

＜LLC部＞

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	TYP	MAX	単位 Unit
発振器機能 Oscillator section						
周波数設定精度 Output frequency	f(0)	Ct=1500pF,Rt=9.3kΩ*6	90	100	110	kHz
ソフトスタート周波数 Soft start frequency	fss	Ct=1500pF,Rt=9.3kΩ*6 SST=Vss(st)	260	320	380	kHz
FB充電電流 FB charge current	Ifb(chg)	FB=4.0V	−10.8	−9.0	−7.2	mA
FB充電停止電圧 FB charge stop voltage	Vfb(top)		4.75	5.00	5.25	V
FB充電開始電圧1 FB charge start voltage 1	Vfb(bottom)1		3.50	3.75	4.00	V
FB充電開始電圧2 FB charge start voltage 2	Vfb(bottom)2	Tss(3)	2.85	3.10	3.35	V
FB充電開始電圧3 FB charge start voltage 3	Vfb(bottom)3	ASTBY=open	2.45	2.70	2.95	V
FBマスク電圧 FB musk threshold voltage	Vfb(msk)		4.35	4.60	4.85	V
Tss拡大比 Tss expansion ratio	Tss(3) *7	SST=Vss(st)	−	1.7	−	−
FB放電電流1 FB discharge current1	Ifb(dis)1	Vsen=6V ASTBY=6V	300	400	500	uA
FB放電電流2 FB discharge current2	Ifb(dis)2	Vsen=6V ASTBY=2V	−5	0	5	uA

*6 Ct : FB端子に接続する外付けコンデンサ
Ct is external capacitor connected to FB terminal .
Rt : FB端子に接続する外付け抵抗
Rt is external resistor connected to FB terminal .

*7 Tss(3):発振器1発目と3発目のVGLのON幅比(設計保証)
Tss(3) is on-time ratio of VGL depend on 1st and 3rd time in saw-tooth wave. (design assurance)

3-1.電気的特性(5/6)
Electrical characteristics (5/6)

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

＜LLC部＞

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	TYP	MAX	単位 Unit
過電流保護機能 Over current protection						
OCP1(+)検出電圧 OCP1(+) threshold voltage	Vocp1(+)		0.485	0.550	0.615	V
OCP1(−)検出電圧 OCP1(−) threshold voltage	Vocp1(−)		−0.615	−0.550	−0.485	V
OCP2(+)検出電圧1 OCP2(+) threshold voltage1	Vocp2(+)1	SSD=4V	0.290	0.350	0.410	V
OCP2(+)検出電圧2 OCP2(+) threshold voltage2	Vocp2(+)2	SSD=1V FB=Vfb(bottom)+0.1V	0.200	0.260	0.320	V
OCP2(−)検出電圧 OCP2(−) threshold voltage	Vocp2(−)		−0.410	−0.350	−0.290	V
CS端子充電電流 CS charge current	Ics	CS=0V	−120	−100	−80	uA
CSO端子プレチャージ電圧 CSO pre-charge voltage	Vcso(pre)	CS=0V	0.8	0.9	1.0	V
OCP2動作開始CSO端子電圧 CSO voltage to OCP2-ON	Vcso(ocp2)	|Vocp2(±)|<CS<|Vocp1(±)|	0.9	1.0	1.1	V
CSO端子検出電圧差 Difference of CSO voltage	Vcso	Vcso(ocp2)−Vcso(pre)	0.04	0.10	0.20	V
Timer充電切替CSO端子検出電圧 CSO voltage to timer current switching	Vcso(tmr)		1.8	2.0	2.2	V
OCP2動作時CSO端子充電電流 CSO charge current to OCP2 operation	Icso(ocp2)	CSO>Vcso(ocp2)	−35	−25	−15	uA
CSO端子放電電流 CSO discharge current	Icso(dis)	CSO=1.2V	5	10	15	uA
SSD端子充電電流1 SSD charge current1	Issd(chg)1	ASTBY<Vastby(bston/off)	−120	−100	−80	uA
SSD端子充電電流2 SSD charge current2	Issd(chg)2	ASTBY>Vastby(bston/off)	−5	0	5	uA
SSD端子開放電圧 SSD open voltage	Vssd(open)		5.5	6.0	6.5	V
di/dt保護機能 di/dt protection						
didt(+)検出電圧 didt(+) threshold voltage	Vdidt(+)		0.030	0.060	0.090	V
didt(−)検出電圧 didt(−) threshold voltage	Vdidt(−)		−0.090	−0.060	−0.030	V

3-1.電気的特性(6/6)

Electrical characteristics (6/6)

特に指定なき場合はVin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃
Vin=100V,Vc1=16V,f(0)=100kHz,Tj=25℃ unless otherwise specified

＜LLC部＞

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	規格値 Ratings TYP	規格値 Ratings MAX	単位 Unit
AS機能 Active stand-by section						
ASリニア動作開始電圧 AS-linear start voltage	Vas(linon)		2.7	3.0	3.3	V
ASリニア動作解除電圧 AS-linear stop voltage	Vas(linoff)		2.0	2.2	2.4	V
ASモード開始電圧 AS-mode start voltage	Vas(on)		3.0	3.2	3.4	V
ASモード解除電圧 AS-mode stop voltage	Vas(off)		2.0	2.2	2.4	V
ASTBY端子開放電圧 ASTBY open voltage	Vastby(open)	Vin=Vc1=16V Vsen=1V	5.0	5.4	6.0	V
ASTBY端子充電電流 ASTBY charge current	Iastby(chg)	Vin=Vc1=16V Vsen=1V,ASTBY=0V	-35	-25	-15	uA
バーストモード開始ASTBY端子電圧 Burst-mode on voltage	Vastby(bston)		3.7	4.0	4.3	V
バーストモード解除ASTBY端子電圧 Burst-mode off voltage	Vastby(bstoff)		3.6	3.9	4.2	V
バーストモード開始/解除電圧差 Burst-mode on/off hysteresis voltage	Vastby(on/off)hys	Vastby(bston)- Vastby(bstoff)	0.05	0.10	0.20	V

＜ドライバ部＞

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings MIN	規格値 Ratings TYP	規格値 Ratings MAX	単位 Unit
ハイサイドドライバ機能 High side driver section						
ハイサイドドライバ動作開始電圧 high side driver start voltage	VB-VS(st)		6.5	7.5	8.5	V
ハイサイドドライバ動作停止電圧 high side driver stop voltage	VB-VS(sp)		4.5	5.5	6.5	V
ハイサイドドライバ動作停止電圧 2 high side driver stop voltage 2	Vc2-VB	Vc2(sp)-VB-VS(sp)	1.5	2.5	3.5	V
LLCドライバ LLC driver						
ソース駆動能力 Output source current	Iout(so)	Vc2=VB=12V VGL=VGH=0V	-280	-240	-200	mA
シンク駆動能力 Output sink current	Iout(si)	Vc2=VB=12V VGL=VGH=12V	320	400	500	mA
ONデューティー Output duty cycle	duty	Ct=1500pF,Rt=9.3kΩ*6	40	45	50	%
デッドタイム Dead time	DT	Ct=1500pF,Rt=9.3kΩ*6	250	400	550	ns
上下デッドタイム差 Unbalance of dead time	⊿DT	Ct=1500pF,Rt=9.3kΩ*6	-100	0	100	ns

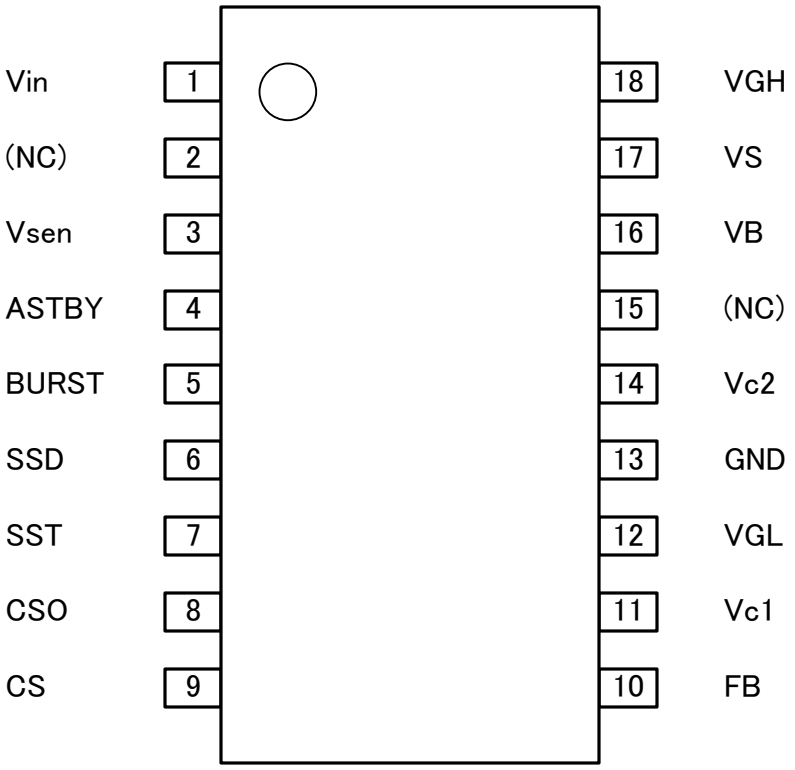
*6 Ct : FB端子に接続する外付けコンデンサ
Ct is external capacitor connected to FB terminal .
Rt : FB端子に接続する外付け抵抗
Rt is external resistor connected to FB terminal .

4.端子機能説明 Pin Function

端子番号	記号	Starter/LLC	機能
1	Vin	Starter	起動回路入力端子 Input of start-up circuit
2	(NC)	-	未接続端子 Non connection
3	Vsen	LLC	低入力保護、SSリセット Low voltage protection. SS-reset
4	ASTBY	Starter/LLC	アクティブスタンバイ切替端子、バーストモード切替端子 Change to active stand-by mode, burst mode
5	BURST	Starter/LLC	バースト動作制御端子 Control to burst operation
6	SSD	Starter/LLC	OCP2しきい値調整端子、ノーマル・バースト動作モード出力端子 Vocp2+ regulation, Normal/Burst mode output
7	SST	LLC	ソフトスタートと異常検出時の間欠動作用コンデンサ接続端子 Control to soft-start time and intermittent operation time
8	CSO	LLC	過電流平均化検出応答調整用端子 Detect to adjust response of averaging current
9	CS	LLC	過電流検出、過電流平均化検出、di/dt(共振はずれ)検出端子 Detect to over current, averaging current, di/dt-mode
10	FB	LLC	発振器の周波数設定用端子:Dutyや動作周波数の制御 Frequency and duty setting
11	Vc1	Starter/LLC	制御回路の電源供給端子 Power supply
12	VGL	LLC	ローサイドドライバ出力端子 Low side driver output
13	GND	common	GND端子 GND terminal.
14	Vc2	Starter/LLC	ドライバ用電源出力端子 Output voltage of driver
15	(NC)	-	未接続端子 Non connection
16	VB	LLC	ハイサイドドライバ電源端子 High side driver output
17	VS	LLC	ハイサイドドライバ基準電源端子 Reference of high side driver
18	VGH	LLC	ハイサイドドライバ出力端子 Output of high side driver

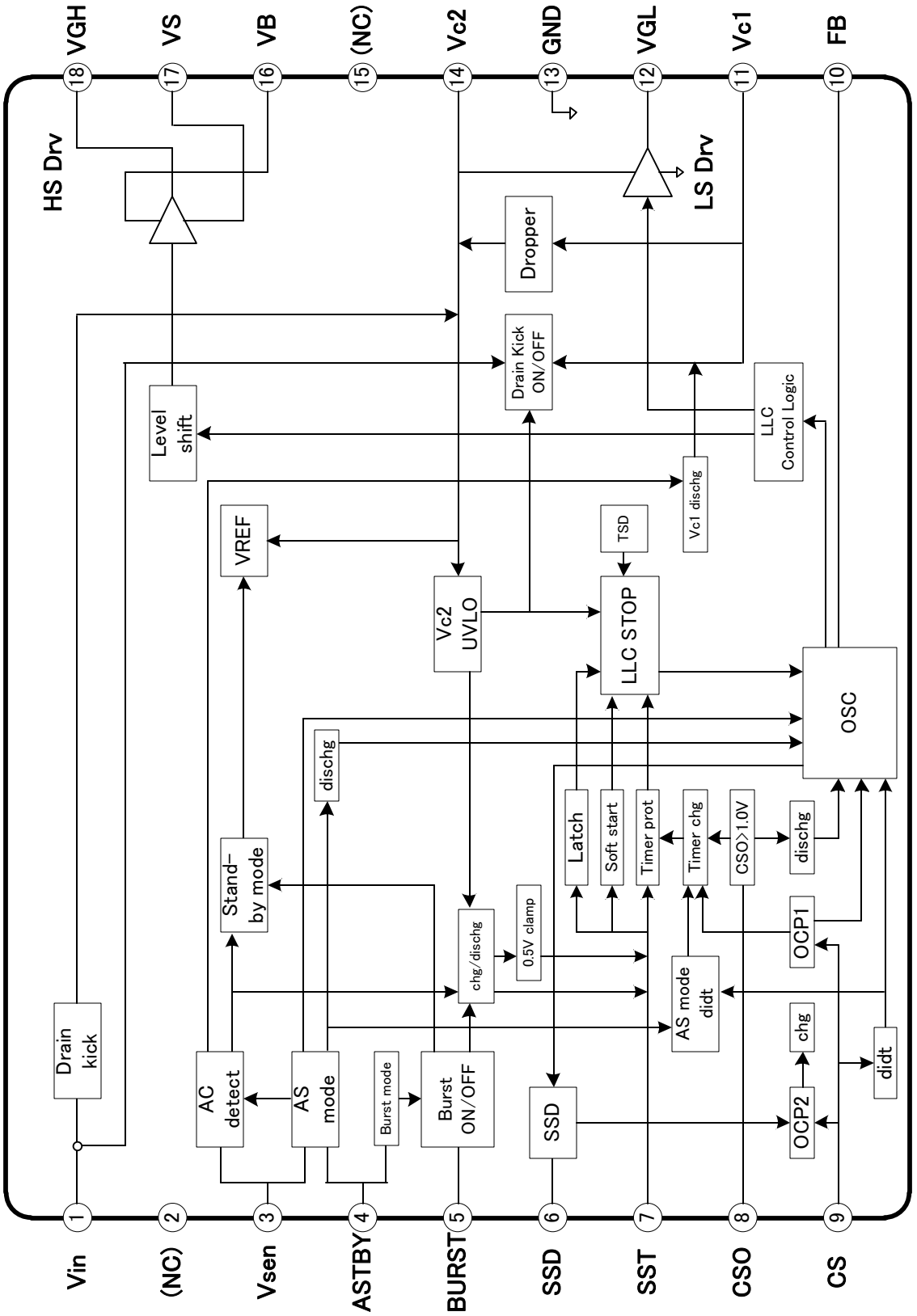
5.端子配置
Pin assignment

SOP18pkg



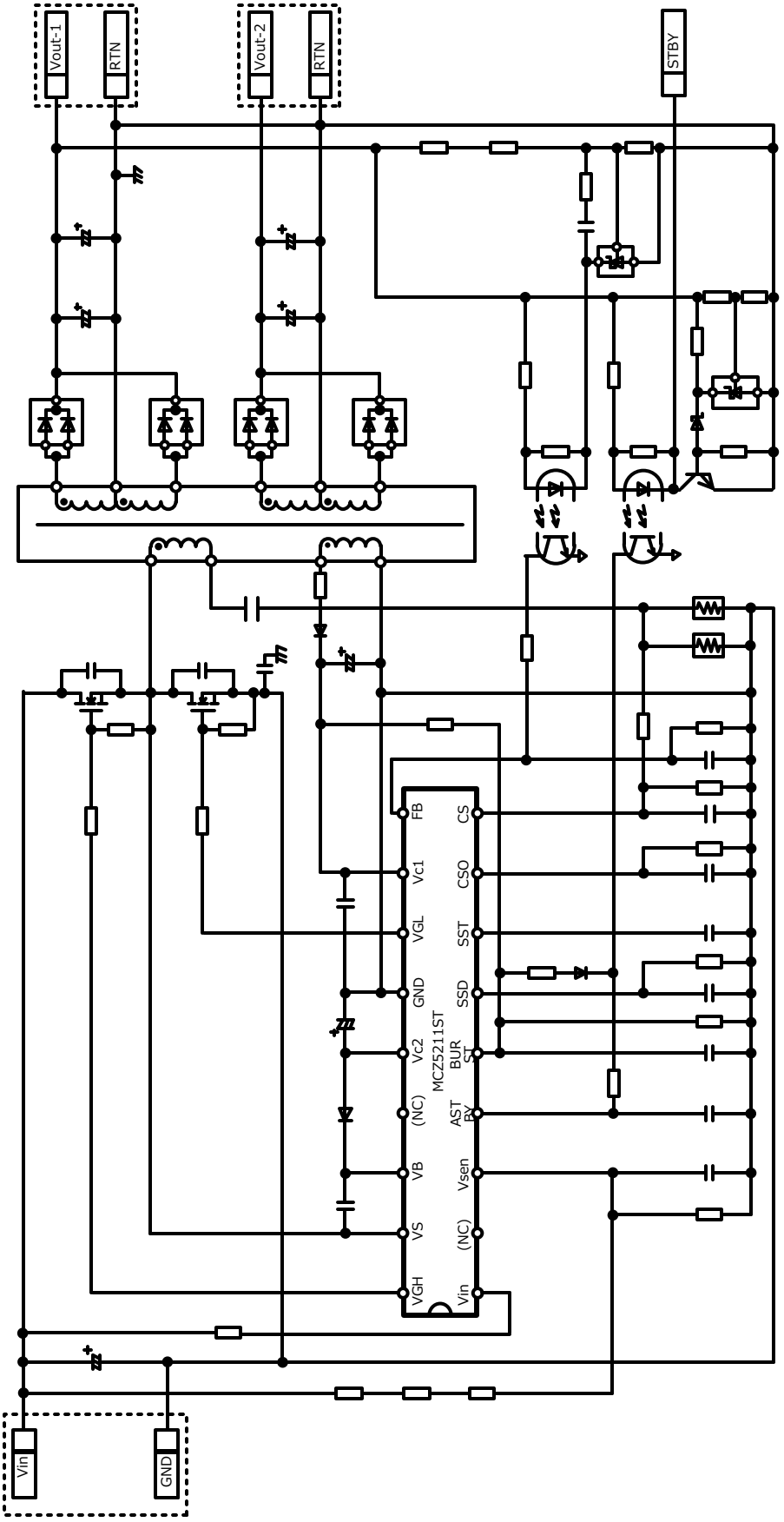
6.ブロック図

Block Diagram



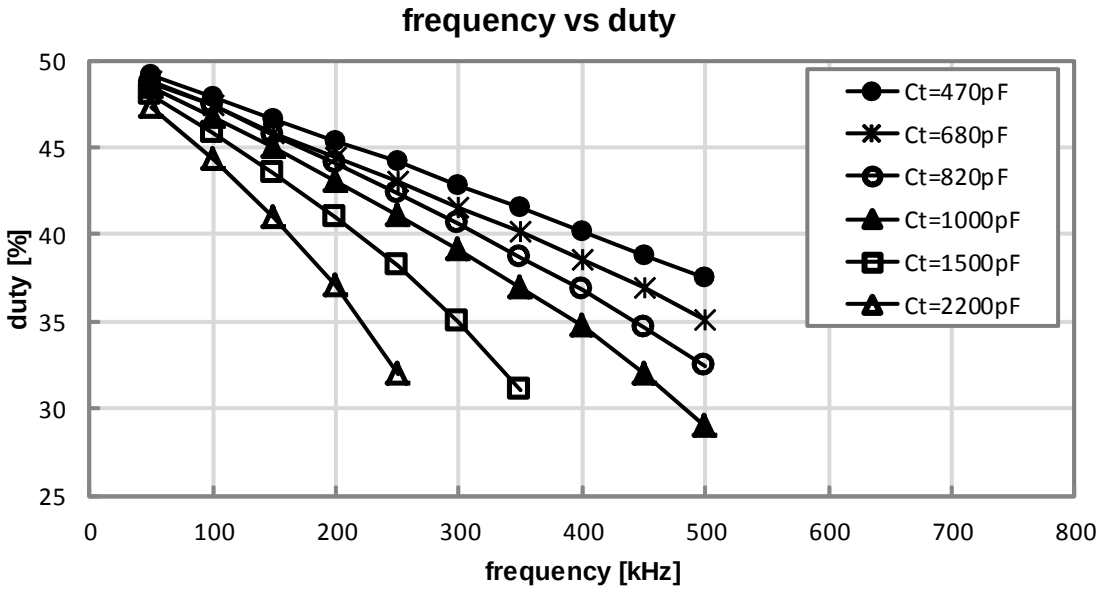
7.代表回路図

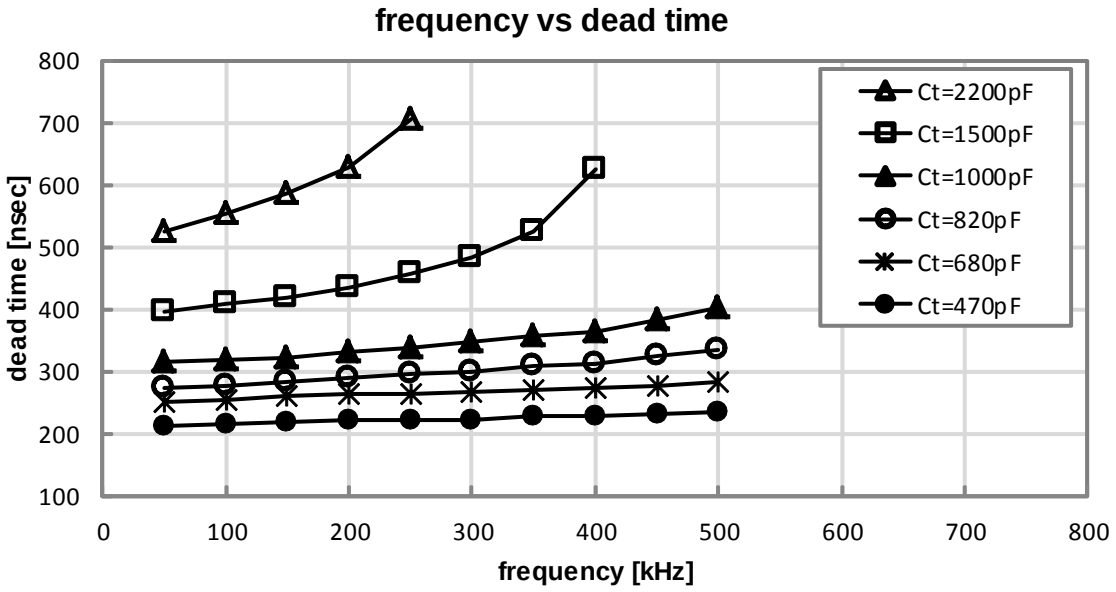
Example Circuit Diagram



特性図
Characteristics Diagrams

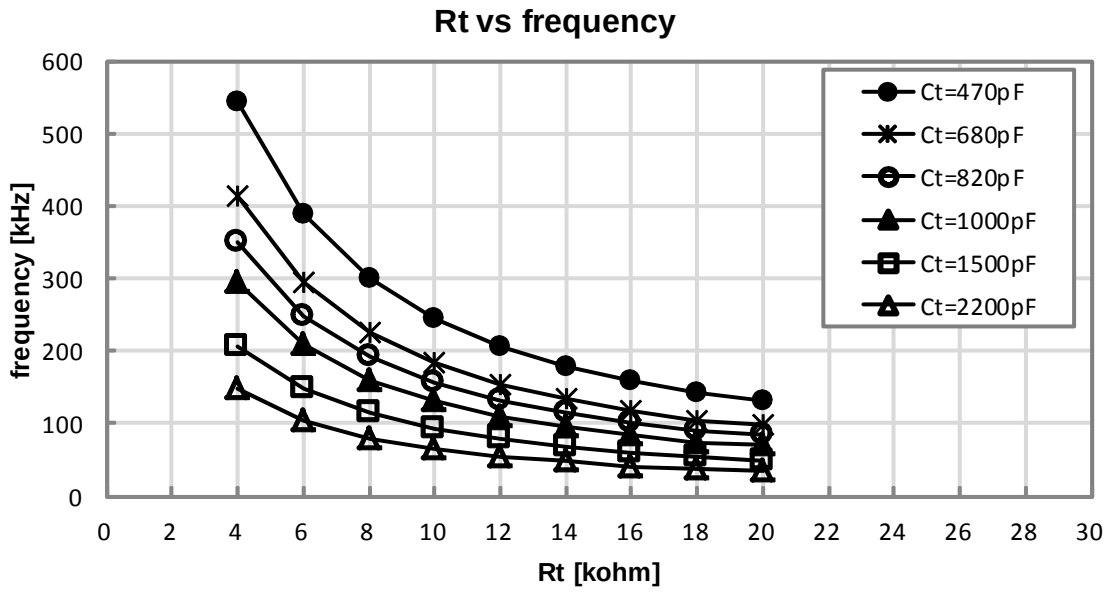
特に指定なき場合はTj=25℃
Tj=25℃ unless otherwise specified

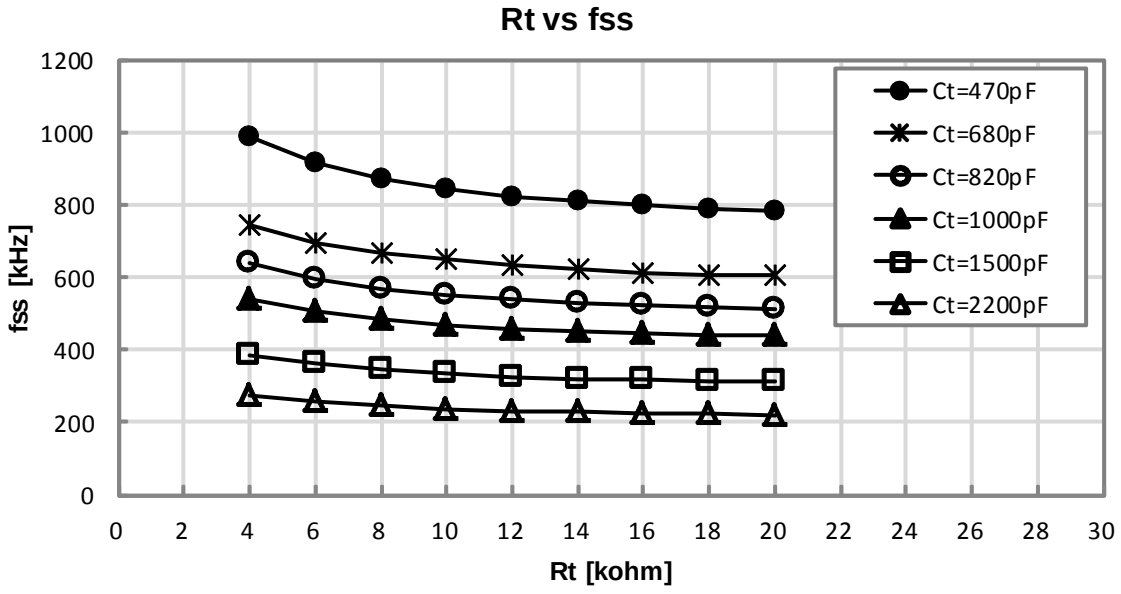




＊Ct：FB端子に接続する外付けコンデンサ
Ct is external capacitor connected to FB terminal .

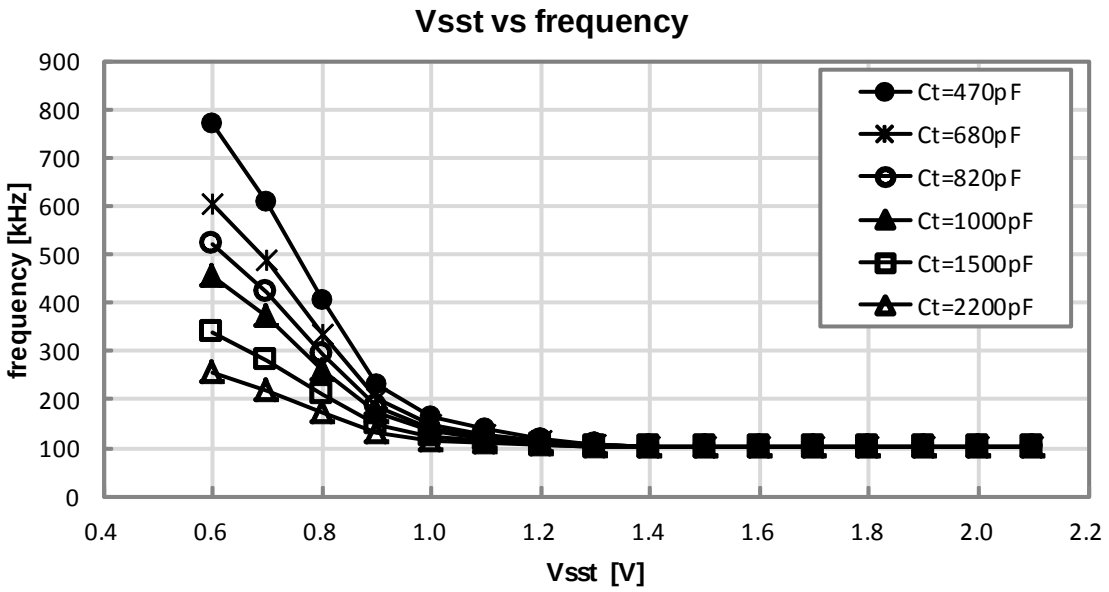
特に指定なき場合はTj=25℃
Tj=25℃ unless otherwise specified

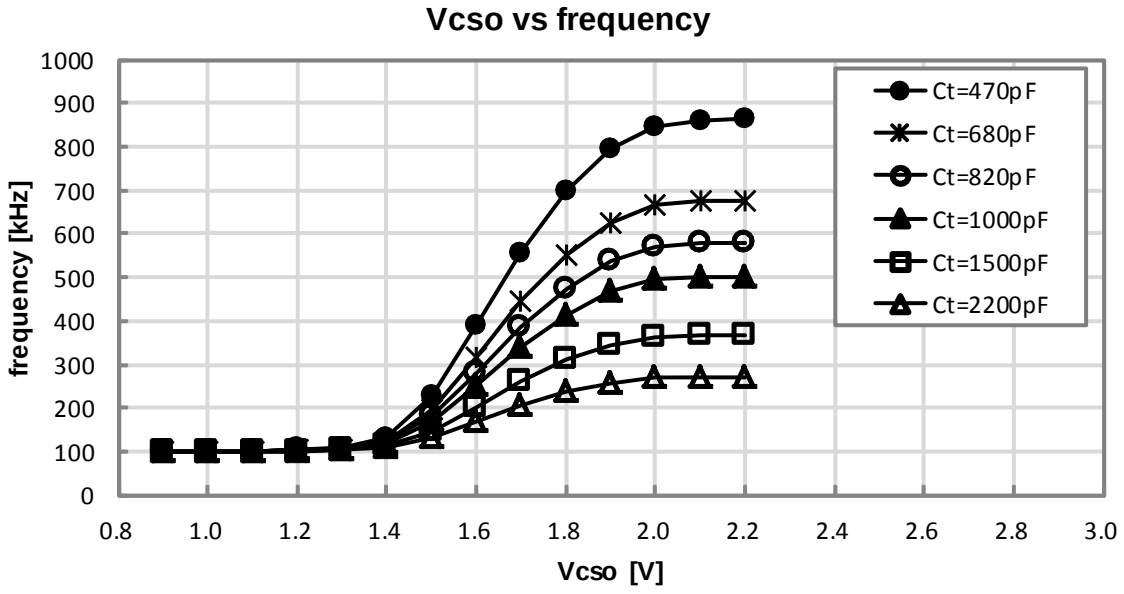




＊Ct：FB端子に接続する外付けコンデンサ
Ct is external capacitor connected to FB terminal .
Rt：FB端子に接続する外付け抵抗
Rt is external resistor connected to FB terminal .

特に指定なき場合はTj=25℃
Tj=25℃ unless otherwise specified





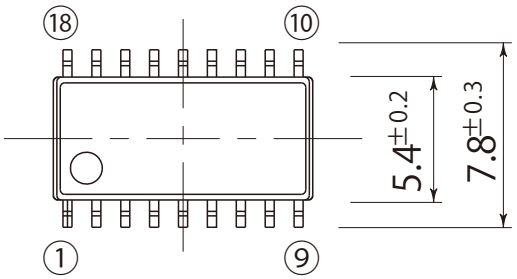
＊Ct：FB端子に接続する外付けコンデンサ
Ct is external capacitor connected to FB terminal .

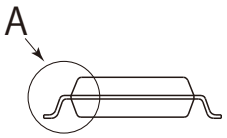
Package Outline-Dimensions

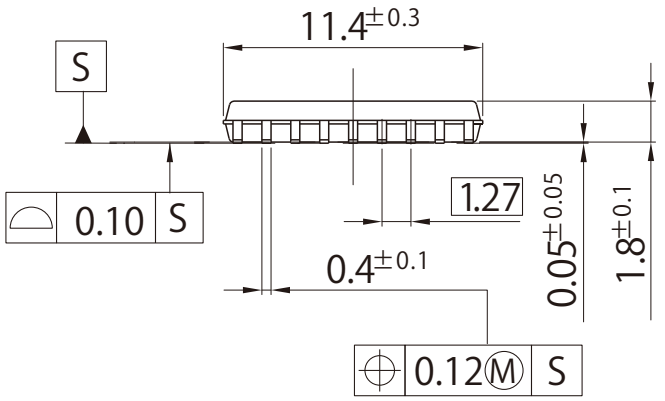
unit : mm
scale: 3/1

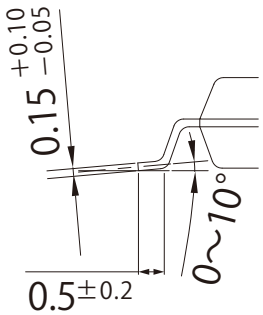
L6

JEDEC Code	–
JEITA Code	–
House Name	SOP18

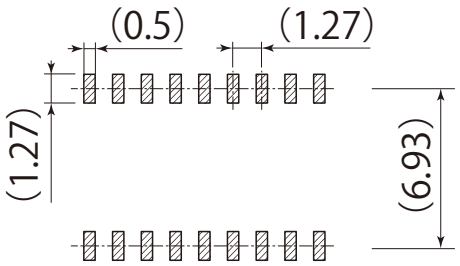








Detail A



Referential Soldering Pad

・量産時には、適正化を図って下さい
・Optimize soldering pad to the board design and soldering condi tion.

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