

■ Features

- Maximum switching current: 3.5A
- Built-in ON/OFF control function
- Built-in soft start function to suppress overshoot of output voltage in power on sequence or ON/OFF control sequence
- Built-in oscillation circuit (Oscillation frequency: TYP. 150kHz)
- Built-in overheat protection function, overcurrent shut-down function
- Sleeve-packaged product
- Variable output voltage
(Output variable range: Vref to 35V/-Vref to -30V)
[Possible to select step-down output/inverting output according to external connection circuit]

■ Applications

- LCD monitors
- Car navigation systems
- Switching power supplies

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V _{IN}	40	V
Error input voltage	V _{ADJ}	7	V
Input-output voltage	V _{LO}	41	V
*2 Output – COM voltage	V _{OUT}	-1	V
*3 V _{soft} terminal voltage	V _{soft}	-0.3 to +40	V
Switching current	I _{SW}	3.5	A
*4 Power dissipation	P _D	35	W
*5 Junction temperature	T _j	150	°C
Operating temperature	T _{opr}	-20 to +85	°C
Storage temperature	T _{stg}	-40 to +150	°C
Soldering temperature	T _{sol}	260 (10s)	°C

*1 Voltage between V_{IN} terminal and COM terminal

*2 Voltage between V_{OUT} terminal and COM terminal

*3 Voltage between V_{SOFT} terminal and COM terminal

*4 P_D: With infinite heat sink

*5 Overheat protection may operate at T_j=125°C to 150°C

• Please refer to the chapter " Handling Precautions ".

* All specs and applications shown above subject to change without prior notice.

Electrical Characteristics (CP1032-ADJ)

(Unless otherwise specified, condition shall be $V_{IN}=12V$, $I_O=0.5A$, $V_O=5V$, $V_{soft\ terminal}=0.1\mu F$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	$I_{SW}=3A$	-	1.4	1.8	V
Reference voltage	V_{ref}	-	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	ΔV_{ref}	$T_J=0$ to $125^\circ C$	-	± 0.5	-	%
Load regulation	$ R_{egL} $	$I_O=0.5$ to $3A$	-	0.2	1.5	%
Line regulation	$ R_{egI} $	$V_{IN}=8$ to $35V$	-	1	2.5	%
Efficiency	η	$I_O=3A$	-	80	-	%
Oscillation frequency	f_o	-	135	150	165	kHz
Oscillation frequency temperature fluctuation	Δf_o	$T_J=0$ to $125^\circ C$	-	± 2	-	%
Overcurrent detecting level	I_L	-	3.6	4.2	5.8	A
Charge current	I_{CHG}	②, ④ terminals is open, ⑤ terminal	-	-10	-	μA
Input threshold voltage	V_{THL}	Duty ratio=0%, ④ terminal=0V, ⑤ terminal	-	1.3	-	V
	V_{THH}	Duty ratio=100%, ④ terminals is open, ⑤ terminal	-	2.3	-	V
ON threshold voltage	$V_{TH(ON)}$	④ terminal=0V, ⑤ terminal	0.7	0.8	0.9	V
Overcurrent shutdown threshold voltage	V_{THIL}	⑤ terminal	3.8	4.6	5.5	V
Stand-by current	I_{SD}	$V_{IN}=40V$, ⑤ terminal=0V	-	140	400	μA
Output OFF-state dissipation current	I_{QS}	$V_{IN}=40V$, ⑤ terminal=0.9V	-	8	16	mA

(CP1032-5.0V)

(Unless otherwise specified, condition shall be $V_{IN}=12V$, $I_O=0.5A$, $V_O=5V$, $V_{soft\ terminal}=0.1\mu F$, $T_a=25^\circ C$)

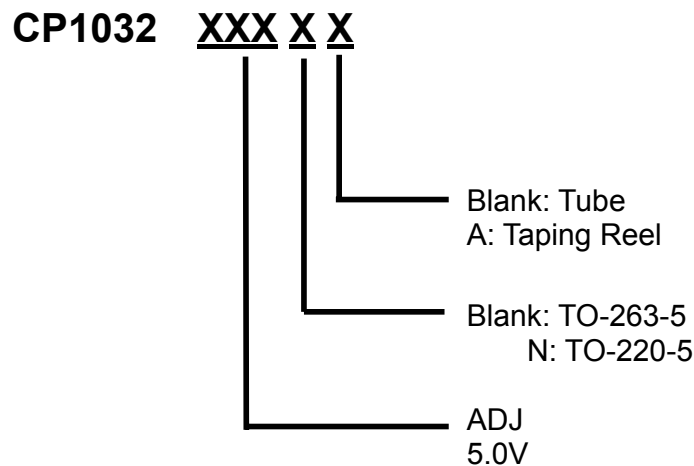
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit.	
Output Voltage	V_{OUT}	Test circuit of Figure2	4.9	5.0	5.1	V	
		0.5 I_{LOAD} 3A Test circuit of Figure2	8V V_{IN} 40V	4.8	5.0	5.2	V
		0.5 I_{LOAD} 3A -40 T_J 125 Test circuit of Figure2	8V V_{IN} 40V	4.75	5.0	5.25	V
Efficiency		$I_{LOAD}=3A$		80		%	
Oscillator Frequency	f_{osc}		135	150	165	kHz	

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Chopper Regulators

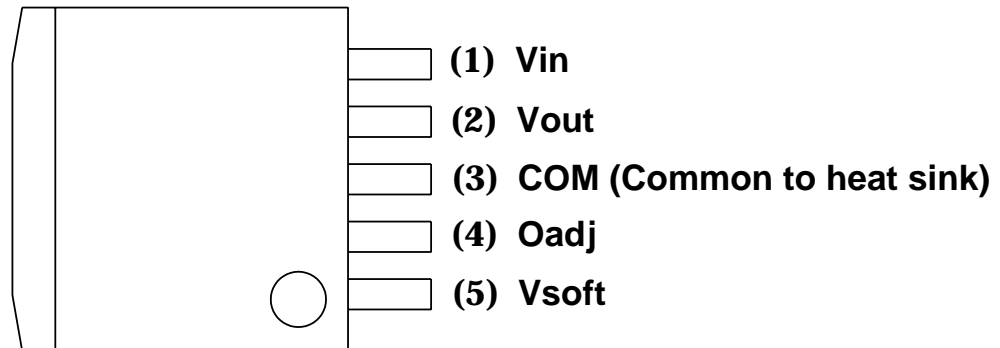
■ Order Information

Package	Part Number	Packing Type	Marking
TO-263-5	CP1032 ADJ	Tape/Tube	CP1032 ADJ
	CP1032 5.0	Tape/Tube	CP1032 5.0
TO-220-5	CP1032 ADJ N	Tape/Tube	CP1032 ADJ
	CP1032 5.0 N	Tape/Tube	CP1032 5.0

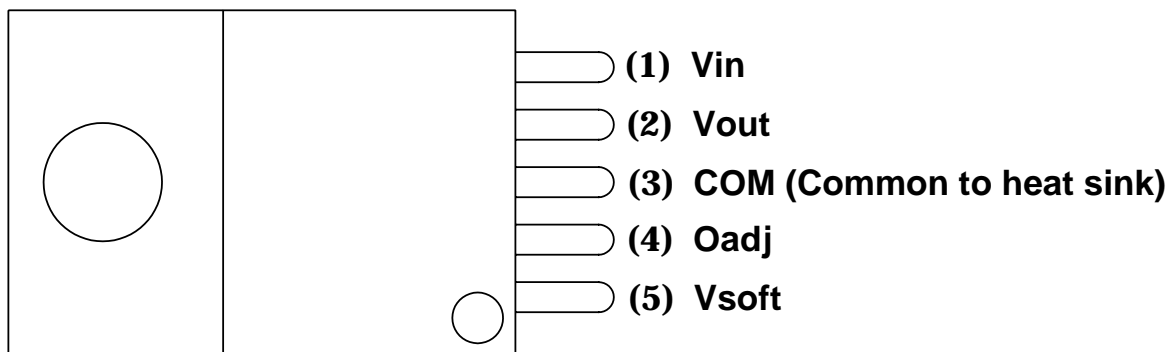


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■ Connection Diagrams



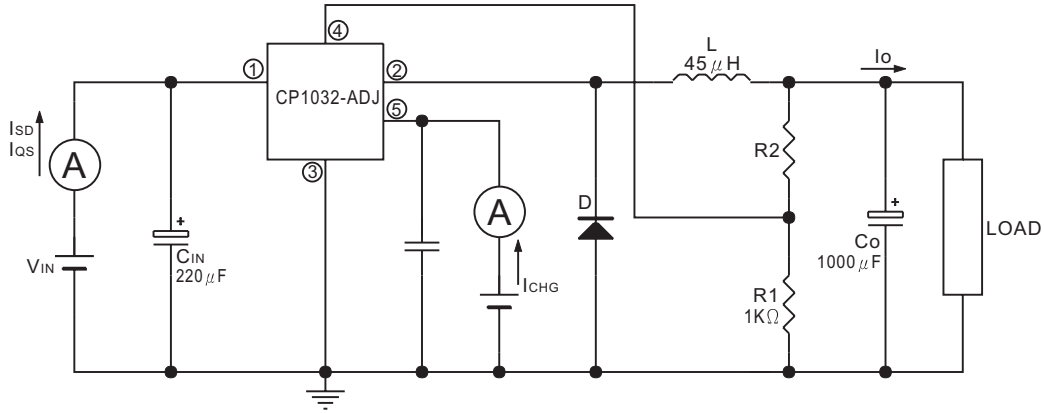
(TO-263-5)



(TO-220-5)

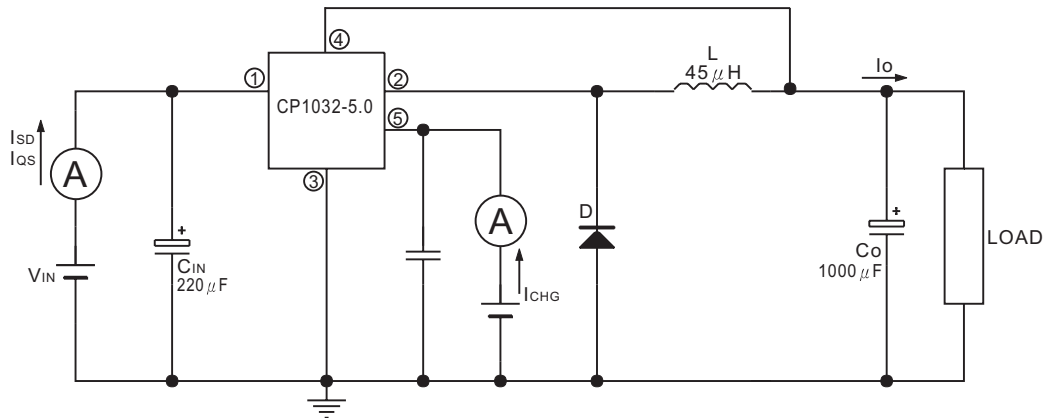
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Fig.1 Test Circuit



5 terminal	Vo output
LOW	OFF
HIGH	ON
OPEN	ON

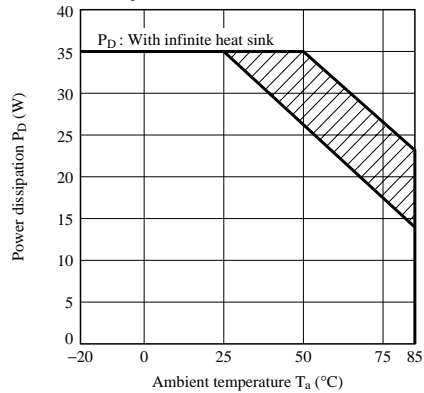
Fig.2 Test Circuit



5 terminal	Vo output
LOW	OFF
HIGH	ON
OPEN	ON

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Fig.3 Power Dissipation vs. Ambient Temperature



Note) Oblique line portion: Overheat protection may operate in this area.

Fig.4 Overcurrent Protection Characteristics (Typical Value)

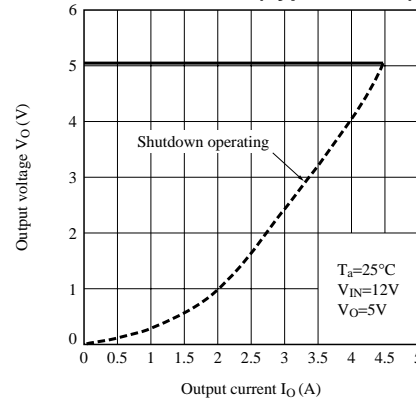


Fig.5 Efficiency vs. Input Voltage

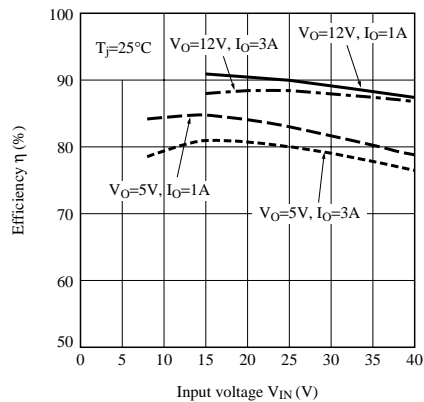


Fig.6 Switching Current vs. Output Saturation Voltage

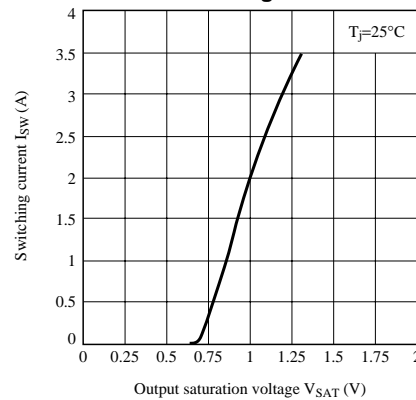


Fig.7 Operating Dissipation Current vs. Input Voltage

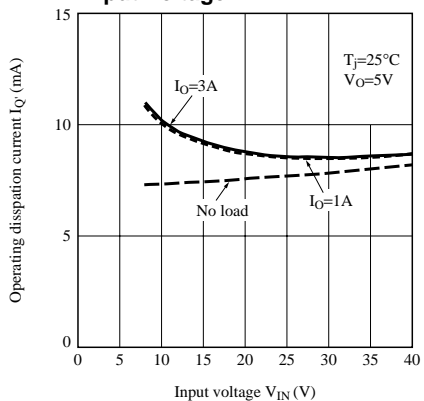
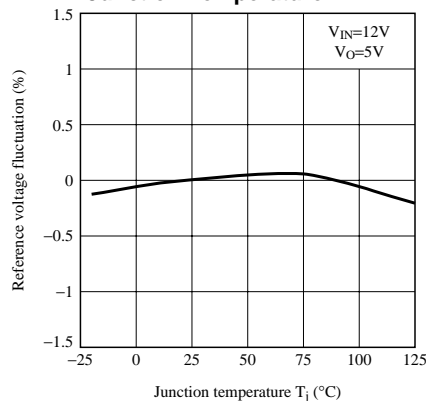


Fig.8 Reference Voltage Fluctuation vs. Junction Temperature



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Fig.9 Load Regulation vs. Output Current

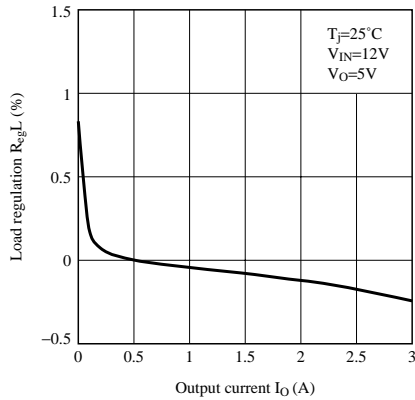


Fig.10 Line Regulation vs. Input Voltage

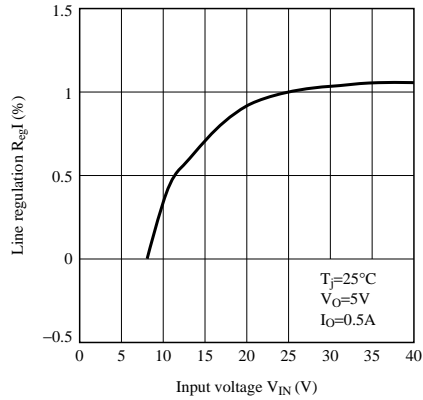


Fig.11 Oscillation Frequency Fluctuation vs. Junction Temperature

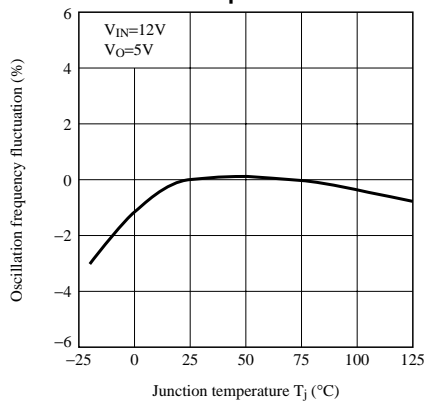


Fig.12 Overcurrent Detecting Level Fluctuation vs. Junction Temperature

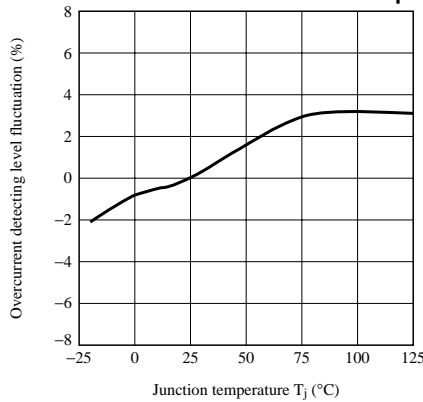


Fig.13 On Threshold Voltage vs. Junction Temperature

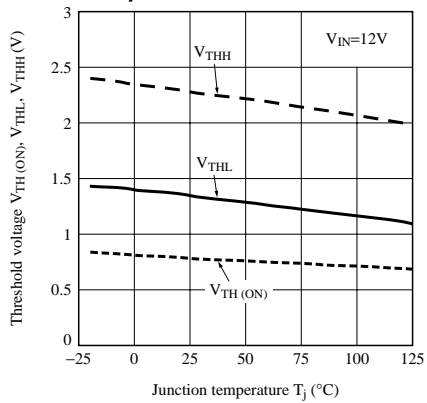
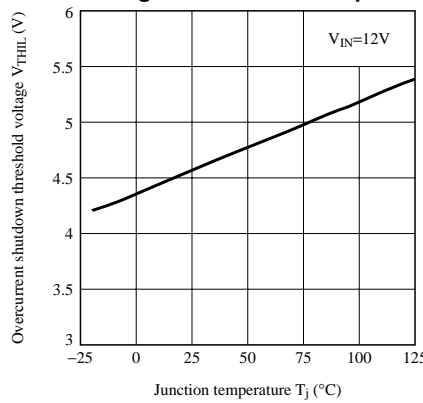


Fig.14 Overcurrent Shutdown Threshold Voltage vs. Junction Temperature



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Fig.15 Power Dissipation vs. Ambient Temperature (Typical Value)

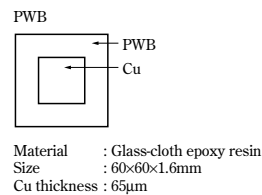
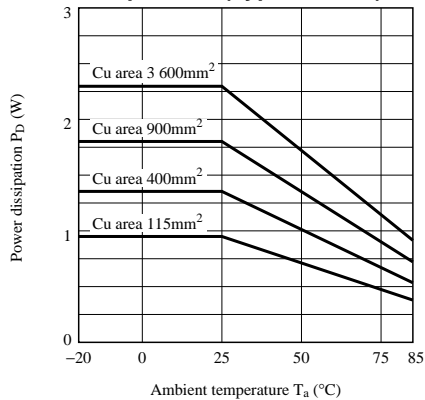
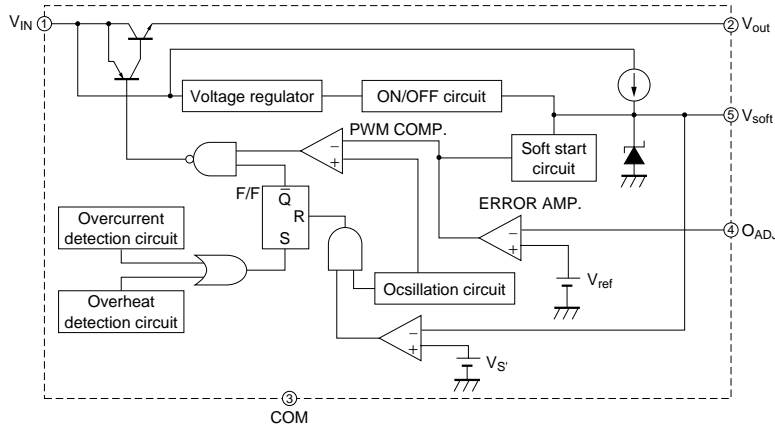


Fig.16 Block Diagram



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Fig.17 Step Down Type Circuit Diagram

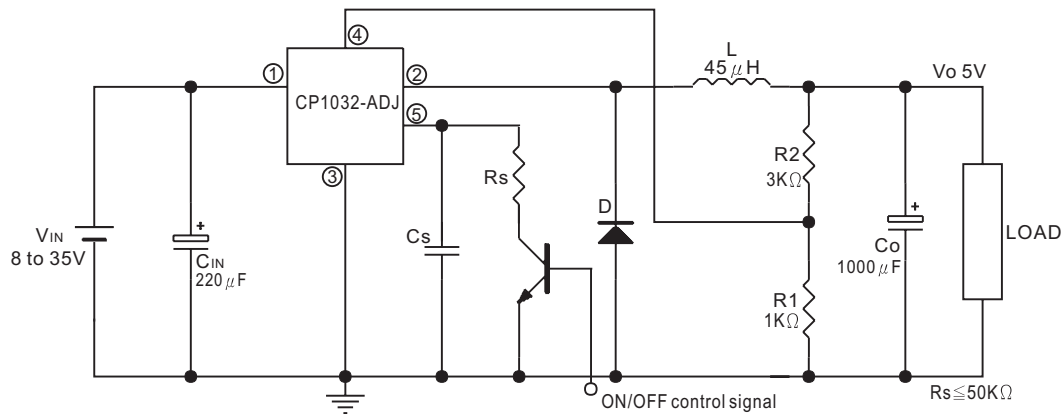
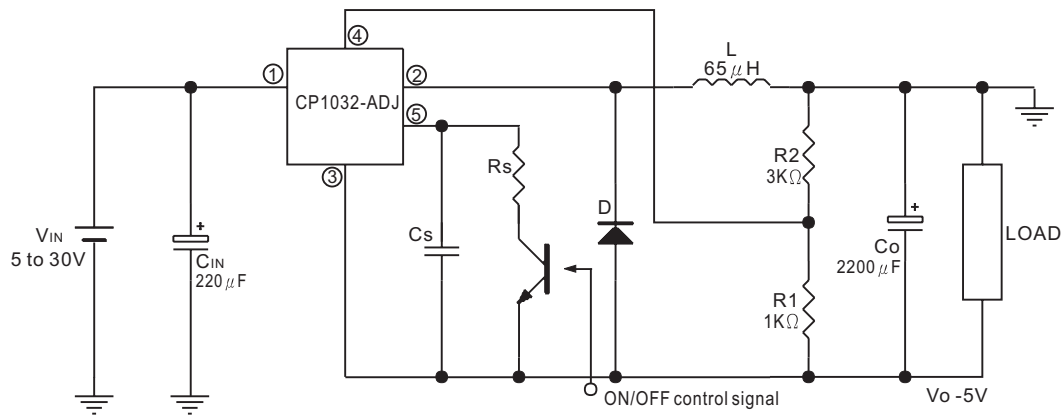


Fig.18 Polarity Inversion Type Circuit Diagram



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Fig.19 Step Down Type Circuit Diagram

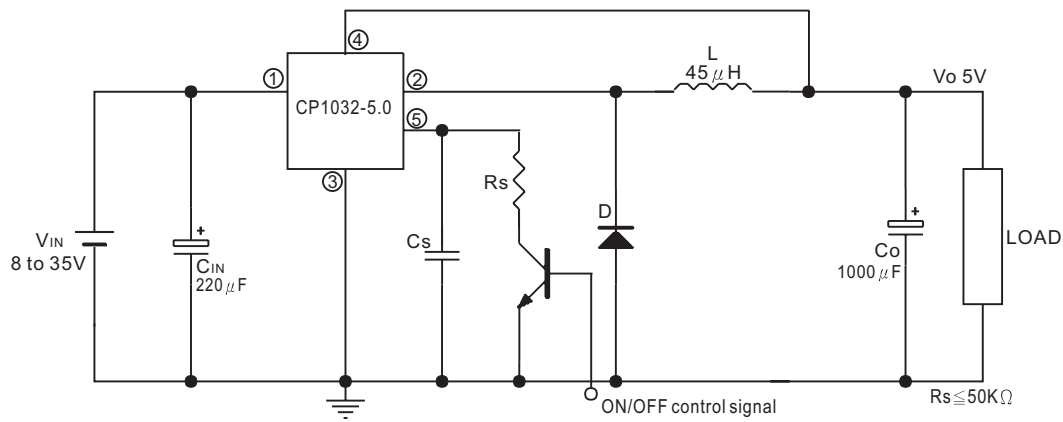
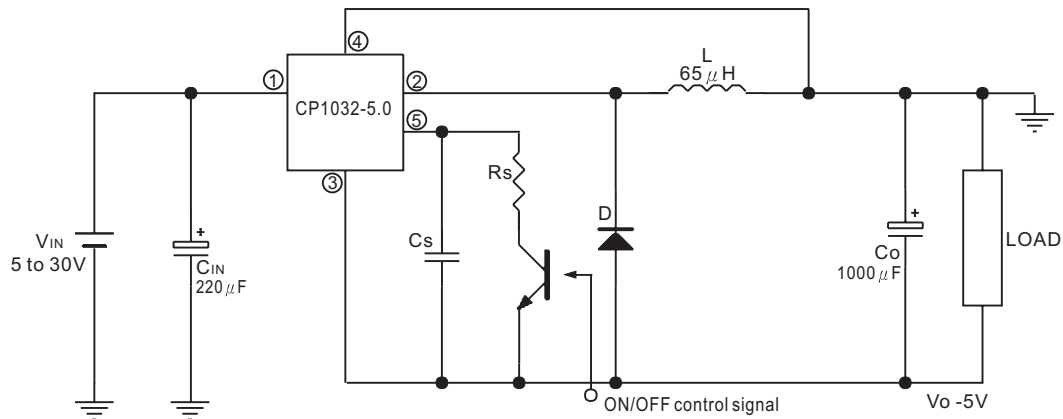


Fig.20 Polarity Inversion Type Circuit Diagram

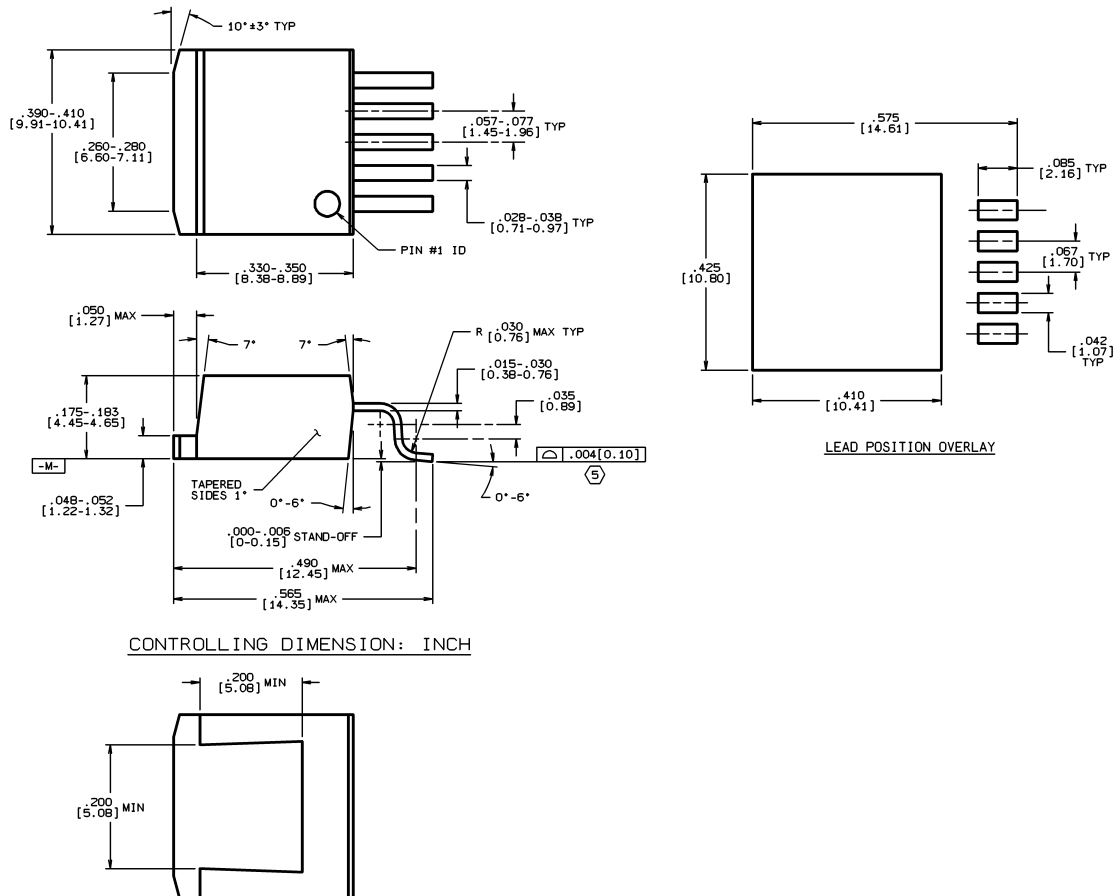


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Chopper Regulators

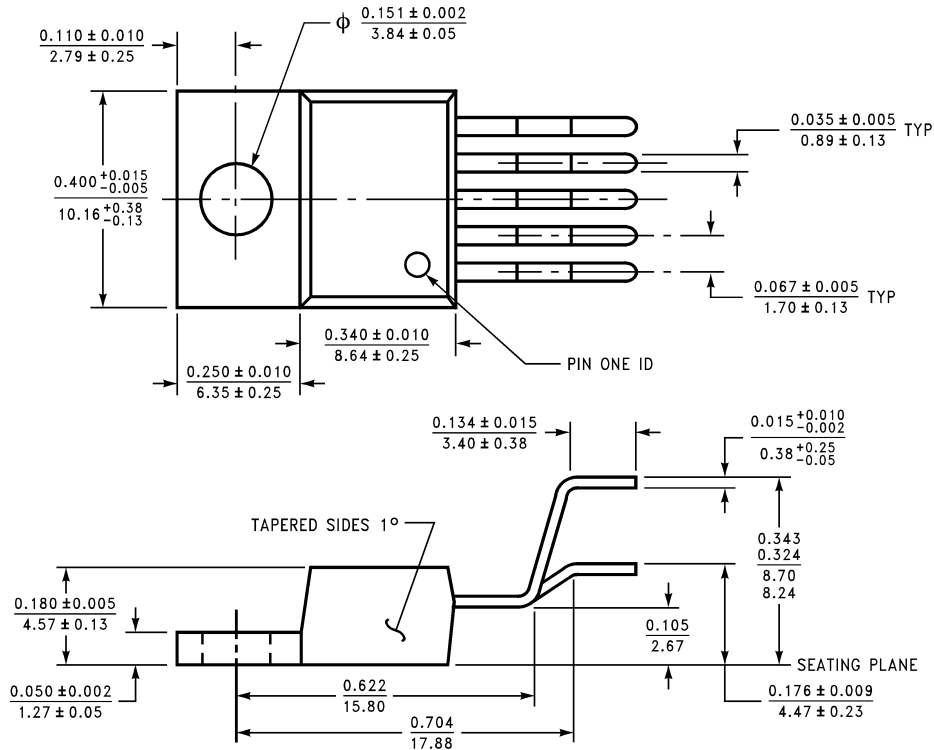
■ Physical Dimensions inch(millimeters)

(TO-263-5)



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(TO-220-5)



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