

4825898 INTEGRATED POWER

82D 00134 D7-58-1/31

INTEGRATED POWER SEMICONDUCTORS, LTD.

Switched Mode Power Supply Control Chip Set

Section 2 - Pulse Width Modulators
IP1P00, IP2P00, IP3P00, IP1P01, IP2P01, IP3P01

Description

The IP1P00 and IP1P01 chip set offers all the functions necessary to implement fully isolated switch mode power supplies with a minimum of external components. The IP1P00 primary side controller provides the main power drive, while the IP1P01 secondary side controller monitors the regulated output and provides the error communication signal. Isolated communication takes place via a low-cost signal transformer.

Features

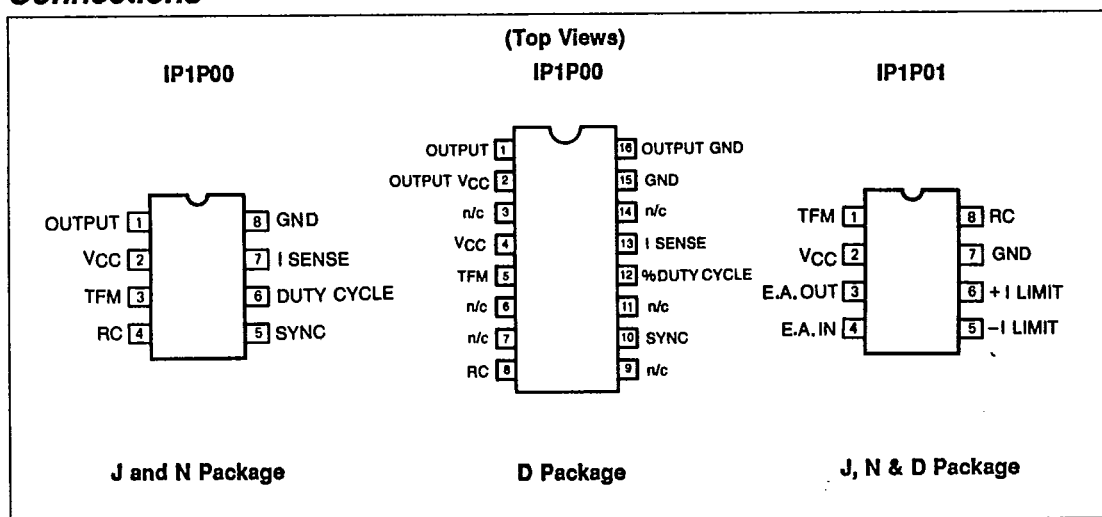
IP1P00 series

- Undervoltage lockout with hysteresis
- Cycle by cycle current limit
- PWM with maximum duty cycle limit
- Soft start
- External synchronization

IP1P01 series

- 1% trimmed internal reference
- Error amp
- DC current limit
- PWM

Connections



T-58-11-31

Absolute Maximum Ratings

IP1P00

Voltage Source Supply

18V

Current Source Supply

30mA

Output Stage Current (source or sink)

300mA

IP1P01

Supply Voltage

40V

Operating Temperature (Ambient)

IP1P00, IP1P01

-55°C to +125°C

IP2P00, IP2P01

-25°C to +85°C

IP3P00, IP3P01

0°C to +70°C

Storage Temperature Range

-65°C to +150°C

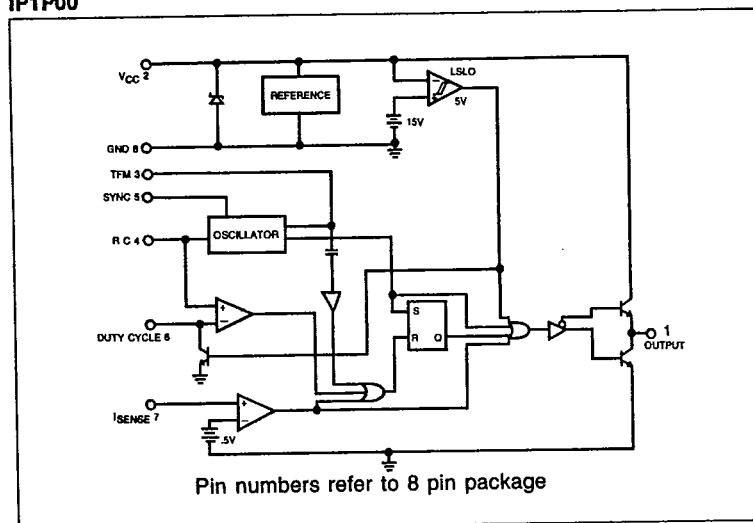
Max Operating Junction Temperature

+150°C

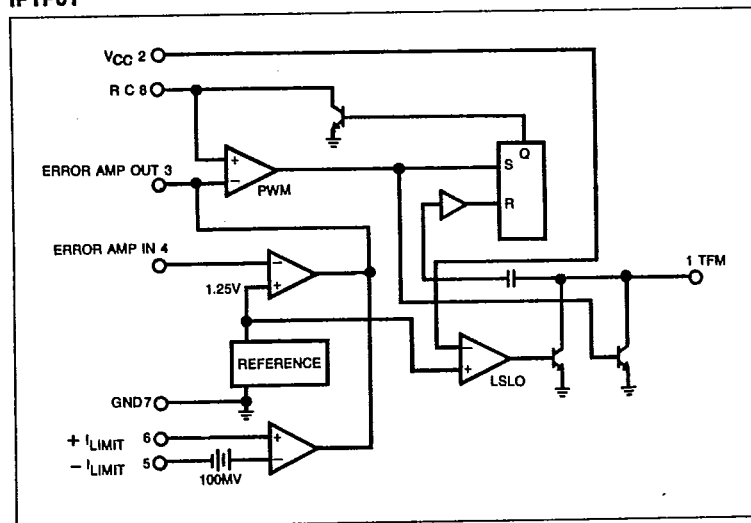
Absolute maximum ratings are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the device should be operated at these limits. The electrical characteristics provide conditions for actual device operation.

Block Diagrams

IP1P00



IP1P01



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Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$ unless otherwise specified)Section 2 - Pulse Width Modulators
IP1P00, IP2P00, IP3P00, IP1P01, IP2P01, IP3P01

Parameter	Condition	IP1P00/IP2P00/IP3P00			Unit
		Min	Typ	Max	
Supply Current, I_{CC}	V Supply < LSLO		3		mA
Supply Current, I_{CC}	V Supply > LSLO, no load		12		mA
Supply Voltage, V_{CC}	$I_{CC} = 25\text{mA}$		20		V

Oscillator					
Frequency Range		50		500K	Hz

Output					
Output voltage MOS drive, V_H	$R_L = 1\text{K}$		$V_{CC}-2$		V
Output voltage MOS drive, V_L	$R_L = 1\text{K}$		.2		V
Rise time, T_{ON}	10% to 90% $C_L = 1000\text{ pf}$		175		ns
Fall time, T_{OFF}	10% to 90% $C_L = 1000\text{ pf}$		90		ns

House Keeping Functions					
LSLO disable, V_{OFF}			10		V
LSLO enable, V_{ON}			15		V
Current Limit Threshold			0.5		V
Current Limit Threshold, I_{BIAS}			1		μA
Duty Cycle Control, I_{BIAS}			1		μA
Sync, I_{BIAS}			1		μA

Parameter	Condition	IP1P01/IP2P01/IP3P01			Unit
		Min	Typ	Max	
I_{CC}			5		mA

Error Amplifier					
Open Loop Gain, A_{OL}	$R_L > 5\text{k}$		60		dB
Output Current, I_{OUT}	Sink		2		mA
	Source		2		mA
Slew Rate			8		V/us

Oscillator Section					
Ramp Swing		0		$V_{CC}-2$	V

House Keeping Functions					
Current Limit Threshold			0.1		V
Common mode range on Current Limit				$V_{CC}-2.5$	V
Internal Reference		1.237	1.250	1.263	V

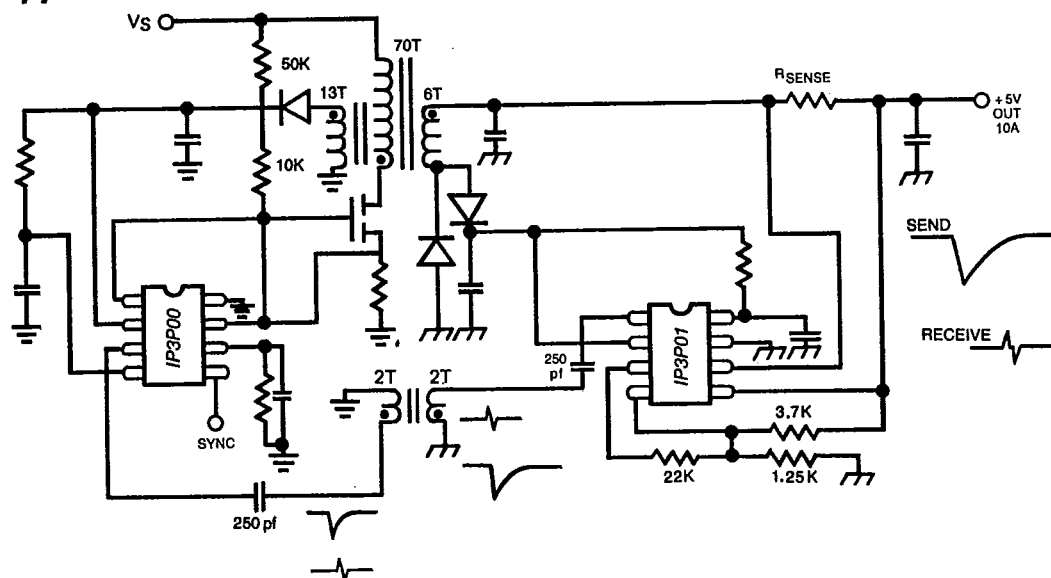
Parameter	Condition	IP1P00/IP2P00/IP3P00 IP1P01/IP2P01/IP3P01			Unit
		Min	Typ	Max	
Inter Device Communications					
TFM High Level			V _{CC} -1V		V
TFM Low Level			1		V
Send Signal Fall Time			50		ns
Send Signal Rise Time			3000		ns
Receive Signal Trip Voltage			1		V _p

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Application Information



Fly back power supply with MOS switch, primary over-current protection, secondary current limit, soft start, feed forward, maximum duty cycle protection to 350 kHz. Compensation components not shown for simplicity.

Order Information

Part Number

IP1P00J
IP2P00D
IP2P00J
IP2P00N
IP3P00D
IP3P00J
IP3P00N

Temperature Range

-55°C to +125°C
-25°C to +85°C
-25°C to +85°C
-25°C to +85°C
0°C to +70°C
0°C to +70°C
0°C to +70°C

Package

8 pin Ceramic DIP
16 pin Plastic SOIC
8 pin Ceramic DIP
8 pin Plastic DIP
16 pin Plastic SOIC
8 pin Ceramic DIP
8 pin Plastic DIP

IP1P01J
IP2P01D
IP2P01J
IP2P01N
IP3P01D
IP3P01J
IP3P01N

-55°C to +125°C
-25°C to +85°C
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-25°C to +85°C
0°C to +70°C
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8 pin Ceramic DIP
8 pin Plastic DIP

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