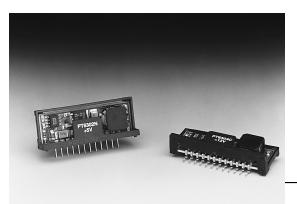


SLTS031B

(Revised 9/30/2000)



- 90% Efficiency
- Adjustable Output Voltage
- Internal Short Circuit Protection
- Over-Temperature Protection
- On/Off Control (Ground Off)
- Small SIP Footprint
- Wide Input Range

GND

GND

Vout

 V_{out}

Vout Adj (5)

9

10

11

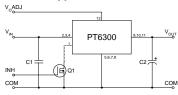
12

The PT6300 Series is a line of High-Performance 3 Amp, 12-Pin SIP (Single In-line Package) Integrated

Switching Regulators (ISRs) designed to meet the on-board power conversion needs of battery powered or other equipment requiring high efficiency and small size. This high performance ISR family offers a unique combination of features combining 90% typical efficiency with open-collector on/off control and adjustable output voltage.

Quiescent current in the shutdown mode is typically less than 100µA.

Standard Application



C1 = Optional 1µF ceramic

 C_2 = Required 100 μ F electrolytic (1)

 $Q_1 = NFET$

Pin-Out Information

		3
Pin	Function	PT6302 □ = +5 Volts
1	Inhibit (30V max)	PT6303 □ = +3.3 Volts
2	V_{in}	PT6304 \square = +12 Volts PT6314 \square = +1.5 Volts
3	V_{in}	F 10314 = +1.3 voits
4	V_{in}	_
5	GND	
6	GND	Pkg Style 200

PT6300

Ordering Information PT Series Suffix (PT1234X) Volts Case/Pin

Configuration		
Vertical Through-Hole	N	
Horizontal Through-Hole	Α	
Horizontal Surface Mount	С	

Specifications

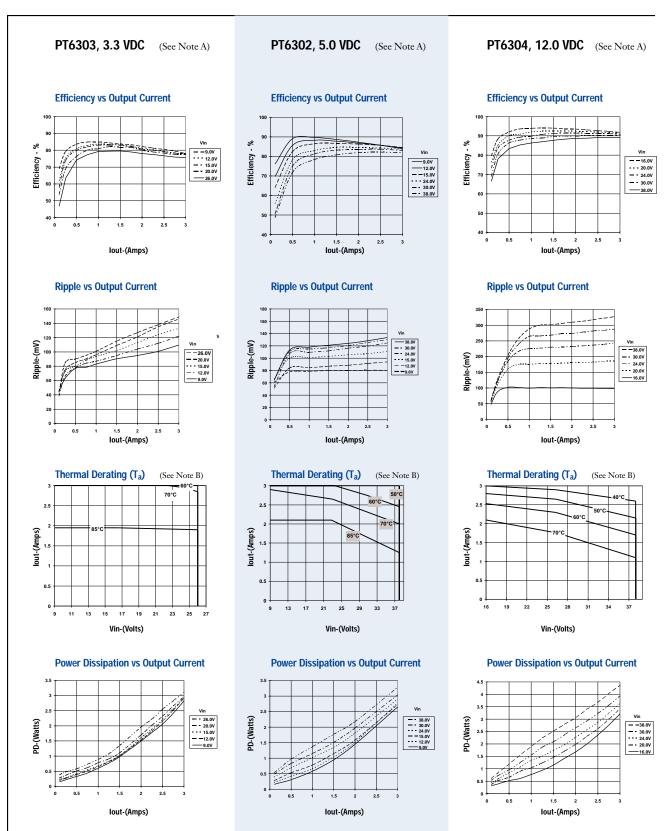
Characteristics						
(T _a =25°C unless noted)	Symbols	Conditions	Min	Тур	Max	Units
Output Current	I_o	Over V _{in} range	0.1 (2)	_	3.0	A
Short Circuit Current	I_{sc}	$V_{\rm in} = V_{\rm o} + 5V$	_	5.0	_	Apk
Input Voltage Range (Note: inhibit function cannot be used above 30V.)	$ m V_{in}$	$\begin{array}{ccc} 0.1 \leq I_o \leq 3.0 \; A & V_o = 12V \\ V_o = 5.0V \\ V_o = 3.3V \\ V_o = 1.5V \end{array}$	16 9 9 9.0		30/38 (3) 30/38 (3) 26 17	v
Output Voltage Tolerance	$\Delta V_{ m o}$	Over V_{in} Range, $I_o = 3.0$ A $T_a = 0$ °C to +60°C	_	±1.0	±2.0	$%V_{o}$
Line Regulation	Regline	Over V _{in} range	_	±0.25	±0.5	$%V_{o}$
Load Regulation	Regload	$0.1 \le I_o \le 3.0 \text{ A}$	_	±0.25	±0.5	$%V_{o}$
Vo Ripple/Noise	V_n	$V_{in} = V_{in} \min$, $I_o = 3.0 A$	_	±2	_	$%V_{o}$
Transient Response with $C_o = 100 \mu F$	$\overset{ ext{t}_{ ext{tr}}}{ ext{V}_{ ext{os}}}$	50% load change ${ m V_o}$ over/undershoot	_	100 5.0	<u>200</u>	μSec %V _o
Efficiency	η	$\begin{array}{lll} V_{\rm in} \! = \! 16 V, I_{\rm o} \! = \! 0.5 A, & V_{\rm o} \! = \! 12 V \\ V_{\rm in} \! = \! 9 V, I_{\rm o} \! = \! 0.5 A, & V_{\rm o} \! = \! 5.0 V \\ V_{\rm in} \! = \! 9 V, I_{\rm o} \! = \! 0.5 A, & V_{\rm o} \! = \! 3.3 V \\ V_{\rm in} \! = \! 9 V, I_{\rm o} \! = \! 0.5 A, & V_{\rm o} \! = \! 1.5 V \end{array}$	_ _ _	91 89 84 72		%
Switching Frequency	f_{o}	Over V_{in} and I_o ranges, $ \begin{array}{c} V_o = 12V \\ V_o = 3.3V/5V \\ V_o = 1.5V \end{array} $	600 400 350	750 500 450	900 600 550	kHz
Shutdown Current	I_{sc}	$V_{in} = 15V$	_	100	_	μА
Quiescent Current	I_{nl}	$I_0 = 0A, V_{in} = 10V$	_	10	_	mA
Absolute Maximum Operating Temperature Range	T_a	Over V _{in} range	-40		+85 (4)	°C
Thermal Resistance	θ_{ja}	Free Air Convection (40-60LFM)	_	30	_	°C/W
Storage Temperature	T_s	_	-40	_	+125	°C
Mechanical Shock		Per Mil-STD-883D, Method 2002.3, 1 msec, Half Sine, mounted to a fixture		500	_	G's
Mechanical Vibration		Per Mil-STD-883D, Method 2007.2, 20-2000 Hz,Soldered in a PC board		10	_	G's
Weight	_	_	_	6.5	_	grams

Notes: (1) The PT6300 Series requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.

- (2) The ISR will operate to no load with reduced specifications.
- (3) Input voltage cannot exceed 30V when the inhibit function is used.
- See Thermal Derating charts.
- (5) Consult the related application note for guidance on adjusting the output voltage.



3 Amp Adjustable Positive Step-down Integrated Switching Regulators



Note A: Characteristic data listed in the above graphs has been developed from actual products tested at 25°C. This data is considered typical data for the ISR Note B: Thermal derating graphs are developed in free air convection cooling of 40-60 LFM. (See Thermal Application note.)





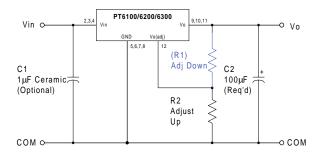
Adjusting the Output Voltage of Power Trends' Wide Input Range Bus ISRs

The output voltage of the Power Trends' Wide Input Range Series ISRs may be adjusted higher or lower than the factory trimmed pre-set voltage with the addition of a single external resistor. Table 1 accordingly gives the allowable adjustment range for each model for either series as $V_{\rm a}$ (min) and $V_{\rm a}$ (max).

Adjust Up: An increase in the output voltage is obtained by adding a resistor R2, between pin 12 (V_o adjust) and pins 5-8 (GND).

Adjust Down: Add a resistor (R1), between pin 12 (V_o adjust) and pins 9-11(V_{out}).

Figure 1



The values of (R1) [adjust down], and R2 [adjust up], can also be calculated using the following formulas. Refer to Figure 1 and Table 2 for both the placement and value of the required resistor; either (R1) or R2 as appropriate.

(R1)
$$= \frac{R_0 (V_a - 1.25)}{V_o - V_a} k\Omega$$

$$R2 = \frac{1.25 R_o}{V_a - V_o} k\Omega$$

Where: V_o = Original output voltage

 V_a = Adjusted output voltage R_o = The resistance value from Table 1

Table 1

ISR ADJUSTMI	ENT RANGE AND	FORMULA PARA	METERS		
1Adc Rated		PT6102	PT6101		PT6103
2Adc Rated	PT6216	PT6213		PT6212	PT6214
3Adc Rated	PT6314	PT6303		PT6302	PT6304
Vo (nom)	1.5	3.3	5.0	5.0	12.0
Va (min)	1.3	1.8	1.88	2.18	2.43
Va (max)	1.9	6.07	11.25	8.5	22.12
R_0 (k Ω)	8.25	66.5	150.0	90.9	243.0

Notes:

- 1. Use only a single 1% resistor in either the (R1) or R2 location. Place the resistor as close to the ISR as possible.
- 2. Never connect capacitors from V_o adjust to either GND or V_{out} . Any capacitance added to the V_o adjust pin will affect the stability of the ISR.
- 3. Adjustments to the output voltage may place additional limits on the maximum and minimum input voltage for the part. The revised maximum and minimum input voltage limits must comply with the following requirements. The limits are model dependant.

PT6216/PT6314:

 V_{in} (max) = (10 x V_a)V or 17V, whichever is less.

 V_{in} (min) = 9.0V

All other models:

 V_{in} (max) = $(8 \times V_a)V$ or as specified.

 V_{in} (min) = $(V_a + 4)V$ or 9V, whichever is greater.

Application Notes continued

PT6100/6210/6300 Series

Table 2

$\begin{array}{c} 2.6 & (128.0) k\Omega & (84.4) k\Omega & (51.1) k\Omega & (34.9) kd \\ 2.7 & (161.0) k\Omega & (94.6) k\Omega & (57.3) k\Omega & (37.9) kd \\ 2.8 & (206.0) k\Omega & (106.0) k\Omega & (64.0) k\Omega & (40.9) kd \\ 2.9 & (274.0 kΩ & (118.0) kΩ & (71.4) kΩ & (44.1) kd \\ 3.0 & (388.0) kΩ & (131.0) kΩ & (79.5) kΩ & (47.3) kd \\ 3.1 & (615.0) kΩ & (146.0) kΩ & (88.5) kΩ & (50.5) kd \\ 3.2 & (1300.0) kΩ & (163.0) kΩ & (98.5) kΩ & (53.8) kd \\ 3.3 & (181.0) kΩ & (110.0) kΩ & (57.3) kΩ & (60.8) kd \\ 3.5 & 416.0 kΩ & (222.0) kΩ & (122.0) kΩ & (60.8) kd \\ 3.5 & 416.0 kΩ & (225.0) kΩ & (153.0) kΩ & (68.0) kd \\ 3.6 & 227.0 kΩ & (252.0) kΩ & (153.0) kΩ & (71.7) kd \\ 3.8 & 166.0 kΩ & (319.0) kΩ & (171.0) kΩ & (71.7) kd \\ 3.8 & 166.0 kΩ & (319.0) kΩ & (193.0) kΩ & (75.6) kd \\ 3.9 & 139.0 kΩ & (361.0) kΩ & (219.0) kΩ & (79.5) kd \\ 4.0 & 119.0 kΩ & (413.0) kΩ & (250.0) kΩ & (83.5) kd \\ 4.1 & 104.0 kΩ & (475.0) kΩ & (288.0) kΩ & (87.7) kd \\ 4.2 & 92.4 kΩ & (533.0) kΩ & (396.0) kΩ & (96.3) kd \\ 4.3 & 83.1 kΩ & (654.0) kΩ & (396.0) kΩ & (96.3) kd \\ 4.4 & 75.6 kΩ & (788.0) kΩ & (477.0) kΩ & (101.0) kd \\ 4.5 & 69.3 kΩ & (775.0) kΩ & (591.0) kΩ & (105.0) kΩ \\ 4.6 & 63.9 kΩ & (126.0) kΩ & (761.0) kΩ & (115.0) kd \\ 4.7 & 59.4 kΩ & (173.00) kΩ & (105.00) kΩ & (115.0) kd \\ 4.9 & 52.0 kΩ & (126.00) kΩ & (105.00) kΩ & (115.00) kd \\ 4.9 & 52.0 kΩ & (126.00) kΩ & (105.00) kΩ & (115.00) kd \\ 5.1 & 46.2 kΩ & 1880.0 kΩ & 1140.0 kΩ & (136.00) kd \\ 5.2 & 43.8 kΩ & 937.0 kΩ & 568.0 kΩ & (141.00) kd \\ 5.3 & 41.6 kΩ & 625.0 kΩ & 379.0 kΩ & (136.00) kd \\ 5.5 & 43.8 kΩ & 937.0 kΩ & 568.0 kΩ & (141.00) kd \\ 5.5 & 43.8 kΩ & 937.0 kΩ & 568.0 kΩ & (141.00) kd \\ 5.5 & 43.8 kΩ & 937.0 kΩ & 227.0 kΩ & (159.00) kd \\ 5.6 & 36.1 kΩ & 313.0 kΩ & 189.0 kΩ & (159.00) kd \\ 5.6 & 36.1 kΩ & 313.0 kΩ & 189.0 kΩ & (165.00) kd \\ 5.7 & 34.6 kΩ & 268.0 kΩ & 162.0 kΩ & (172.00) kd \\ 5.8 & 33.3 kΩ & 234.0 kΩ & 142.0 kΩ & (178.00) kd \\ 5.9 & 32.0 kΩ & 208.0 kΩ & 126.0 kΩ & (185.00) kd \\ 5.9 & 32.0 kΩ & 208.0 kΩ & 126.0 kΩ & (185.00) kd \\ 5.9 & 32.0 kΩ & 208.0 kΩ & 126.0 kΩ & (185.00) kd \\ 5.9 & 32.0 kΩ & 208.0 kΩ & 1$	ISR ADJUSTMENT RESISTOR VALUES									
3Adc Rated PT6314 PT6303 DT6302 PT6304 V ₀ (norm) 1.5 3.3 5.0 5.0 12.0	1Adc Rated		PT6102	PT6101		PT6103				
V ₀ (nom) 1.5 3.3 5.0 5.0 12.0 1.3 (2.1kΩ) (2.1kΩ) (3.1kΩ) (3.2kΩ) <	2Adc Rated	PT6216	PT6213		PT6212	PT6214				
1.3	3Adc Rated	PT6314	PT6303		PT6302	PT6304				
1.3 (2.1kΩ) 1.4 (12.4kΩ) 1.5 1.6 103.0kΩ 1.7 51.6kΩ 1.8 34.4kΩ (24.4)kΩ 1.9 25.8kΩ (30.9)kΩ (31.5)kΩ 2.0 (38.4)kΩ (75.5)kΩ 2.1 (47.1)kΩ (50.9)kΩ (30.8)kΩ 2.2 (57.4)kΩ (50.9)kΩ (30.8)kΩ 2.3 (69.8)kΩ (58.3)kΩ (35.4)kΩ 2.4 (85.0)kΩ (66.3)kΩ (40.2)kΩ 2.5 (104.0)kΩ (75.0)kΩ (45.5)kΩ (32.0)kΩ 2.6 (128.0)kΩ (76.0)kΩ (75.3)kΩ (35.4)kΩ 2.7 (161.0)kΩ (94.6)kΩ (57.3)kΩ (37.9)kΩ 2.8 (206.0)kΩ (106.0)kΩ (64.0)kΩ (49.9)kΩ 2.9 (274.0kΩ (118.0)kΩ (70.5)kΩ (47.3)kΩ 3.0 (388.0)kΩ (131.0)kΩ (70.5)kΩ (47.3)kΩ 3.1 (615.0)kΩ (140.0)kΩ (88.5)kΩ (50.5)kΩ (33.3)λΩ 3.2 (1300.0)kΩ (163.0)kΩ (98.5)kΩ (53.8)kΩ 3.3 (181.0)kΩ (110.0)kΩ (75.3)kΩ (53.8)kΩ 3.3 (181.0)kΩ (110.0)kΩ (75.3)kΩ (64.3)kΩ 3.5 4416.0kΩ (225.0)kΩ (136.0)kΩ (66.8)kΩ 3.7 208.0kΩ (225.0)kΩ (136.0)kΩ (66.8)kΩ 3.8 166.0kΩ (319.0)kΩ (171.0)kΩ (75.5)kΩ 4.0 119.0kΩ (413.0)kΩ (210.0)kΩ (70.5)kΩ (70.5)kΩ 4.1 104.0kΩ (47.5)kΩ (33.0)kΩ (33.0)kΩ (68.0)kΩ 4.2 92.4kΩ (33.0)kΩ (31.0)kΩ (36.0)kΩ (66.3)kΩ 4.4 75.6kΩ (39.0)kΩ (210.0)kΩ (35.5)kΩ (70.5)kΩ 4.5 69.3kΩ (78.0)kΩ (35.0)kΩ (35.0)kΩ (70.5)kΩ 4.7 59.4kΩ (33.0)kΩ (35.0)kΩ (35.0)kΩ (70.5)kΩ 4.7 59.4kΩ (33.0)kΩ (35.0)kΩ (35.0)kΩ (70.5)kΩ 4.9 52.0kΩ (17.0)kΩ (10.0)kΩ (10.0)kΩ (70.5)kΩ 4.9 52.0kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ 4.7 59.4kΩ (33.0)kΩ (36.0)kΩ (35.0)kΩ (10.0)kΩ (70.5)kΩ 4.9 52.0kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ 4.7 59.4kΩ (33.0)kΩ (30.0)kΩ (10.0)kΩ (10.0)kΩ 4.7 59.4kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ 4.9 52.0kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ 4.9 52.0kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ (10.0)kΩ 5.1 46.2kΩ 188.00kΩ (140.0)kΩ (110.0)kΩ (110.0)kΩ 5.2 43.8kΩ (975.0)kΩ (100.0)kΩ (100.0)kΩ (100.0)kΩ (100.0)kΩ 5.3 44.6kΩ (188.0)kΩ (170.0)kΩ (110.0)kΩ (110.0)k	V _o (nom)	1.5	3.3	5.0	5.0	12.0				
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1.5 1.6 103.0 kΩ 1.7 51.6 kΩ 1.8 34.4 kΩ (24.4) kΩ 1.9 25.8 kΩ (30.9) kΩ (31.5) kΩ 2.0 (38.4) kΩ (37.5) kΩ 2.1 (47.1) kΩ (44.0) kΩ 2.2 (57.4) kΩ (50.9) kΩ (30.8) kΩ 2.2 (57.4) kΩ (58.3) kΩ (35.4) kΩ 2.3 (69.8) kΩ (58.3) kΩ (35.4) kΩ 2.4 (85.0) kΩ (66.3) kΩ (40.2) kΩ 2.5 (104.0) kΩ (75.0) kΩ (45.5) kΩ (32.0) kΩ 2.6 (128.0) kΩ (84.4) kΩ (51.1) kΩ (34.9) kΩ 2.7 (161.0) kΩ (94.6) kΩ (57.3) kΩ (37.9) kΩ 2.8 (206.0) kΩ (106.0) kΩ (64.0) kΩ (40.9) kΩ 2.9 (274.0 kΩ (118.0) kΩ (71.4) kΩ (44.1) kΩ 3.0 (38.8) kΩ (131.0) kΩ (79.5) kΩ (47.3) kΩ 3.1 (615.0) kΩ (146.0) kΩ (98.5) kΩ (50.5) kΩ 3.2 (1300.0) kΩ (160.0) kΩ (98.5) kΩ (50.5) kΩ 3.3 (181.0) kΩ (110.0) kΩ (97.3) kΩ (50.5) kΩ 3.4 831.0 kΩ (202.0) kΩ (122.0) kΩ (68.8) kΩ 3.5 416.0 kΩ (225.0) kΩ (136.0) kΩ (68.0) kΩ 3.6 227.0 kΩ (252.0) kΩ (136.0) kΩ (68.0) kΩ 3.7 208.0 kΩ (283.0) kΩ (171.0) kΩ (77.5) kΩ 3.8 166.0 kΩ (319.0) kΩ (171.0) kΩ (77.5) kΩ 3.9 139.0 kΩ (361.0) kΩ (193.0) kΩ (75.0) kΩ 4.0 119.0 kΩ (413.0) kΩ (292.0) kΩ (299.0) kΩ (75.0) kΩ 4.1 104.0 kΩ (475.0) kΩ (299.0) kΩ (299.0) kΩ (75.0) kΩ 4.2 92.4 kΩ (533.0) kΩ (299.0) kΩ (88.5) kΩ (75.0) kΩ 4.4 75.6 kΩ (788.0) kΩ (299.0) kΩ (199.0) kΩ (75.0) kΩ 4.5 60.3 kΩ (160.0) kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ 4.7 55.6 kΩ (788.0) kΩ (477.0) kΩ (100.0) kΩ (115.0) kΩ 4.8 55.4 kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ (175.0) kΩ 4.9 52.0 kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ (175.0) kΩ 4.9 52.0 kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ (175.0) kΩ 4.9 52.0 kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ (175.0) kΩ 4.9 52.0 kΩ (170.0) kΩ (170.0) kΩ (170.0) kΩ (175.0) kΩ 4.9 52.0 kΩ (170.0) kΩ	1.3	$(2.1k\Omega)$								
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1.7	1.5									
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5.8 33.3kΩ 234.0kΩ 142.0kΩ (178.0)kΩ 5.9 32.0kΩ 208.0kΩ 126.0kΩ (185.0)kΩ						(165.0)kΩ				
5.9 32.0k Ω 208.0k Ω 126.0k Ω (185.0)ks						(172.0)kΩ				
						(178.0)kΩ				
6.0 30.8 kΩ 188.0 kΩ 114.0 kΩ (192.0) kΩ						(185.0)kΩ				
	6.0		30.8 k Ω	188.0 k Ω	114.0 k Ω	(192.0) k Ω				

ISR ADJUS IN	ENT RESISTOR	VALUES (Cont)	
1Adc Rated	PT6101		PT6103
2Adc Rated		PT6212	PT6214
3Adc Rated		PT6302	PT6304
V _o (nom)	5.0	5.0	12.0
I _a (req.d)			
6.2	156.0 k Ω	94.7kΩ	(207.0) k Ω
6.4	134.0kΩ	81.2kΩ	(223.0)kΩ
6.6	117.0kΩ	71.0kΩ	(241.0)kΩ
6.8	$104.0 \mathrm{k}\Omega$	63.1kΩ	(259.0) k Ω
7.0	93.8kΩ	56.8kΩ	(279.0) k Ω
7.2	85.2kΩ	51.6kΩ	(301.0) k Ω
7.4	78.1kΩ	47.3kΩ	(325.0) k Ω
7.6	72.1kΩ	$43.7 \mathrm{k}\Omega$	(351.0) k Ω
7.8	$67.0 \mathrm{k}\Omega$	40.6kΩ	(379.0) k Ω
8.0	62.5kΩ	$37.9 \mathrm{k}\Omega$	(410.0) k Ω
8.2	58.6kΩ	35.5kΩ	(444.0) k Ω
8.4	55.1kΩ	33.4kΩ	(483.0) k Ω
8.6	52.1kΩ		(525.0) k Ω
8.8	49.3kΩ		(573.0) k Ω
9.0	46.9kΩ		(628.0) k Ω
9.5	$41.7 \mathrm{k}\Omega$		(802.0) k Ω
10.0	$37.5 \mathrm{k}\Omega$		(1060.0) k Ω
10.5	34.1kΩ		(1500.0) k Ω
11.0	$31.3 \mathrm{k}\Omega$		
11.5			
12.0			
12.5			$608.0 \mathrm{k}\Omega$
13.0			$304.0 \mathrm{k}\Omega$
13.5			$203.0 \mathrm{k}\Omega$
14.0			$152.0 \mathrm{k}\Omega$
14.5			122.0kΩ
15.0			$101.0 \mathrm{k}\Omega$
15.5			86.8kΩ
16.0			75.9kΩ
16.5			67.5kΩ
17.0			60.8kΩ
17.5			55.2kΩ
18.0			50.6kΩ
18.5			46.7kΩ
19.0			43.4kΩ
19.5			40.5kΩ
20.0			38.0kΩ
20.5			35.7kΩ
21.5			33.8kΩ
21.5			32.0kΩ
22.0			30.4kΩ

R1 = (Blue) R2 = Black



PT6100/6210/6300 Series

Using the Inhibit Function on Power Trends' Wide Input Range Bus ISRs

For applications requiring output voltage On/Off control, the 12pin ISR products incorporate an inhibit function. The function has uses in areas such as battery conservation, power-up sequencing, or any other application where the regulated output from the module is required to be switched off. The On/Off function is provided by the Pin 1 (*Inhibit*) control.

The ISR functions normally with Pin 1 open-circuit, providing a regulated output whenever a valid source voltage is applied to $V_{\rm in}$, (pins 2, 3, & 4). When a low-level² ground signal is applied to Pin 1, the regulator output will be disabled.

Figure 1 shows an application schematic, which details the typical use of the Inhibit function. Note the discrete transistor (Q1). The Inhibit control has its own internal pull-up with a maximum open-circuit voltage of 8.3VDC. Only devices with a true open-collector or open-drain output can be used to control this pin. A discrete bipolar transistor or MOSFET is recommended.

Equation 1 may be used to determine the approximate current drawn by Q1 when the inhibit is active.

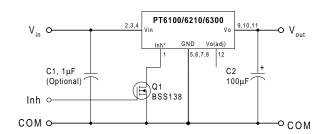
Equation 1

$$I_{stbv}$$
 = $V_{in} \div 155k\Omega$ ± 20%

Notes:

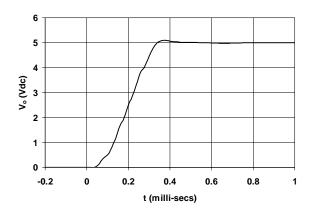
- The Inhibit control logic is similar for all Power Trends' modules, but the flexibility and threshold tolerances will be different. For specific information on the inhibit function of other ISR models, consult the applicable application note.
- 2. Use only a true open-collector device (preferably a discrete transistor) for the Inhibit input. <u>Do Not</u> use a pull-up resistor, or drive the input directly from the output of a TTL or other logic gate. To disable the output voltage, the control pin should be pulled low to less than +1.5VDC.
- 3. When the Inhibit control pin is active, i.e. pulled low, the maximum allowed input voltage is limited to $+30{
 m Vdc}$.
- Do not control the Inhibit input with an external DC voltage. This will lead to erratic operation of the ISR and may over-stress the regulator.
- Avoid capacitance greater than 500pF at the Inhibit control pin. Excessive capacitance at this pin will cause the ISR to produce a pulse on the output voltage bus at turn-on.
- Keep the On/Off transition to less than 10μs. This
 prevents erratic operation of the ISR, which can cause a
 momentary high output voltage.

Figure 1



Turn-On Time: The output of the ISR is enabled automatically when external power is applied to the input. The *Inbibit* control pin is pulled high by its internal pull-up resistor. The ISR produces a fully regulated output voltage within 1-msec of either the release of the Inhibit control pin, or the application of power. The actual turn-on time will vary with the input voltage, output load, and the total amount of capacitance connected to the output Using the circuit of Figure 1, Figure 2 shows the typical rise in output voltage for the PT6101 following the turn-off of Q1 at time t =0. The waveform was measured with a 9Vdc input voltage, and 5-Ohm resistive load.

Figure 2



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PACKAGING INFORMATION

Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Samples (Requires Login)
PT6302A	LIFEBUY	SIP MODULE	EBA	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6302B	LIFEBUY	SIP MODULE	EBK	12	12	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6302BT	LIFEBUY	SIP MODULE	EBK	12	200	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6302C	LIFEBUY	SIP MODULE	EBC	12	12	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6302CT	LIFEBUY	SIP MODULE	EBC	12	200	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6302G	LIFEBUY	SIP MODULE	EBG	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6302H	OBSOLETI	SIP MODULE	EBH	12		TBD	Call TI	Call TI	
PT6302J	OBSOLETI	SIP MODULE	EBJ	12		TBD	Call TI	Call TI	
PT6302N	LIFEBUY	SIP MODULE	EBD	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6302R	LIFEBUY	SIP MODULE	EBE	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6302S	LIFEBUY	SIP MODULE	EBF	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6303A	LIFEBUY	SIP MODULE	EBA	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6303C	LIFEBUY	SIP MODULE	EBC	12	12	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6303CT	LIFEBUY	SIP MODULE	EBC	12	200	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6303G	LIFEBUY	SIP MODULE	EBG	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6303N	LIFEBUY	SIP MODULE	EBD	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6303R	LIFEBUY	SIP MODULE	EBE	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6303S	OBSOLETI	SIP MODULE	EBF	12		TBD	Call TI	Call TI	





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Orderable Device	Status	Package Type	_		Package Qty	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Samples
	(1)		Drawing			(2)		(3)	(Requires Login)
PT6304A	LIFEBUY	SIP MODULE	EBA	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6304B	LIFEBUY	SIP MODULE	EBK	12	12	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6304C	LIFEBUY	SIP MODULE	EBC	12	12	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM	
PT6304G	LIFEBUY	SIP MODULE	EBG	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6304H	OBSOLETE	SIP MODULE	EBH	12		TBD	Call TI	Call TI	
PT6304J	OBSOLETI	SIP MODULE	EBJ	12		TBD	Call TI	Call TI	
PT6304N	LIFEBUY	SIP MODULE	EBD	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6304R	LIFEBUY	SIP MODULE	EBE	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
PT6314A	LIFEBUY	SIP MODULE	EBA	12	12	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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PACKAGE OPTION ADDENDUM

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