PTH08T240W Type B Capacitors

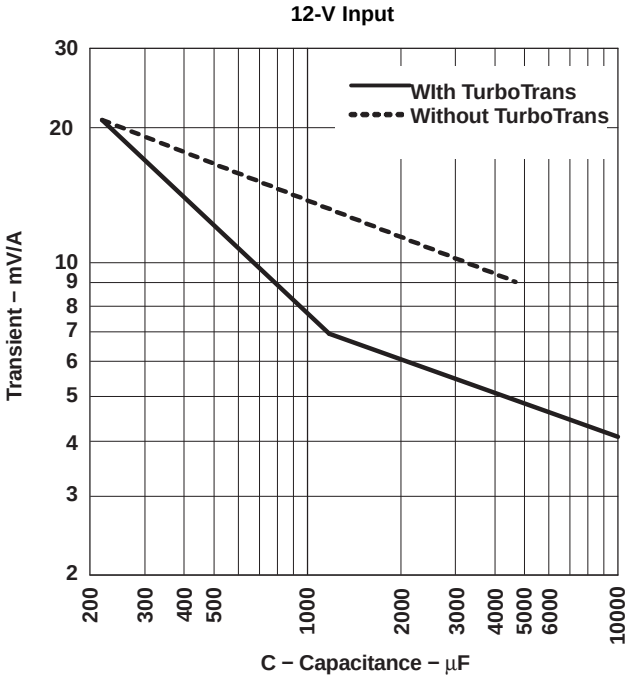

Figure 14. Cap Type B, 1000 < C(µF)×ESR(mΩ) ≤ 5000 (e.g. Polymer-Tantalum)

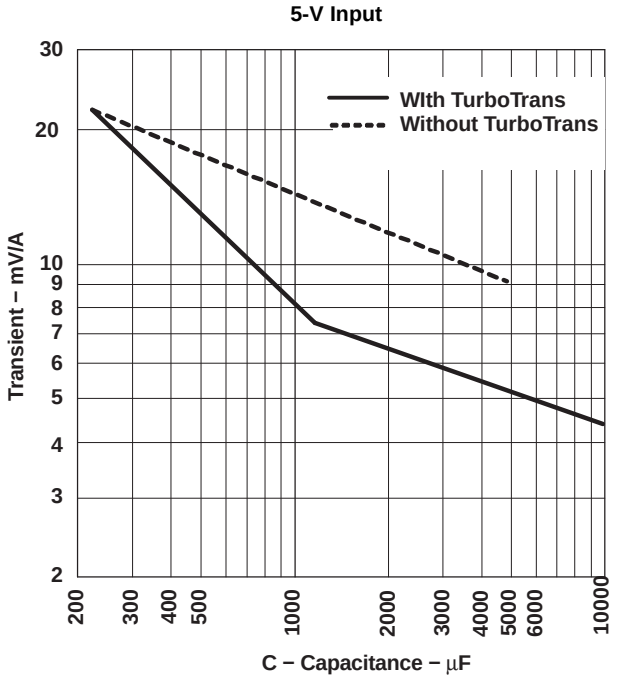

Figure 15. Cap Type B, 1000 < C(µF)×ESR(mΩ) ≤ 5000 (e.g. Polymer-Tantalum)

Table 5. Type B TurboTrans C_O Values and Required R_{TT} Selection Table

Transient Voltage Deviation (mV)			12-V Input		5-V Input	
25% load step (2.5 A)	50% load step (5 A)	75% load step (7.5 A)	C_O Minimum Required Output Capacitance (µF)	R_{TT} Required TurboTrans Resistor (kΩ)	C_O Minimum Required Output Capacitance (µF)	R_{TT} Required TurboTrans Resistor (kΩ)
55	110	165	220	open	220	open
40	80	120	330	57.6	360	42.2
35	70	105	400	30.9	450	23.7
30	60	90	510	16.2	560	12.7
25	50	75	680	7.32	750	5.49
20	40	60	1000	1.58	1050	0.536
15	30	45	2100	short	2600	short
10	20	30	10500	short	exceeds limit	—

R_{TT} Resistor Selection

The TurboTrans resistor value, R_{TT} can be determined from the TurboTrans programming, see Equation 3. For V_O > 3.45V please contact TI for C_O and R_{TT} values.

$$R_{TT} = \frac{40 \times \left[1 - \left(C_O/1100\right)\right]}{\left[\left(C_O/220\right) - 1\right]} \ (k\Omega) \quad (3)$$

Where C_O is the total output capacitance in µF. C_O values greater than or equal to 1100 µF require R_{TT} to be a short, 0Ω. (R_{TT} results in a negative value when C_O > 1100µF).

To ensure stability, a minimum amount of output capacitance is required for a given R_{TT} resistor value. The value of R_{TT} must be calculated using the minimum required output capacitance determined from the capacitor transient response charts above.

PTH08T240W Type C Capacitors

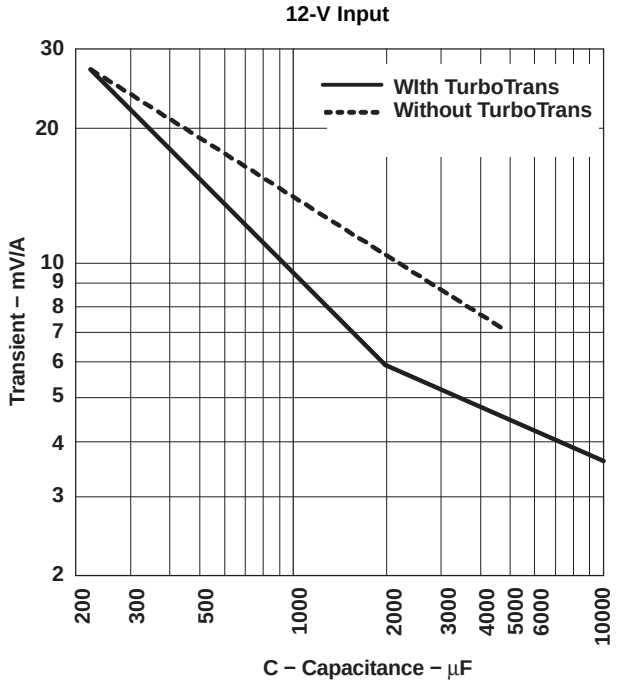

Figure 16. Cap Type C, 5000 < C(µF)×ESR(mΩ) ≤ 10,000 (e.g. OS-CON)

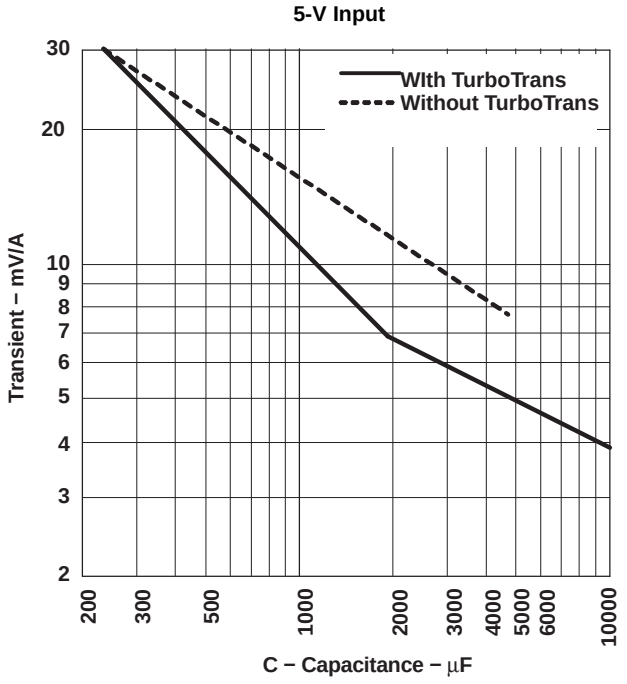

Figure 17. Cap Type C, 5000 < C(µF)×ESR(mΩ) ≤ 10,000 (e.g. OS-CON)

Table 6. Type C TurboTrans C_O Values and Required R_{TT} Selection Table

Transient Voltage Deviation (mV)			12-V Input		5-V Input	
25% load step (2.5 A)	50% load step (5 A)	75% load step (7.5 A)	C_O Minimum Required Output Capacitance (µF)	R_{TT} Required TurboTrans Resistor (kΩ)	C_O Minimum Required Output Capacitance (µF)	R_{TT} Required TurboTrans Resistor (kΩ)
75	150	225	220	open	250	1300
60	120	180	270	294	330	133
45	90	135	400	68.1	480	45.3
35	70	105	580	31.6	700	21.5
30	60	90	720	20.0	860	13.7
25	50	75	950	11.8	1150	7.68
20	40	60	1300	5.23	1550	2.61
15	30	45	2000	short	2800	short
10	20	30	7400	short	exceeds limit	—

R_{TT} Resistor Selection

The TurboTrans resistor value, R_{TT} can be determined from the TurboTrans programming, see Equation 4 . For V_O > 3.45V please contact TI for C_O and R_{TT} values.

$$R_{TT} = \frac{40 \times \left[1 - \left(C_O/1980\right)\right]}{\left[\left(\left(\left(5 \times C_O\right) + 880\right)/1980\right) - 1\right]} \ (k\Omega) \tag{4}$$

Where C_O is the total output capacitance in µF. C_O values greater than or equal to 1980 µF require R_{TT} to be a short, 0Ω. (R_{TT} results in a negative value when C_O > 1980µF).

To ensure stability, the value of R_{TT} must be calculated using the minimum required output capacitance determined from the capacitor transient response charts above.