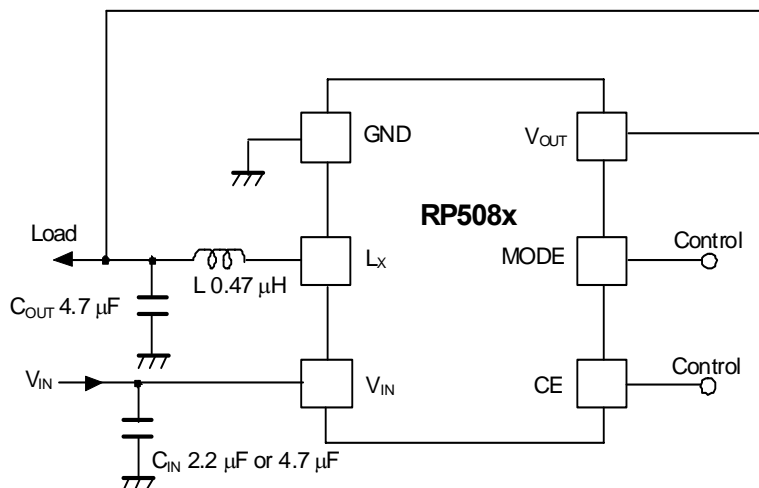


DESIGN GUIDE

NO.ED-318-130821

TYPICAL APPLICATION



RP508x Typical Application

RECOMMENDED COMPONENTS

Recommended Components

Symbol	Size	Type	Manufacturer
C _{IN}	2.2 μF	Ceramic Capacitor	C1005JB0J225K (TDK)
	4.7 μF	Ceramic Capacitor	C1005JB0J475K (TDK)
C _{OUT}	4.7 μF	Ceramic Capacitor	C1005JB0J475K (TDK)
L	0.47 μH (0.5 μH)	Inductor	MIPSZ2012D0R5 (FDK)
			MDT1608CHR47N (TOKO)
	1.0 μH	Inductor	MIPSZ2012D1R0 (FDK)
			MDT1608CH1R0N (TOKO)

SET OUTPUT VOLTAGE RANGE VS. INDUCTANCE RANGE

Set Output Voltage Range vs. Inductance Range

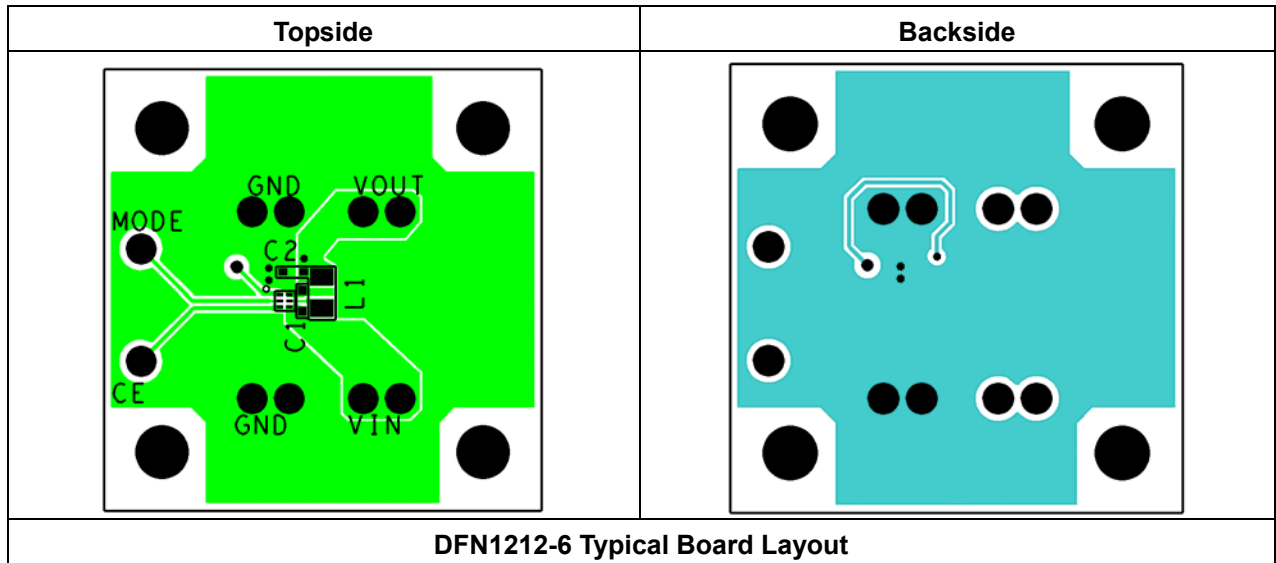
Set Output Voltage (V)	Input Voltage (V)	Inductance	
		L = 0.47 μ H	L = 1.0 μ H
V_{SET}	V_{IN}		
0.8 to 1.2	up to 5.5	Recommended	Acceptable
1.3 to 1.5	up to 4.5	Recommended	Acceptable
	4.5 to 5.5	Acceptable	Recommended
1.6 to 2.6	up to 3.6	Recommended	Acceptable
	up to 4.5	Acceptable	Recommended
	4.5 to 5.5	-	Recommended
2.7 to 3.3	up to 4.5	Recommended	Acceptable
	4.5 to 5.5	-	Recommended

TECHNICAL NOTES

The performance of power source circuits using this IC largely depends on the peripheral circuits. When selecting the peripheral components, consider the conditions of use. Do not allow each component, PCB pattern and the IC to exceed their respected rated values (voltage, current and power) when designing the peripheral circuits.

- Ensure the V_{IN} and GND lines are sufficiently robust. A large switching current flows through the GND lines, the V_{DD} line, the V_{OUT} line, an inductor, and L_X. If their impedance is too high, noise pickup or unstable operation may result. Set the external components as close as possible to the IC and minimize the wiring between the components and the IC, especially between a capacitor (C_{IN}) and the V_{IN} pin. The wiring between V_{OUT} and load and between L and V_{OUT} should be separated.
- Choose a low ESR ceramic capacitor. The capacitance of C_{IN} should be more than or equal to 4.7 μ F. The capacitance of a capacitor (C_{OUT}) should be between 4.7 μ F to 10 μ F.
- The Inductance value should be set within the range of 0.47 μ H to 1.0 μ H. However, the inductance value is limited by output voltage. Refer to the table above. The phase compensation of this IC is designed according to the C_{OUT} and L values. Choose an inductor that has small DC resistance, has enough allowable current and is hard to cause magnetic saturation. If the inductance value of an inductor is extremely small, the peak current of L_X may increase. The increased L_X peak current reaches “L_X limit current” to trigger over current protection circuit even if the load current is less than 600 mA.

TYPICAL BOARD LAYOUT



DFN1212-6 Typical Board Layout



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