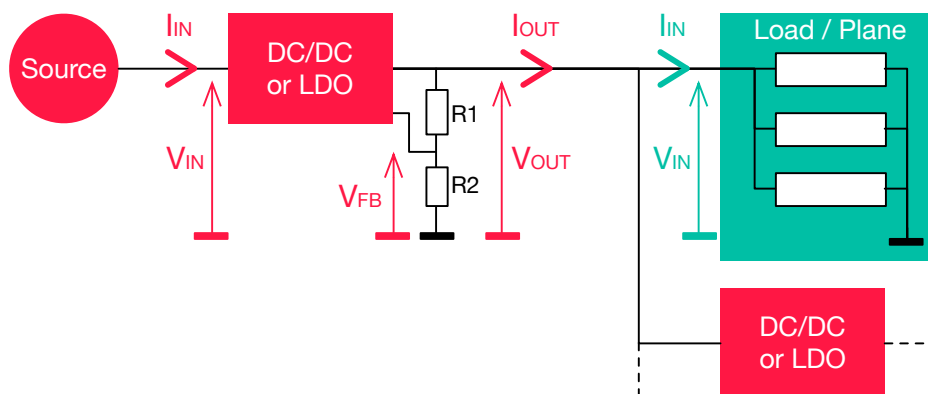


Summary of equations for electrical characteristics of DC/DC, LDO and power planes (loads).

Characteristic			LDO	DC/DC	Power plane / Load
Input	V _{IN TYP}		V _{OUT TYP} SOURCE		
	V _{IN MAX}		V _{OUT MAX} SOURCE		
	I _{IN TYP}		I _{OUT TYP} + I _{Q TYP}	P _{IN TYP} / V _{IN TYP}	Σ(I _{TYP} COMPONENT)
	I _{IN MAX}		I _{OUT MAX} + I _{Q MAX}	P _{IN MAX} / V _{IN TYP}	Σ(I _{MAX} COMPONENT)
	P _{IN TYP}		V _{IN TYP} . I _{IN TYP}	P _{OUT TYP} / Efficiency	V _{IN TYP} . I _{IN TYP}
	P _{IN MAX}		V _{IN TYP} . I _{IN MAX}	P _{OUT MAX} / Efficiency	V _{IN TYP} . I _{IN MAX}
Output	Fixed	V _{OUT TYP}	V _{OUT TYP}		N/A
		V _{OUT MAX}	V _{OUT MAX}		
	Adjust.	V _{OUT TYP}	V _{REF TYP} . (1 + R _{1 TYP} / R _{2 TYP})		
		V _{OUT MAX}	V _{REF MAX} . (1 + R _{1 MAX} / R _{2 MIN})		
	I _{OUT TYP}		Σ(I _{IN TYP} CHILDREN)		
	I _{OUT MAX}		Σ(I _{IN MAX} CHILDREN)		
	P _{OUT TYP}		V _{OUT TYP} . I _{OUT TYP}		
	P _{OUT MAX}		V _{OUT TYP} . I _{OUT MAX}		
Loss	P _{LOSS TYP}		P _{IN TYP} - P _{OUT TYP}		N/A
	P _{LOSS MAX}		P _{IN MAX} - P _{OUT MAX}		



Comment 1

In component datasheets, maximum currents are given for a typical voltage. Therefore, for simplification, those equations are only expressed with a typical voltage.

If the maximum voltage has to be considered (for example, in case of a badly regulated DC/DC), the currents will decrease and the equations will be balanced with minor differences in most cases.

Comment 2

The plane is considered as perfect. In reality, a voltage drop should be considered between the regulator output and the component input because of the copper resistance induced by the power plane shape. Especially if the current is high (CPU cores, for example) and the feedback is close to the regulator.