

AN6540

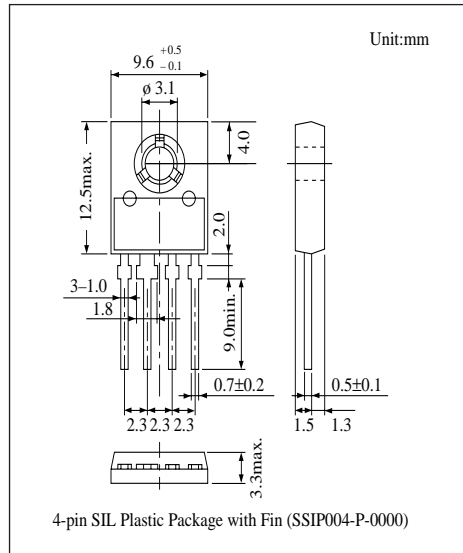
4-pin Voltage Regulator with Adjustable Rise Time

■ Overview

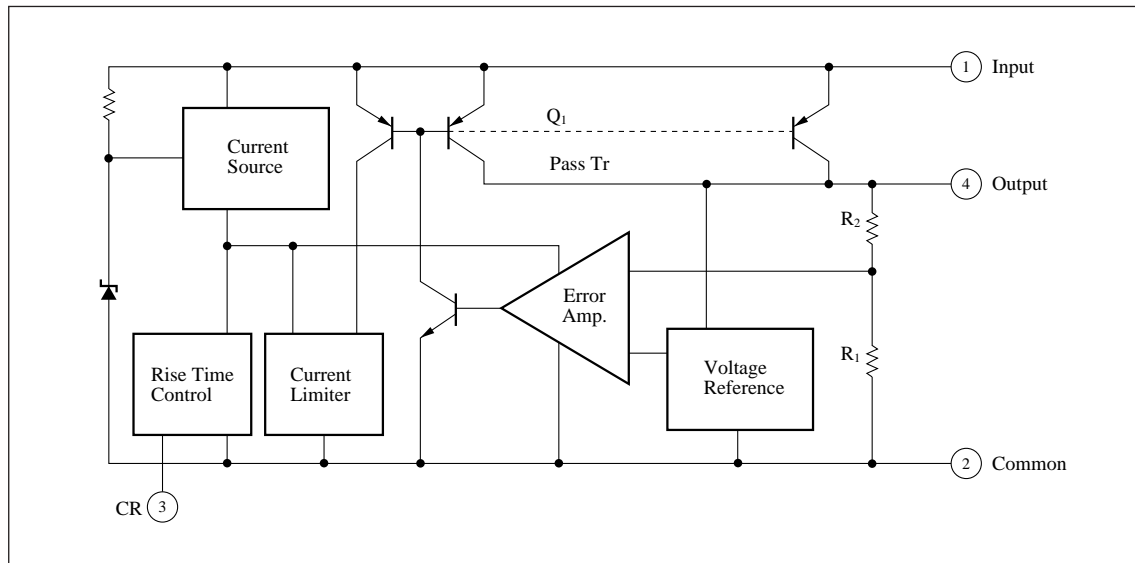
The AN6540 is an integrated circuit designed for a 4-pin voltage regulator with adjustable rise time. An external capacitor allows any setting of output voltage rise time and noise reduction at power on, and are best suited for power circuits with current capacitance up to 240mA. It can be used up to the minimum input/output voltage difference 0.3V(typ.).

■ Features

- Low dropout voltage:0.3V(typ.)
- Control of output voltage rise time
- Internal short-circuit protection
- Low temperature coefficient of output voltage



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	20	V
Supply surge voltage	V _{surge} *	40	V
Power dissipation (Tc=25°C)	P _D	6	W
Operating ambient temperature	T _{opr}	-30 to +80	°C
Storage temperature	T _{stg}	-40 to +150	°C

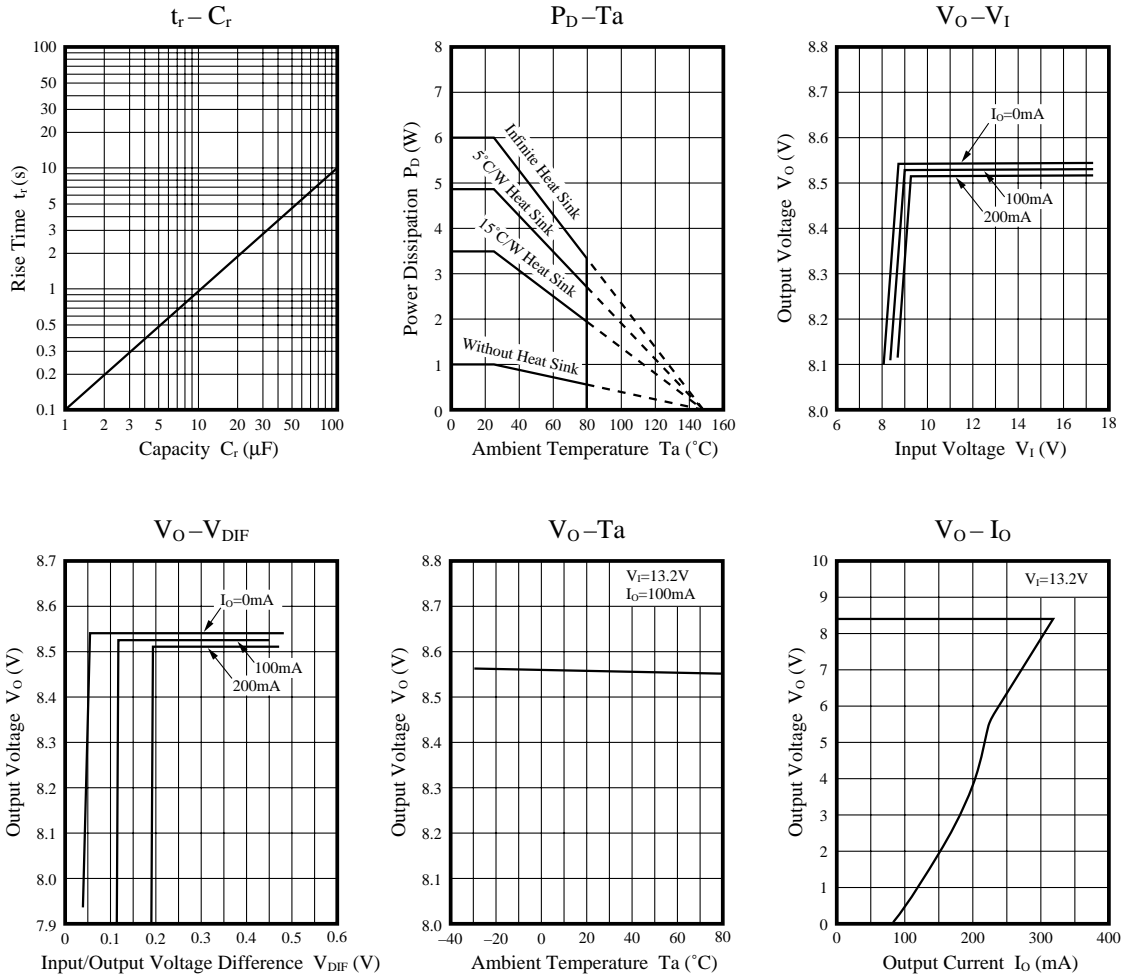
* t=200ms

■ Electrical Characteristics (Ta=25°C)

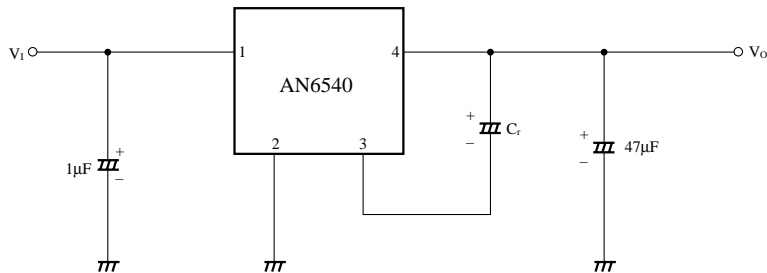
Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V _O	V _I =13.2V, I _O =200mA	8.1	8.5	8.9	V
Bias current	I _{bias}	V _I =13.2V, I _O =200mA	—	25	50	mA
Load regulation	REG _L	V _I =13.2V, I _O =0 to 200mA	—	—	±50	mV
Line regulation	REG _{IN}	V _I =9.5 to 16V, I _O =100mA	—	—	±50	mV
Output voltage temperature coefficient	ΔV _O /Ta	V _I =13.2V, I _O =100mA, T _{opr} =-30 to +80°C	—	±0.01	—	%/°C
Minimum input/output voltage difference	V _{DIF (min.)}	input/output voltage difference with input voltage 8.0V, I _O =100mA	—	0.3	0.6	V
Ripple rejection ratio	Regin	V _I =13.2V, I _O =100mA, f=100Hz, e _{in} =1V _{P-P}	50	—	—	dB
Maximum output current	I _{O (max.)}	V _I =13.2V	240	—	600	mA
Output short current	I _{OS}	V _I =13.2V	50	—	160	mA
Rise time	t _r	C _r =10μF±10%	0.5	1	2	s

Note) After the load short, return with I_O=230mA or over.

■ Characteristics Curve



■ Basic Regulator Circuit



Note) Choose the oscillation control capacitor $47\mu\text{F}$ which has a small capacitance reduction even at a low temperature. For example, use the tantalum capacitor.