

AN6540

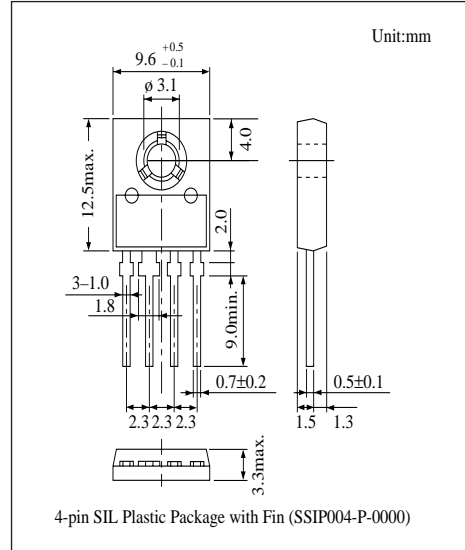
4-pin Voltage Regulator with Adjustable Rise Time

■ Overview

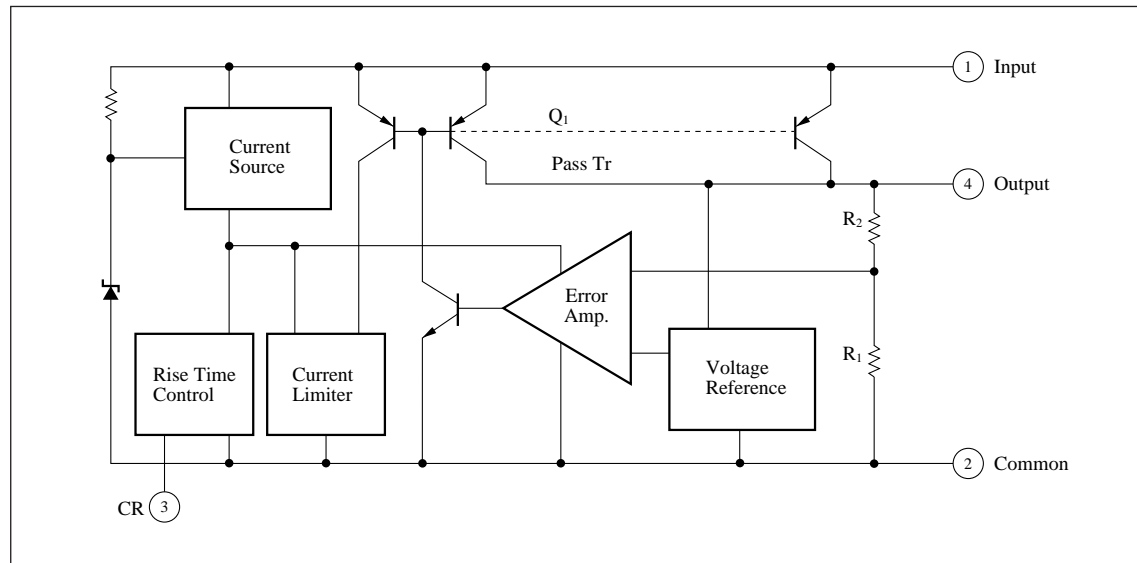
The AN6540 is an integrated circuit designed for a 4-pin voltage regulator with adjustable rise time. An external capacitor allows any setting of output voltage rise time and noise reduction at power on, and are best suited for power circuits with current capacitance up to 240mA. It can be used up to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

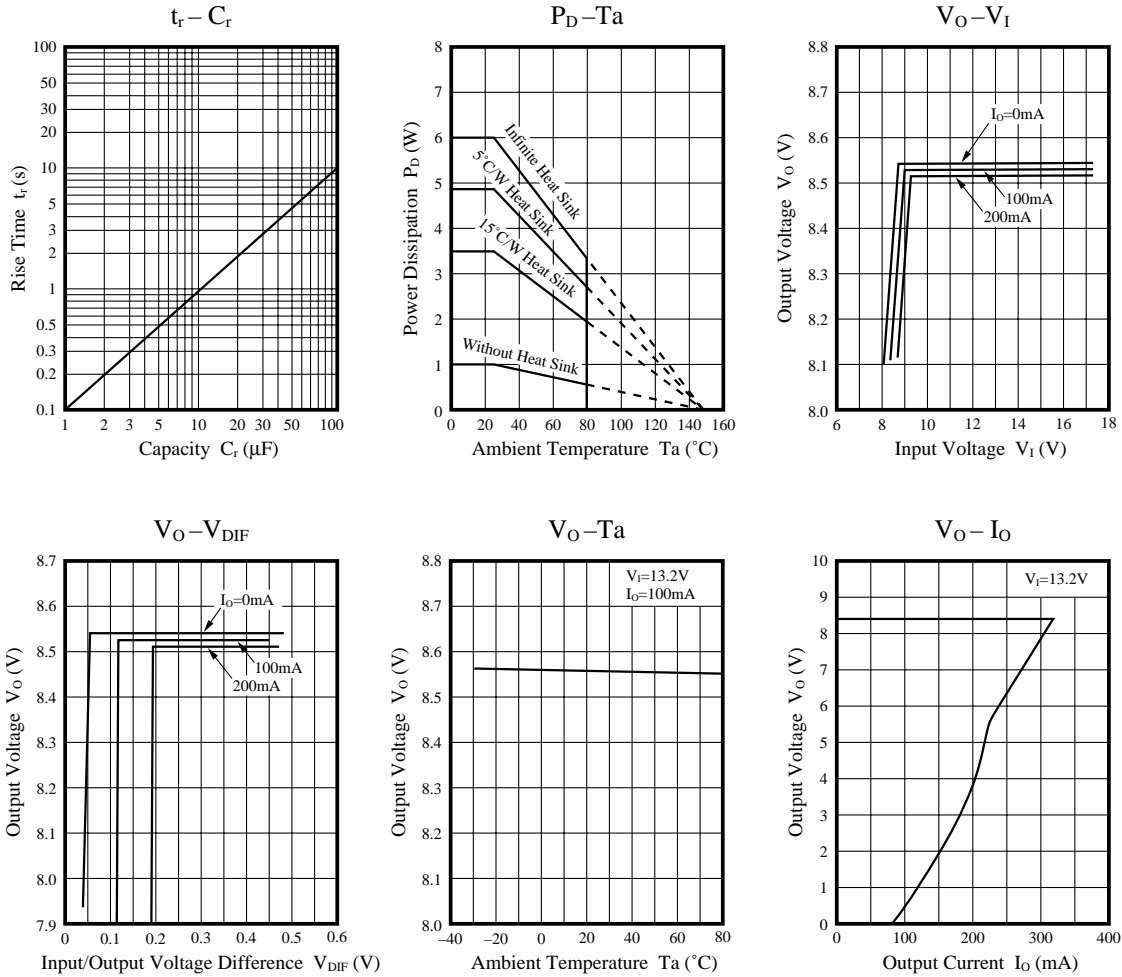
* $t=200ms$

■ Electrical Characteristics (Ta=25°C)

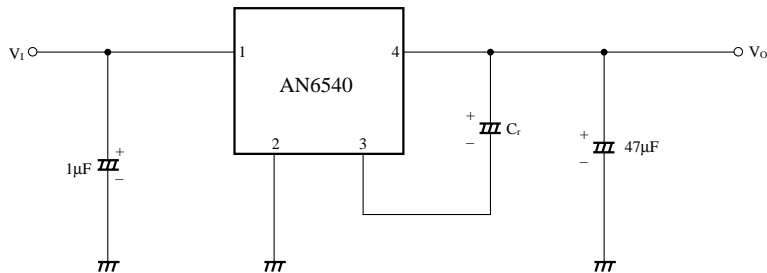
Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	$V_I=13.2V, I_O=200mA$	8.1	8.5	8.9	V
Bias current	I_{bias}	$V_I=13.2V, I_O=200mA$	—	25	50	mA
Load regulation	REG_L	$V_I=13.2V, I_O=0$ to 200mA	—	—	±50	mV
Line regulation	REG_{IN}	$V_I=9.5$ to 16V, $I_O=100mA$	—	—	±50	mV
Output voltage temperature coefficient	$\Delta V_O/T_a$	$V_I=13.2V, I_O=100mA,$ $T_{opr}=-30$ 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	Reg_{in}	$V_I=13.2V, I_O=100mA,$ $f=100Hz, e_{in}=1V_{P-P}$	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	$C_r=10\mu F \pm 10\%$	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.