

TL782C, TL782Q 2-V FIXED POSITIVE VOLTAGE REGULATORS

D3022, SEPTEMBER 1987—REVISED NOVEMBER 1991

- Overvoltage Protection
- Thermal Shutdown Protection
- Internal Short-Circuit Current Limiting
- Peak Output Current Constant Over Temperature Range
- TL782Q Has Extended Temperature Range of -40°C to 125°C

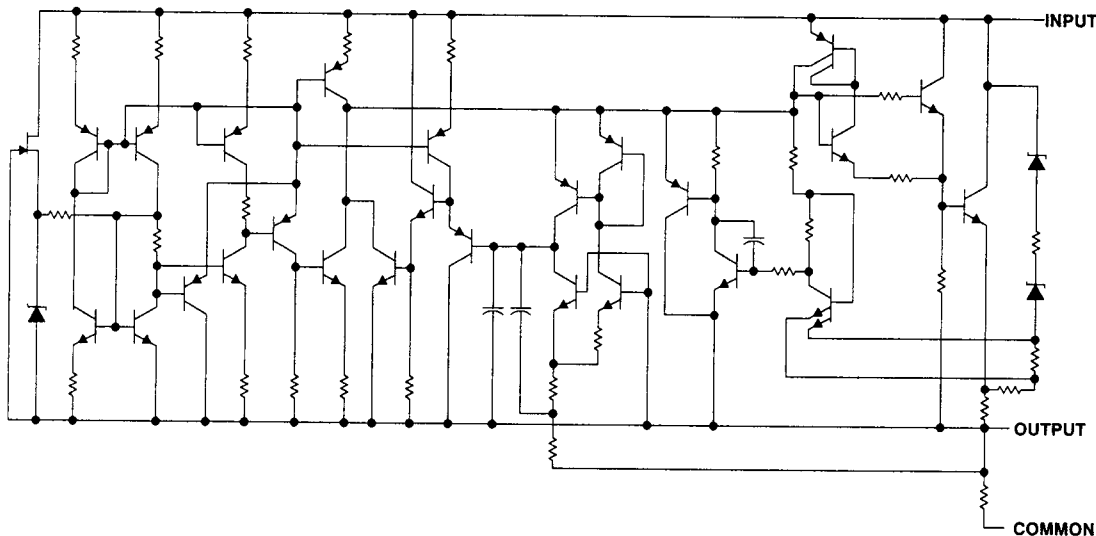
description

The TL782C and the TL782Q are fixed 2-V positive voltage regulators designed to address industry needs. With superior input and output regulation, they can regulate input voltages of 4.5 V to 30 V and are capable of supplying up to 1.5 A of load current.

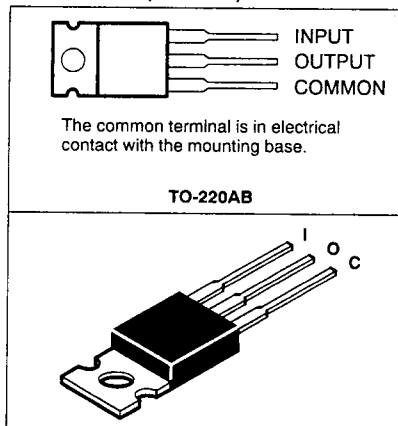
In addition to high performance, the TL782C and TL782Q feature on-board overvoltage and thermal overload protection circuitry, and the output is current-limit protected.

The TL782C is characterized for operation from 0°C to 125°C virtual temperature range. The TL782Q is characterized for operation from -40°C to 125°C virtual temperature range.

schematic



KC PACKAGE
(TOP VIEW)



TL782C, TL782Q 2-V FIXED POSITIVE VOLTAGE REGULATORS

absolute maximum ratings over operating temperature range (unless otherwise noted)

Input voltage	40 V
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 1)	2 W
Continuous total dissipation at (or below) 70°C case temperature (see Note 1)	20 W
Operating free-air, case, or virtual junction temperature range: TL782C	0°C to 125°C
TL782Q	-40°C to 125°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C

NOTE 1: For operation above 25°C free-air or 70°C case temperature, refer to Figures 1 and 2. To avoid exceeding the design maximum virtual junction temperature, these ratings should not be exceeded. Due to variations in individual device electrical characteristics and thermal resistance, the built-in thermal overload protection may be activated at power levels slightly above or below the rated dissipation.

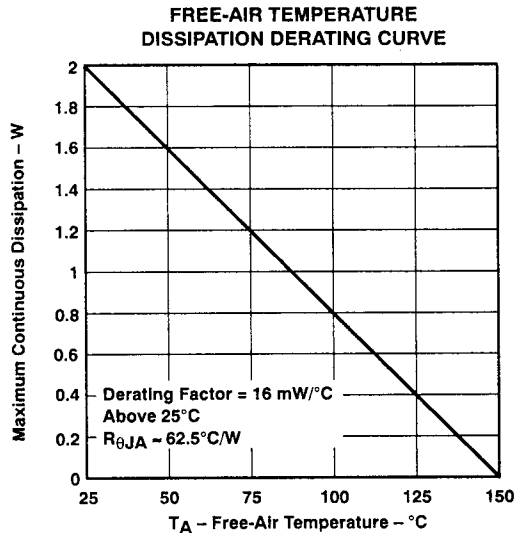


Figure 1

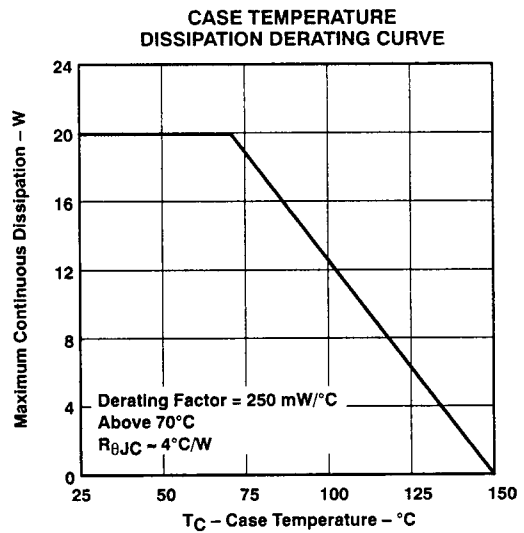


Figure 2

recommended operating conditions

		MIN	MAX	UNIT
Input voltage, V_I		4.5	30	V
Output current, I_O			1.5	A
Operating virtual junction temperature, T_J	TL782C	0	125	°C
	TL782Q	-40	125	

TL782C, TL782Q
2-V FIXED POSITIVE VOLTAGE REGULATORS

electrical characteristics at specified virtual junction temperature, $V_I = 5\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	T_J ‡	MIN	TYP	MAX	UNIT
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $P_D \leq 15\text{ W}$, $V_I = 4.5\text{ V to }30\text{ V}$	25°C	1.94	2	2.06	V
		Full range	1.9		2.1	
Input regulation	$V_I = 5\text{ V to }20\text{ V}$	25°C			25	mV
	$V_I = 8\text{ V to }12\text{ V}$				15	
	$V_I = 5\text{ V to }20\text{ V}$	Full range			35	
	$V_I = 8\text{ V to }12\text{ V}$				25	
Ripple rejection	$V_I(\Delta V) = 10\text{ V}$, $V_{PP} = 10\text{ V}$, $f = 120\text{ Hz}$	25°C	60			dB
Output regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C			25	mV
	$I_O = 250\text{ mA to }750\text{ mA}$				15	
	$I_O = 5\text{ mA to }1.5\text{ A}$	Full range			70	
	$I_O = 250\text{ mA to }750\text{ mA}$				35	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	Full range		0.25		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		75		μV
Bias current		25°C		8	9	mA
		Full range			10	
Bias current change	$V_I = 5\text{ V to }20\text{ V}$	Full range			1.4	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current	$V_I = 2.5\text{ V}$	25°C		750		mA
Peak output current		25°C		2.2		A

† Pulse-testing techniques are used to maintain the virtual junction temperature as close to the free-air temperature as possible. All characteristics are measured with a 0.33-μF capacitor across the input and a 1-μF capacitor across the output.

‡ For the TL782C, full range is 0°C to 125°C, and for the TL782Q, full range is -40°C to 125°C.

