



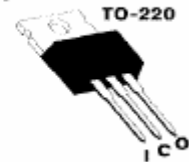
L7805CV

Positive Voltage regulators

1.Features

- Output current to 1.5 A
- Output voltage of 5V
- Thermal overload protection
- Short circuit protection
- Output transition SOA protection

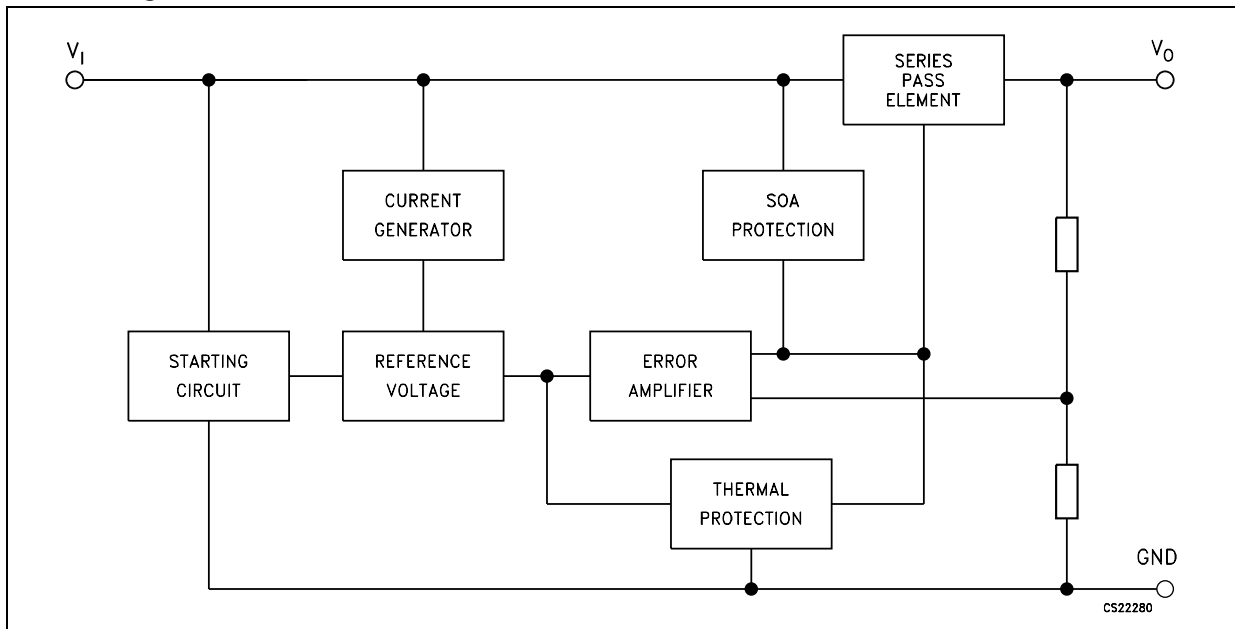
KC PACKAGE (TOP VIEW)



2.Description

The L7805CV of three-terminal positive regulators is available in TO-220 package, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1.5 A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltage and currents.

Block diagram

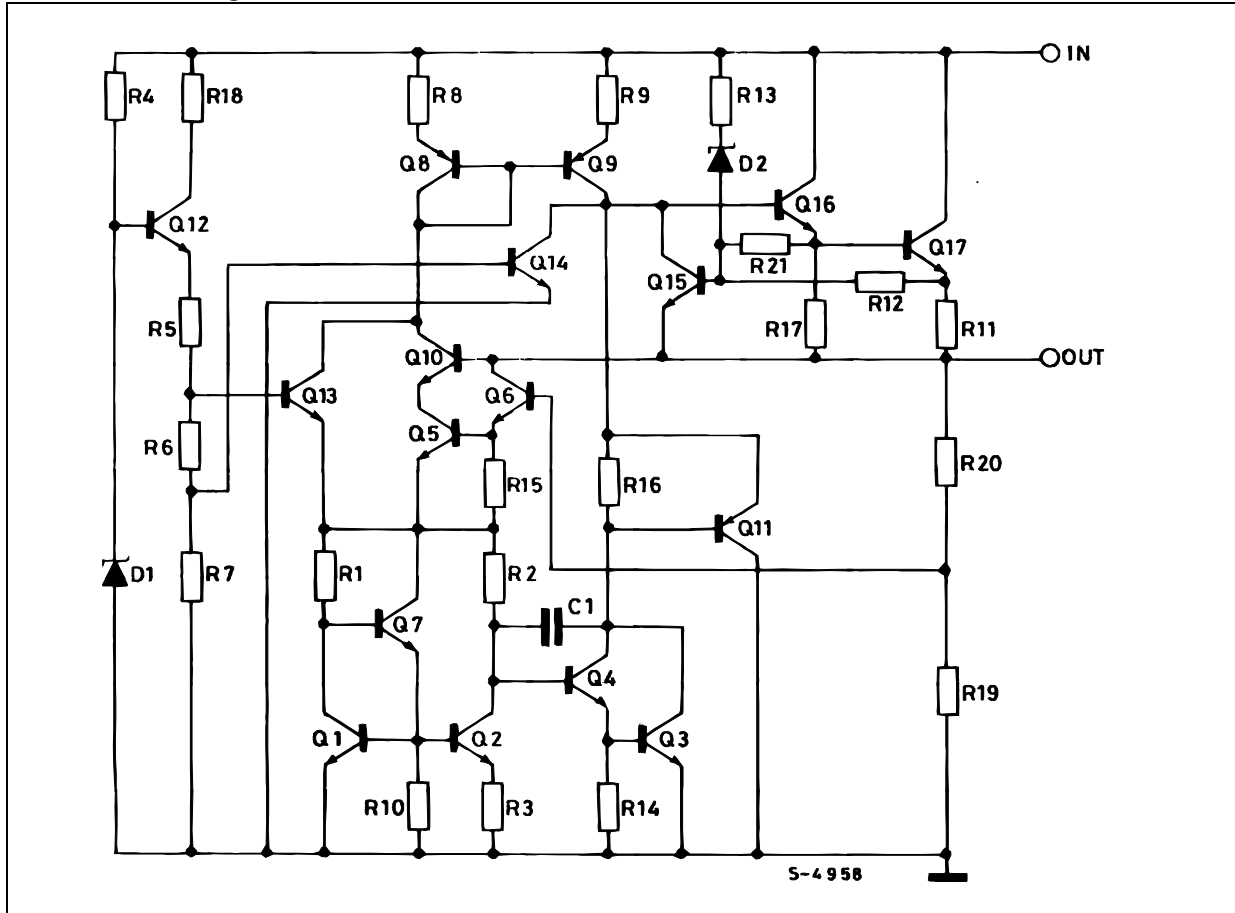




L7805CV

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Schematic diagram





3. Maximum ratings

Absolute maximum ratings

Symbol	Parameter		Value	Unit
V_I	DC input voltage	$V_O = 5\text{ V}$	35	V
I_O	Output current		Internally limited	
P_D	Power dissipation		Internally limited	
T_{STG}	Storage temperature range		-65 to 150	°C
T_{OP}	Operating junction temperature range	L7805CV	0 to 150	°C

Note: Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

4. Electrical characteristics

Electrical characteristics of L7805CV (refer to the test circuits, $T_J = 0$ to 150 °C , $V_I = 10\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25\text{ °C}$	4.8	5	5.2	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $P_O \leq 15\text{ W}$ $V_I = 8\text{ to }20\text{ V}$	4.65	5	5.35	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 7\text{ to }25\text{ V}$, $T_J = 25\text{ °C}$		3	50	mV
		$V_I = 8\text{ to }12\text{ V}$, $T_J = 25\text{ °C}$		1	25	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25\text{ °C}$			100	mV
		$I_O = 250\text{ to }750\text{ mA}$, $T_J = 25\text{ °C}$			25	
I_d	Quiescent current	$T_J = 25\text{ °C}$			6	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
		$V_I = 8\text{ to }25\text{ V}$			0.8	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		0.6		mV/°C
eN	Output noise voltage	$B = 10\text{ Hz to }100\text{ kHz}$, $T_J = 25\text{ °C}$			40	$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 8\text{ to }18\text{ V}$, $f = 120\text{ Hz}$	68			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25\text{ °C}$		2	2.5	V
R_O	Output resistance	$f = 1\text{ kHz}$		17		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25\text{ °C}$		0.75		A
I_{scp}	Short circuit peak current	$T_J = 25\text{ °C}$		2.2		A

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.



5. Test circuits

Figure 5. DC parameter

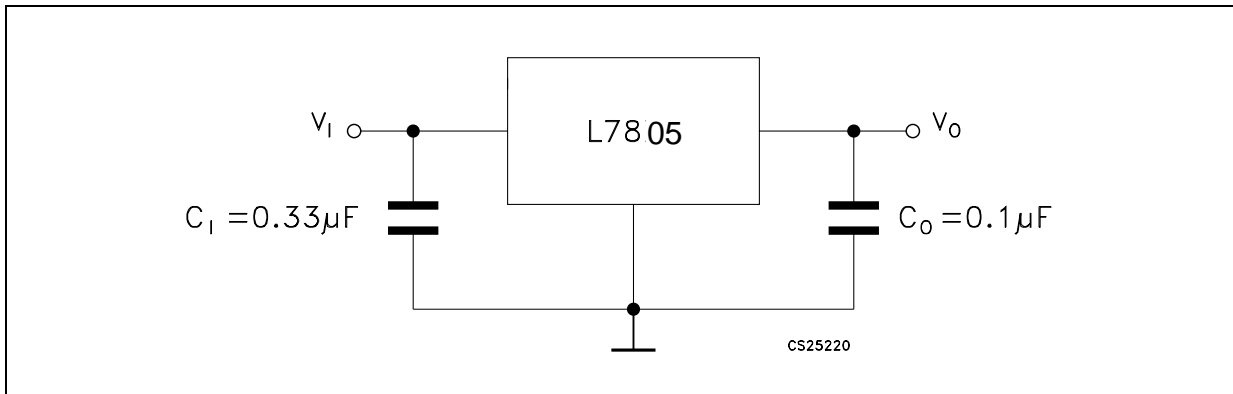


Figure 6. Load regulation

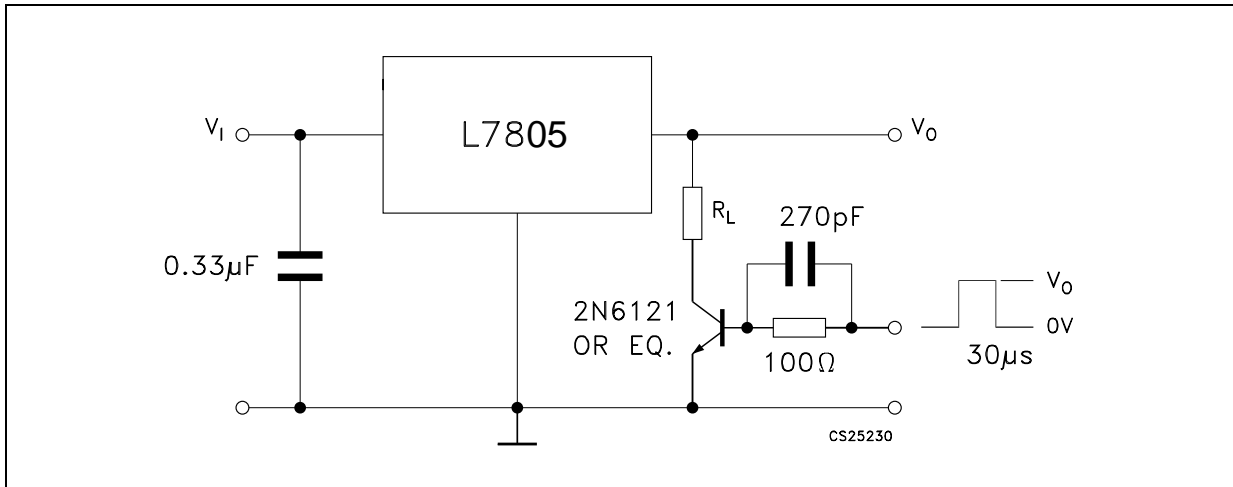
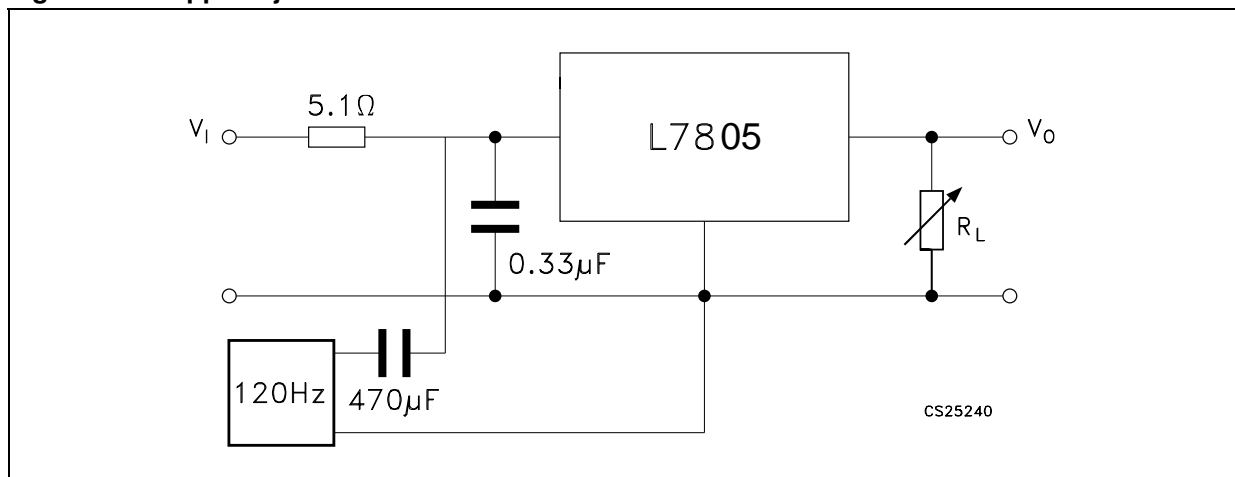


Figure 7. Ripple rejection



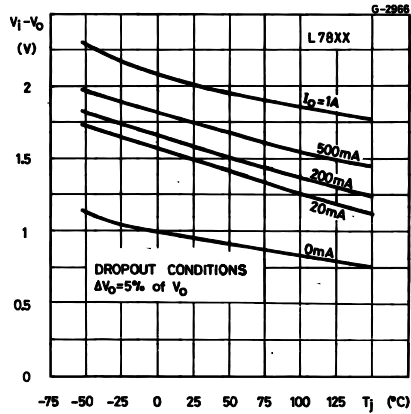


L7805CV

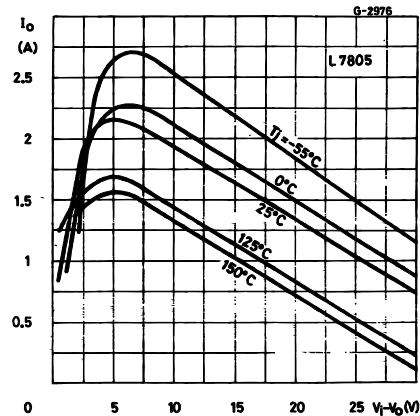
Positive Voltage Regulators

6. Typical performance

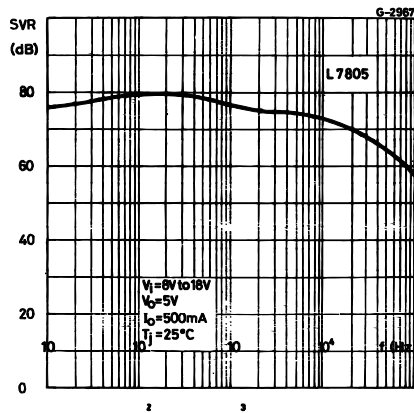
Dropout voltage vs junction temperature



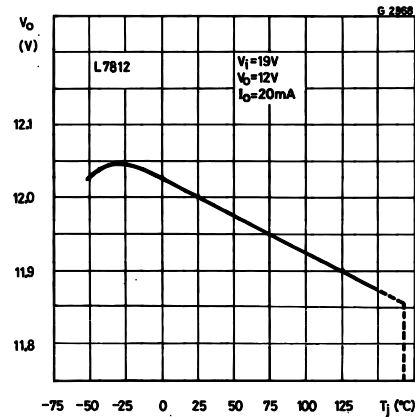
Peak output current vs input/output differential voltage



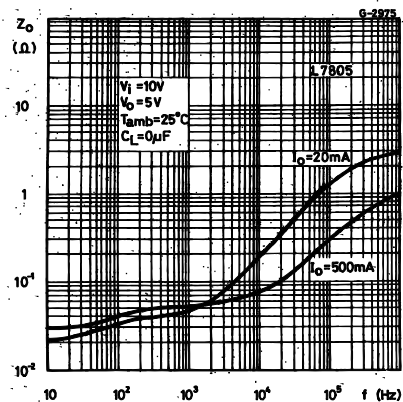
Supply voltage rejection vs frequency



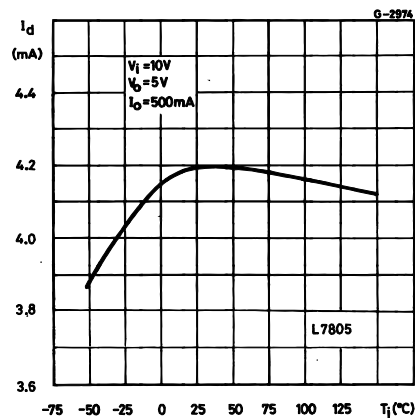
Output voltage vs junction temperature



Output impedance vs frequency



Quiescent current vs junction temp.

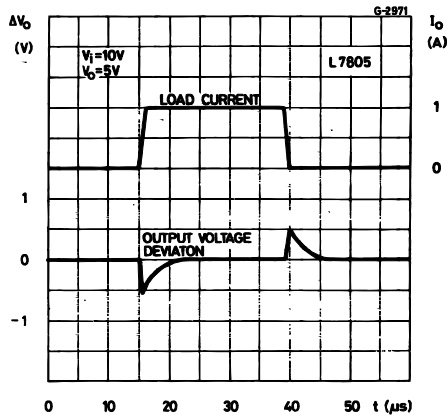




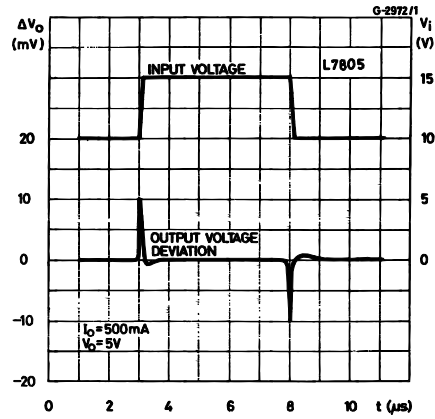
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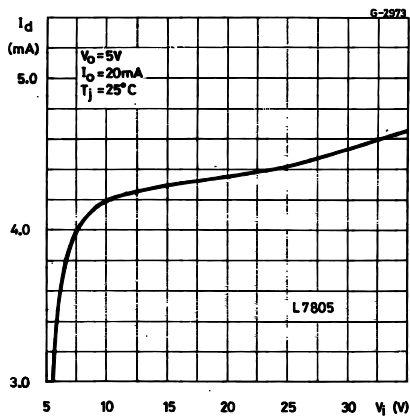
Load transient response



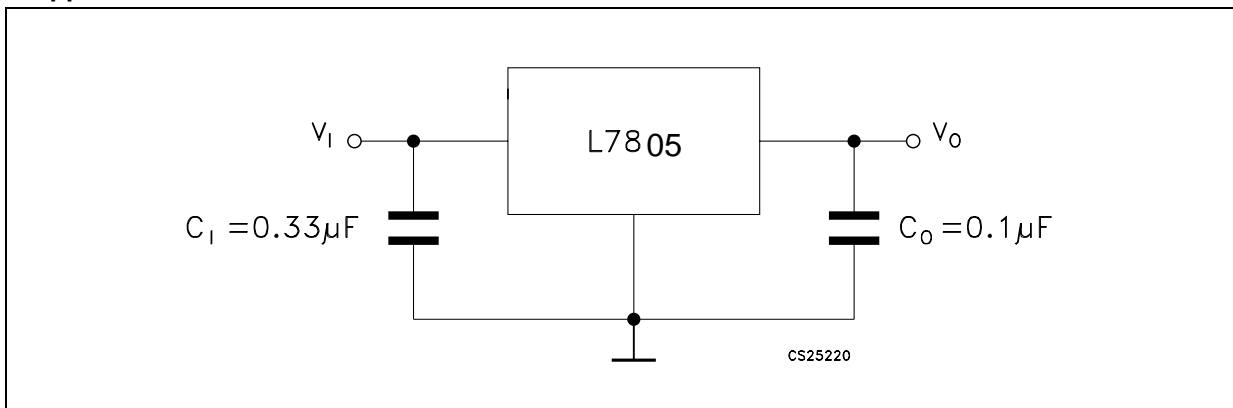
Line transient response



Quiescent current vs input voltage



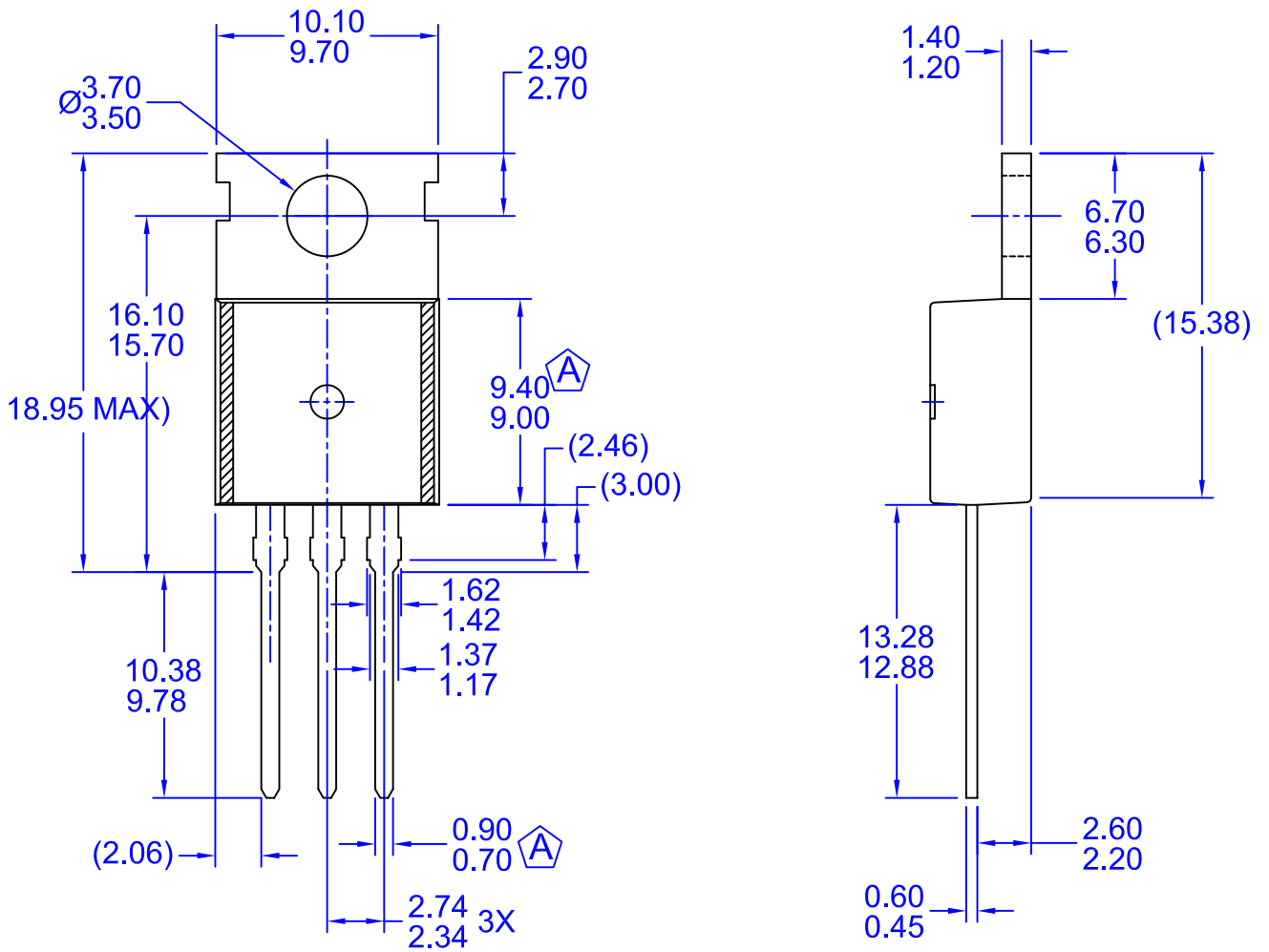
Application circuits



1. Although no output capacitor is need for stability, it does improve transient response.
2. Required if regulator is locate an appreciable distance from power supply filter.



7.Package mechanical data



NOTES:

- Ⓐ CONFORMS TO JEDEC TO-220 VARIATION AB EXCEPT WHERE NOTED
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

