

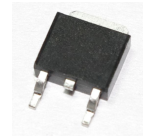
TS78MXX

3-Terminal 0.5A Positive Voltage Regulator

DRAWING

Features

- ◆ Output Current up to 0.5A
- ◆ Output Voltages of 5,6,8,9,10,12,15,18,24V
- ◆ Thermal Overload protection
- ◆ Short Circuit protection
- ◆ Output Transistor Safe Operating Area Protection
- ◆ Package :TO-252



IN GND OUT

General Description

The 78MXX series of three-terminal positive regulator are Available in the TO-220AB/220T/252/263-2L, ITO-220AB Package and with several fixed output voltage ,marking Them useful in a wide range of applications. Each type Employs internal current limiting, thermal shut down and Safe operating area protection, marking it provided, They Can deliver over 0.5A output current.

Absolute Maximum Ratings

Parameter	Symbol	Value		Units
		Min	Max	
Output Voltage	V _I		35 ^①	V
			40 ^②	V
Power	P _D		15 ^③	W
Operating temperature	T _{amb}	-20	80	°C
Storage Temperature Range	T _{stg}	-55	150	°C

Note: ① For 78M05,78M06,78M09,78M12,78M15,78M18,78M24

② When the temperature exceeds 150°C ,the output automatically protected.

Electrical Characteristics

TS78M05

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	V _O	V _I =8~20V,I _O =5mA~0.5A,P _D ≤15W	4.75	5	5.25	V
Line Regulation	REGV	V _I =8~25V,I _o =500mA			100	mV
Load Regulation	REGL	V _I =10V,I _O =5mA~0.5A			100	mV
Input Voltage	V _I		7.5		35	V
Ripple Rejection	Srip	V _I =12V,I _o =100mA,V _{IPP} =4V,f=100Hz	62			dB
Maximum output current	I _{oM}			2.2		A
Output Voltage Drift	△V/T	I _o =5mA,T _j =0~125°C		-0.3		mV/°C
Output Noise Voltage	V _{NO}	f=10Hz~100kHz		40		uV

TS78M06

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=9~21V, IO=5mA~0.5A, PD≤15W	5.7	6	6.3	V
Line Regulation	REGV	VI=8.5~23V, IO=100mA			120	mV
Load Regulation	REGL	VI=15V, IO=5mA~0.5A			120	mV
Input Voltage	VI		8.5		35	V
Ripple Rejection	Srip	VI=13V, IO=100mA, V _{IPP} =4V, f=100Hz	59			dB
Maximum output current	I _{OM}			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA, Tj=0~125°C		-0.4		mV/°C
Output Noise Voltage	VNO	f=10Hz~100kHz		40		uV

TS78M08

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=12~24V, IO=5mA~0.5A, PD≤15W	7.6	8	8.4	V
Line Regulation	REGV	VI=11.5~26V, IO=100mA			180	mV
Load Regulation	REGL	VI=18V, IO=5mA~0.5A			180	mV
Input Voltage	VI		11.5		35	V
Ripple Rejection	Srip	VI=18V, IO=100mA, V _{IPP} =4V, f=100Hz	56			dB
Maximum output current	I _{OM}			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA, Tj=0~125°C		-0.5		mV/°C
Output Noise Voltage	VNO	f=10Hz~100kHz		55		uV

TS78M09

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=12~24V, IO=5mA~0.5A, PD≤15W	8.55	9	9.45	V
Line Regulation	REGV	VI=11.5~26V, IO=100mA			180	mV
Load Regulation	REGL	VI=18V, IO=5mA~0.5A			180	mV
Input Voltage	VI		11.5		35	V
Ripple Rejection	Srip	VI=18V, IO=100mA, V _{IPP} =4V, f=100Hz	56			dB
Maximum output current	I _{OM}			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA, Tj=0~125°C		-0.5		mV/°C
Output Noise Voltage	VNO	f=10Hz~100kHz		57		uV

TS78M12

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=15~27V,IO=5mA~0.5A,PD≤15W	11.5	12	12.5	V
Line Regulation	REGV	VI=15~23V,IO=100mA		60	110	mV
Load Regulation	REGL	VI=19V,IO=5mA~0.5A		60	240	mV
Input Voltage	VI		14.6		35	V
Ripple Rejection	Srip	VI=22V,IO=100mA,VIpp=4V,f=100Hz	55			dB
Maximum output current	IOM			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA,Tj=0~125℃		-1.5		mV/℃
Output Noise Voltage	VNO	f=10Hz~100kHz		75		uV

TS78M15

Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=18~30V,IO=5mA~0.5A,PD≤15W	14.25	15	15.75	V
Line Regulation	REGV	VI=18~30V,IO=100mA			300	mV
Load Regulation	REGL	VI=23V,IO=5mA~0.5A			300	mV
Input Voltage	VI		17.7		35	V
Ripple Rejection	Srip	VI=26V,IO=100mA,VIpp=4V,f=100Hz	54			dB
Maximum output current	IOM			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA,Tj=0~125℃		-1		mV/℃
Output Noise Voltage	VNO	f=10Hz~100kHz		90		uV

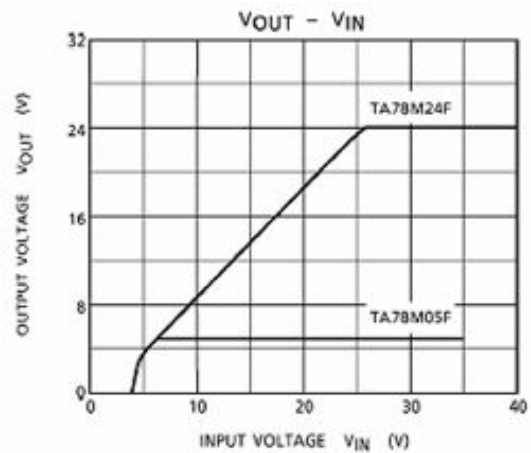
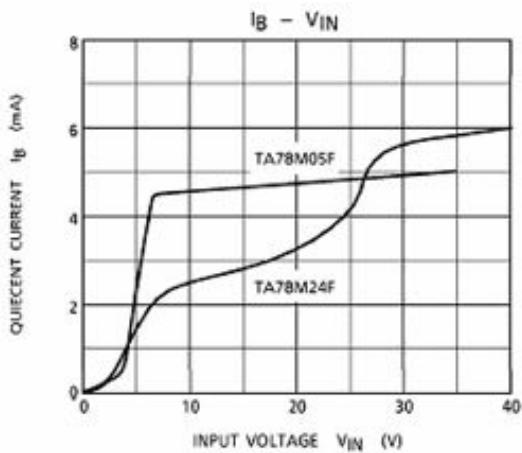
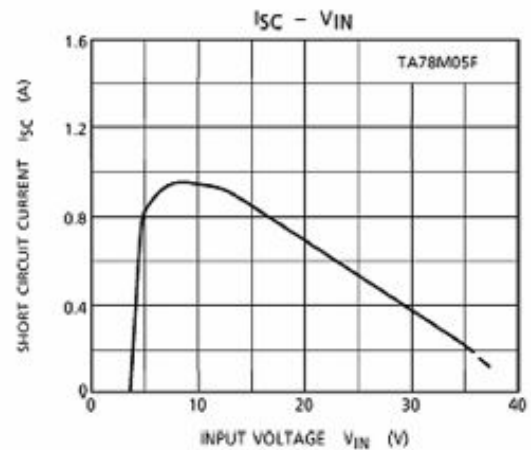
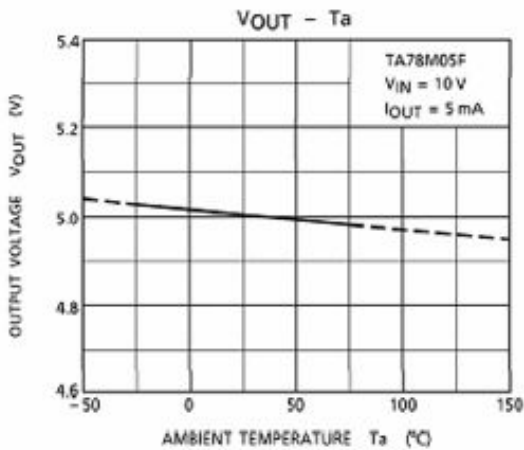
TS78M18

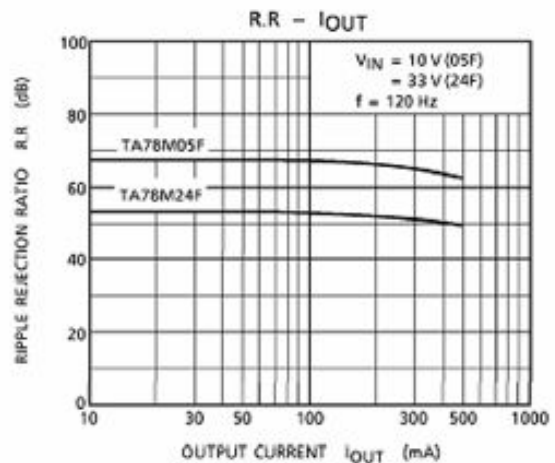
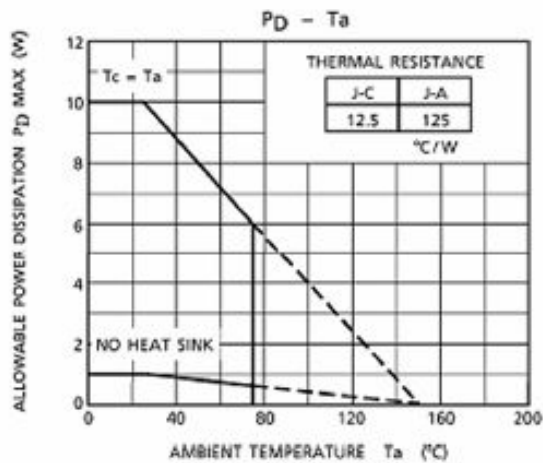
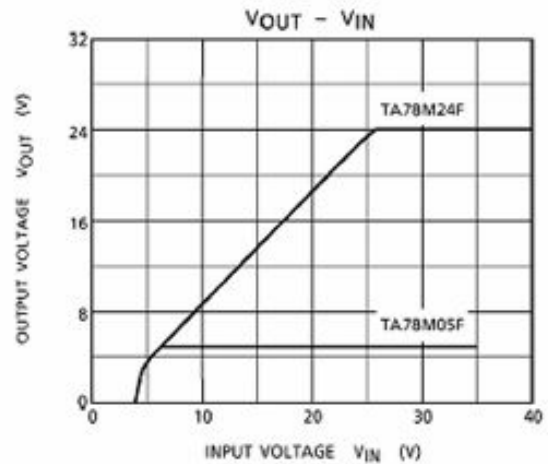
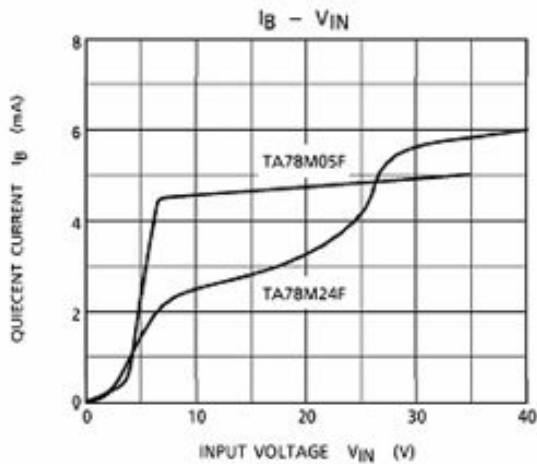
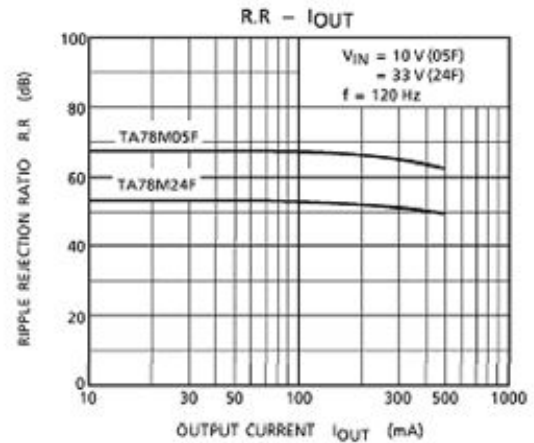
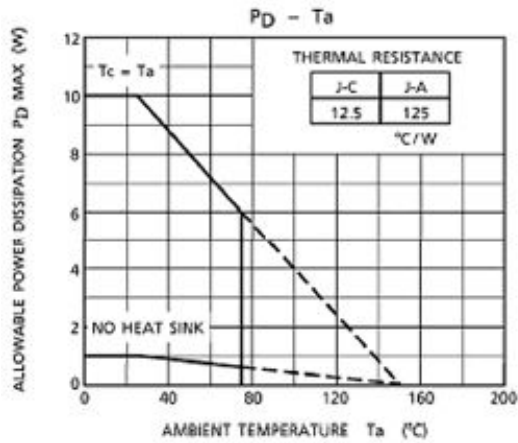
Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=21~33,IO=5mA~0.5A,PD≤15W	17.1	18	18.9	V
Line Regulation	REGV	VI=21~33V,IO=100mA			360	mV
Load Regulation	REGL	VI=27V,IO=5mA~0.5A			360	mV
Input Voltage	VI		20.8		35	V
Ripple Rejection	Srip	VI=30V,IO=100mA,VIpp=4V,f=100Hz	53			dB
Maximum output current	IOM			1.5		A
Output Voltage Drift	ΔV/T	IO=5mA,Tj=0~125℃		-1.1		mV/℃
Output Noise Voltage	VNO	f=10Hz~100kHz		110		uV

TS78M24

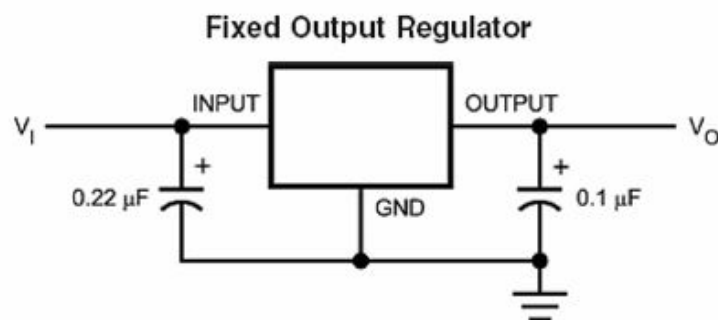
Parameter	Symbol	Conditions	Specification values			Unit
			Min	Typ	Max	
Output Voltage	VO	VI=27~38, IO=5mA~0.5A, Po≤15W	23	24	25	V
Line Regulation	REGV	VI=27~38V, Io=100mA			400	mV
Load Regulation	REGL	VI=33V, IO=5mA~0.5A			480	mV
Input Voltage	VI		27		40	V
Ripple Rejection	Srip	VI=36V, Io=100mA, V _{IPP} =4V, f=100Hz	50			dB
Maximum output current	I _{OM}			1.5		A
Output Voltage Drift	ΔV/T	I _o =5mA, T _j =0~125°C		-3		mV/°C
Output Noise Voltage	VNO	f=10Hz~100kHz		170		μV

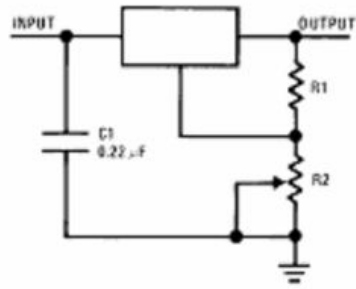
Typical Characteristics



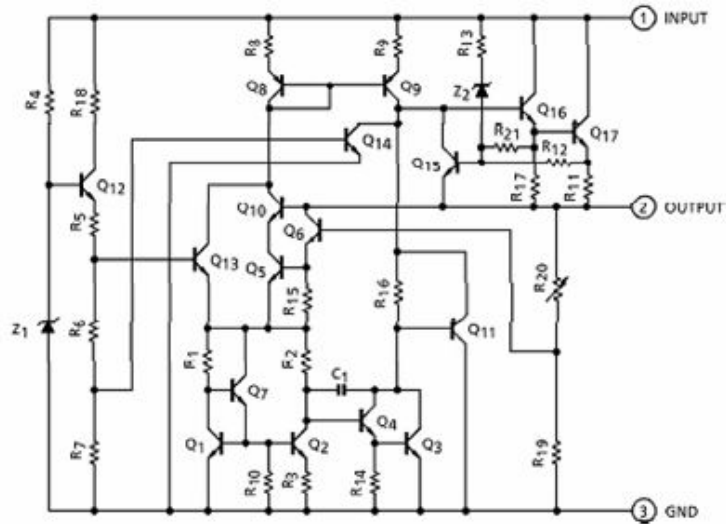


Test Circuit



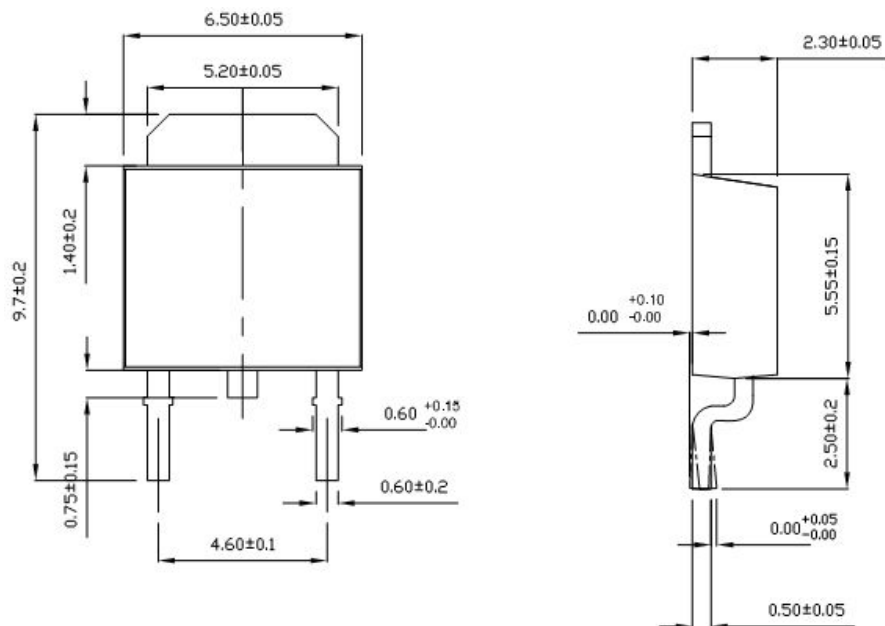


Schematic Diagram

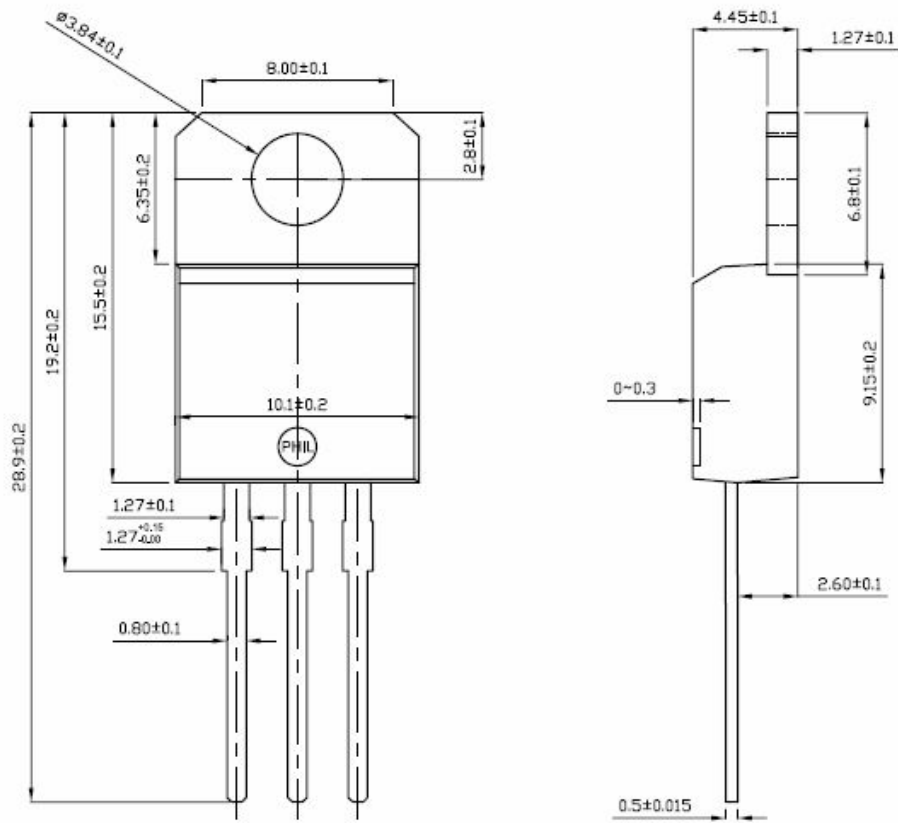


Mechanical Dimensions

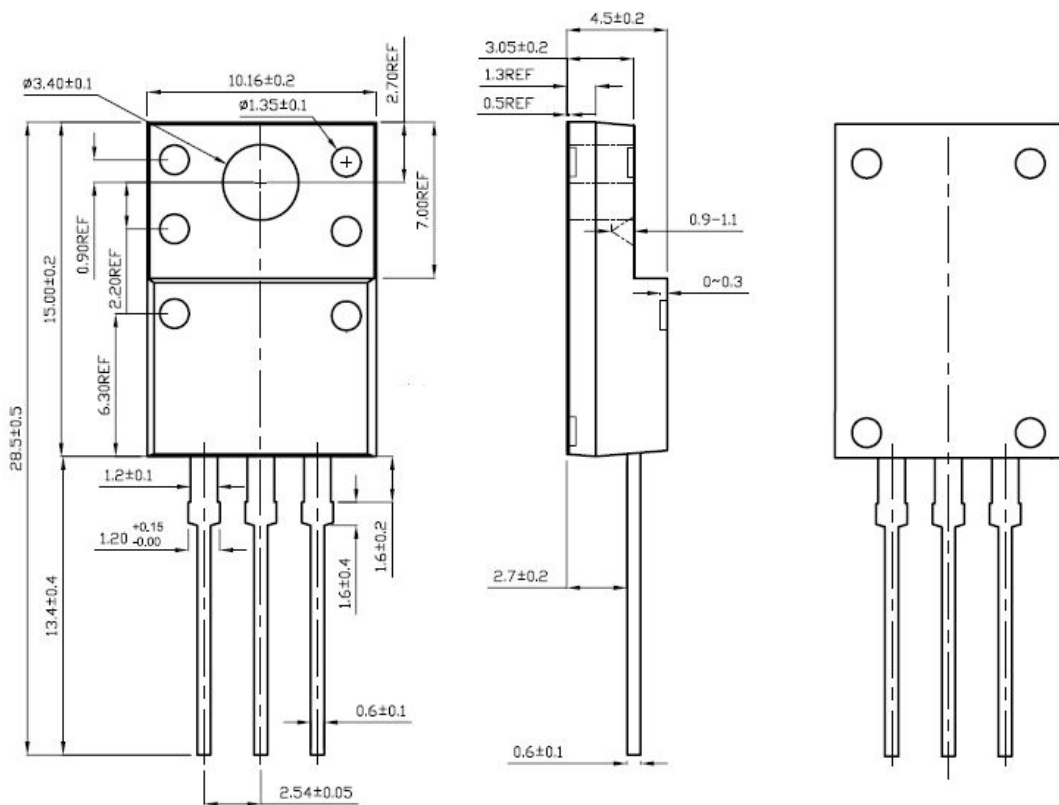
TO-252



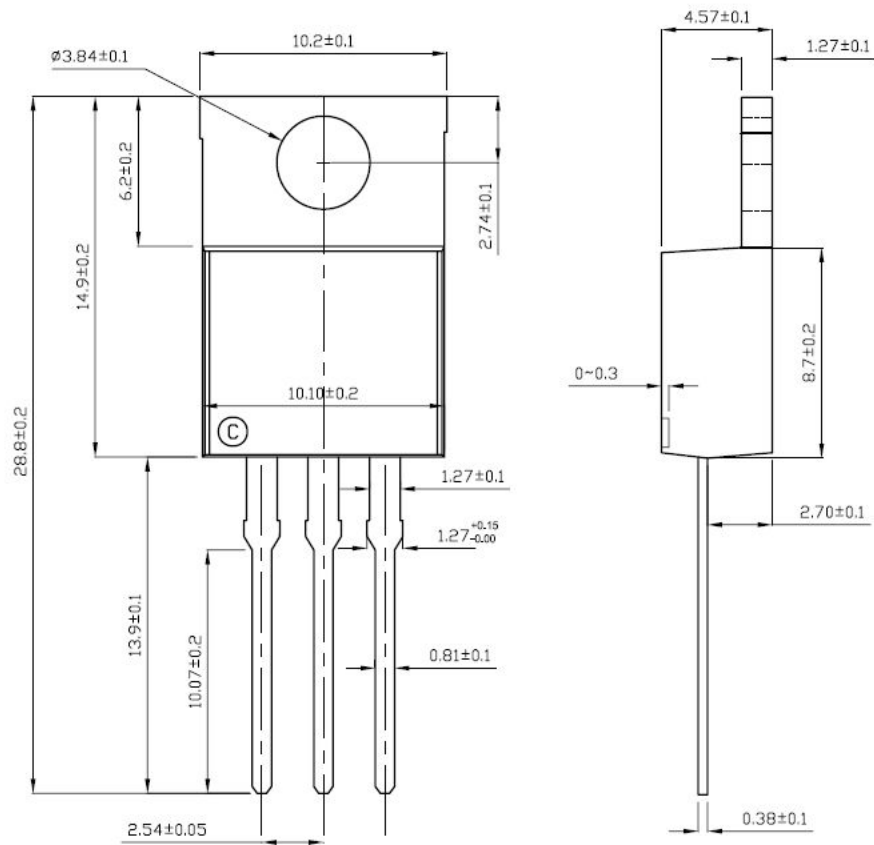
TO-220T



ITO-220AB



TO-220AB



TO-263-2L

