



TS378R00

3A Ultra Low Dropout Voltage Regulator w/Disable

ITO-220-4L



ITO-220-4SL



Pin assignment:

- 1. Input
- 2. Output
- 3. Gnd
- 4. Enable

Low Dropout Voltage 0.5V max.

General Description

The TS378R00 Series is a low-dropout voltage regulator suitable for various electronic equipments. It provides constant voltage power source with ITO-220 4 lead full mold package.

Dropout voltage of TS378R00 Series is below 0.5V in full rated current (3A). This regulator has various functions such as a peak current protection, thermal shut down, over voltage protection and an output disable function.

Features

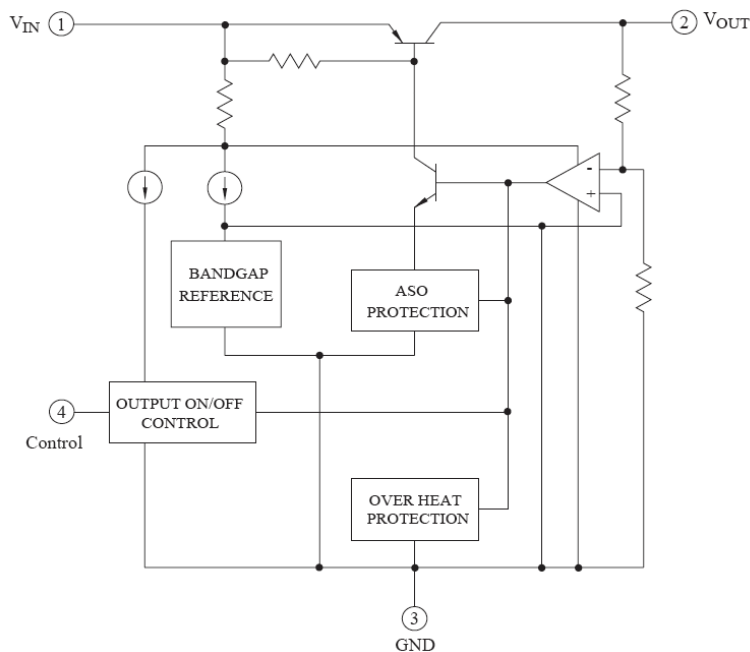
- ◇ Ultra Low Dropout performance 0.5Vmax 3A
- ◇ Over Current Protection, Thermal Shutdown
- ◇ Over Voltage Protection, Short Circuit Protection
- ◇ With Output Disable Function
- ◇ ± 2.4% Typical Total output
- ◇ TO-220 Full-Mold Package (4Pin)

Ordering Information

Part No.	Operating Temp.	Package
TS378RxxCI4	-40 ~ +125 °C	ITO-220-4L
TS378RxxCI4S		ITO-220-4SL

Note: Where xx denotes voltage option,
33=3.3V, 05=5.0V, 08=8.0V, 09=9.0V, 12=12V

Block Diagram





Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Remark
Input Voltage	V _{in}	30	V	--
Disable Voltage	V _{dis}	30	V	--
Output Current	I _o	3.0	A	--
Power Dissipation 1	P _{d1}	1.5	W	No heat sink
Power Dissipation 2	P _{d2}	15	W	With heat sink
Junction Temperature	T _j	-40~+125	°C	--
Thermal Resistance, Junction-to Case(Note2)	R _{θjc}	4.31	°C / W	--
Thermal Resistance, Junction-to Air(Note2)	R _{θja}	48.83	°C / W	--
Thermal Shutdown Temperature	T _{tsd}	150	°C	--

Electrical Characteristics

TS278R00 Series (V_{in}=Note 6, I_o=1.0A, T_a=25°C, unless otherwise specified).

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	TS378R33	V _o	3.22	3.3	3.38	V
	TS378R05		4.88	5.0	5.12	
	TS378R08		7.80	8.0	8.20	
	TS378R09		8.78	9.0	9.22	
	TS378R12		11.7	12	12.3	
Load Regulation	REG _{load}	5mA<I _o <3A	--	0.1	2.0	%
Line Regulation	REG _{line}	Note 7	--	0.5	2.5	%
Ripple Rejection Ratio	RR	Note1	45	55	--	dB
Dropout Voltage	V _{drop}	I _o =3A	--	--	0.5	V
Disable Voltage High	V _{disH}	Output Active	2.0	--	--	V
Disable Voltage Low	V _{disL}	Output Disabled	--	--	0.8	V
Disable Bias Current High	I _{disH}	V _{dis} =2.7V	--	--	20	uA
Disable Bias Current Low	I _{disL}	V _{dis} =0.4V	--	--	-0.4	mA
Quiescent Current	I _q	I _o =0A	--	--	10	mA

Note: 1. These parameters, although guaranteed, are not 100% tested in production.

2. Junction -to -case thermal resistance test environments.

3. Pneumatic heat sink fixture.

4. Clamping pressure 60psi through 12mm diameter cylinder.

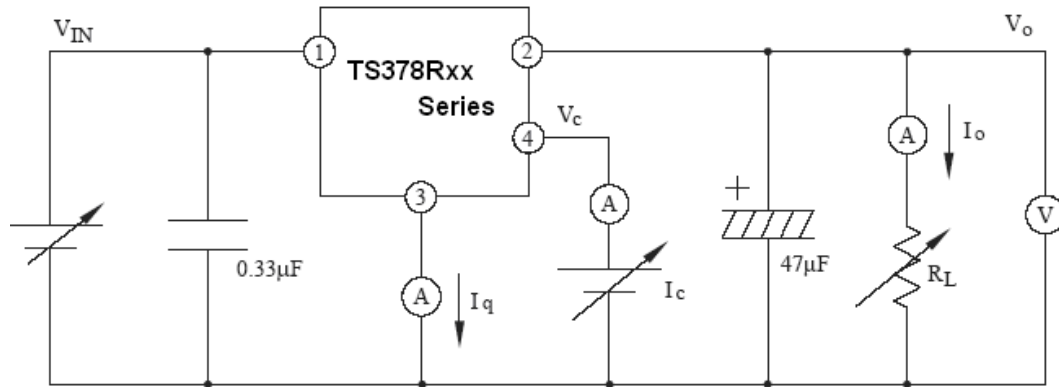
5. Thermal grease applied between PKG and heat sink fixture

6. TS378R33: V_{in}=5V, TS378R05: V_{in}=7V, TS378R08: V_{in}=10V, TS378R09: V_{in}=11V, TS378R12: V_{in}=15V

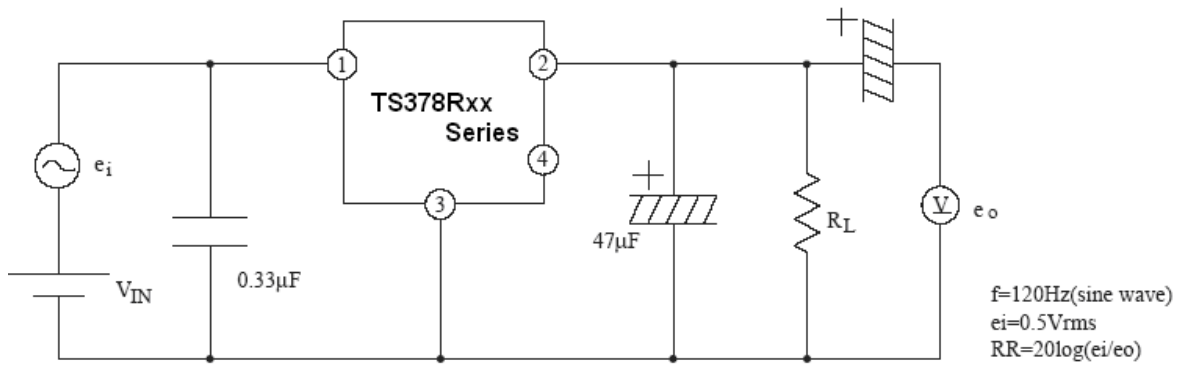
7. TS378R33: V_{in}=4~10V, TS378R05: V_{in}=6~12V, TS378R08: V_{in}=9~25V, TS378R09: V_{in}=10~25V,

TS378R12: V_{in}=13~29V

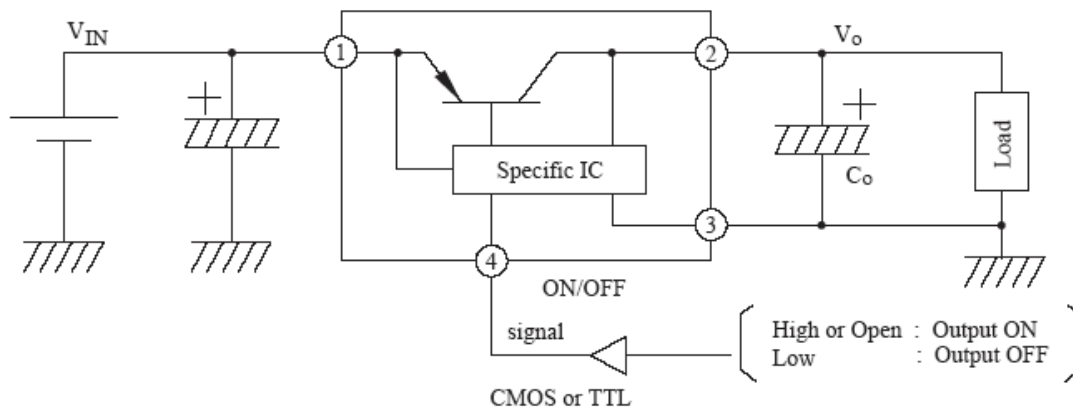
Standard Test Circuit



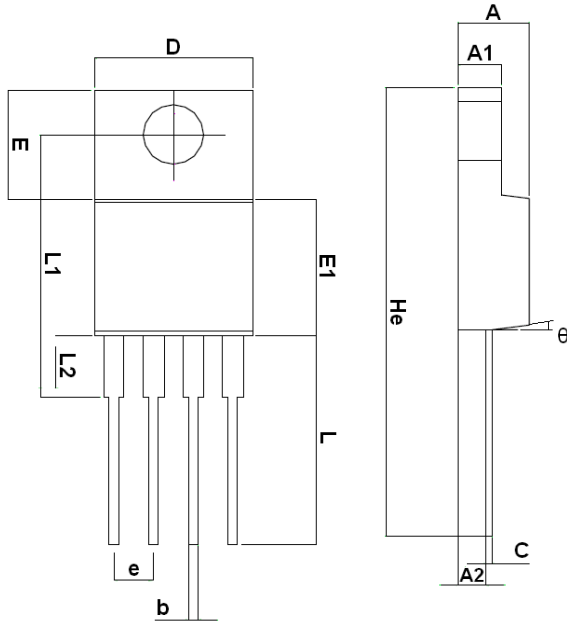
Ripple Rejection Test Circuit



Standard Application Circuit

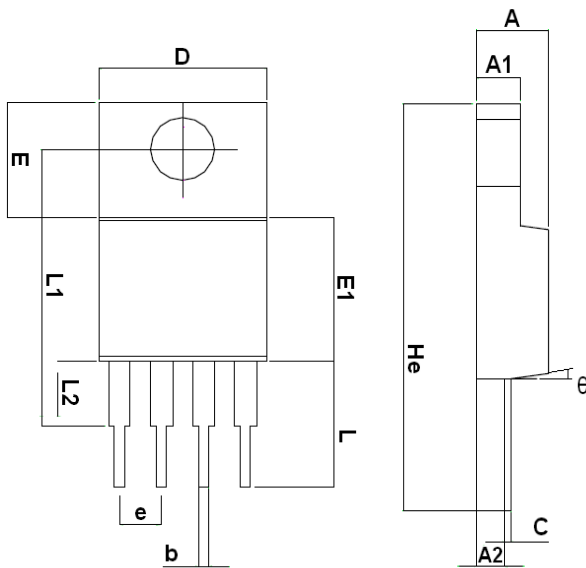


ITO-220-4L Mechanical Drawing



ITO-220-4L DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.42	4.72	0.174	0.186
A1	2.69	2.89	0.136	0.114
A2	1.68	1.88	0.066	0.074
D	10.00	10.20	0.394	0.402
E	6.85	7.05	0.269	0.278
E1	8.54	8.74	0.336	0.344
L	13.15	13.55	0.518	0.533
L2	16.56	16.76	0.652	0.660
L2	3.60	3.80	0.142	0.150
He	28.44	28.92	1.119	1.159
C	0.48		0.019	
E	2.54(TYP)		0.1(TYP)	
b	0.635(TYP)		0.025(TYP)	
θ	4°	7°	4°	7°

ITO-220-4SL Mechanical Drawing



ITO-220-4SL DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.42	4.72	0.174	0.186
A1	2.69	2.89	0.136	0.114
A2	1.68	1.88	0.066	0.074
D	10.00	10.20	0.394	0.402
E	6.85	7.05	0.269	0.278
E1	8.54	8.74	0.336	0.344
L	8.32	8.72	0.328	0.343
L2	16.56	16.76	0.652	0.660
L2	3.60	3.80	0.142	0.150
He	23.72	24.72	0.934	0.973
C	0.48		0.019	
E	2.54(TYP)		0.1(TYP)	
b	0.635(TYP)		0.025(TYP)	
θ	4°	7°	4°	7°