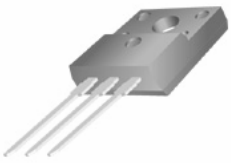
1A Ultra Low Dropout Voltage Regulator

DPAK (TO-252)



TO-220F

General Description

- The LM78Dxx is three terminal fixed positive Low Dropout Voltage Regulator. They are used to provide a stabilized output voltage from a fluctuating DC input voltage.
- There are 10 fixed output voltages: 2.5V/3.3V/3.5V/5V/6V/8V/9V/10V/12V/15V. They are suitable for applications that required supply current up to 1A.
- The LM78Dxx is available in DPAK (TO-252) and TO-220F

.

Features

- Output Current up to1A
- Input Voltage up to 35V
- Thermal Overload Shutdown Protection function
- Over Voltage Protection and Over Current Protection function
- Low minimum Input/Output voltage differential
- Richly Diverse Lineup
- RoHS Compliance and Halogen Free

RoHS Compliant

HALOGEN FREE

Applications

- High Efficiency Linear Regulator
- Post Regulation for Switching Supply
- Microprocessor Power Supply
- Mother Board

LM78D25 - LM78D15

Ordering Information

LM78D 33 D — 93 — RG30

Circuit Type:
ULDO: Vin max:35V
Io max:1.0A

Package: RG30: 13"Reel, RoHS, HF(Halogen Free)
UG: Tube, RoHS, HF(Halogen Free)

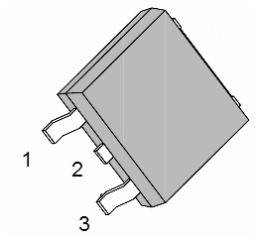
Factory Location Code

Typical output voltage code:

25:2.5V	06:6V	12:12V
33:3.3V	08:8V	15:15V
35:3.5V	09:9V	
05:5V	10:10V	

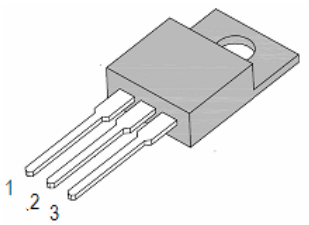
Outline:
D: DPAK(TO-252)
F: TO-220F

Pin Configuration



DPAK (TO-252)

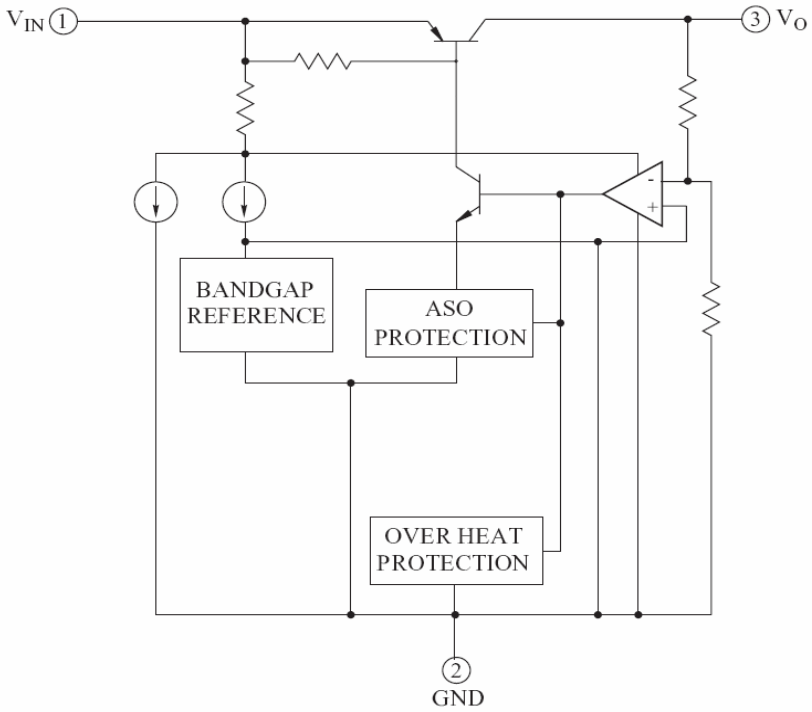
1: INPUT 2: GND 3: OUTPUT



TO-220F

1: INPUT 2: GND 3: OUTPUT

Block Diagram



Absolute Maximum Ratings (T_J=25° C, unless otherwise specified)

Symbol	Description		Ratings	Unit
V_{IN}	Input Voltage		35	V
I_O	Output Current		1.0	A
P_D	Power Dissipation (No Heatsink)	D:	1.3	W
		F:	2.0	
	Power Dissipation (Infinite Heatsink)	D:	13	
		F:	20.8	
T_J	Junction Temperature		150	° C
T_{OPR}	Operation Temperature Range		-40 to 85	° C
T_{STG}	Storage Temperature Range		-50 to 150	° C
T_{sol}	Soldering Temperature (10Sec)		260	° C

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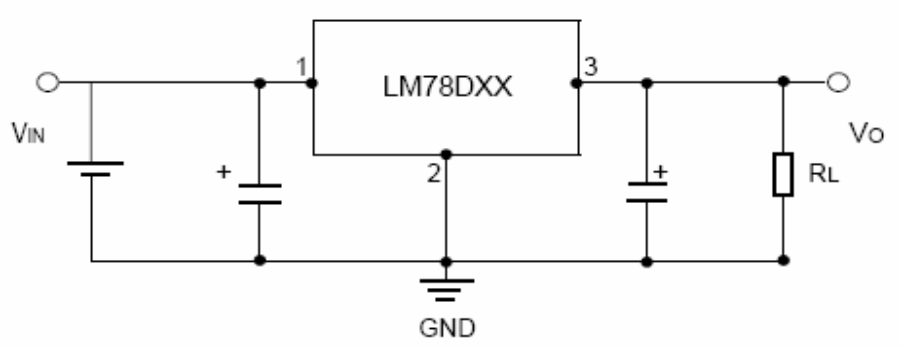
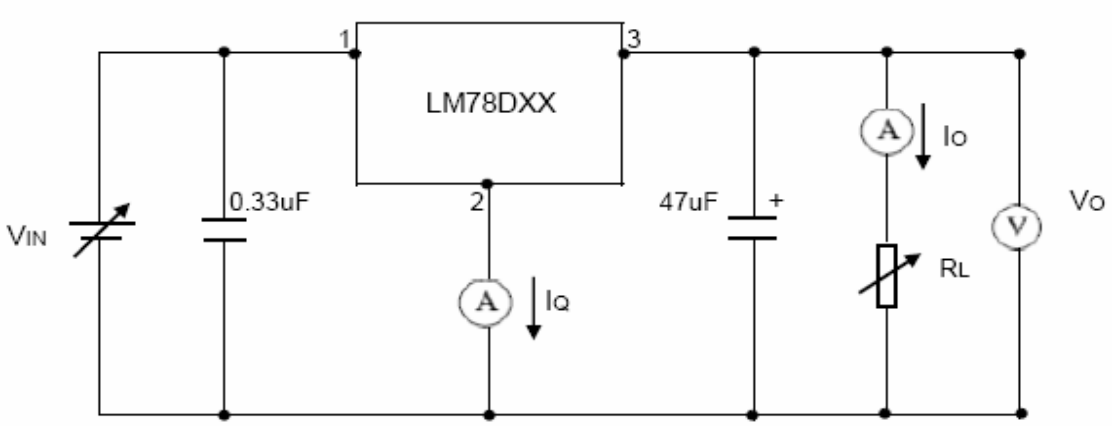
Electrical Characteristics (T_a=25° C, I_O=0.5A ,unless otherwise specified)

Symbol	Description		Min.	Typ.	Max.	Unit	Test Conditions
V_O	Output Voltage	LM78D25	2.438	2.50	2.562	V	Vin=4.2V
		LM78D33	3.220	3.30	3.380		Vin=5V
		LM78D35	3.413	3.50	3.587		Vin=5.2V
		LM78D05	4.88	5.0	5.12		Vin=7V
		LM78D06	5.85	6.0	6.15		Vin=8V
		LM78D08	7.80	8.0	8.20		Vin=10V
		LM78D09	8.78	9.0	9.22		Vin=15V
		LM78D10	9.75	10.0	10.25		Vin=16V
		LM78D12	11.70	12.0	12.30		Vin=18V
		LM78D15	14.70	15.0	15.30		Vin=21V
ΔV_{LOAD}	Load Regulation		-	0.1	2.0	%	5mA ≤I_O ≤1.0A
ΔV_{LINE}	Line Regulation	LM78D25	-	0.5	2.5	%	3.2V≤V_{IN}≤10V
		LM78D33					4V≤V_{IN}≤10V
		LM78D35					4.2V≤V_{IN}≤10V
		LM78D05					6V≤V_{IN}≤12V
		LM78D06					7V≤V_{IN}≤15V
		LM78D08					9V≤V_{IN}≤25V
		LM78D09					10V≤V_{IN}≤25V
		LM78D10					11V≤V_{IN}≤26V
		LM78D12					13V≤V_{IN}≤29V
		LM78D15					16V≤V_{IN}≤32V
V_D	Dropout Voltage		-	-	0.5	V	Vin=0.95Vo,Io=1A
I_Q	Quiescent Current		-	-	10.0	mA	I_O=0A
PSRR	Power Supply Ripple Rejection Ratio		45	55	-	dB	-

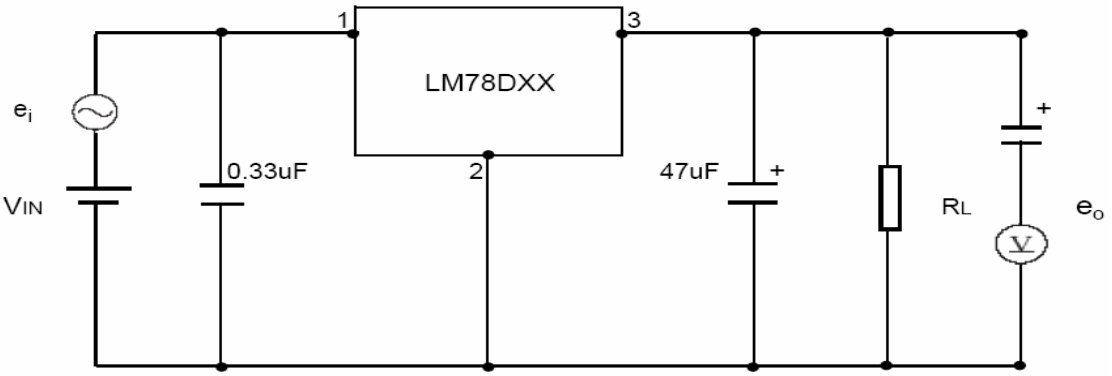
Typical Standard Application Circuit



Standard Test Circuit



Ripple Rejection Test Circuit



f=120Hz(sine wave)

e_i=0.5Vrms

PSRR=20log(e_i/e_o)

Fig.1 P_D-Ta (Outline:DPAK)

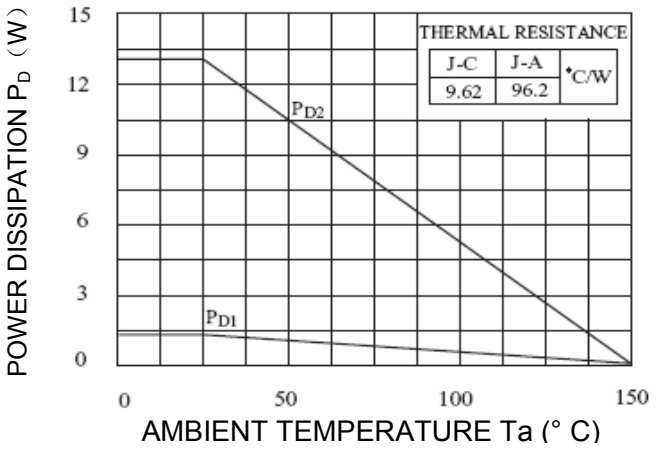


Fig.2 P_D-Ta (Outline:TO-220F)

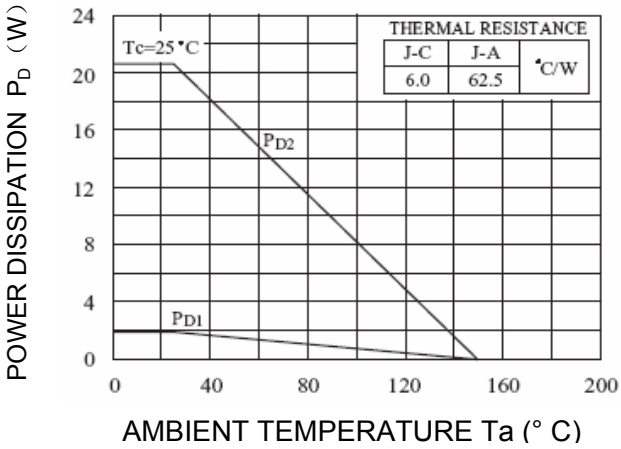


Fig.3 Tj-ΔVo (LM78D25)

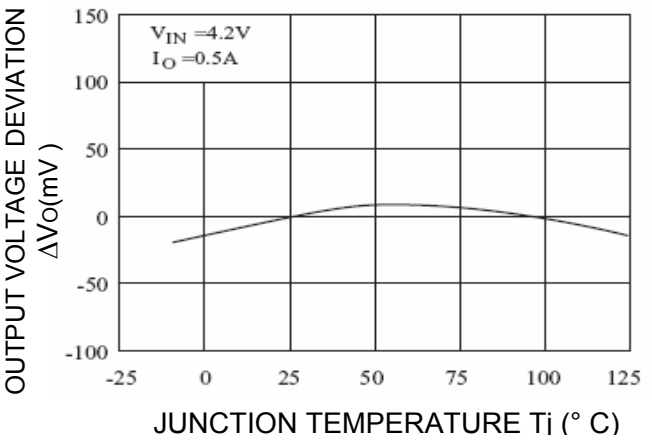


Fig.4 Tj-ΔVo (LM78D33)

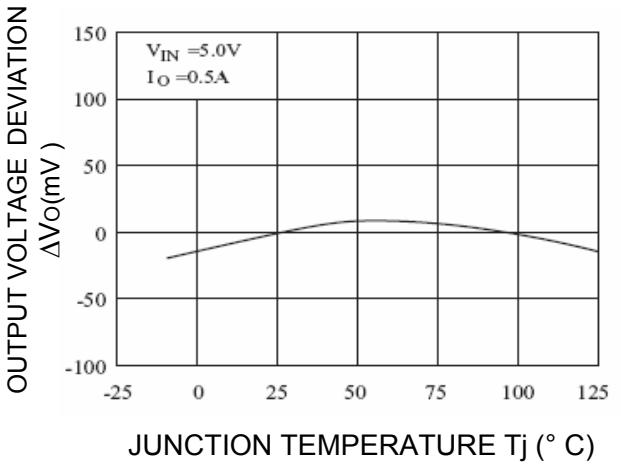


Fig.5 Tj-ΔVo (LM78D35)

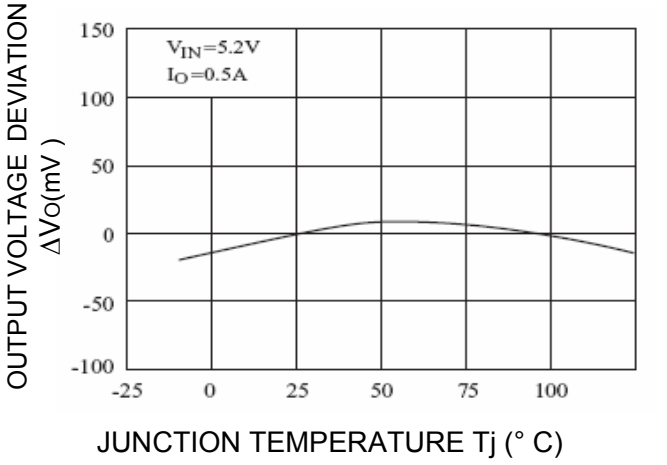


Fig.6 Tj-V_D

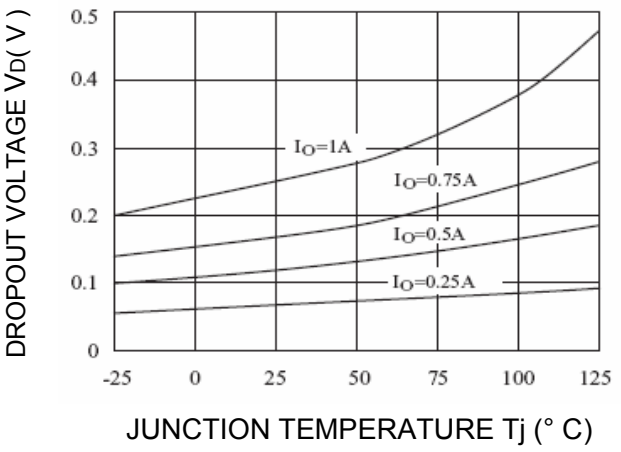


Fig.7 Tj-I_Q

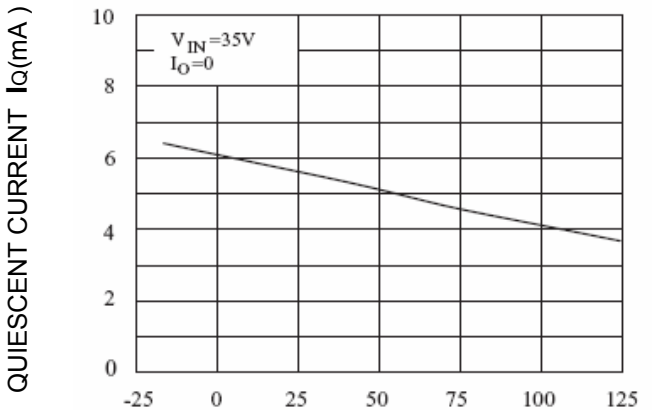


Fig.8 f-PSRR

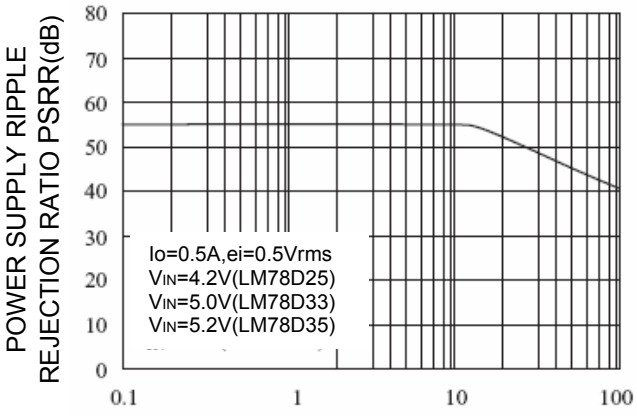


Fig.9 I_O-PSRR

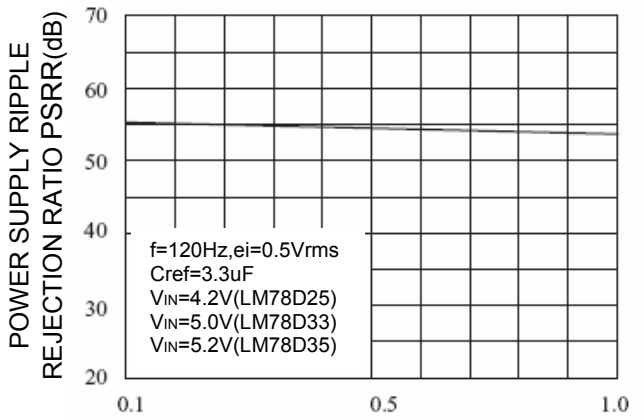
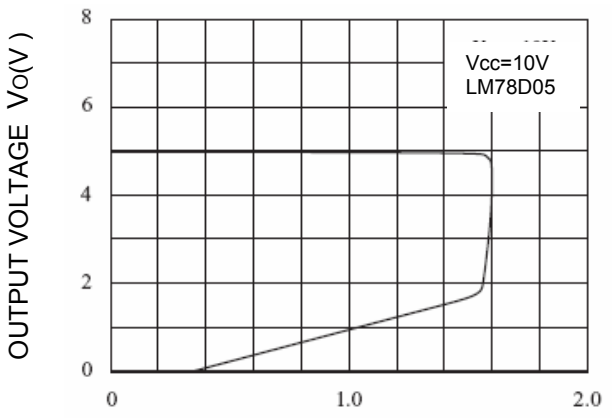
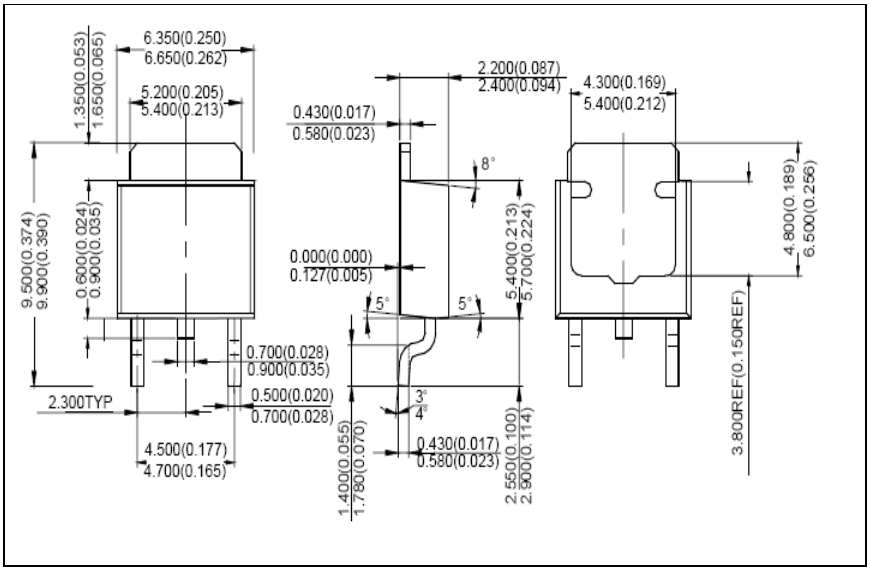


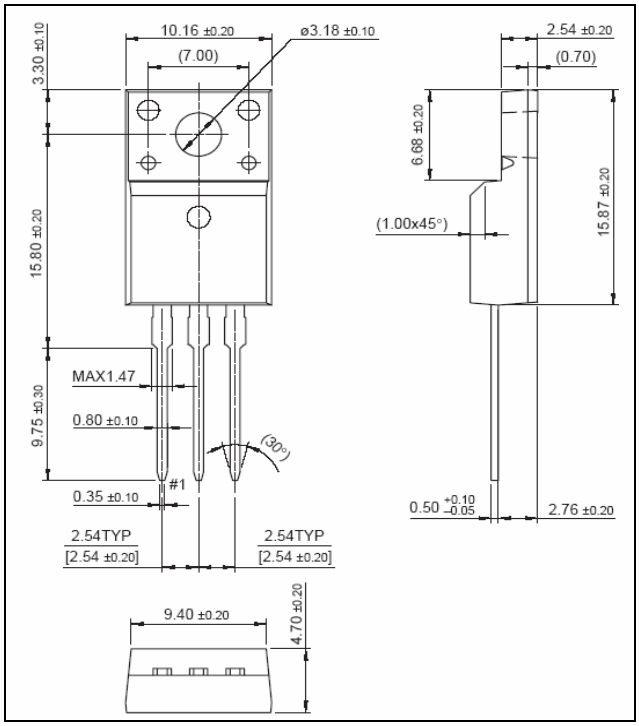
Fig.10 I_O-V_O



Dimensions in mm (inches)



DPAK
(TO-252)



TO-220F

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D2-PACK (TO-263)