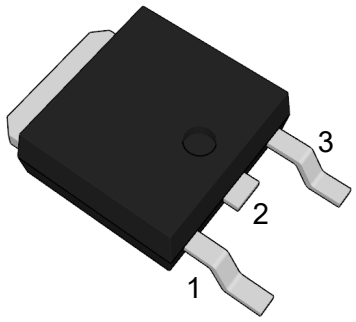
3-Terminal Voltage Regulators

Description

The TN79DXXTE series of three-terminal negative regulators are available in TO-252 package and with several fixed output voltages. making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible.

TO-252



1. GND 2. VIN 3. VOUT

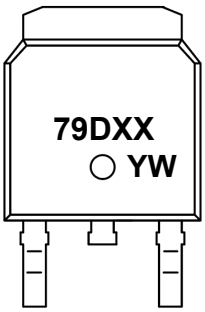
Features

- Input voltage: up to -35V
- Output voltage: -3V,-5V,-12V,-15V,-18V,
- Output current up to 1 A
- Thermal overload protection
- Short circuit current limiting

Applications

- DC motor drivers
- Household electric appliances
- Industrial power supplies
- Test and measurement equipment

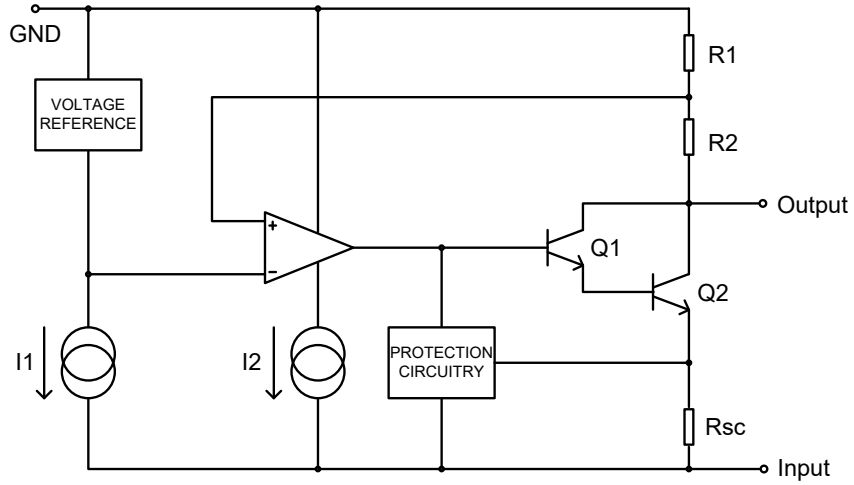
Ordering Information

Orderable Device	Package	Reel (inch)	Package Qty (PCS)	Eco Plan Note	MSL Level	Marking Code
TN79D03TE	TO-252	13	2500	RoHS & Green	MSL3	
TN79D05TE						
TN79D12TE						
TN79D15TE						
TN79D18TE						

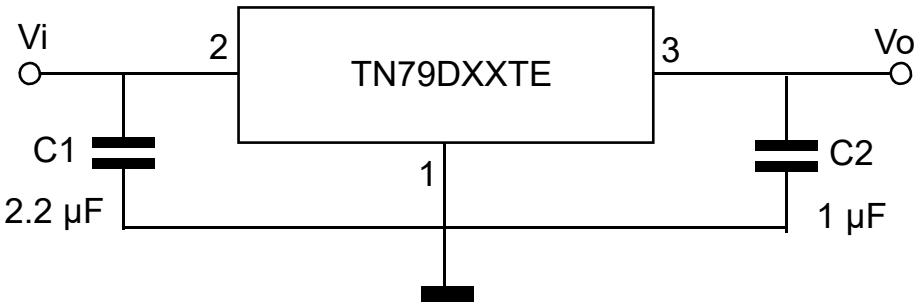
79DXX: Product code
e.g. TN 79D05TE:79D05
YW: Year code and Week code

Note:
RoHS: TN defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials.
Green: TN defines "Green" to mean Halogen-Free and Antimony-Free.

Function Block Diagram



Typical Application Circuit



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Input Voltage	$-V_I$	35	V
Output Current	I_O	1	A
Maximum Power Dissipation	P_D	1.5	W
Operating Temperature Range	T_{OPR}	0 to +125	°C
Storage Temperature Range	T_{STG}	-65 to +150	°C

TN79D03TE Electrical Characteristics

V_I=-8V, I_O=500mA, -20<T_J<125℃, C_I=0.22μF,C_O=1μF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage	-V_O	T_J=25°C	2.88	3.0	3.12	V
		I_O=5mA to 1A V_I=-6V to -20V	2.85	3.0	3.15	V
Line Regulation	△V_O	V_I=-5V to -25V, T_J=25°C	--	--	60	mV
		V_I=-6V to-15V, T_J=25°C	--	--	30	mV
Load Regulation	△V_O	I_O=5mA to 1A, T_J=25°C	--	--	60	mV
		I_O=250mA to 750mA, T_J=25°C	--	--	30	mV
Ripple Rejection	RR	△V_I=10V, f=120Hz	54	60	--	dB
Dropout Voltage	V_D	I_O=1A, T_J=25°C	--	1.5	--	V
Quiescent Current	I_Q	, T_J=25°C	--	--	6	mA
Temperature coefficient of V_O	△V_O/△T	I_O=5mA	--	0.5	--	mV/°C
Quiescent Current Change	△I_Q	I_O=5mA to 1A	--	--	0.5	mA
		V_I=-5V to -20V	--	--	0.8	mA
Output Noise Voltage	V_N	10Hz≤f≤100kHz,T_A=25°C	--	40	--	μV

TN79D05TE Electrical Characteristics

V_I=-10V, I_O=500mA, -20<T_J<125℃, C_I=0.22μF,C_O=1μF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage	-V_O	T_J=25°C	4.8	5.0	5.2	V
		I_O=5mA to 1A V_I=-7V to -20V	4.75	5.0	5.25	V
Line Regulation	△V_O	V_I=-7V to -25V, T_J=25°C	--	--	100	mV
		V_I=-8V to-12V, T_J=25°C	--	--	50	mV
Load Regulation	△V_O	I_O=5mA to 1A, T_J=25°C	--	--	100	mV
		I_O=250mA to 750mA, T_J=25°C	--	--	50	mV
Ripple Rejection	RR	△V_I=10V, f=120Hz	54	60	--	dB
Dropout Voltage	V_D	I_O=1A, T_J=25°C	--	1.5	--	V
Quiescent Current	I_Q	, T_J=25°C	--	--	6	mA
Temperature coefficient of V_O	△V_O/△T	I_O=5mA	--	0.5	--	mV/°C
Quiescent Current Change	△I_Q	I_O=5mA to 1A	--	--	0.5	mA
		V_I=-8V to -25V	--	--	0.8	mA
Output Noise Voltage	V_N	10Hz≤f≤100kHz,T_A=25°C	--	40	--	μV

TN79D12TE Electrical Characteristics

V_I=-19V, I_O=500mA, -20<T_J<125℃, C_I=0.22μF,C_O=1μF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage	-V_O	T_J=25°C	11.5	12	12.5	V
		I_O=5mA to 1A V_I=-16V to -25V	11.4	12	12.6	V
Line Regulation	△V_O	V_I=-14.5V to -30V, T_J=25°C	--	--	240	mV
		V_I=-16V to-25V, T_J=25°C	--	--	120	mV
Load Regulation	△V_O	I_O=5mA to 1A, T_J=25°C	--	--	240	mV
		I_O=250mA to 750mA, T_J=25°C	--	--	120	mV
Ripple Rejection	RR	△V_I=10V, f=120Hz	54	60	--	dB
Dropout Voltage	V_D	I_O=1A, T_J=25°C	--	2	--	V
Quiescent Current	I_Q	, T_J=25°C	--	--	6	mA
Temperature coefficient of V_O	△V_O/△T	I_O=5mA	--	1.2	--	mV/°C
Quiescent Current Change	△I_Q	I_O=5mA to 1A	--	--	0.5	mA
		V_I=-14.5V to -30V	--	--	1	mA
Output Noise Voltage	V_N	10Hz≤f≤100kHz,T_A=25°C	--	200	--	μV

TN79D15TE Electrical Characteristics

V_I=-23V, I_O=500mA, -20<T_J<125℃, C_I=0.22μF,C_O=1μF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage	-V_O	T_J=25°C	14.4	15	15.6	V
		I_O=5mA to 1A V_I=-20V to -26V	14.25	15	15.75	V
Line Regulation	△V_O	V_I=-17.5V to -30V, T_J=25°C	--	--	300	mV
		V_I=-20V to-26V, T_J=25°C	--	--	150	mV
Load Regulation	△V_O	I_O=5mA to 1A, T_J=25°C	--	--	300	mV
		I_O=250mA to 750mA, T_J=25°C	--	--	150	mV
Ripple Rejection	RR	△V_I=10V, f=120Hz	54	60	--	dB
Dropout Voltage	V_D	I_O=1A, T_J=25°C	--	2	--	V
Quiescent Current	I_Q	, T_J=25°C	--	--	6	mA
Temperature coefficient of V_O	△V_O/△T	I_O=5mA	--	1.5	--	mV/°C
Quiescent Current Change	△I_Q	I_O=5mA to 1A	--	--	0.5	mA
		V_I=-17.5V to -30V	--	--	1	mA
Output Noise Voltage	V_N	10Hz≤f≤100kHz,T_A=25°C	--	250	--	μV

TN79D18TE Electrical Characteristics

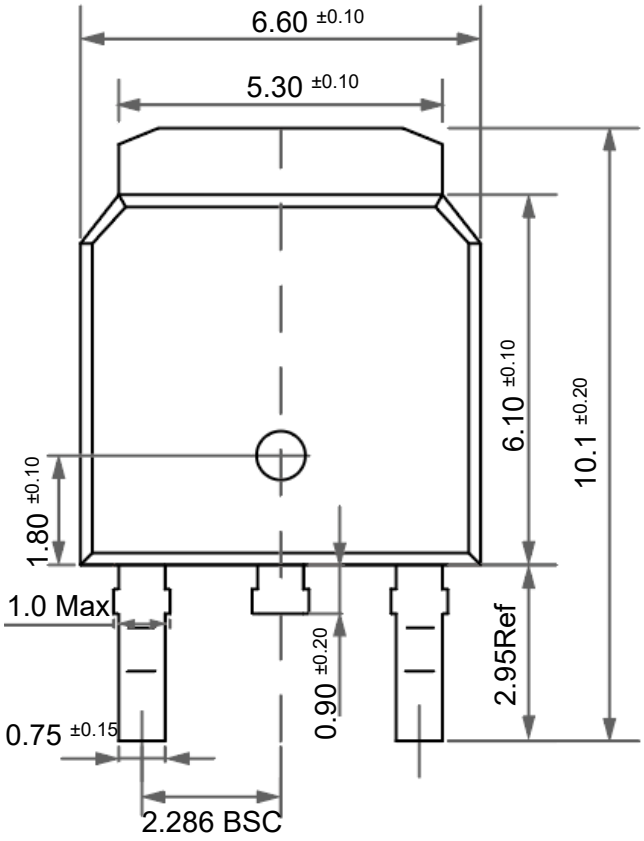
V_I=-27V, I_O=500mA, -20<T_J<125℃, C_I=0.22μF,C_O=1μF,unless otherwise specified.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage	-V_O	T_J=25°C	17.28	18	18.72	V
		I_O=5mA to 1A V_I=-22.5V to -33V	17.1	18	18.9	V
Line Regulation	△V_O	V_I=-21V to -33V, T_J=25°C	--	--	360	mV
		V_I=-24V to-30V, T_J=25°C	--	--	180	mV
Load Regulation	△V_O	I_O=5mA to 1A, T_J=25°C	--	--	360	mV
		I_O=250mA to 750mA, T_J=25°C	--	--	180	mV
Ripple Rejection	RR	△V_I=10V, f=120Hz	--	40	--	dB
Dropout Voltage	V_D	I_O=1A, T_J=25°C	--	2	--	V
Quiescent Current	I_Q	, T_J=25°C	--	--	6	mA
Temperature coefficient of V_O	△V_O/△T	I_O=5mA	--	0.5	--	mV/°C
Quiescent Current Change	△I_Q	I_O=5mA to 1A	--	--	0.5	mA
		V_I=-21V to -33V	--	--	0.8	mA
Output Noise Voltage	V_N	10Hz≤f≤100kHz,T_A=25°C	--	300	--	μV

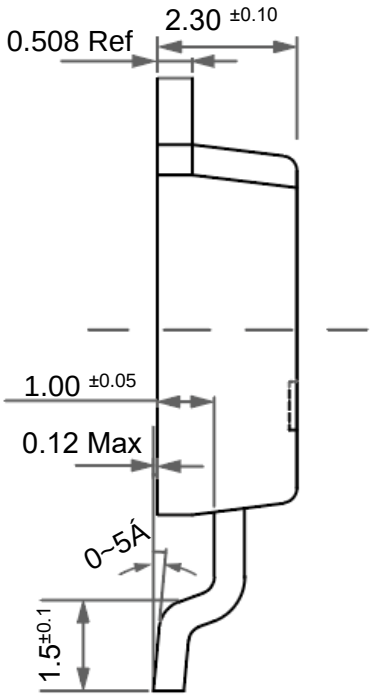
Package Outline

TO-252

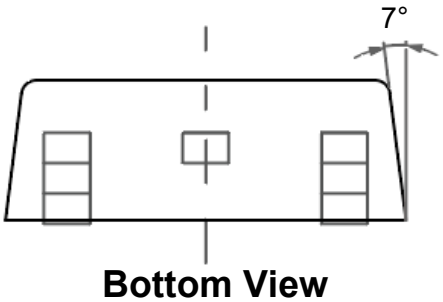
Dimensions in mm



Front View



Side View



Bottom View

Contact Information

TANI website: **http://www.tanisemi.com** Email:tani@tanisemi.com

For additional information, please contact your local Sales Representative.

® is registered trademarks of TANI Corporation.

Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up -to- date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

TANI reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with TANI to ensure that the prod uct specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult TANI in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

Users should also comply with relevant laws, regulations, policies, and standards when using the product specification. Users are responsible for the risks and liabilities arising from the use of the product specification and must ensure that it is not used for illegal purposes. Additionally, users should respect the intellectual property rights related to the product specification and refrain from infringing upon any third- party legal rights. TANI shall assume no responsibility for any disputes or controv ersies arising from the above-mentioned issues in any form.