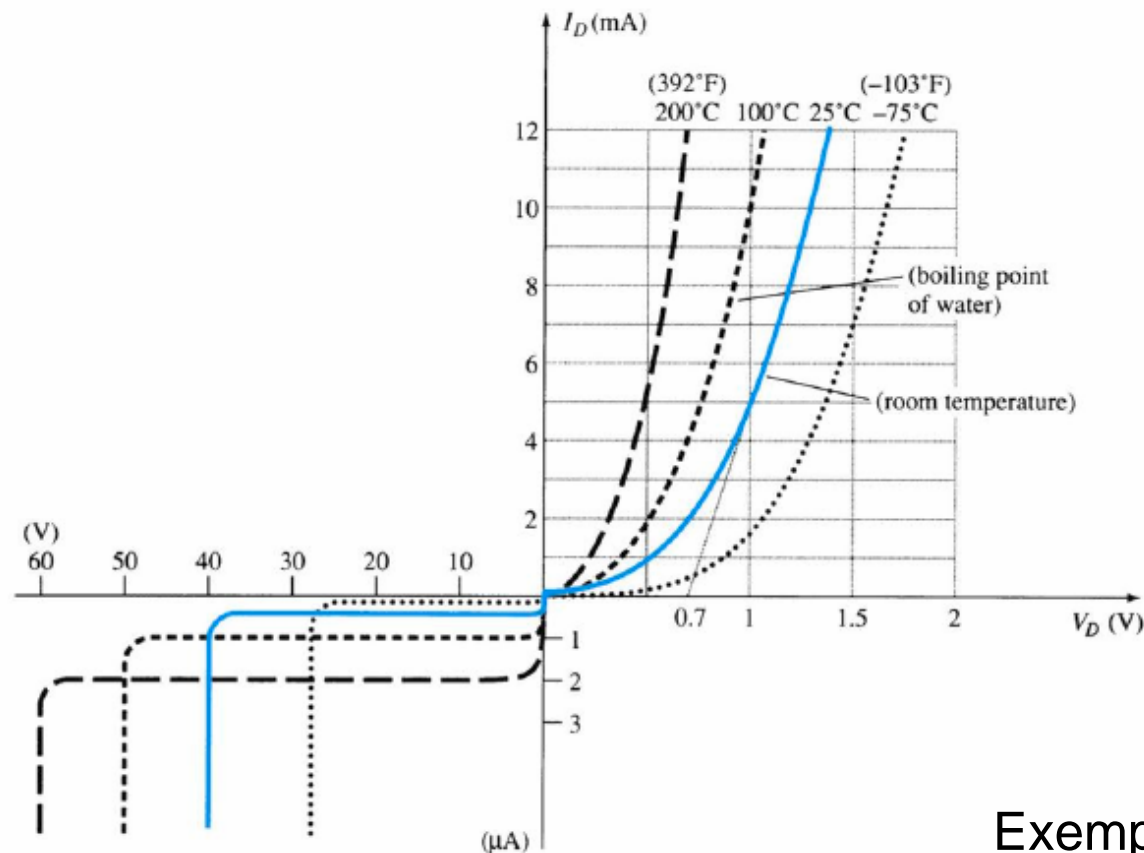


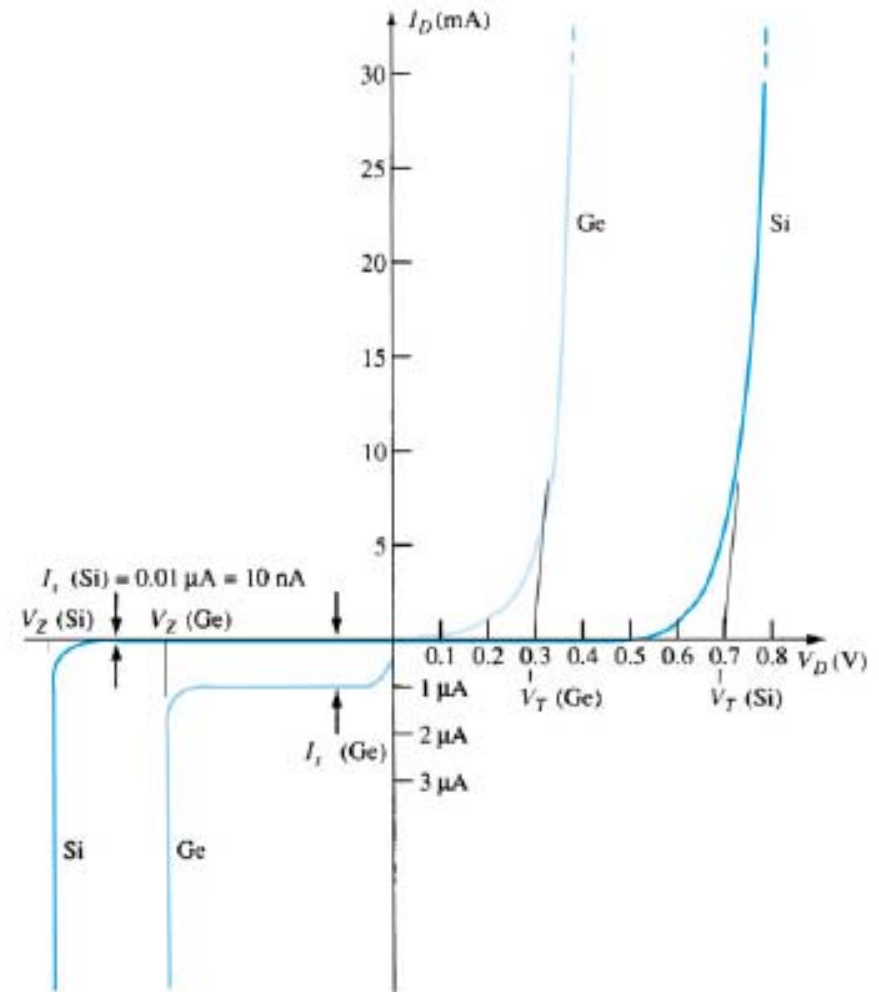
Efeito da temperatura na junção P-N

A corrente de saturação reversa I_S terá sua amplitude praticamente dobrada para aumento de $10\text{ }^\circ\text{C}$ na temperatura.

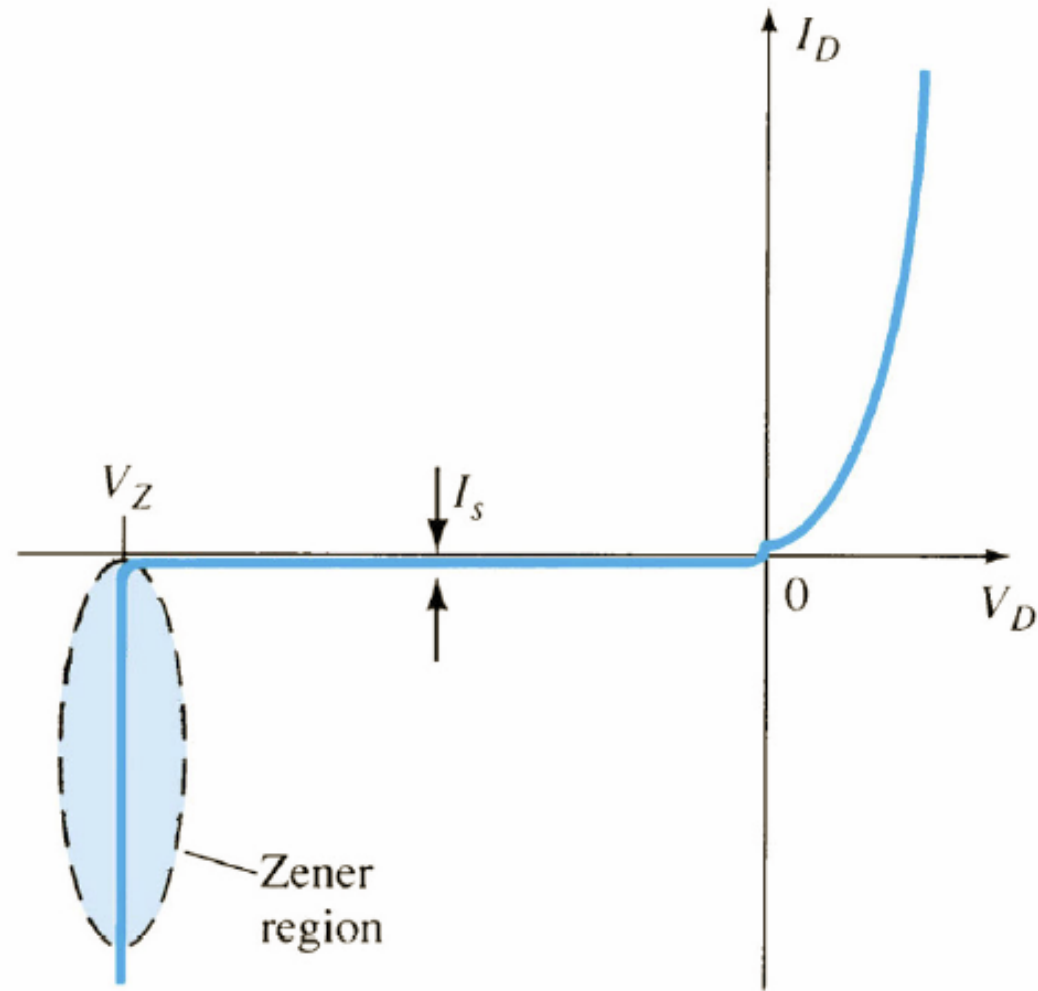


Silício versus germânio

- Tensão reversa:
 - Silício: 1000 V;
 - Germânio: 400 V.
- Temperatura de operação:
 - Silício: 200 °C;
 - Germânio: 100 °C.
- Queda de tensão direta:
 - Silício: 0,7 V;
 - Germânio: 0,3 V.



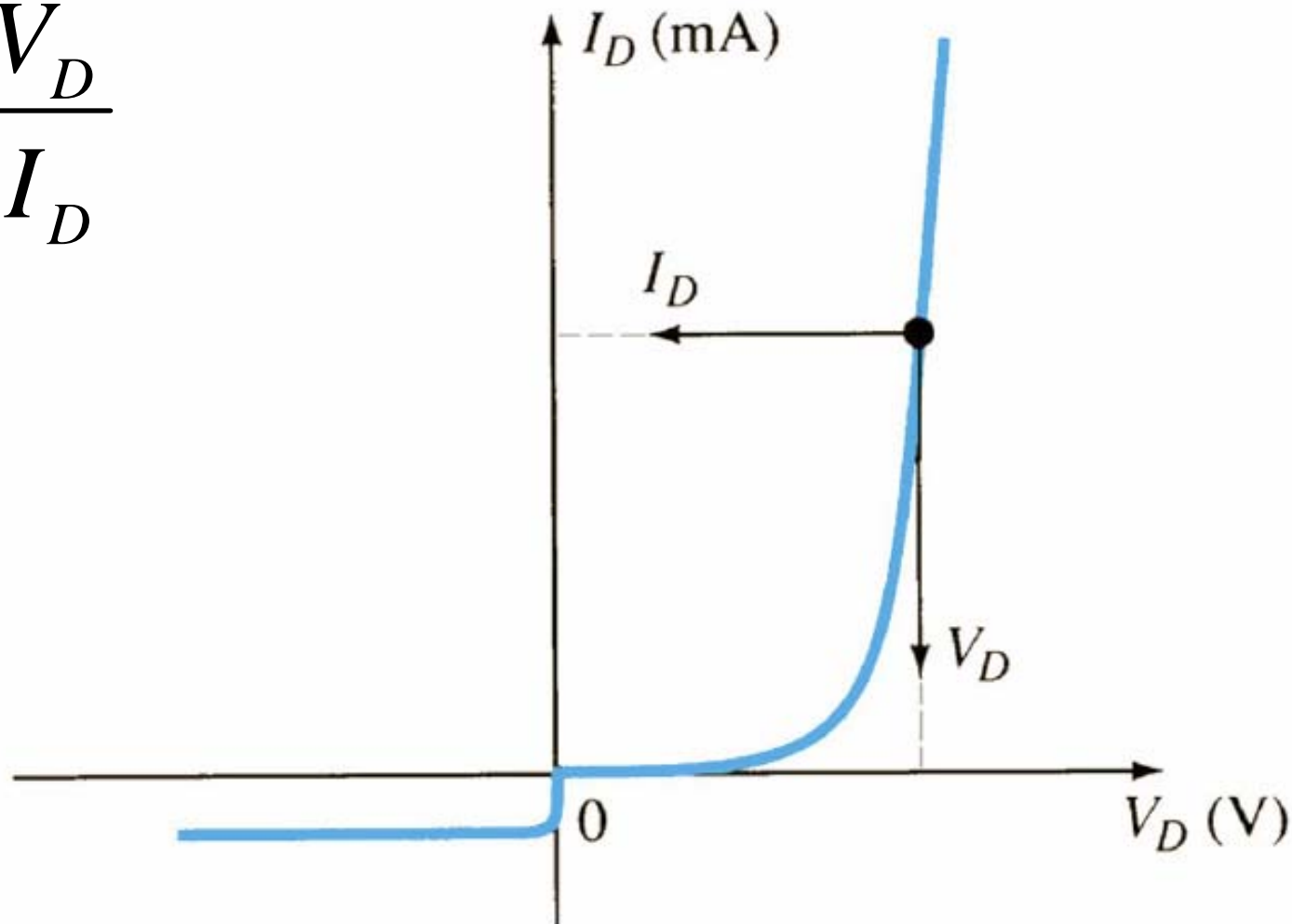
Diodo – Região zener



Resistências do diodo

Resistência CC ou estática:

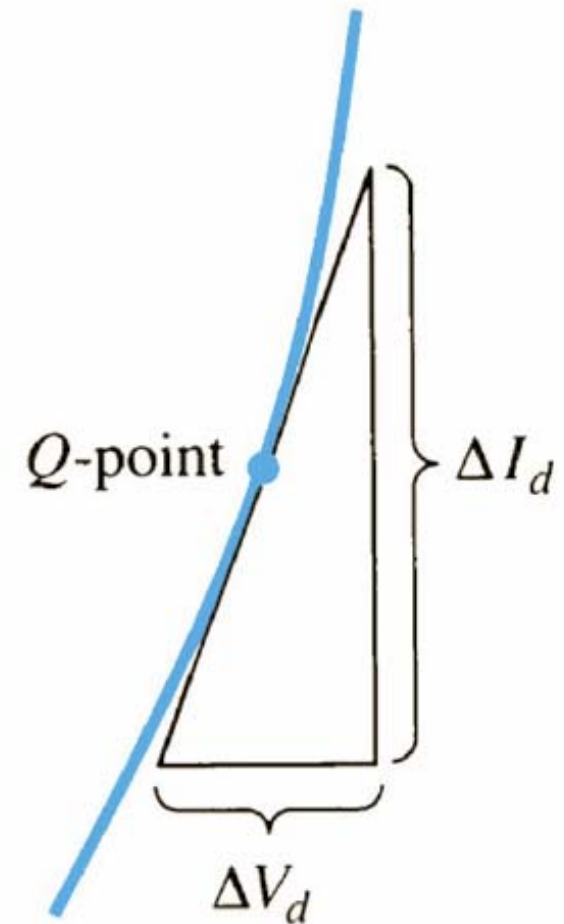
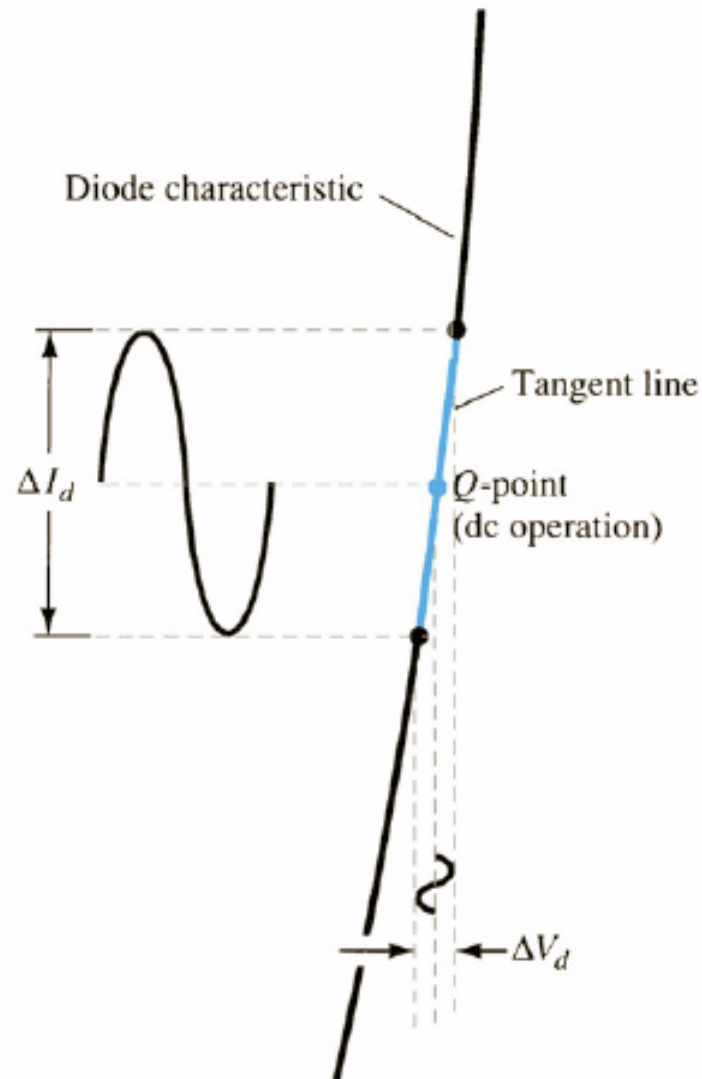
$$R_D = \frac{V_D}{I_D}$$



Resistências do diodo

Resistência CA ou dinâmica:

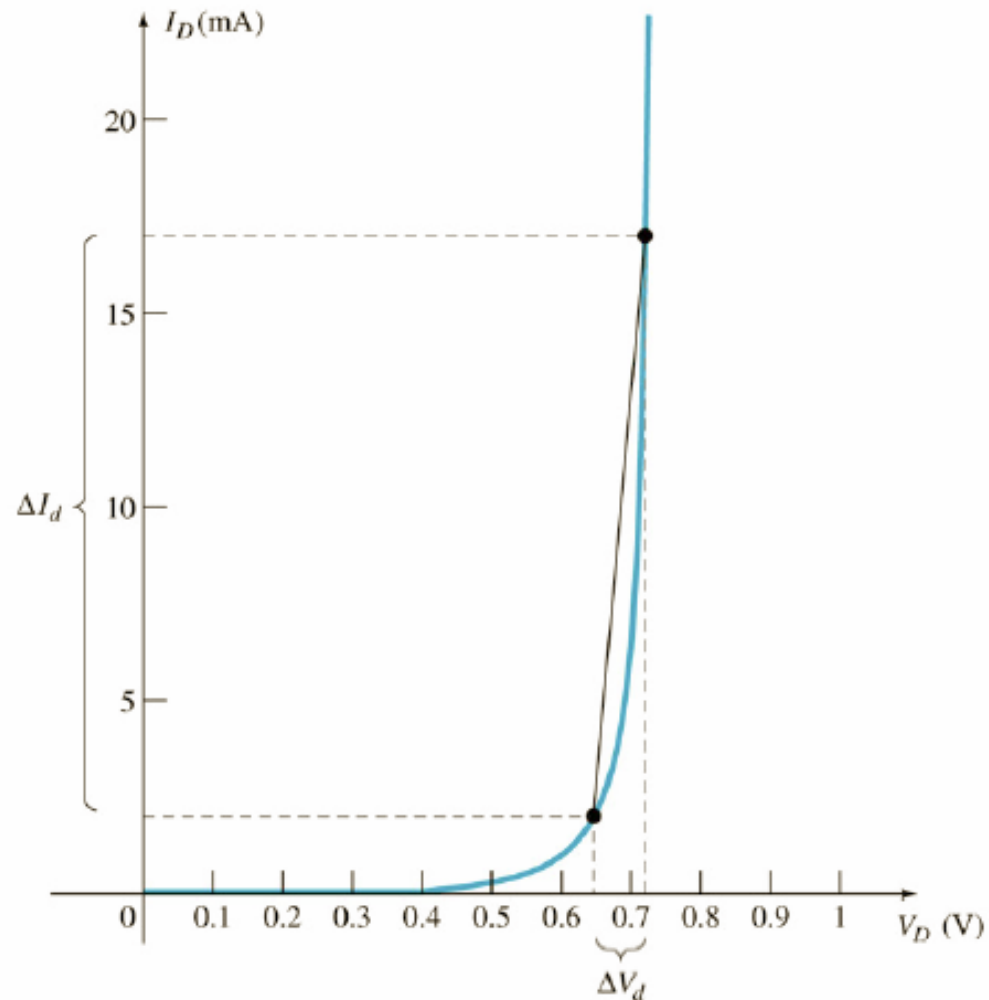
$$r_D = \frac{\Delta V_D}{\Delta I_D}$$



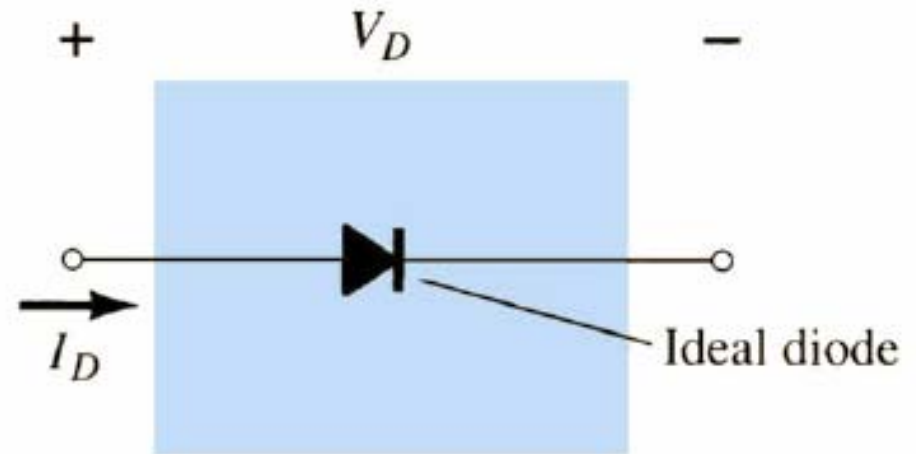
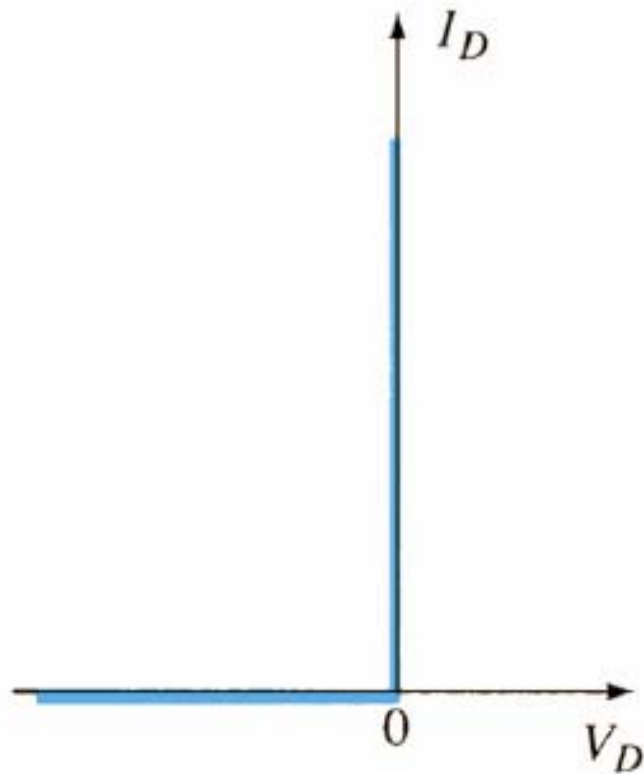
Resistências do diodo

Resistência CA média ou resistência de corpo:

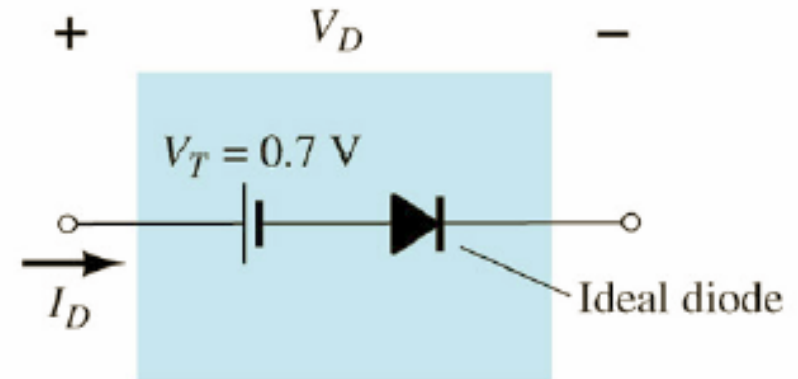
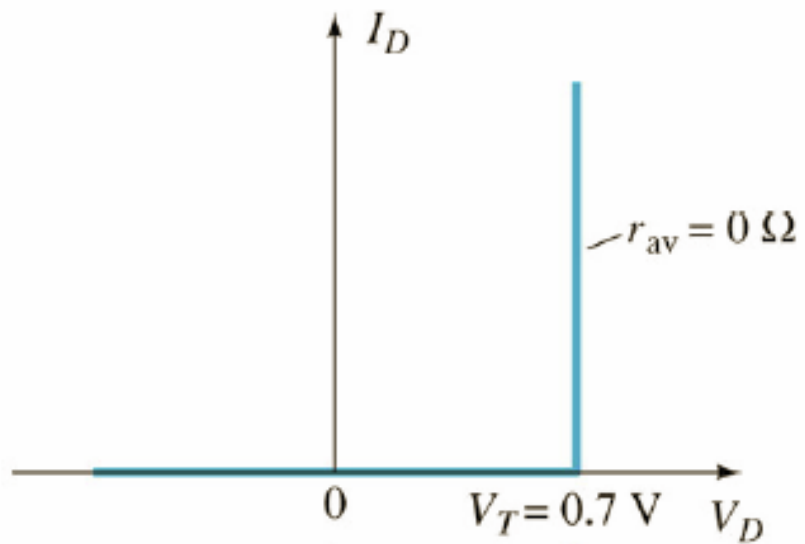
$$r_{av} = \frac{\Delta V_d}{\Delta I_d}$$



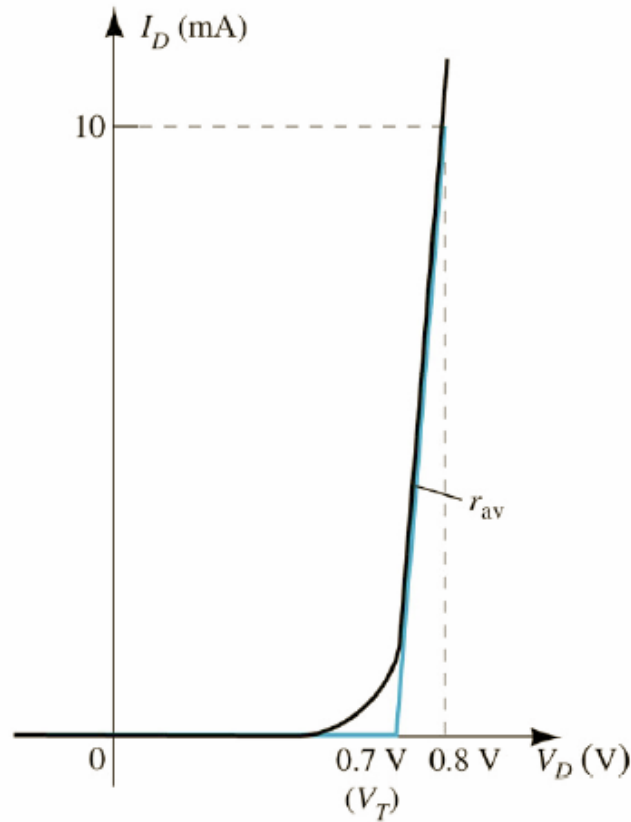
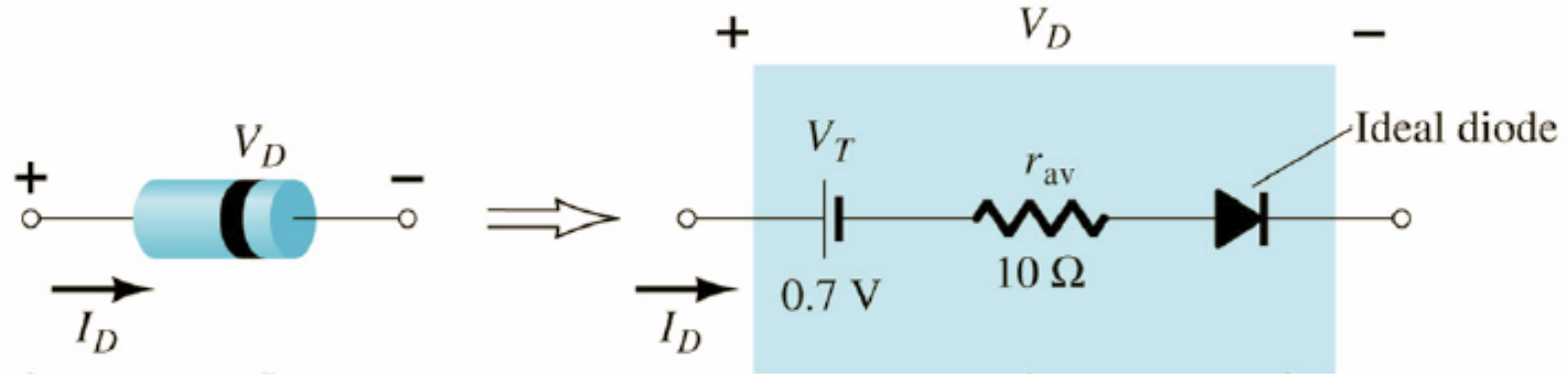
Modelo ideal do diodo



Modelo simplificado do diodo



Modelo linear por partes do diodo




Características dos diodos

As principais características (grandezas) são:

1. Corrente máxima direta (I_F ou I_o);
2. Tensão de ruptura reversa:
 - VRRM = Tensão de pico inverso repetitivo;
 - VRWM = Tensão de pico inverso de trabalho;
 - VR = Tensão de bloqueio CC.
3. Queda de tensão direta (v_F);
4. Corrente reversa máxima (I_R).
5. Entre outras

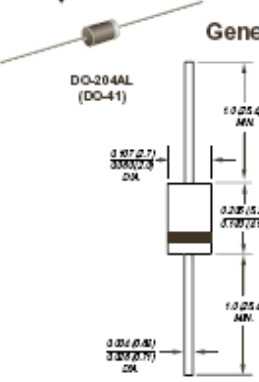
Características dos diodos



1N4001 thru 1N4007
Vishay Semiconductors
formerly General Semiconductor

General Purpose Plastic Rectifier

Reverse Voltage
50 to 1000V
Forward Current 1.0A



Features

- Plastic package has Underwriters Laboratories Flammability Classification 94V-0
- Construction utilizes void-free molded plastic technique
- Low reverse leakage
- High forward surge capability
- High temperature soldering guaranteed: 350°C/10 seconds, 0.375" (9.5mm) lead length, 5 lbs. (2.3kg) tension

Mechanical Data

Case: JEDEC DO-204AL, molded plastic body
Terminals: Plated axial leads, solderable per MIL-STD-750, Method 2026
Polarity: Color band denotes cathode and
Mounting Position: Any
Weight: 0.012 oz., 0.3 g

Dimensions in inches and (millimeters)

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symb.	1N4001	1N4002	1N4003	1N4004	1N4005	1N4006	1N4007	Unit
Maximum repetitive peak reverse voltage	V _{RRM}	50	100	200	400	600	800	1000	V
* Maximum RMS voltage	V _{RMS}	35	70	140	280	420	560	700	V
* Maximum DC blocking voltage	V _{DC}	50	100	200	400	600	800	1000	V
* Maximum average forward rectified current 0.375" (9.5mm) lead length at T _A = 75°C	I _{F(AV)}	1.0							A
* Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) T _A = 75°C	I _{FSM}	30							A
* Maximum full load reverse current, full cycle average 0.375" (9.5mm) lead length T _L = 75°C	I _{R(AV)}	30							µA
Typical thermal resistance ⁽¹⁾	R _{θJA} R _{θAL}	50 25							°C/W
* Maximum DC blocking voltage temperature	T _A	+150							V
* Operating junction and storage temperature range	T _J , T _{STG}	-50 to +175							°C

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symb.	1N4001 thru 1N4007	Unit
Maximum instantaneous forward voltage at 1.0A	V _F	1.1	V
* Maximum DC reverse current at rated DC blocking voltage T _A = 25°C T _A = 125°C	I _R	5.0 50	µA
Typical junction capacitance at 4.0V, 1MHz	C _J	15	pF

Note: (1) Thermal resistance from junction to ambient at 0.375" (9.5mm) lead length, P.C.B. mounted. *JEDEC registered value

Datasheet: PD-20731 rev. C 12/05

International
IR Rectifier

MUR820
MURB820
MURB820-1

Ultrafast Rectifier

Features

- Ultrafast Recovery Time
- Low Forward Voltage Drop
- Low Leakage Current
- 175°C Operating Junction Temperature

t_r = 25ns
I_{F(AV)} = 8Amp
V_R = 200V

Description/Applications

International Rectifier's MUR... series are the state of the art Ultra fast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultra fast recovery time. The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics. These devices are intended for use in the output rectifier stage of SMPS, UPS, DC-DC converters as well as free-wheeling diode in low voltage inverters and chopper motor drives. Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

Absolute Maximum Ratings

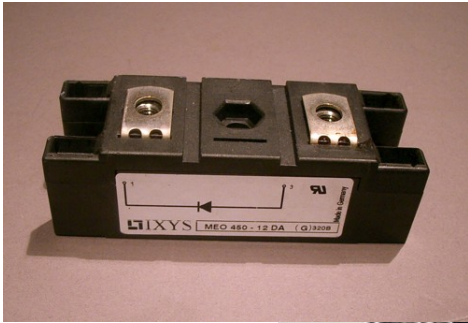
Parameters	Max	Units
V _{RRM} Peak Repetitive Peak Reverse Voltage	200	V
I _{F(AV)} Average Rectified Forward Current Total Device, (Rated V _F), T _C = 150°C	9	A
I _{FSM} Non Repetitive Peak Surge Current	100	
I _{RM} Peak Repetitive Reverse Current (Rated V _R , Square wave, 50 kHz), T _C = 150°C	10	
T _J , T _{STG} Operating Junction and Storage Temperature	-55 to 175	°C

Case Styles

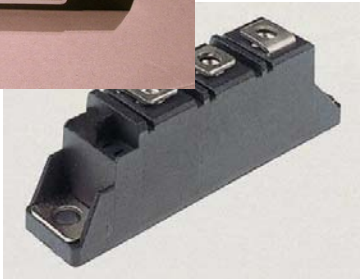
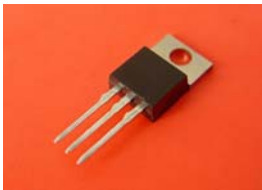


TO-220AC D²PAK TO-262

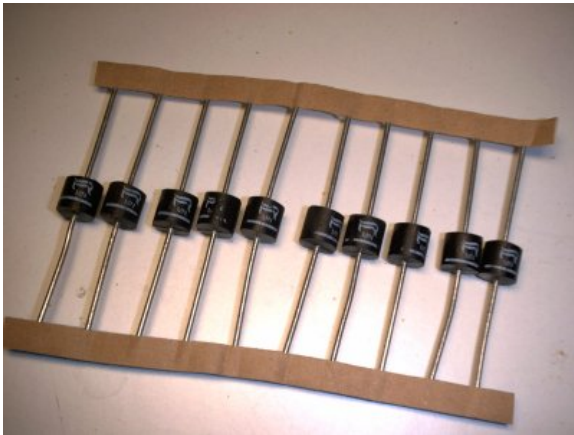
Características dos diodos



Diodos de potência



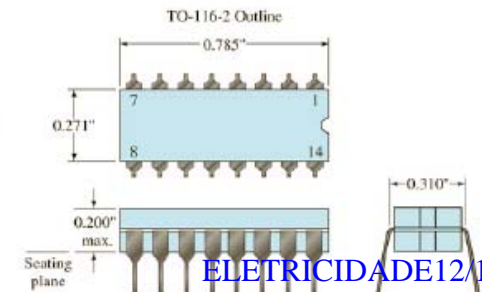
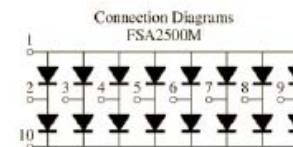
Diodos de sinal



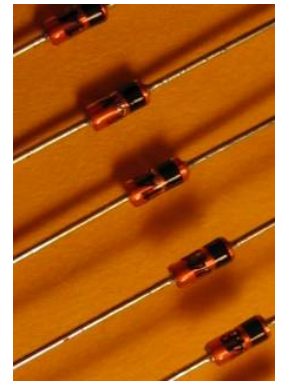
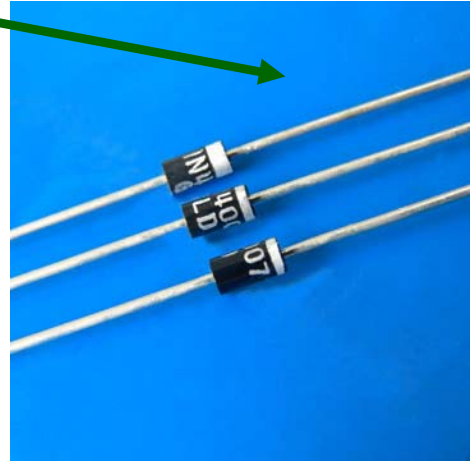
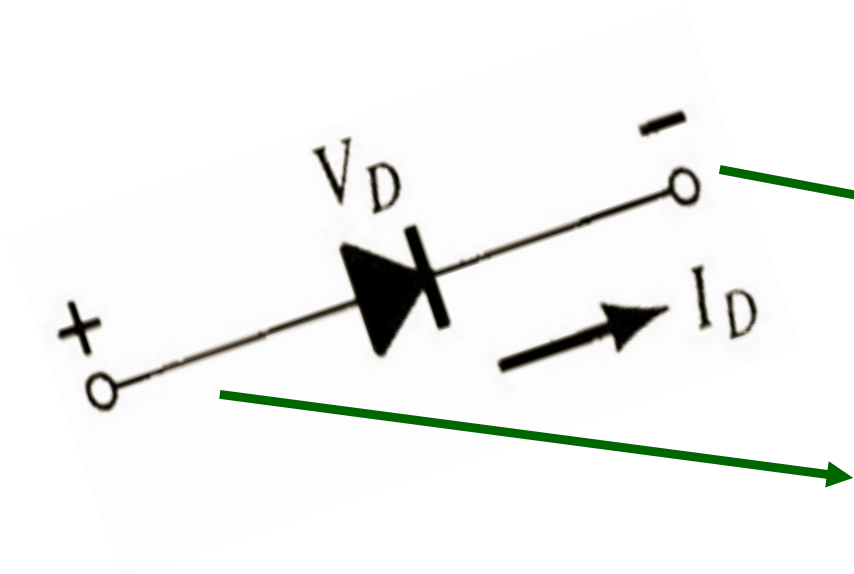
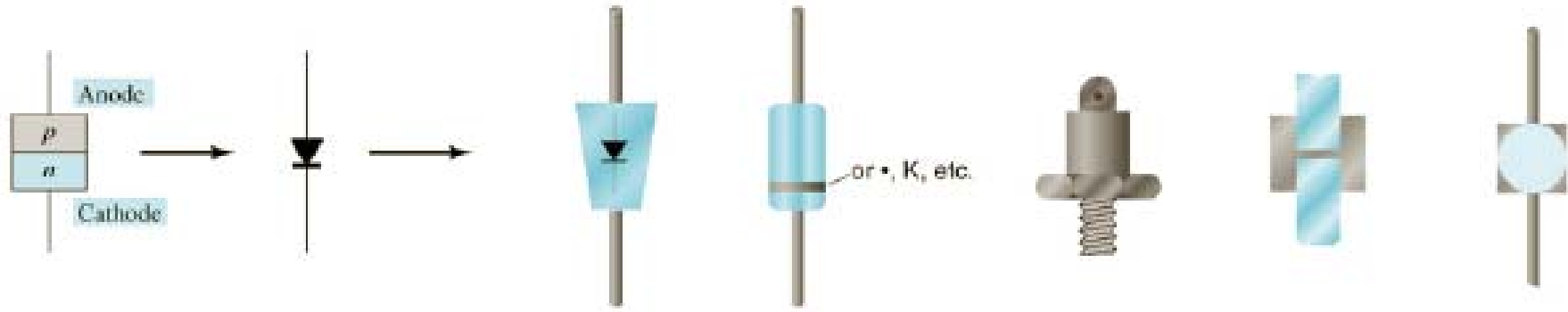
Diodos de uso geral



Circuitos integrados de diodos



Identificação dos terminais de um diodo



Testando diodos com o multímetro



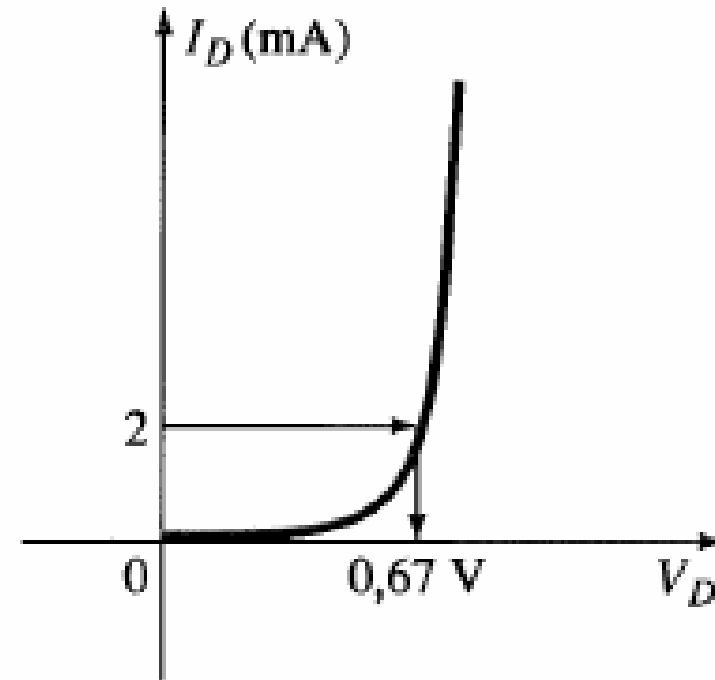
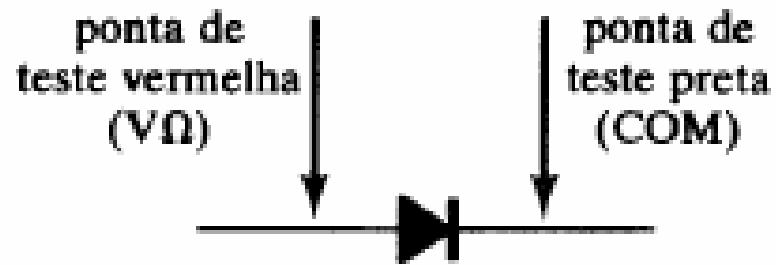
Escala para teste de diodos



Escala para teste de diodos

Testando diodos com o multímetro

Polarização direta:



Testando diodos com o multímetro

Testes com ohmímetro:

