



# ELECTRÓNICA DE POTENCIA

<https://www.youtube.com/watch?v=rUQxddype4I>

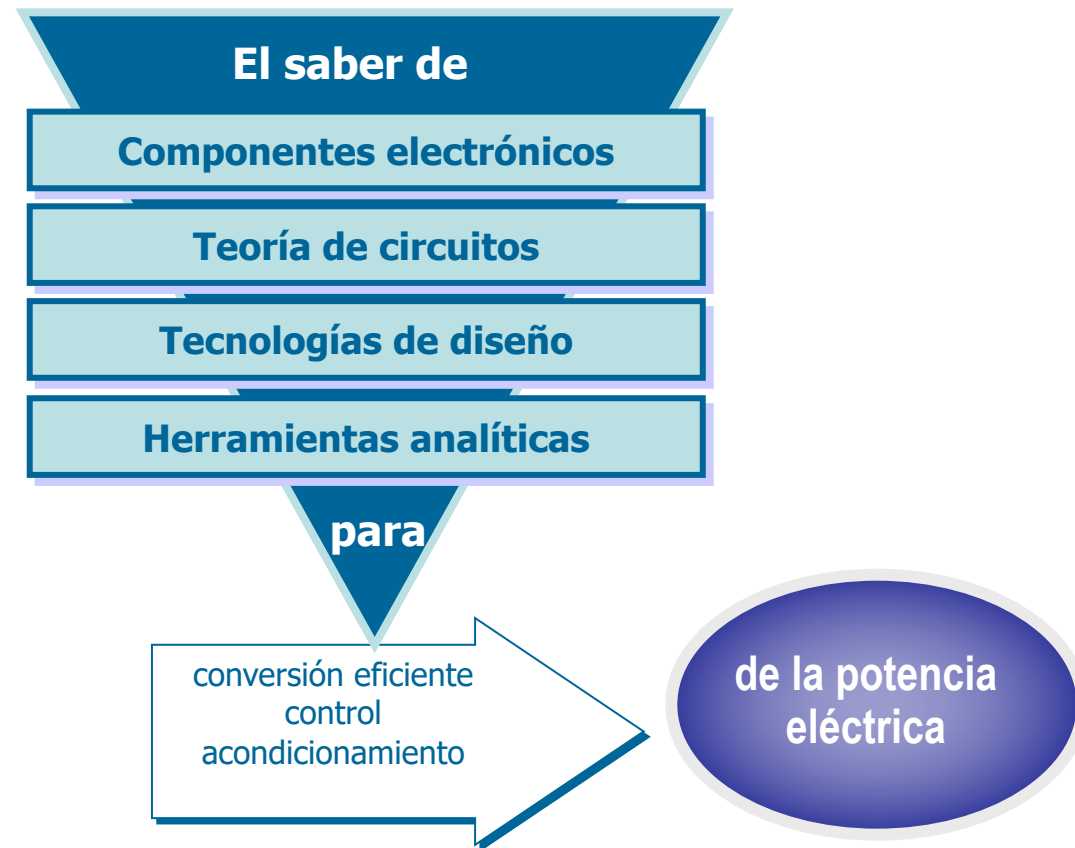
<https://www.youtube.com/watch?v=xVJOTLkBjLs>

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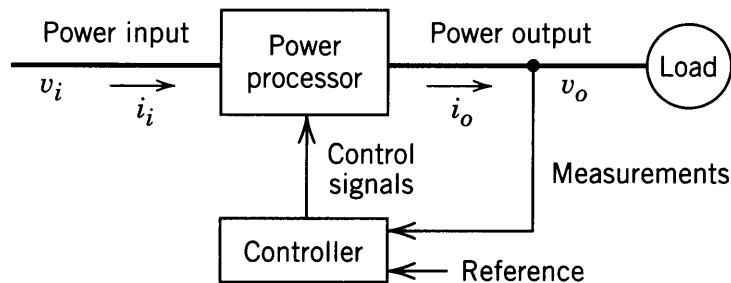
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# Definición de la IEEE Power Electronics Society

Power electronics is a technology for converting, controlling and conditioning the flow of electrical energy from the source to the load according to the requirements of the source and/or the load by means of power semiconductors



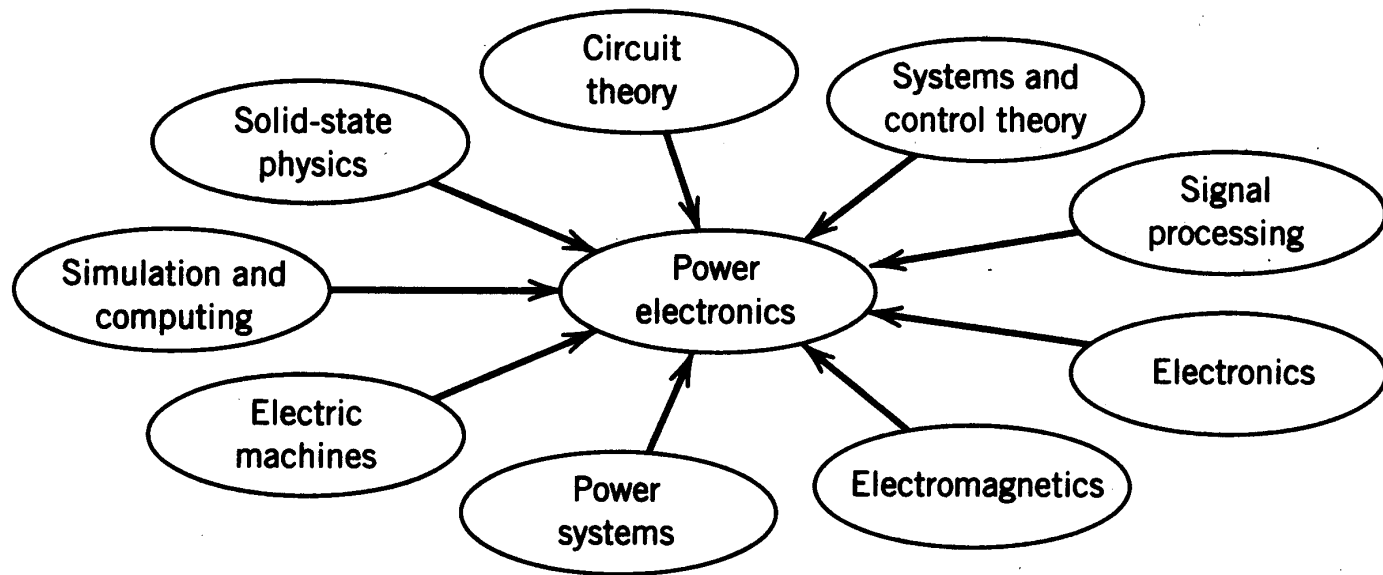
# Power Electronic Systems



**Figure 1-1** Block diagram of a power electronic system.

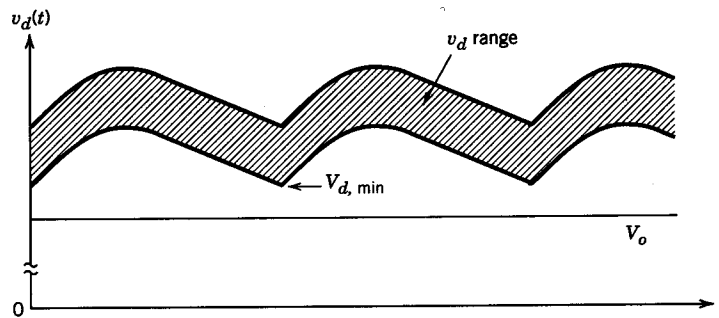
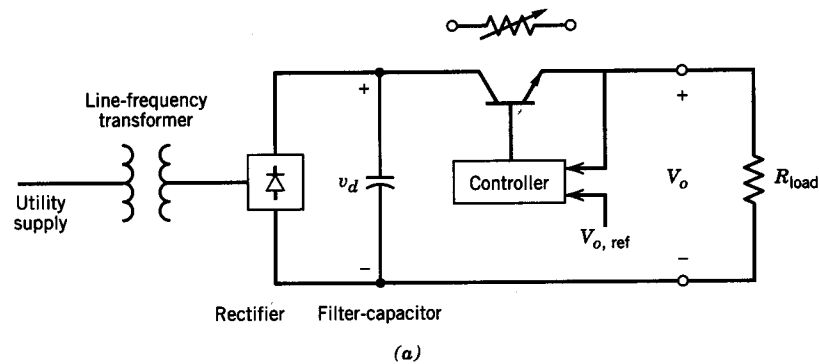
- Block diagram
- Role of Power Electronics
- Reasons for growth

# Interdisciplinary Nature of Power Electronics



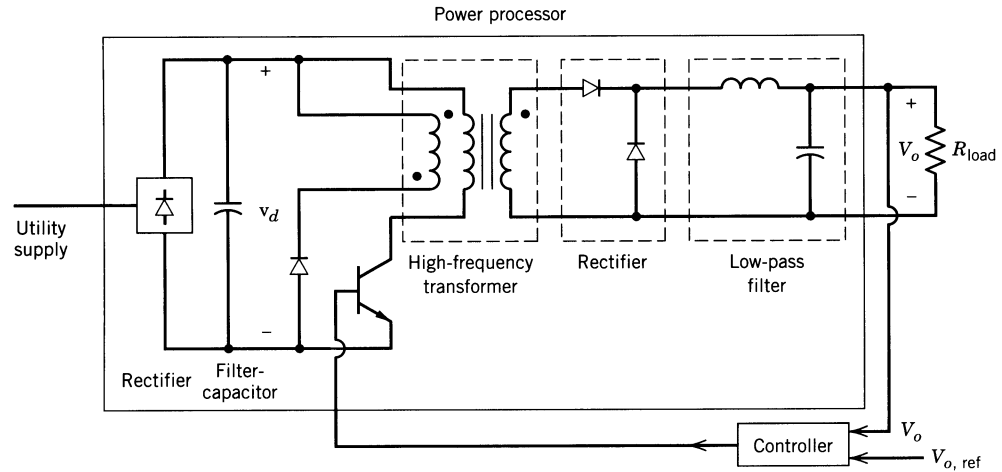
**Figure 1-10** Interdisciplinary nature of power electronics.

# Linear Power Supply



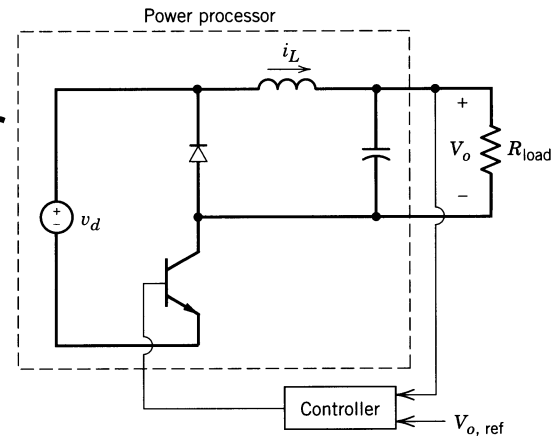
- Series transistor as an adjustable resistor
- Low Efficiency
- Heavy and bulky

# Switch-Mode Power Supply



(a)

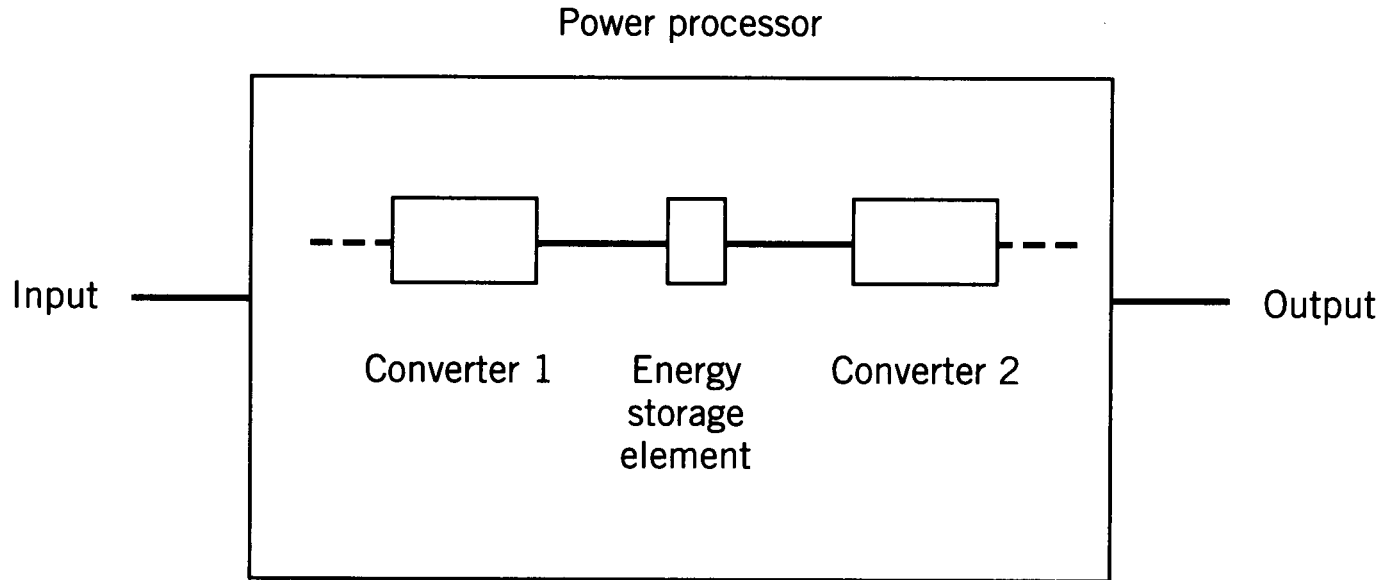
- Transistor as a switch
- High Efficiency
- High-Frequency Transformer



(b)

Figure 1-3 Switch-mode dc power supply.

# Power Processor as a Combination of Converters

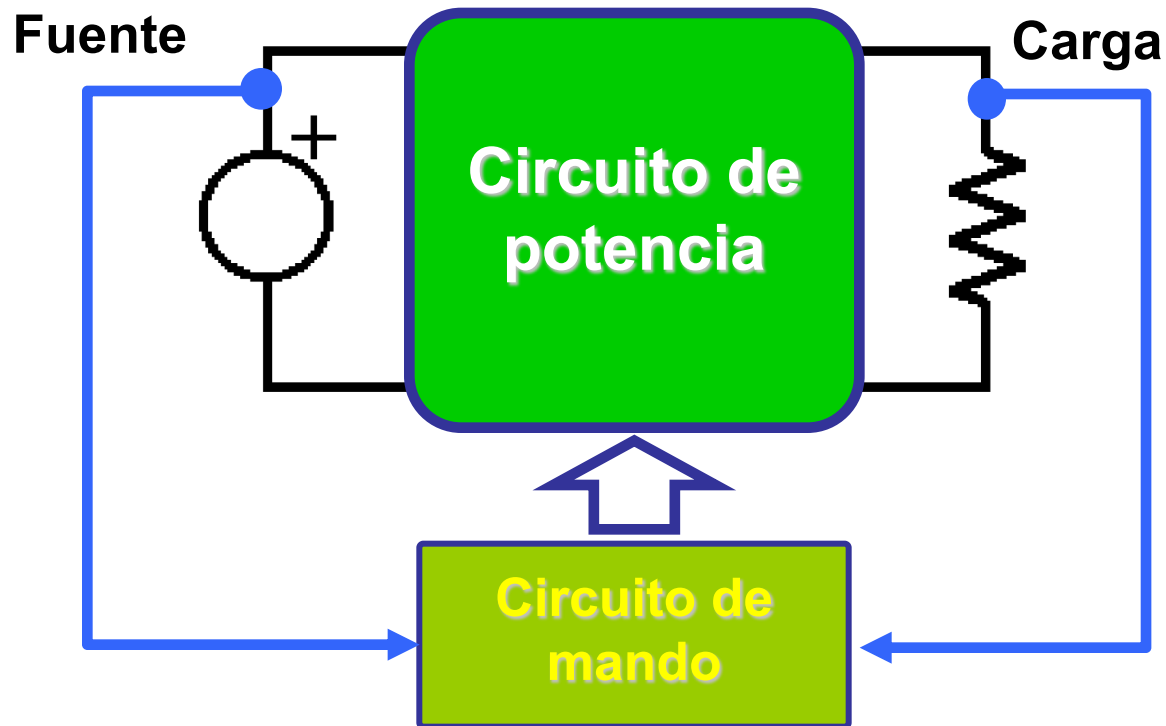


**Figure 1-6** Power processor block diagram.

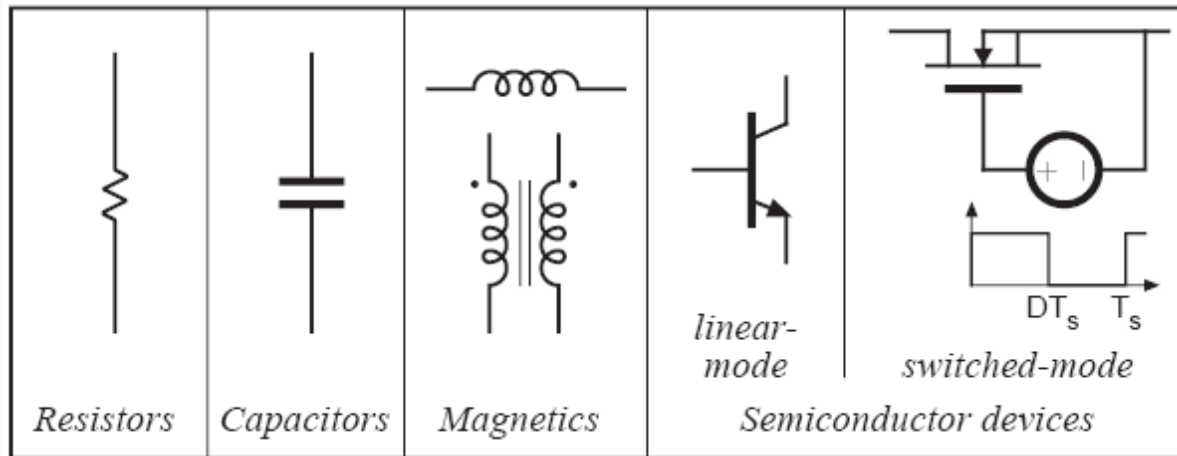
- Most practical topologies require an energy storage element, which also decouples the input and the output side converters



# Convertidores electrónicos de potencia



# Dispositivos



Zona lineal

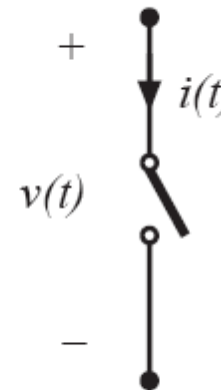
# Pérdidas en un interruptor ideal

Switch closed:  $v(t) = 0$

Switch open:  $i(t) = 0$

In either event:  $p(t) = v(t) i(t) = 0$

Ideal switch consumes zero power





# Elementos que integran los circuitos

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## Etapa de potencia

Bobinas  
Transformadores  
Condensadores  
Semiconductores  
.....  
Redes de protección  
Sensores-transductores

## Etapa de control

Circuitos integrados  
Control  
Drivers  
DSPs  
Amplificadores operacionales  
Componentes pasivos  
Optoacopladores  
Semiconductores de señal

# AC & DC Grids

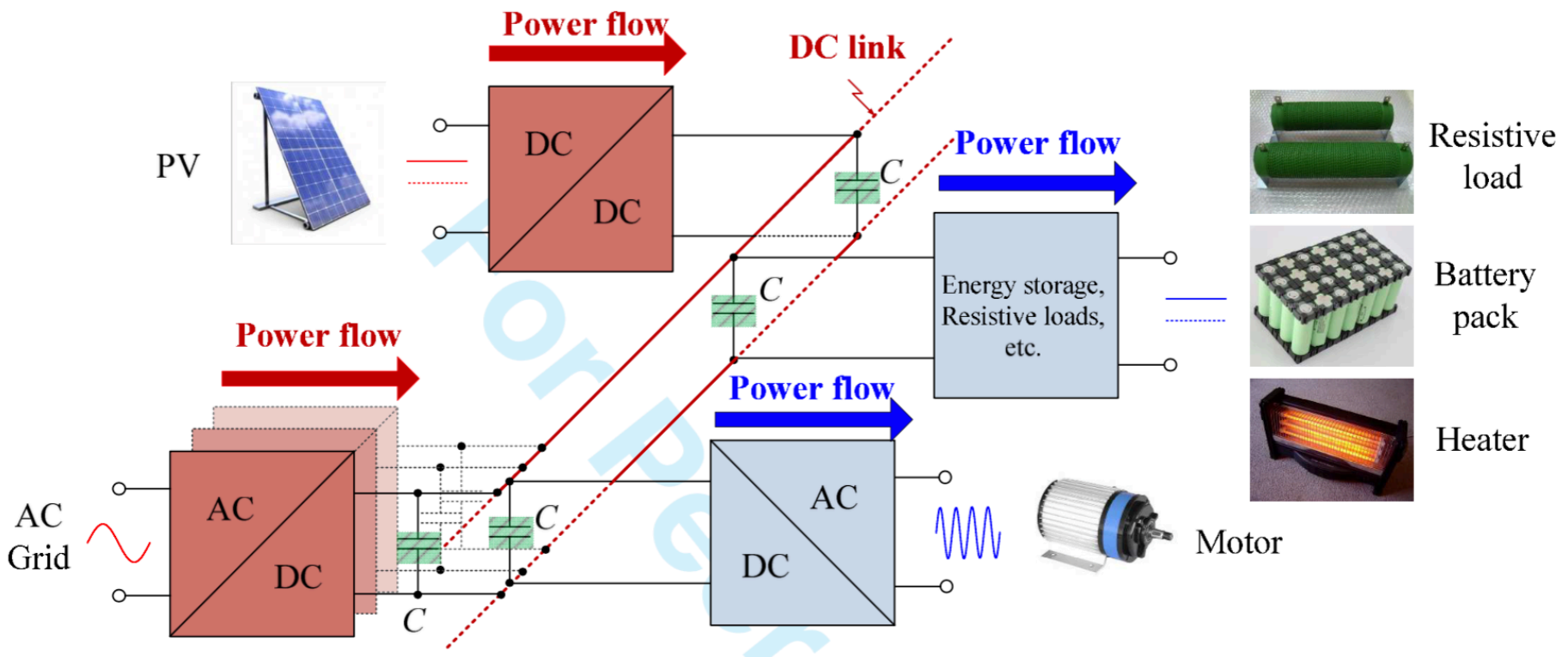
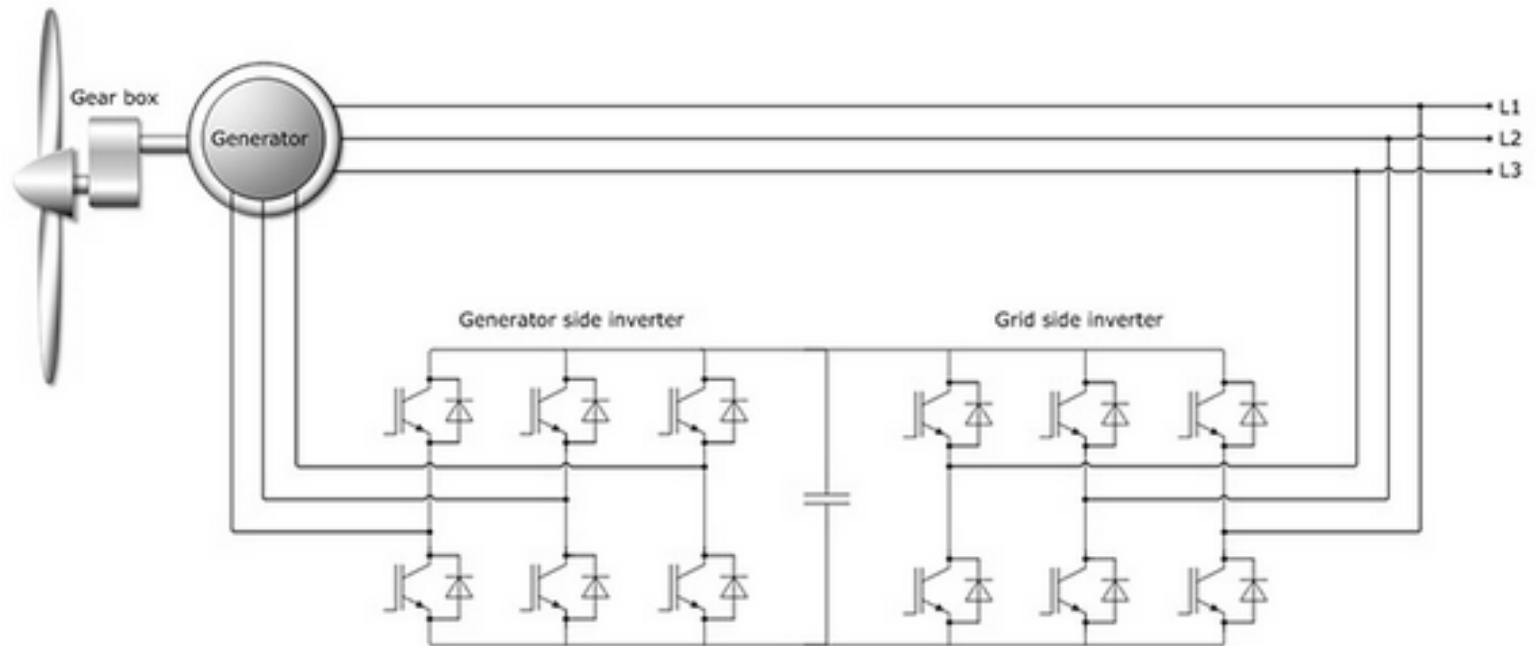


Fig. 1. A typical power stage infrastructure in a DC power grid.

# Energía Eólica



# IGBT discreto



# Modulos IGBT

MiniSKiiP now  
up to 90kW



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# Modulo diodos de potencia

## SKKD 15, SKKE 15



SEMIPACK® 0

### Rectifier Diode Modules

SKKD 15

SKKE 15

#### Features

- Heat transfer through aluminium oxide ceramic isolated metal baseplate
- Hard soldered joints for high reliability
- UL recognized, file no. E 63 532

#### Typical Applications\*

- Non-controllable rectifiers for AC/AC converters
- Line rectifiers for transistorized AC motor controllers
- Field supply for DC motors
- SKKE: Free-wheeling diodes

1) SKKD types only

$V_{RSM}$ V	$V_{RRM}$ V	$I_{FRMS} = 24$ A (maximum value for continuous operation) $I_{FAV} = 15$ A (sin. 180; $T_c = 82$ °C)	
700	600	SKKD 15/06	SKKE 15/06
900	800	SKKD 15/08	SKKE 15/08
1300	1200	SKKD 15/12	SKKE 15/12
1500	1400	SKKD 15/14	SKKE 15/14
1700	1600	SKKD 15/16	SKKE 15/16

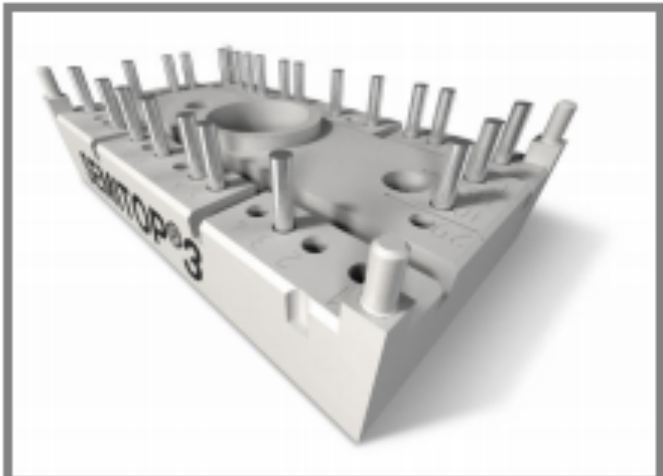
Symbol	Conditions	Values	Units
$I_{FAV}$	sin. 180; $T_c = 85$ (100) °C	14 (10)	A
$I_D$	P13A/125; $T_a = 45$ °C; B2 / B6	18 / 22,5	A
$I_{FSM}$	$T_{vj} = 25$ °C; 10 ms	320	A
$Pt$	$T_{vj} = 125$ °C; 10 ms	280	A
	$T_{vj} = 25$ °C; 8,3 ... 10 ms	510	A²s
$r_T$	$T_{vj} = 25$ °C; 8,3 ... 10 ms	390	A²s
	$T_{vj} = 125$ °C; 8,3 ... 10 ms		
$V_F$	$T_{vj} = 25$ °C; $I_F = 75$ A	max. 1,85	V
$V_{(TO)}$	$T_{vj} = 125$ °C	max. 0,85	V
$r_T$	$T_{vj} = 125$ °C	max. 15	mΩ
$I_{RD}$	$T_{vj} = 125$ °C; $V_{RD} = V_{RRM}$	max. 2,5	mA
$R_{th(j-c)}$	per diode / per module <sup>1)</sup>	2 / 1	K/W
$R_{th(c-s)}$	per diode / per module <sup>1)</sup>	0,2 / 0,1	K/W
$T_{vj}$		- 40 ... + 125	°C
$T_{stg}$		- 40 ... + 125	°C
$V_{isol}$	a. c. 50 Hz; r.m.s.; 1 s / 1 min. to heatsink	3600 / 3000	V~
$M_s$		1,5 ± 15 %	Nm
$a$		5 * 9,81	m/s²
$m$	approx.	50	g
Case	SKKD	A 3	
	SKKE	A 4	

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# Modulo Mosfet

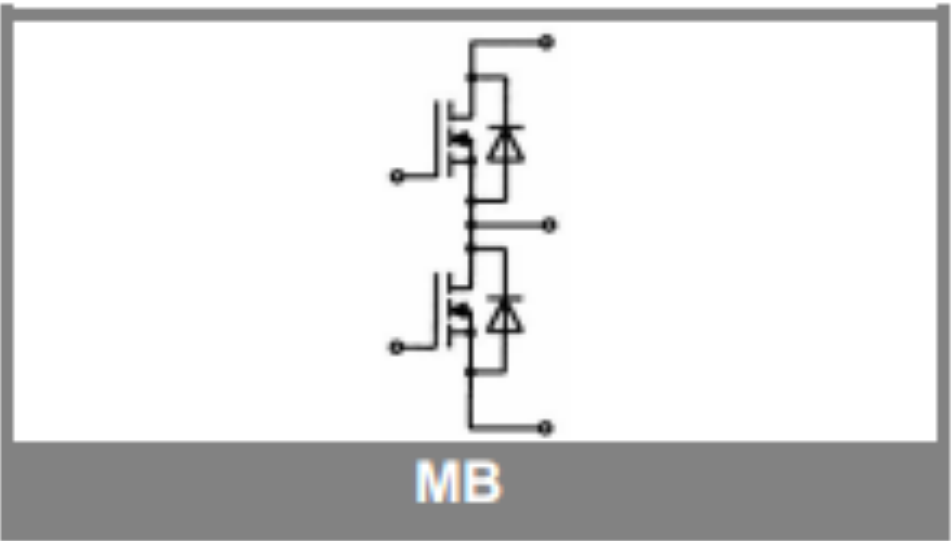


**SK 300MB075**



**SEMITOP® 3**

**Mosfet Module**



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