

## LAMPIRAN



CE

### LA 50-P

#### Definition

The «LA 50-P» is a current transducer for the electronic measurement of currents : DC, AC, IMPL., etc., with galvanic isolation between the primary (high power) and the secondary (electronic) circuits.

#### Electrical data

Nominal current $I_n$	: 50 A rms	
Measuring range	: 0 to $\pm 70$ A	
Measuring resistance	: R, min.	R, max.
with $\pm 15$ V	at $\pm 50$ A max.	: 50 ohm
	at $\pm 70$ A max.	: 50 ohm
		: 100 ohm
		: 70 ohm
Nominal analog output current	: 50 mA	
Turns ratio	: 1 : 1000	
Overall accuracy at +25°C	: $\pm 0,8$ % of $I_n$	
Supply voltage	: $\pm$ and $-15$ V ( $\pm 5$ %)	
Isolation	: between primary and secondary : 2 kV rms/50 Hz/1 min.	

#### Accuracy - Dynamic performance

Zero offset current at +25°C	: max. $\pm 0,3$ mA
Thermal drift of offset current (between 0°C and +70°C)	: typical $\pm 0,3$ mA
	: max. $\pm 0,6$ mA
Linearity	: better than 0,1 %
Response time	: better than 1 $\mu$ s
di/dt accurately followed	: better than 50 A/ $\mu$ s
Bandwidth	: 0 to 150 kHz (-1dB)

#### General data

Operating temperature	: 0°C to +70°C
Storage temperature	: -25°C to +85°C
Current consumption	: 10 mA + output current
Secondary internal resistance	: 90 ohm (at +70°C)
Package	: insulated plastic case
Weight	: 20 g.
Fastening	: for mounting on printed circuit by 3 pins 0.63 x 0.56 mm, recommended hole size 0.9 mm dia.
Connection to primary circuit	: through-hole 12,7 x 6,4 mm
secondary circuit	: on 3 pins 0.63 x 0.56 mm
Polarity markings	: a positive measuring current is obtained on terminal M, when the primary current flows in the direction of the arrow.

**Notes :** - The temperature of the primary conductor should not exceed 100°C.  
 - This is a standard model; for different versions (e.g. supply voltages, turns ratio, unidirectional measurements, etc.), please contact us.

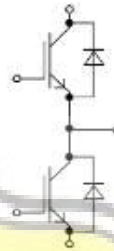
## Technische Information / Technical Information

IGBT-Module  
IGBT-modules

# FF100R12KS4



62mm C-Serien Modul mit schnellem IGBT2 für hochfrequentes Schalten  
62mm C-Series module with the fast IGBT2 for high-frequency switching



$V_{CES} = 1200V$   
 $I_{C, rms} = 100A / I_{CRM} = 200A$

### Typische Anwendungen

- Anwendungen mit hohen Schaltfrequenzen
- Medizinische Anwendungen
- Motorantriebe
- Anwendungen für Resonanz Umrichter
- Servoumrichter
- USV-Systeme

### Typical Applications

- High Frequency Switching Application
- Medical Applications
- Motor Drives
- Resonant Inverter Applications
- Servo Drives
- UPS Systems

### Elektrische Eigenschaften

- Hohe Kurzschlussrobustheit, selbstlimitierender Kurzschlussstrom
- Niedrige Schaltverluste
- Sehr große Robustheit
- $V_{CES, max}$  mit positivem Temperaturkoeffizienten

### Electrical Features

- High Short Circuit Capability, Self Limiting Short Circuit Current
- Low Switching Losses
- Unbeatable Robustness
- $V_{CES, max}$  with positive Temperature Coefficient

### Mechanische Eigenschaften

- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Isolierte Bodenplatte
- Kupferbodenplatte
- Standardgehäuse

### Mechanical Features

- Package with CTI > 400
- High Creepage and Clearance Distances
- Isolated Base Plate
- Copper Base Plate
- Standard Housing

### Module Label Code

#### Barcode Code 128



#### DMX - Code



#### Content of the Code

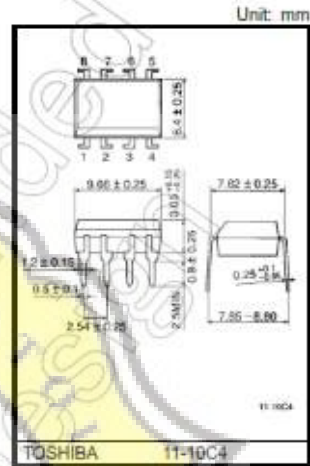
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Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

# TLP250

Industrial Inverter  
 Inverter For Air Conditioner  
 IGBT Gate Drive  
 Power MOS FET Gate Drive

The TOSHIBA TLP250 consists of a GaAIs light emitting diode and a integrated photodetector.  
 This unit is 8-lead DIP package.  
 TLP250 is suitable for gate driving circuit of IGBT or power MOS FET.

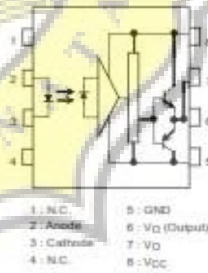
- Input threshold current: 5mA(max)
- Supply current : 11mA(max)
- Supply voltage : 10-35V
- Output current :  $\pm 1.5A$  (max)
- Switching time  $t_{\text{on}}/t_{\text{off}}$ : 0.5 $\mu$ s(max)
- Isolation voltage: 2500V<sub>rms</sub>(min)
- UL recognized: UL1577, file No.E67349
- c-UL approved : CSA Component Acceptance Service No. 5A, File No.E67349
- Option(D4)  
 VDE Approved : EN60747-5-5  
 Note: When a EN60747-5-5 approved type is needed, Please designate "Option(D4)"



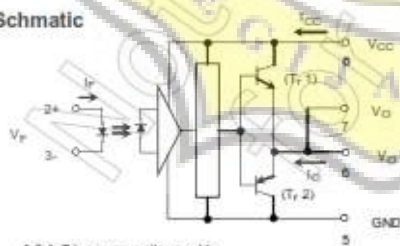
**Truth Table**

	$T_{r1}$	$T_{r2}$
Input LED	On	Off
	Off	On

**Pin Configuration (top view)**



**Schematic**



A 0.1 $\mu$ F bypass capacitor must be connected between pin 5 and 8

Start of commercial production  
 1990-11



# dsPIC30F4011/4012

## dsPIC30F4011/4012 Enhanced Flash 16-bit Digital Signal Controller

**Note:** This data sheet summarizes features of this group of dsPIC30F devices and is not intended to be a complete reference source. For more information on the CPU, peripherals, register descriptions and general device functionality, refer to the *dsPIC30F Family Reference Manual* (DS70046). For more information on the device instruction set and programming, refer to the *dsPIC30F Programmer's Reference Manual* (DS70030).

### High Performance Modified RISC CPU:

- Modified Harvard architecture
- C compiler optimized instruction set architecture with flexible addressing modes
- 84 base instructions
- 24-bit wide instructions, 16-bit wide data path
- 48 Kbytes on-chip Flash program space (16K instruction words)
- 2 Kbytes of on-chip data RAM
- 1 Kbytes of non-volatile data EEPROM
- Up to 30 MIPS operation:
  - DC to 40 MHz external clock input
  - 4 MHz-10 MHz oscillator input with PLL active (4x, 8x, 16x)
- 30 interrupt sources
  - 3 external interrupt sources
  - 8 user selectable priority levels for each interrupt source
  - 4 processor trap sources
- 16 x 16-bit working register array

### DSP Engine Features:

- Dual data fetch
- Accumulator write back for DSP operations
- Modulo and Bit-Reversed Addressing modes
- Two, 40-bit wide accumulators with optional saturation logic
- 17-bit x 17-bit single cycle hardware fractional/integer multiplier
- All DSP instructions single cycle
- $\pm$  16-bit single cycle shift

### Peripheral Features:

- High current sink/source I/O pins: 25 mA/25 mA
- Timer module with programmable prescaler:
  - Five 16-bit timers/counters; optionally pair 16-bit timers into 32-bit timer modules
- 16-bit Capture input functions
- 16-bit Compare/PWM output functions
- 3-wire SPI™ modules (supports 4 Frame modes)
- I<sup>2</sup>C™ module supports Multi-Master/Slave mode and 7-bit/10-bit addressing
- 2 UART modules with FIFO Buffers
- 1 CAN modules, 2.0B compliant

### Motor Control PWM Module Features:

- 6 PWM output channels
  - Complementary or Independent Output modes
  - Edge and Center Aligned modes
- 3 duty cycle generators
- Dedicated time base
- Programmable output polarity
- Dead-time control for Complementary mode
- Manual output control
- Trigger for A/D conversions

### Quadrature Encoder Interface Module Features:

- Phase A, Phase B and Index Pulse input
- 16-bit up/down position counter
- Count direction status
- Position Measurement (x2 and x4) mode
- Programmable digital noise filters on inputs
- Alternate 16-bit Timer/Counter mode
- Interrupt on position counter rollover/underflow

Gambar motor *Switched Reluctance* buatan SLT



Gambar proses pengelasan rangka sepeda listrik



Gambar *prototype* sepeda listrik



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