LAMPIRAN

Brushless DC Motor

42BLF Series

General Specifications

Winding Type	Star
Hall Effect Angle	120°C Electrical Angle
Insulation Class	B
Ambient Temperature Range	-20°C ~ +50°C
Insulation Resistance	100 MΩ Min. 500 VDC
Dielectric Strength	500 VAC 1 minute

Customized solutions on request.

Hetai Motor

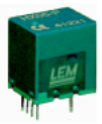
Electrical Specifications

Model		42BLF01	42BLF02	42BLF03
Number of Poles		8	8	8
Number of Phases		3	3	3
Rated Voltage	*VDC*	24	24	24
Rated Speed	*RPM*	4000	4000	4000
Rated Torque	*Nm*	0.063	0.125	0.188
Rated Current	*A*	1.9	3.4	5.7
Output Power	*W*	26	52	78
Peak Torque	*Nm*	0.18	0.38	0.75
Peak Current	*A*	5.7	10.2	18
Torque Constant	*Nm/A*	0.035	0.036	0.036
Back EMF	*V/KRPM*	3.7	3.8	3.8
Rotor Inertia	*gcm²*	24	48	72
Body Length	*mm*	47	63	79
Mass	*kg*	0.33	0.48	0.63

Current Transducer HX 03 .. 50-P/SP2

I_{PN} = 3 .. 50 A

For the electronic measurement of currents: DC, AC, pulsed, mixed, with a galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).



Electrical data

Primary nominal r.m.s. current I_{PN} (A)	Primary current measuring range I_P (A) [1]	Primary Conductor Diameter x Turns (mm)	Type
3	± 9	0.6d x 20T	HX 03-P/SP2
5	± 15	0.8d x 12T	HX 05-P/SP2
10	± 30	1.1d x 6T	HX 10-P/SP2
15	± 45	1.4d x 4T	HX 15-P/SP2
20	± 60	1.6d x 3T	HX 20-P/SP2
25	± 75	1.6d x 2T	HX 25-P/SP2
50	± 150	1.2 x 6.3 x 1T	HX 50-P/SP2

V_{OUT}	Output voltage @ ± I_{PN}, R_L = 2 kΩ, T_A = 25°C	V_{OE} ±0.625	V
R_{OUT}	Output impedance	< 50	Ω
R_L	Load resistance	≥ 2	kΩ
V_C	Supply voltage (± 5 %)	+12 .. +15	V
I_C	Current consumption	< 15	mA
V_d	R.m.s. voltage for AC isolation test, 50/60Hz, 1 mn	> 3	kV
V_e	R.m.s. voltage for partial discharge extinction at 10pC	≥ 1	kV
	Impulse withstand voltage, 1.2/50µs	≥ 6	kV

Accuracy-Dynamic performance data

X	Accuracy @ I_{PN}, T_A = 25°C (without offset)	< ± 1	% of I_{PN}
ε_L	Linearity (0 .. ± I_{PN})	< ± 1	% of I_{PN}
V_{OE}	Electrical offset voltage, T_A = 25°C	+2.5V±50	mV
V_{OH}	Hysteresis offset voltage @ I_P = 0; after an excursion of 3 x I_{PN}	< ± 10	mV
V_{OT}	Thermal drift of V_{OE}	max. ± 1.5	mV/K
$TC\varepsilon_G$	Thermal drift of the gain (% of reading)	± 0.1	%/K
t_r	Response time @ 90% of I_P	≤ 3	µs
f	Frequency bandwidth (-3 dB) [2]	50	kHz

General data

T_A	Ambient operating temperature	- 25 .. + 85	°C
T_S	Ambient storage temperature	- 25 .. + 85	°C
m	Mass	8	g
	Min. internal creepage distance/clearance	≥ 5.5	mm
	Isolation material group	I	
	Standards	EN50178	

Notes : [1] With R_L=2kΩ
[2] Small signal only to avoid excessive heating of the magnetic core

Features

- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 3000V
- Low power consumption
- Extended measuring range (3x I_{PN})
- Single supply from +12V to +15V
- Material according to UL94-V0

Advantages

- Low insertion losses
- Easy to mount with automatic handling system
- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference.

Applications

- Switched Mode Power Supplies (SMPS)
- AC variable speed drives
- Uninterruptible Power Supplies (UPS)
- Electrical appliances
- Battery supplied applications
- DC motor drives

TOSHIBA Photocoupler GaAℓAs Ired & Photo−IC

TLP250

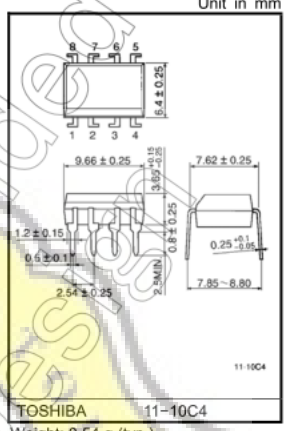
Transistor Inverter
Inverter For Air Conditioner
IGBT Gate Drive
Power MOS FET Gate Drive

The TOSHIBA TLP250 consists of a GaAlAs 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: I_F=5mA(max.)
- Supply current (I_{CC}): 11mA(max.)
- Supply voltage (V_{CC}): 10−35V
- Output current (I_O): ±1.5A (max.)
- Switching time (t_{pLH}/t_{pHL}): 0.5μs(max.)
- Isolation voltage: 2500V_{rms}(min.)
- UL recognized: UL1577, file No.E67349
- Option(D4)
  VDE Approved : DIN EN60747-5-2
  Maximum Operating Insulation Voltage : 890V_{PK}
  Highest Permissible Over Voltage : 4000V_{PK}

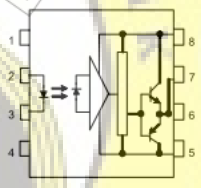
(Note):When a EN60747-5-2 approved type is needed,
Please designate "Option(D4)"

Unit in mm



TOSHIBA 11−10C4
Weight: 0.54 g (typ.)

Pin Configuration (top view)

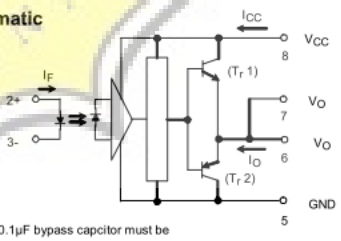


1 : N.C.
2 : Anode
3 : Cathode
4 : N.C.
5 : GND
6 : V_O (Output)
7 : V_O
8 : V_{CC}

Truth Table

		Tr1	Tr2
Input LED	On	On	Off
	Off	Off	On

Schmatic



A 0.1μF bypass capcitor must be connected between pin 8 and 5 (See Note 5).

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
- ± 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^2C™ 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:

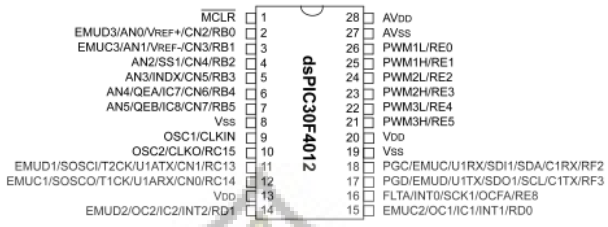
- 6 PWM output channels
  - Complementary or Independent Output modes
  - Edge and Center Aligned modes
- 3 duty cycle generators
- Dedicated time base
- Programmable output polarity
- Dead-time control for Complementary mode
- Manual output control
- Trigger for A/D conversions

Quadrature Encoder Interface Module Features:

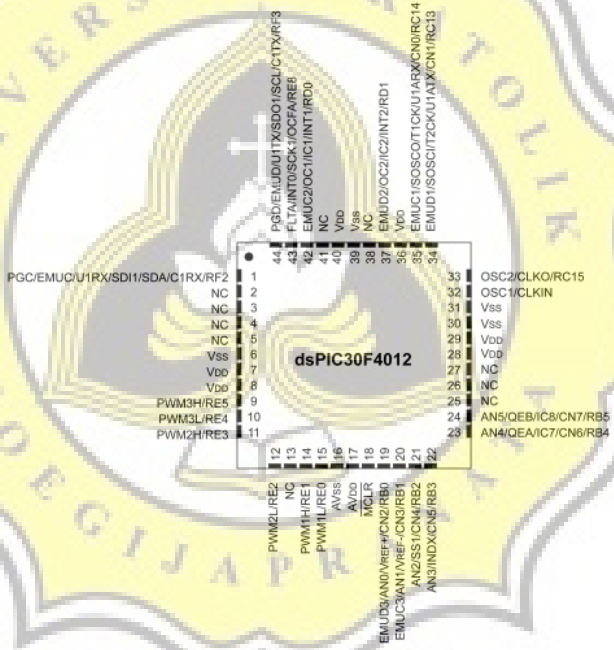
- Phase A, Phase B and Index Pulse input
- 16-bit up/down position counter
- Count direction status
- Position Measurement (x2 and x4) mode
- Programmable digital noise filters on inputs
- Alternate 16-bit Timer/Counter mode
- Interrupt on position counter rollover/underflow

Pin Diagrams (Continued)

28-Pin SPDIP
28-Pin SOIC



44-Pin QFN



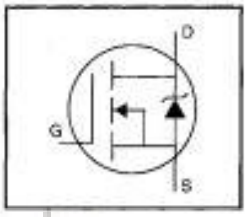
PD-9.512B

International IOR Rectifier

IRFP460

HEXFET® Power MOSFET

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- Isolated Central Mounting Hole
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements



V_{DSS} = 500V

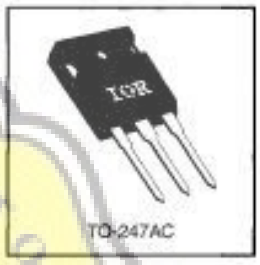
$R_{DS(on)}$ = 0.27Ω

I_D = 20A

Description

Third Generation HEXFETs from International Rectifier provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-247 package is preferred for commercial-industrial applications where higher power levels preclude the use of TO-220 devices. The TO-247 is similar but superior to the earlier TO-218 package because of its isolated mounting hole. It also provides greater creepage distance between pins to meet the requirements of most safety specifications.



TO-247AC

DATA SHEETS

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10 V	20	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10 V	13	
I_{DM}	Pulsed Drain Current ①	80	
P_D @ T_C = 25°C	Power Dissipation	280	W
	Linear Derating Factor	2.2	W/°C
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy ②	960	mJ
I_{AR}	Avalanche Current ①	20	A
E_{AR}	Repetitive Avalanche Energy ①	28	mJ
dv/dt	Peak Diode Recovery dv/dt ③	3.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	
	Mounting Torque, 6-32 or M3 screw	10 lbf•in (1.1 N•m)	

Thermal Resistance

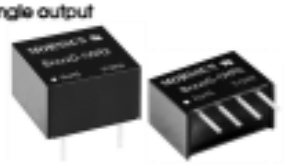
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	—	0.45	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	—	0.24	—	
$R_{\theta JA}$	Junction-to-Ambient	—	—	40	

DC/DC Converter

B_S-1WR2 & B_D-1WR2 series

MORNSUN®

1W, Fixed input voltage, isolated & unregulated single output



Continuous Short Circuit Protection

Patent Protection RoHS

FEATURES

- Continuous short-circuit protection
- Operating temperature range: -40℃ to +105℃
- Conversion efficiency high up to 80%
- Miniature SIP/DIP package, International standard pin-out
- Isolation voltage: 1.5K VDC
- EN60950,UL60950 Approval

B_S-1WR2 & B_D-1WR2 series are specially designed for applications where an isolated voltage is required in a distributed power supply system. They are suitable for

1. *Where the voltage of the input power supply is stable (voltage variation ≤10%)*
2. *Where isolation between input and output is necessary (isolation voltage ≤1500VDC)*
3. *Where the output voltage regulation and the ripple & noise of the output voltage is not strictly required*
4. *Typical application: digital circuit condition; normal low-frequency analog circuit condition; relay drive circuit and data switching circuit condition, etc.*

Selection Guide

Certification	Part No.	Input Voltage (VDC) Nominal (Range)	Output Voltage (VDC)	Output Current (mA)(Max./Min.)	Efficiency (%,Min/Typ.) @ Full Load	Max. Capacitive Load(μF)
–	B0303S-1WR2	3.3 (3.07-3.63)	3.3	303/30	68/72	220
UL/CE	B0305S-1WR2		5	200/20	72/76	
UL/CE	B0312S-1WR2		12	84/9	76/80	
–	B0303D-1WR2		3.3	303/30	68/72	
–	B0305D-1WR2		5	200/20	72/76	
–	B0503S-1WR2	5 (4.5-5.5)	3.3	303/30	68/72	
UL/CE	B0505S-1WR2		5	200/20	76/80	
UL/CE	B0509S-1WR2		9	111/12	76/80	
UL/CE	B0512S-1WR2		12	84/9	76/80	
UL/CE	B0515S-1WR2		15	67/7	76/80	
UL/CE	B0524S-1WR2		24	42/4	76/80	
–	B0503D-1WR2		3.3	303/30	68/72	
UL/CE	B0505D-1WR2		5	200/20	76/80	
UL/CE	B0509D-1WR2		9	111/12	76/80	
UL/CE	B0512D-1WR2		12	84/9	76/80	
UL/CE	B0515D-1WR2		15	67/7	76/80	
UL/CE	B0524D-1WR2		24	42/4	76/80	
–	B1203S-1WR2	12 (10.8-13.2)	3.3	303/30	68/72	
UL/CE	B1205S-1WR2		5	200/20	76/80	
UL/CE	B1209S-1WR2		9	111/12	76/80	
UL/CE	B1212S-1WR2		12	84/9	76/80	
UL/CE	B1215S-1WR2		15	67/7	76/80	
UL/CE	B1224S-1WR2		24	42/4	76/80	
–	B1203D-1WR2		3.3	303/30	68/72	
UL/CE	B1205D-1WR2		5	200/20	76/80	
UL/CE	B1209D-1WR2		9	111/12	76/80	
UL/CE	B1212D-1WR2		12	84/9	76/80	
UL/CE	B1215D-1WR2		15	67/7	76/80	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