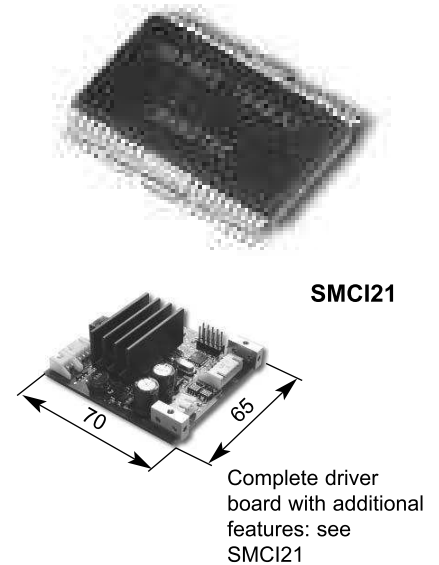


IMT-902 Driver for 2 motors, 1/16 step

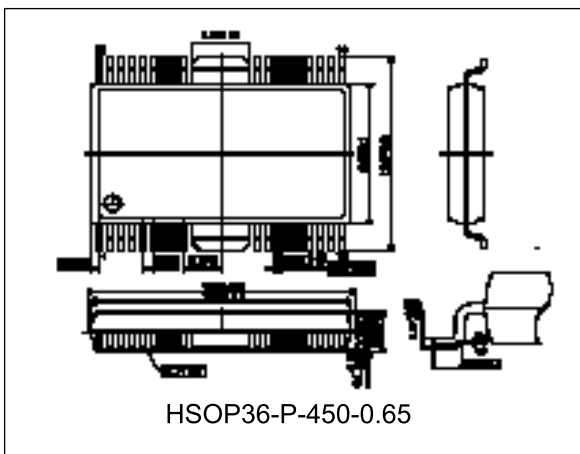
The IMT 902 is a microstep PWM constant current driver. Two bipolar stepper motors can be operated with one low-loss, highly-integrated SMD IC.

Advantages:

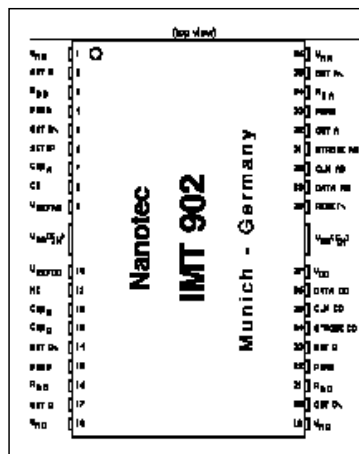
- Only 1 IC for 2 motors (up to 1.5 A/phase) cuts down space requirements and cost considerably with maximum functionality and a minimum number of external components
- Microstep changeover of 1/1, 1/2, 1/4, 1/8 and 1/16 step provides quiet, even running and reduced system resonance
- Low $R_{DS(ON)} = 0.5$ Ohms reduces power loss considerably
- Serial transmission protocol (e.g. SPI) reduces number of pin



Dimensioned diagram (mm)



Pin assignments

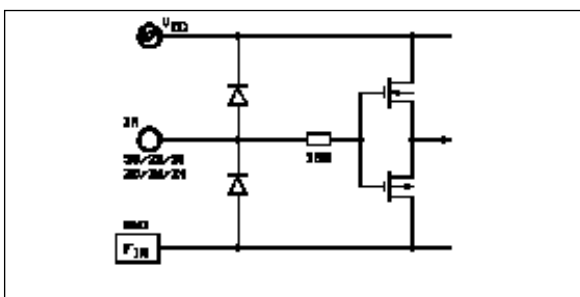


Max. nominal values (at 25°C)

Supply voltage V_{DD} :	5.5 V
V_M :	40 V
Output voltage I_{out} :	1.3 A
(average)	1.1 A
(peak)	1.5 A
Power loss P_d :	3.2 W
Operating temp.:	-40°C to 85°C
Storage temp.:	-50°C to 150°C

More data available on the Internet:
www.nanotec.de

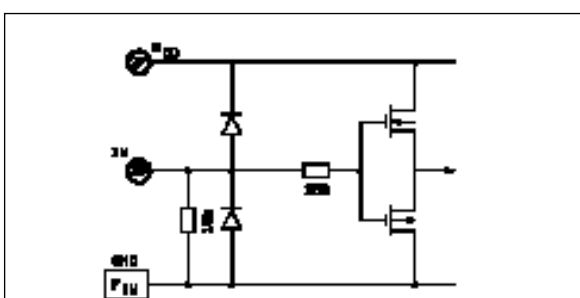
CLK, DATA, STROBE inputs



Data inputs



Reset inputs



Serial data input

DATA No.	NAME	FUNCTIONS
0	LEB	Hold Current 0
1		Hold Current 1
2	-	Must be set (1)
3	-	Must be cleared (0)
4	Current B ₀	Used for setting current.
5	Current B ₁	(LLL = output all off mode)
6	Current B ₂	4-bit current B data
7	Current B ₃	(slope can be decided into 16 by 4-bit data)
8	Phase B	Phase information: High = OUT B High, OUT B Low
9	-	Must be set (1)
10	-	Must be cleared (0)
11	Current A ₀	Used for setting current.
12	Current A ₁	(LLL = output all off mode)
13	Current A ₂	4-bit current A data
14	Current A ₃	(slope can be decided into 16 by 4-bit data)
15	Phase A	Phase information: High = OUT A High, OUT A Low

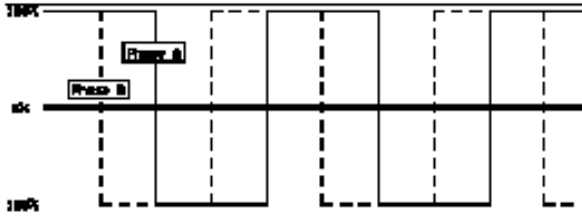
IMT-902

Application data for full step

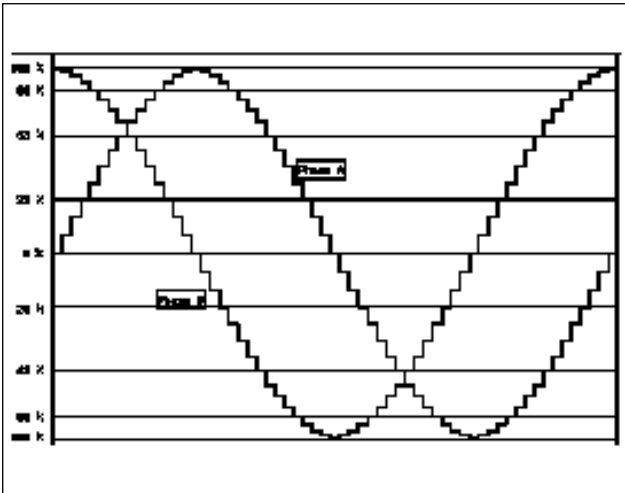
Hold Current 1	Hold Current 2	-	M ₁	M ₂	M ₃	M ₄	Phase B	-	A ₀	A ₁	A ₂	A ₃	A ₄	Phase A		
01	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	1	1	0	1	1	1	1	1	D	1	1	1	1	1	1
2	1	1	0	1	1	1	1	0	1	D	1	1	1	1	1	1
3	1	1	1	0	1	1	1	1	0	1	D	1	1	1	1	1
4	1	1	1	1	0	1	1	1	0	1	D	1	1	1	1	1

Define any input on the rising edge of CLK. Every input of a data using (15-bit) register input of the STROBE signal. Hold Current is set to 100%.

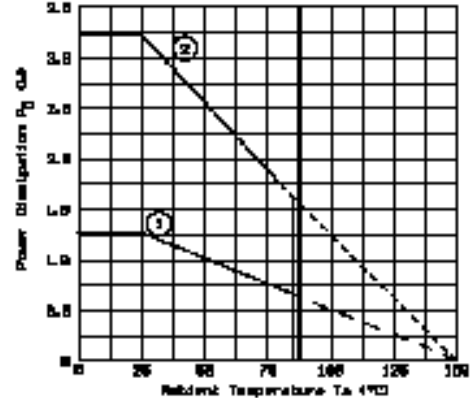
Output current waveforms of 8-phase excitation drive wave:



Sixteenth operation

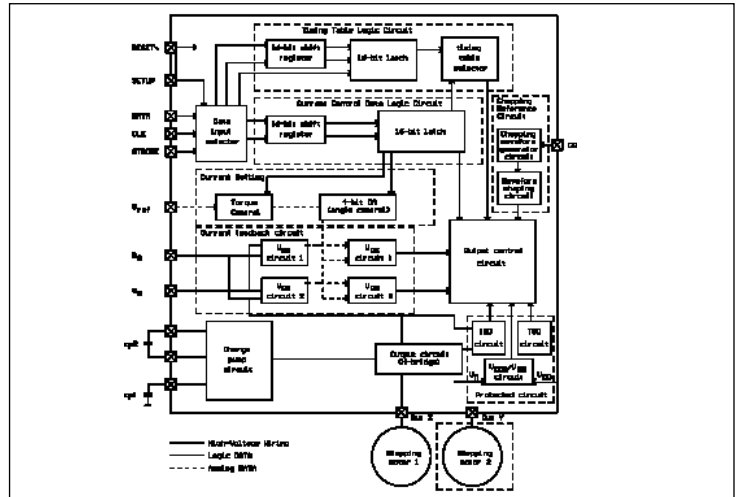


Temperature behaviour



- ① R_{th(j-c)}=0.6 DC only (IMPCAD)
- ② When mounted on the board (IMPCAD Board size C100x292-d.4mm)

Block diagram (internal wiring)



Electrical characteristics (Ta=25°, V_{DD}=5V, V_M=24V)

CF-AM15P3035		I _{CC} (MAX)	TEMP. COEFFICIENT	V _{TH}	V _{OH}	I _{OL} (MAX)	V _{OL}
Input Voltage	High V _{IC}	CLM, MEM, P, M, P, M, P, M, P, M, P, M, P, M, P, M, P	0	Yes	5V	0.1	V
	Low V _{IC}	M, P, M, P, M, P, M, P, M, P, M, P, M, P, M, P	0	No	0.1	0.1	V
Input Current I _{in}	Logic 1	CLM, P, P, M, P, M, P, M, P, M, P, M, P, M, P, M, P	0	-	1.0	1.0	µA
	Logic 0	M, P, M, P, M, P, M, P, M, P, M, P, M, P, M, P	0	-	1.0	1.0	µA
Power Dissipation (P _{tot})	Static	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	0	1.0	1.0	1.0	mW
	Dynamic	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	0	1.0	1.0	1.0	mW
	Dynamic	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	0	1.0	1.0	1.0	mW
Output Boundary Conditions	Upper	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	-	-400	-	-	µA
	Lower	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	-	-400	-	-	µA
Comparator Input Voltage Range	High	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	-	100	-	-	%
	Low	V _{DD} =5V, I _{CC} =5mA, V _M =24V, Duty Cycle=50%	-	45	30	55	%

Block diagram (+ external wiring)

