SENSITRON

    SEMICONDUCTOR

TECHNICAL DATA
DATA SHEET 1161, REV. PRELIMINARY A

Three-Phase MOSFET BRIDGE, 100 VOLT, 50 AMP

ELECTRICAL CHARACTERISTICS PER MOSFET DEVICE (Tj=25^{0}C UNLESS OTHERWISE SPECIFIED)

MOSFET Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Continuous Drain Current	I_D	V_{GS}=10V, T_C = 25 ^{o}C T_C = 80 ^{o}C	-	-	50 50	A
Maximum Pulsed Drain Current	I_{DM}	T_C = 25 ^{o}C	-	-	150	A
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	T_j=25 ^{o}C, V_{GS}=0V, I_D=500µA	100	-	-	V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, T_j=25 ^{o}C I_D = 500 µA	1.0	-	3.0	V
Static Drain-to-Source On Resistance	R_{DS}	V_{GS} = 10 V, I_D = 40 A	-	0.013	0.018	Ω
Drain-to-Source Leakage Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j=25°C V	-	-	250	µA
Turn-on Delay Rise Time Turn-off Delay Fall Time	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	I_D = 50 A, V_{GS} = 10 V, T_j=25°C, R_G = 5Ω , V_{DD} = 30V	-	25 150 60 120		ns
Input Capacitance Output Capacitance Reverse Transfer Capacitance	C_{iss} C_{oss} C_{rss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	-	3.8 0.90 0.30	-	nF
Thermal Resistance	R_{thjc}	-	-	0.7	1	^{o}C/W
Operating and Storage Junction Temperature	T_j	-	-40	-	150	^{o}C

Source Drain Diode Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Forward Voltage	V_{SD}	T_j=25 ^{o}C, I_F = 30A	-	0.80	1.1	V
Reverse Recovery Time	t_{rr}	T_j = 25 ^{o}C, I_S = 30 A, di/dt = 100 A/ µs	-	90	130	ns

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Gate Driver

| PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	VCC	10	15	20	V
Input On Current	HIN, LIN	1.6	-	5	mA
Opto-Isolator Logic High Input Threshold	I_{th}		1.6		mA
Input Reverse Breakdown Voltage	BV_{in}	5			V
Input Forward Voltage @ I_{in} = 5mA	V_F		1.5	1.7	V
Under Voltage Lockout	VCCUV	7.0	-	9.7	V
ITRIP Threshold Voltage [1]	$ITRIP_{th}$	0.4	0.49	0.58	V
Turn On Delay	t_{ond}	-	-	1000	nsec
Turn On Rise Time	t_r	-	-	200	nsec
Turn Off Delay	t_{offd}	-	-	1300	nsec
Turn Off Fall Time	t_f	-	-	200	nsec
Input-Output Isolation Voltage		1000			V

(1) Once ITRIP reaches threshold, the driver latches off. This condition can be reset by holding all three low side inputs high for more than 10 μ sec or by recycling the V_{cc} supply.

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Package Drawing:
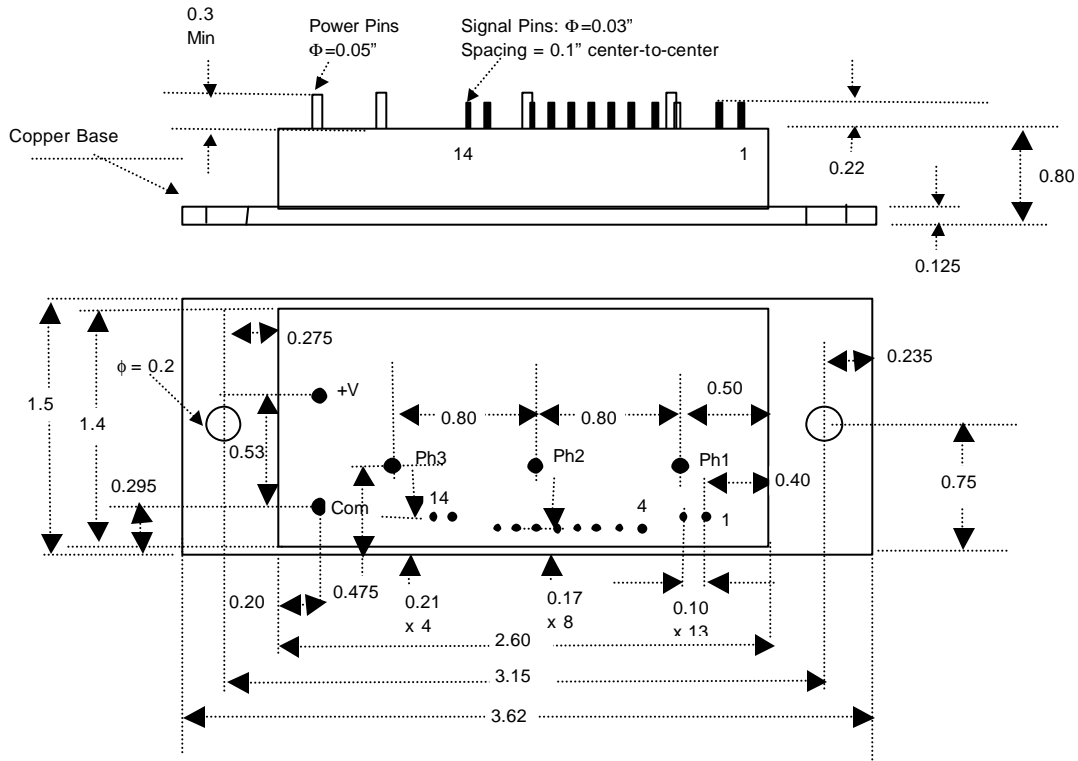
Package Material:
Base: Copper
Frame: Nickel
Lid: Plastic
Power Terminals: Copper

Signal Terminals & Truth Table:

Gate Driver Truth Table			
HIN1,2,3	**LIN1,2,3**	**HO1,2,3**	**LO1,2,3**
0	0	0	0
0	1	1	0
1	0	0	1
1	1	0	0

Note: This device can be used with a non-inverting input logic, if LIN and HIN are swapped.

Signal Pins	
Pin #	**Function**
1	**+15V**
2	**PWR-GRND**
3	**NC**
4	**HIN1**
5	**HIN2**
6	**HIN3**
7	**SGN-GRND**
8	**LIN1**
9	**LIN2**
10	**LIN3**
11	**SGN-GRND**
12	**NC**
13	**ITRIP**
14	**ITRIP-RTN**

TECHNICAL DATA

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