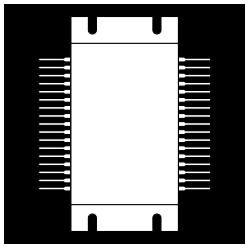
DUAL, LOW VOLTAGE, LOW $R_{DS(on)}$, MOSFET H-BRIDGE CIRCUIT IN A PLASTIC PACKAGE



Dual 100 Volt, 15 To 20 Amp H-Bridge With Current And Temperature Sensing In A Low Profile Plastic Package

FEATURES

- H-Bridge Configuration
- Zener Gate Protection
- 10 m Shunt Resistor
- 2 Linear Thermal Sensors, One For Each Bridge
- Isolated Package
- Output Currents Up To 20 Amps

DESCRIPTION

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This series of MOSFET switches is configured as a Dual H-Bridge with common V_{DD} lines, precision series shunt resistor in the source line, and sensing elements to monitor the substrate temperature of each switch. This device is ideally suited for Stepping Motor Control applications where size, performance, and efficiency are key.

MAXIMUM RATINGS (T_C = @ 25°C)

Part Number	V_{DS} (Volts)	$R_{DS(on)}$ (m)	I_D (Amps)	Package
OMH410	100	58	15	MP-3

OMH410

ELECTRICAL CHARACTERISTICS: OMH410 (T_C = 25° unless otherwise specified)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage, I_D = 250 µA, V_{GS} = 0		$V_{(BR)DSS}$	100	-	-	V
Zero Gate Voltage Drain Current = V_{GS}, V_{DS} = Max. Rat.		I_{DSS}	-	-	10	µA
V_{DS} = Max. Rat. x 0.8, T_C = 70°C			-	-	100	µA
Gate-Body Leakage, V_{GS} = ±12 V		I_{GSS}	-	-	±500	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage, V_{DS} = V_{GS}, I_D = 250 µA		$V_{GS(th)}$	2.0	-	4.0	V
Static Drain-Source On-Resistance, V_{GS} = 10 Vdc, I_D = 9.0 A		$R_{DS(on)}$	-	-	0.058	
T_C = 70°C			-	-	0.1	
On State Drain Current, V_{DS} > $I_{D(on)}$ X $R_{DS(on)}$ Max., V_{GS} = 10 V		$I_{D(on)}$	15	-	-	A
DYNAMIC CHARACTERISTICS						
Forward Transconductance, V_{DS} > $I_{D(on)}$ X $R_{DS(on)}$ Max., I_D = 9.0A		g_{fs}	9.0	-	-	mho
Input Capacitance	V_{DS} = 25 V,	C_{iss}	-	-	2600	pF
Output Capacitance	V_{GS} = 0,	C_{oss}	-	-	910	pF
Reverse Transfer Capacitance	f = 1.0 mHz	C_{rss}	-	-	350	pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time		$t_{d(on)}$	-	-	35	ns
Rise Time	V_{DD} = 100 V, I_D = 15 A,	t_r	-	-	290	ns
Turn-Off Delay Time	R_{GS} = 10 , V_{GS} = 10 V	$t_{d(off)}$	-	-	85	ns
Fall Time		t_f	-	-	120	ns
SOURCE DRAIN DIODE CHARACTERISTICS						
Source - Drain Current		I_{SD}	-	-	14	A
Source - Drain Current Pulsed		I_{SDM}*	-	-	56	A
Forward On-Voltage, I_{SD} = 28 A, V_{GS} = 0		V_{SD}	-	-	2.5	V
Reverse Recovery Time	I_{SD} = 13 A, di/dt = 100 A/µSec	t_{rr}	-	133	-	ns
Reverse Recovered Charge		Q_{rr}	-	0.85	-	µC
RESISTOR CHARACTERISTICS						
Resistor Tolerance		R_S	9.0	10	11	m
Temperature Coefficient, -40°C to +70°C		T_{cr}	-	100	-	ppm

* Indicates Pulse Test 300 µsec, Duty Cycle 1.5%

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Drain Source Voltage, V_{DS} . . . . . 100 V
Drain-Gate (R_{GS} = 1m), V_{DGR} . . . . . 100 V
Continuous Drain Current, I_D @ T_C = 25°C . . . . . 15 A
I_D @ T_C = 70°C . . . . . 11 A
Pulse Drain Current I_{DM} (1) . . . . . 110 A
Maximum Power Dissipation, P_D @ T_C = 25°C (2) . . . . . 33 W
P_D @ T_C = 70°C (2) . . . . . 18 W
Linear Derating Factor, Junction-To-Case . . . . . 0.33 W/C
Thermal Resistance, Junction-To-Case . . . . . 3.0° C/W
Sense Resistor 0.010

Notes:
(1) Pulse Test: Pulse width 300 sec. Duty Cycle 1.5%.
(2) Maximum Junction Temperature = 125°C.

SCHEMATIC

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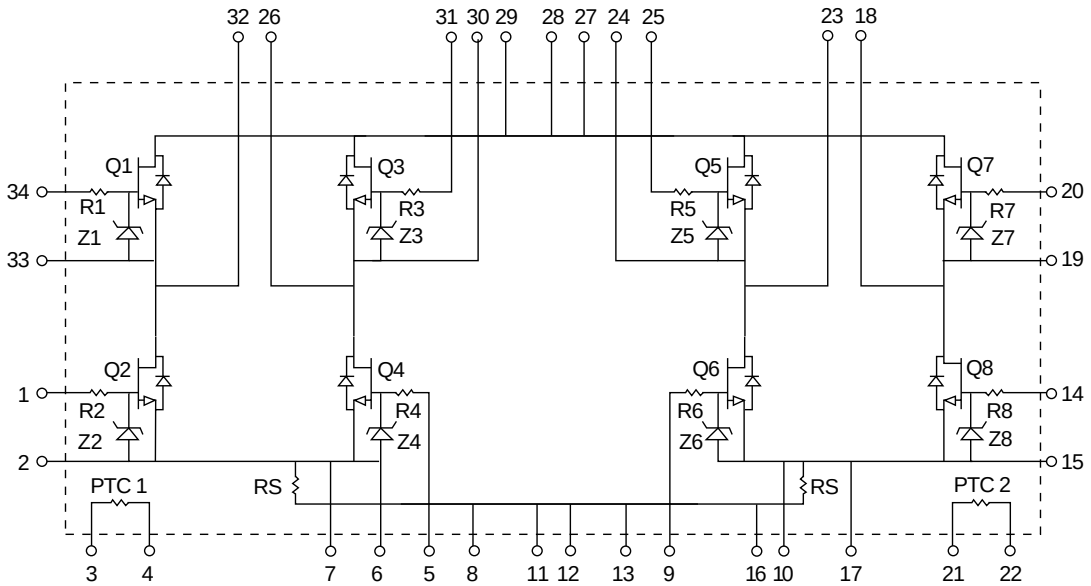
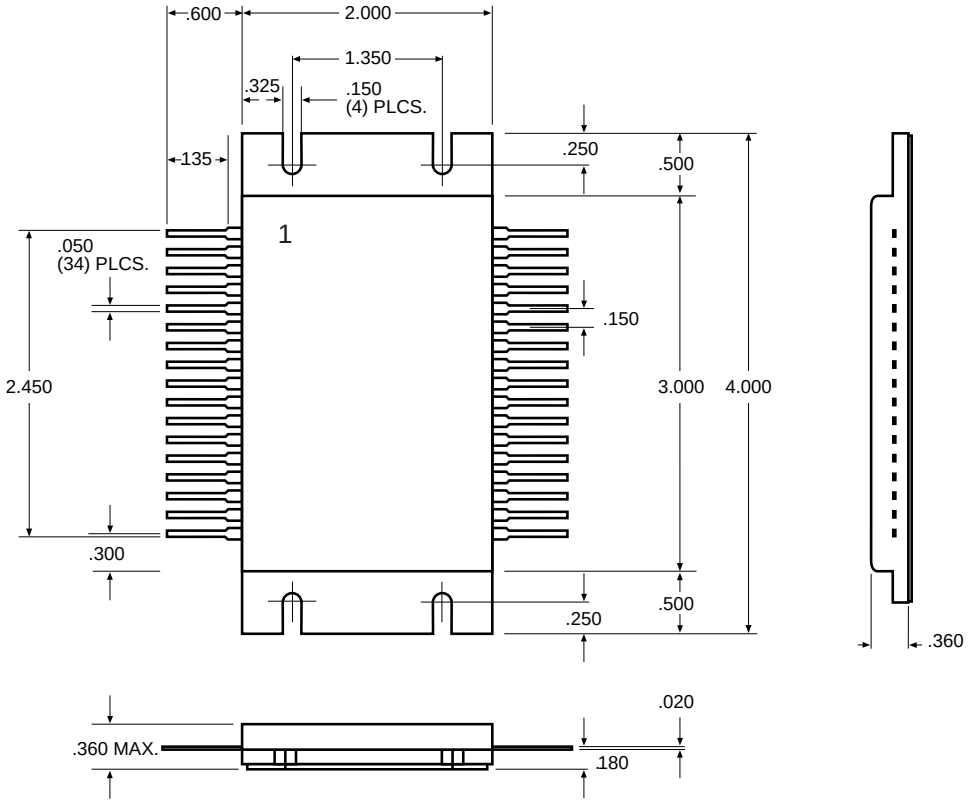


MECHANICAL OUTLINE



Pin 1:	Gate Q2	Pin 34:	Gate Q1
Pin 2:	Source Q2	Pin 33:	Source Q1
Pin 3:	PTC 1	Pin 32:	Output Q1, Q2
Pin 4:	PTC 1	Pin 31:	Gate Q3
Pin 5:	Gate Q4	Pin 30:	Source Q3
Pin 6:	Source Q4	Pin 29:	V_M
Pin 7:	Sense R 1	Pin 28:	V_M
Pin 8:	Sense R 1	Pin 27:	V_M
Pin 9:	Gate Q6	Pin 26:	Output Q3, Q4
Pin 10:	Source Q6	Pin 25:	Gate Q5
Pin 11:	Return Sense	Pin 24:	Source Q5
Pin 12:	Return	Pin 23:	Output Q5, Q6
Pin 13:	Return	Pin 22:	+PTC
Pin 14:	Gate Q8	Pin 21:	-PTC
Pin 15:	Source Q8	Pin 20:	Gate Q7
Pin 16:	Sense R 2	Pin 19:	Source Q7
Pin 17:	Sense R 2	Pin 18:	Output Q7, Q8

Contact factory for lead bending options.
Mounting Recommendations: Maximum Mounting Torque: 3.0 mN.
The module must be attached to a flat heat sink (flatness 100µm maximum).

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