

1200 VOLT, 30 AMP MOSFET FULL-BRIDGE MODULE



Features

- Isolated base plate
- Light weight low profile standard package
- Aluminum Nitride substrate
- High temperature engineering plastic shell construction
- Enhanced die coating
- Die back metal change from Silver to Gold

ELECTRICAL CHARACTERISTICS PER MOSFET LEG

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|---|--|------------------|----------------------|------------------|------|
| MOSFET SPECIFICATIONS | | | | | |
| BV _{DSS} | Drain to Source Breakdown Voltage I _D = 100 μA, V _{GS} = 0V | 1200 | - | - | V |
| I _D | Continuous Drain Current T _C = 25°C T _C = 100°C | - | - | 36 27 | A |
| I _{D(pulse)} | Pulsed Drain Current, 1ms | - | - | 80 | A |
| V _{GS} | Gate to Source Voltage | - | - | -10/+25 | V |
| I _{GSS} | Gate-Source Leakage Current, V _{GS} = +20V / -5V | - | - | 250 | nA |
| V _{GS(th)} | Gate Threshold Voltage, I _D = 5mA, V _{DS} = V _{GS} | 2.0 1.4 | 3.0 2.4 | 4.0 3.4 | V |
| I _{DSS} | Zero Gate Voltage Drain Current V _{DS} = 1200 V, V _{GS} = 0V | - | - | 100 | μA |
| R _{DS(on)} | Drain-Source On-State Resistance I _D = 20A, V _{GS} = 20V | - - | 85 164 | 105 201 | mΩ |
| C _{ISS} C _{OSS} C _{RSS} | Input Capacitance Output Capacitance Reverse Transfer Cap. V _{DS} = 1000 V, V _{GS} = 0 V, f = 1 MHz, V _{AC} = 25 mV | - - - | 1130 92 7.5 | - - - | pF |
| t _{D(on)} t _R t _{D(off)} t _F | Turn On Delay Time Rise Time Turn Off Delay Time Fall Time V _{DS} = 800 V, I _D = 20A, V _{GS} = -5/+20V, R _G = 2.5Ω, R _L = 40Ω | - - - - | 11 22 24 14 | - - - - | ns |
| E _{AS} | Avalanche Energy, Single Pulse I _D = 20A, V _{DS} = 50V | - | 1 | - | J |
| E _{ON} E _{OFF} | Turn on Energy Loss Turn off Energy Loss (Including diode reverse recovery) V _{DS} = 800 V, I _D = 20A, V _{GS} = -5/+20V, R _G = 2.5Ω, L = 156μH | - - | 523 72 | - - | μJ |
| R _{G(int)} | Internal Gate Resistance f = 1MHz, V _{AC} = 25mV | - | 3.9 | - | Ω |
| Q _{GS} Q _{GD} Q _G | Gate to Source Charge Gate to Drain Charge Total Gate Charge V _{DS} = 800 V, I _D = 20A, V _{GS} = -5/+20V | - | 17 29 71 | - | nC |

REVERSE DIODE CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|-----------------------------|--|-----|------------|------------|------|
| DIODE SPECIFICATIONS | | | | | |
| V _{SD} | Diode Forward Voltage V _{GS} = -5V, I _{SD} = 10A | | 4.3 3.8 | 4.5 4.1 | V |
| I _S | Continuous Forward Current, T _J = 25°C | - | - | 36 | A |
| t _{rr} | Reverse Recovery Time V _{GS} = -5V, I _{SD} = 20A, V _R = 800V, di/dt = 2400A/μs | - | 24 | - | ns |
| Q _{rr} | Reverse Recovery Charge V _{GS} = -5V, I _{SD} = 20A, V _R = 800V, di/dt = 2400A/μs | - | 152 | - | nC |
| I _{rrm} | Peak Reverse Recovery Current V _{GS} = -5V, I _{SD} = 20A, V _R = 800V, di/dt = 2400A/μs | - | 10 | - | A |

ZVS SiC DIODE CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|-----------------------------|--|------|----------------|------------|------|
| DIODE SPECIFICATIONS | | | | | |
| V _R RM | Repetitive Peak Reverse Voltage | 1200 | - | - | V |
| V _R SM | Surge Peak Reverse Voltage | 1300 | - | - | V |
| V _R | DC Peak Blocking Voltage | 1200 | - | - | V |
| I _F | Continuous Forward Current, T _J = 150°C | - | - | 2 | A |
| I _{FRM} | Repetitive Peak Forward Surge Current t _P = 10ms, Half Sine Pulse | - | - | 13 8.4 | A |
| I _{FSM} | Non-Repetitive Forward Surge Current t _P = 10ms, Half Sine Pulse | - | - | 19 16.5 | A |
| V _F | Forward Voltage I _F = 2A | - | 1.4 1.9 | 1.8 3.0 | V |
| I _R | Reverse Current V _R = 1200V | - | 10 40 | 50 150 | μA |
| Q _C | Total Capacitive Charge V _R = 800V, I _F = 2A, di/dt = 200A/μs, T _J = 25 °C | - | 11 | - | nC |
| C | Total Capacitance V _R = 0V, T _J = 25 °C, f = 1MHz V _R = 400V, T _J = 25 °C, f = 1MHz V _R = 800V, T _J = 25 °C, f = 1MHz | - | 167 11 8 | - | pF |

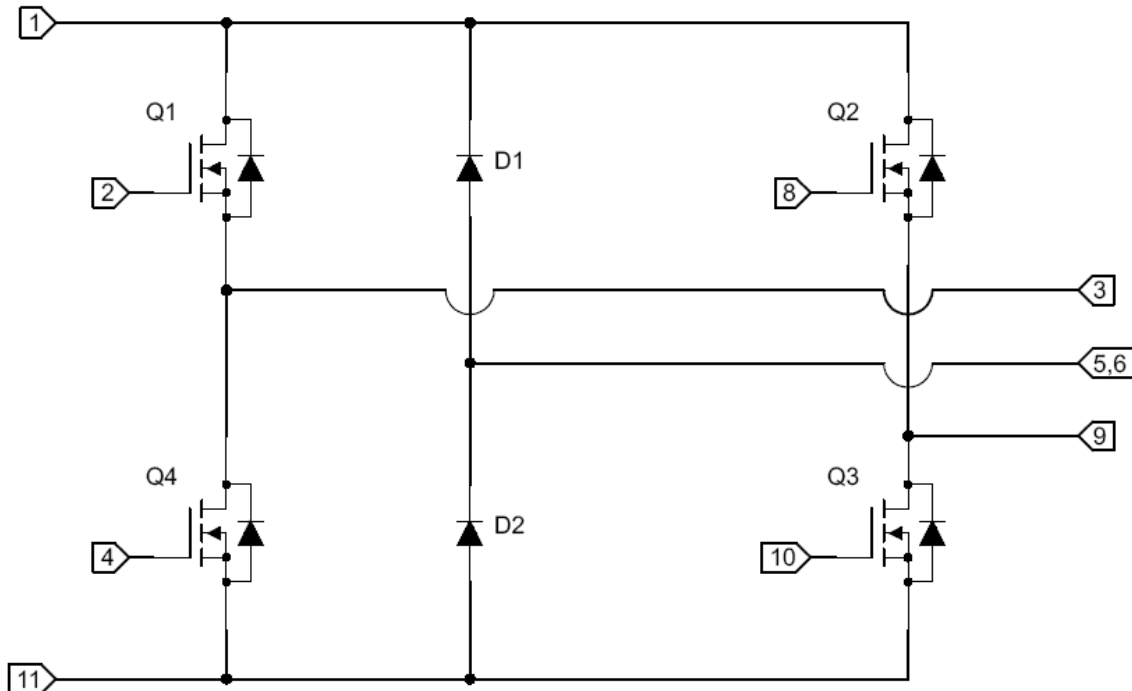
Note: Production units are only tested at room temperature. Low/High temperature operation is guaranteed by design.

THERMAL AND MECHANICAL CHARACTERISTICS

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|--------------------|--|-----|------|------|---------|
| $R_{\theta JB_M}$ | MOSFET Junction-to-Base Plate Thermal Resistance Per Leg | - | 0.61 | 0.73 | °C/W |
| $R_{\theta JB_D}$ | Diode Junction-to-Base Plate Thermal Resistance Per Leg | - | 2.90 | 3.20 | °C/W |
| V_{iso} | Isolation to Base Plate | - | - | 2500 | VDC |
| T_J | Operating Junction Temperature | -55 | - | 150 | °C |
| T_{STG} | Storage Temperature | -55 | - | 150 | °C |
| | Mounting Torque for Module Mounting | 3 | - | 4 | in-lbs. |
| | Weight | - | 10 | - | g |

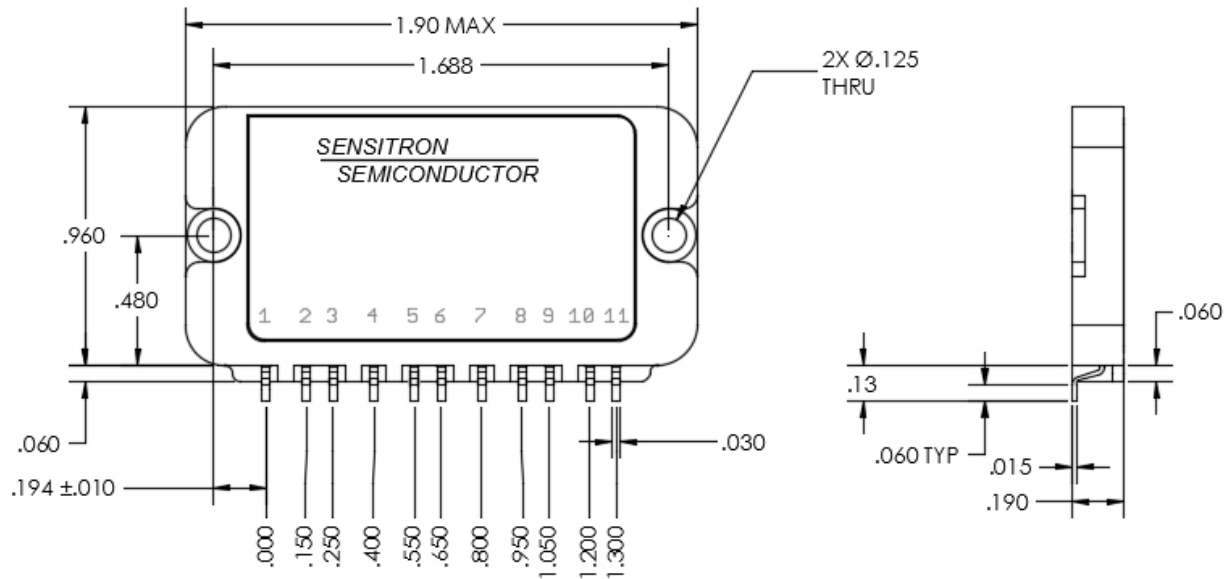
Recommended TIM = Laird Tgon 805

Schematic Diagram:



Note: Pin 7 is not used (No Connect)

Mechanical Outline (inches):



TOLERANCE UNLESS OTHERWISE NOTED:
 .XX = ±.010
 .XXX = ±.005

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