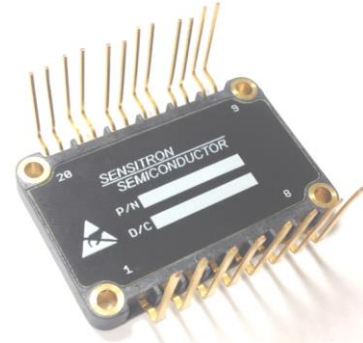


600 VOLT, 75 AMP IGBT SIX-PACK MODULE

Features

- Electrically isolated, base-less construction
- Light weight, low profile standard package
- Aluminum nitride substrate
- High temperature engineering plastic shell construction



ELECTRICAL CHARACTERISTICS PER IGBT LEG

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|----------------------------|---|------------------------|------|------------|------|
| IGBT SPECIFICATIONS | | | | | |
| BV _{CES} | Collector to Emitter Breakdown Voltage I _D = 200 μA, V _{GS} = 0V | 600 | - | - | V |
| I _C | Continuous Collector Current T _C = 100°C | - | - | 75 | A |
| I _{C(pulse)} | Pulsed Collector Current, 1ms | - | - | 225 | A |
| V _{GE} | Gate to Emitter Voltage | - | - | ±20 | V |
| I _{GES} | Gate-Emitter Leakage Current, V _{GS} = +20V | - | - | 100 | nA |
| V _{GE(th)} | Gate Threshold Voltage I _C = 1.2mA, V _{CE} = V _{GE} | 4.1 | 4.9 | 6.5 | V |
| I _{CES} | Zero Gate Voltage Collector Current V _{CE} = 600 V, V _{GS} = 0V | - | - | 40 5000 | μA |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage I _C = 75A, V _{GE} = 15V | T _J = 25°C | 1.8 | 2.2 | V |
| | | T _J = 150°C | 2.1 | - | |
| I _{C(sc)} | Short Circuit Collector Current V _{CC} = 400 V, V _{GE} = 15V, t _{SC} ≤ 5μs | - | 687 | - | A |
| C _{ies} | Input Capacitance | - | 4620 | - | pF |
| C _{oes} | Output Capacitance | - | 288 | - | |
| C _{res} | Reverse Transfer Cap. V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz | - | 137 | - | |
| t _{D(on)} | Turn On Delay Time | - | 33 | - | ns |
| t _R | Rise Time | - | 36 | - | |
| t _{D(off)} | Turn Off Delay Time | - | 330 | - | |
| t _F | Fall Time V _{CE} = 400 V, I _C = 75A, V _{GE} = 0/+15V, R _G = 5Ω, L = 100nH, C = 39pF | - | 35 | - | |
| E _{ON} | Turn on Energy Loss | - | 2.0 | - | mJ |
| E _{OFF} | Turn off Energy Loss | - | 2.5 | - | |
| E _{TS} | Total Switching Energy V _{CE} = 400 V, I _C = 75A, V _{GE} = 0/+15V, R _G = 5Ω, L = 100nH, C = 39pF | - | 4.5 | - | |
| E _{ON} | Turn on Energy Loss | - | 2.9 | - | mJ |
| E _{OFF} | Turn off Energy Loss | - | 2.9 | - | |
| E _{TS} | Total Switching Energy V _{CE} = 400 V, I _C = 75A, V _{GE} = 0/+15V, R _G = 5Ω, L = 100nH, C = 39pF | - | 5.8 | - | |
| Q _G | Total Gate Charge V _{CE} = 480 V, I _C = 75A, V _{GE} = 15V | - | 470 | - | nC |

DIODE CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|-----------------------------|---|---|-------------------|--------------|------|
| DIODE SPECIFICATIONS | | | | | |
| V _F | Diode Forward Voltage I _F = 60A | T _J = 25°C T _J = 150°C | - 1.55 1.20 | 1.80 1.45 | V |
| I _F | Continuous Forward Current | T _J = 110°C | - | 60 | A |
| I _{FRM} | Repetitive Peak Forward Surge Current t = 8.3ms (60Hz sine) | | - | 150 | A |
| I _R | Reverse Current V _R = 600V | T _J = 25°C T _J = 150°C | - | 50 500 | μA |
| t _{rr} | Reverse Recovery Time I _F = 50A, dI _F /dt = 200A/us, V _R = 200V | T _J = 25°C T _J = 125°C | - | 81 164 | ns |
| I _{RPM} | Peak Recovery Current I _F = 50A, dI _F /dt = 200A/us, V _R = 200V | T _J = 25°C T _J = 125°C | - | 7.4 17.0 | A |
| Q _{rr} | Reverse Recovery Charge I _F = 50A, dI _F /dt = 200A/us, V _R = 200V | T _J = 25°C T _J = 125°C | - | 300 1394 | nC |
| C | Total Capacitance V _R = 600V, T _J = 25°C, f = 1MHz | | - | 39 | pF |

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

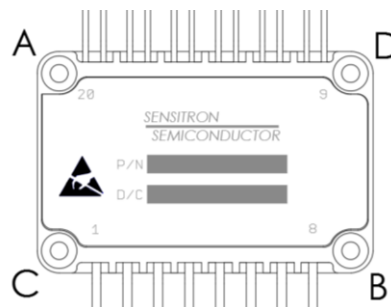
THERMAL AND MECHANICAL CHARACTERISTICS

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|--------------------|---|-----|------|------|---------|
| R _{θJB_I} | IGBT Junction-to- Base Plate Thermal Resistance Per Leg | - | 0.44 | 0.49 | °C/W |
| R _{θJB_D} | Diode Junction-to-Base Plate Thermal Resistance Per Leg | - | 0.70 | 0.77 | °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 (see installation instructions) #4 Size Screw | 3 | - | 4 | in-lbs. |
| | Weight Module | - | 15 | 20 | g |

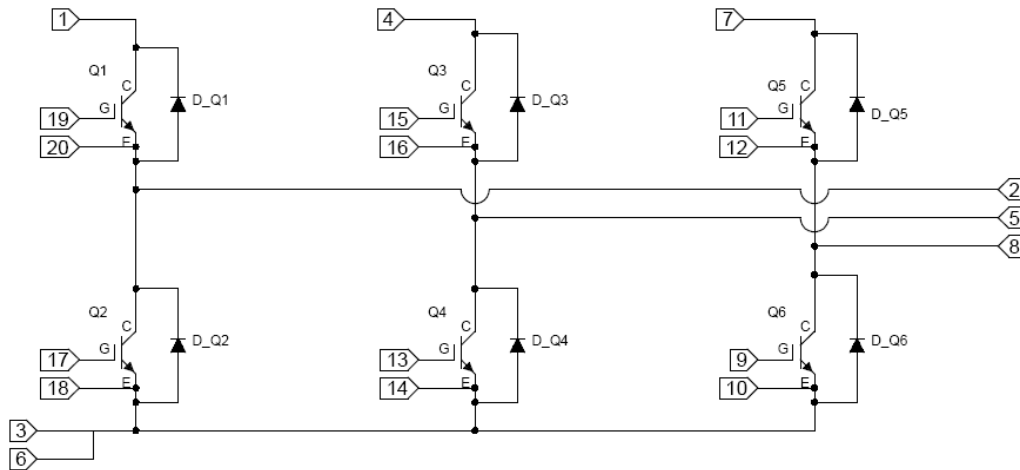
Installation instructions:

Recommended thermal interface material = Laird Tgon 805 (5 mil thick graphite pad)

1. Fasten screws to 1 to 2 in-lb of torque in the following sequence: A, B, C, D.
2. Fasten screws to final torque in the same sequence: A, B, C, D

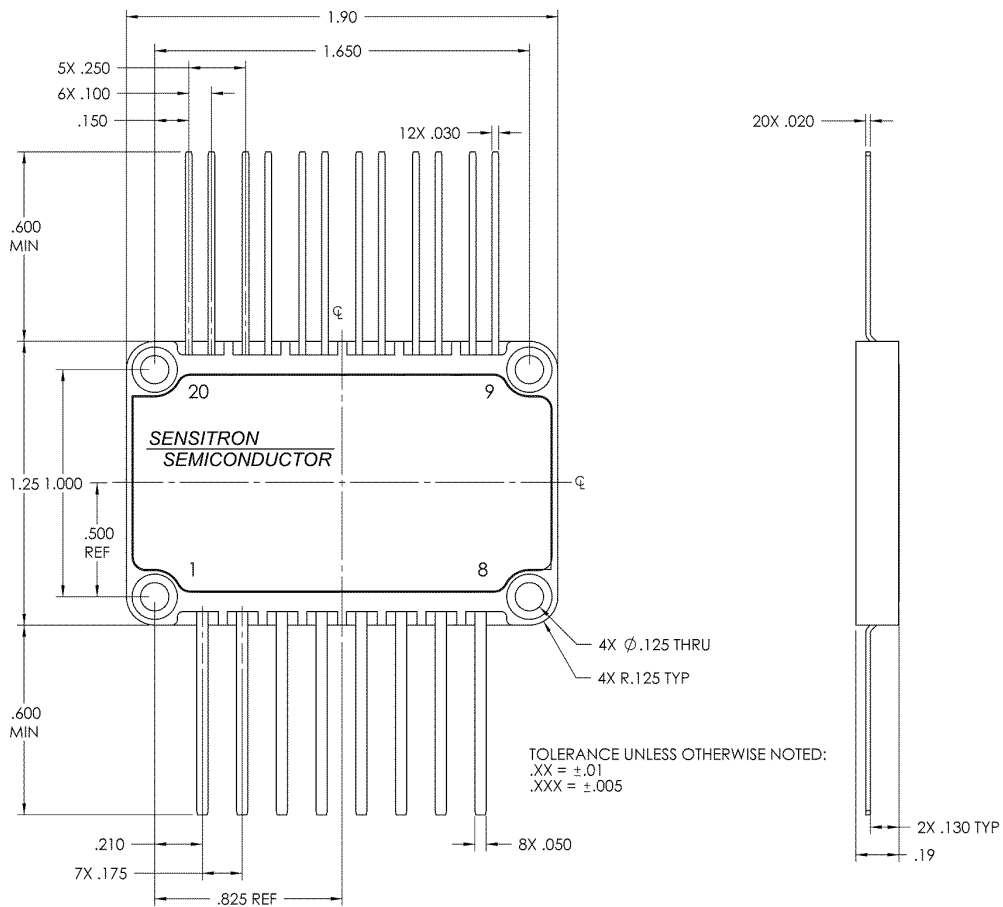


Schematic Diagram:

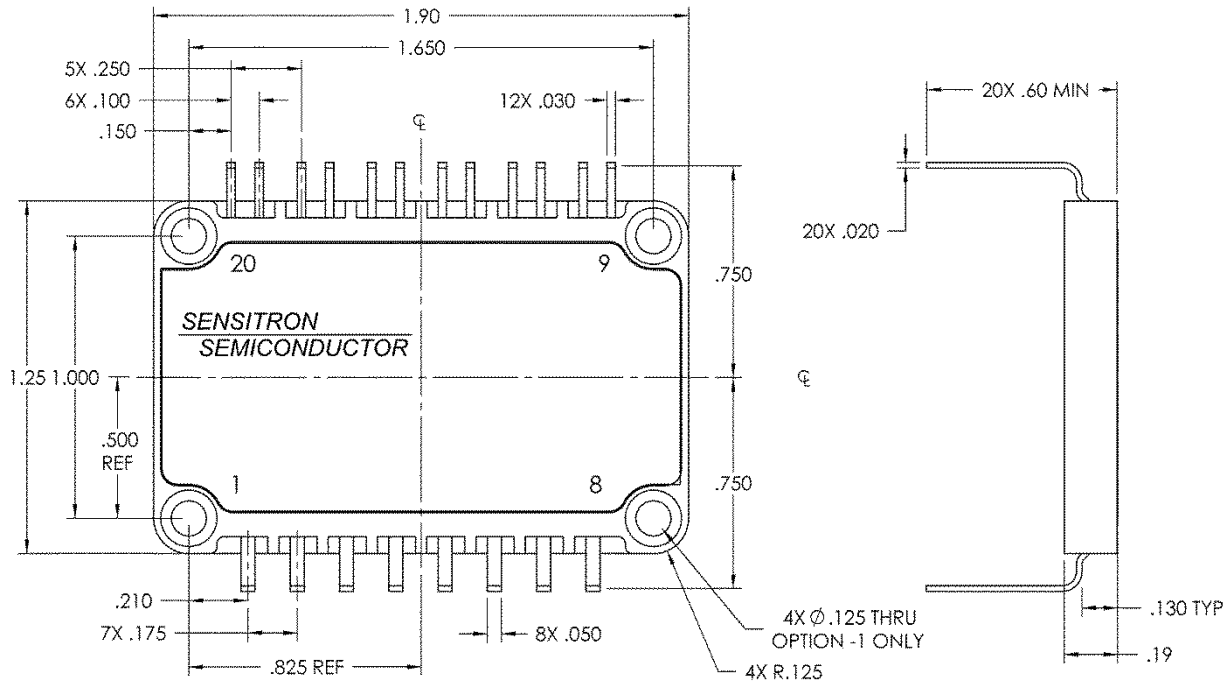


Mechanical Outline (inches):

Part Number SPM1014



Part Number SPM1014-1



TOLERANCE UNLESS OTHERWISE NOTED:
.XX = ±.01
.XXX = ±.005

Part Number Description

“SPM1014”: Straight leads

“SPM1014-1”: Leads bent up

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