micross components
transforming specialty electronics

# SiC Power BJT Double 1200 Volt 20 Amp Hermetic
MYXB21200-20GAB

## Product Overview

### Features

- Two devices in one hermetic package.
- High voltage 1200V isolation in a small package outline
- High current 20A
- High temperature 210°C
- RoHS compliant
- HMP solder tinned leads available
- Electrically isolated flange / case
- Silicon Carbide (SiC) device, gives a superior high temperature performance
- Fast temperature independent switching
- Screening options available
  - Commercial high temperature
  - In accordance with MIL-PRF-19500
  - Other options available on request
- Excellent capability to withstand short circuit

### Benefits

- High speed switching with low capacitance
- High blocking voltage with low $R_{(on)}$
- Reduction of heat sink requirements

### Applications

- Harsh environment motor drive
- Harsh environment inverter
- Induction heater
- DC-DC converters
- Aerospace power electronics

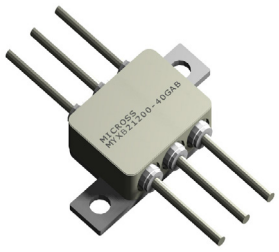


Figure 1: TO-259 (6 PIN)

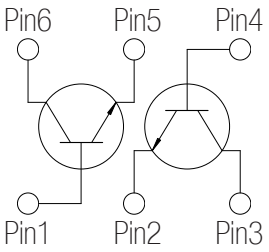



Figure 2: Circuit Diagram



## Absolute Maximum Ratings* (Per single device)

| Symbols | Parameters | Values | Units |
|---|---|---|---|
| $V_{CEO}$ | Drain Source Voltage | 1200 | V |
| $V_{EC}$ | Emitter-Collector Voltage | 30 | |
| $V_{CBO}$ | Collector-Base Voltage | 1200 | |
| $V_{EC}$ | Emitter-Base Voltage | 30 | |
| $I_C$ | Constant Collector Current | 20 | A |
| $I_{CM}$ | Pulsed Collector Current ($t_p$ < 10ms) | 40 | |
| $I_B$ | Constant Base Current (DC) | 3 | |
| $I_{BM}$ | Pulsed Base Current ($t_p$ < 10ms) | 6 | |
| $T_{stg}$ | Storage Temperature | -55 to 210 | °C |
| $T_J$ | Operating Junction Temperature | 210 | |
| $P_{TOT}$ | Total Power Dissipation | 154 | W |

## Thermal Properties

| Symbols | Parameters | Values | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case | 1.2 | °C / Watt |



March 2014 Rev 1.0

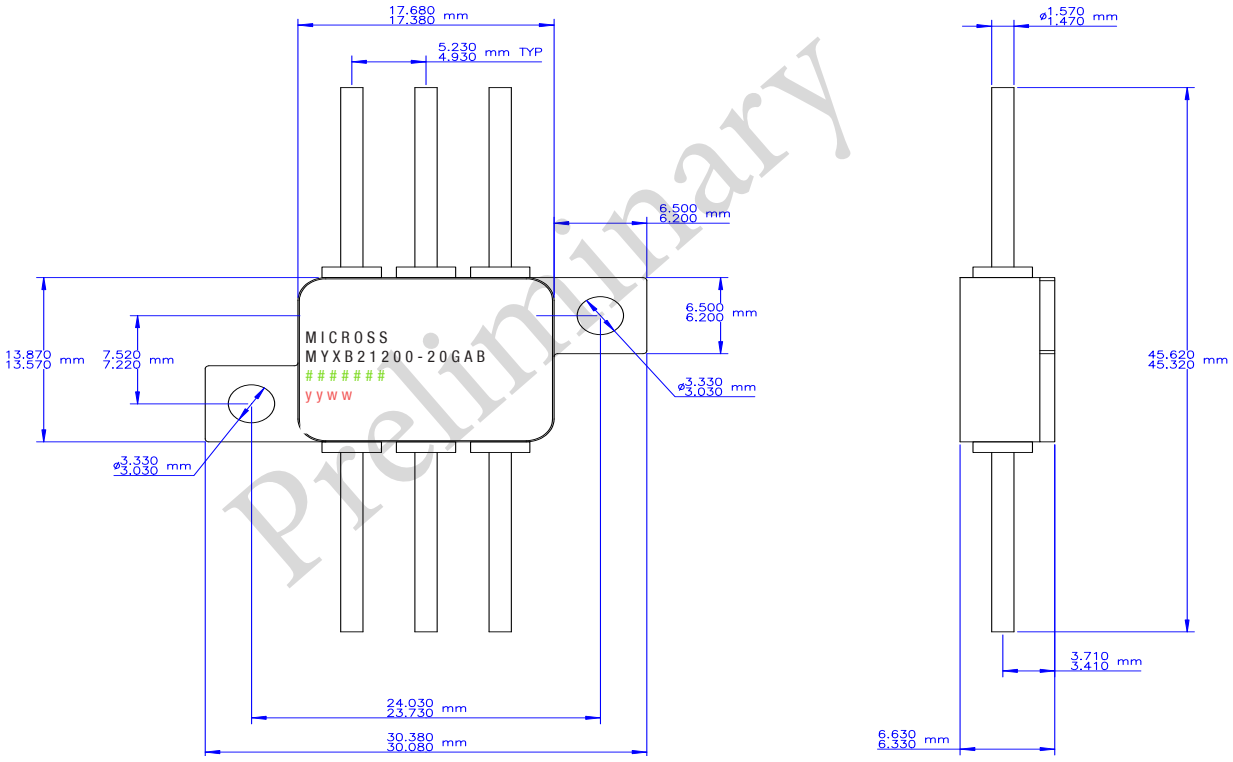
## Electrical Characteristics (Per single device)

| Symbols | Parameters | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| $I_{CEO}$ | Collector cut off current | $T_J$ = 25°C, $V_{CE}$ = 600 V | | TBD | | nA |
| | | $T_J$ = 25°C, $V_{CE}$ = 1200 V | | TBD | | |
| | | $T_J$ = 210°C, $V_{CE}$ = 600 V | | TBD | | |
| | | $T_J$ = 210°C, $V_{CE}$ = 1200 V | | TBD | | |
| $h_{FE}$ | DC Current gain | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 25°C, $I_C$ = 3A | | 20 | | |
| | | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 25°C, $I_C$ = 20A | | 50 | | |
| | | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 150°C, $I_C$ = 3A | | 15 | | |
| | | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 150°C, $I_C$ = 20A | | 35 | | |
| | | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 210°C, $I_C$ = 3A | | TBD | | |
| | | Pulse Duration = 300µs, $V_{CE}$ = 2.5 V, 210°C, $I_C$ = 20A | | TBD | | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation voltage | Pulse Duration = 300µs, $I_C$ = 20 A, $I_B$ = 2 A, $T_J$ = 25°C | | 0.5 | | V |
| | | Pulse Duration = 300µs, $I_C$ = 20 A, $I_B$ = 2 A, $T_J$ = 150°C | | 0.75 | | |
| | | Pulse Duration = 300µs, $I_C$ = 20 A, $I_B$ = 2 A, $T_J$ = 210°C | | 1.0 | | |



## Dynamic Characteristics (Per single device)

| Symbols | Parameters | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| $C_{BC}$ | Base-Collector capacitance | $V_{CB}$ = 0 V, $T_J$ = 25°C, f = 100kHz | | 2500 | | pF |
| | | $V_{CB}$ = 40 V, $T_J$ = 25°C, f = 100kHz | | 650 | | |
| $C_{BE}$ | Base-Emitter capacitance | $V_{BE}$ = 0 V, $T_J$ = 25°C, f = 100kHz | | 6 | | nF |
| | | $V_{BE}$ = 3.2 V, $T_J$ = 25°C, f = 100kHz | | 16 | | |
| $Q_{BC}$ | Base-Collector charge | $V_{CB}$ = 800 V, $T_J$ = 25°C, f = 100kHz | | 35 | | nC |
| $Q_{BE}$ | Base-Emitter charge | $V_{BE}$ = 3.2 V, $T_J$ = 25°C, f = 100kHz | | 0.5 | | nC |






**GA** = TO-259 Package Type
**#######** = Batch code
**yyww** = Date code

yy = year
ww = week

(Font and text colour is not representative of actual parts produced)

Figure 3: Package Dimensions & Part Marking

## * Absolute Maximum Ratings Disclaimer

Stresses greater than the values listed under the Absolute Maximum Ratings table may cause permanent damage to the device. These values are stress ratings, functional operation of the device at these or conditions greater than those listed is not implied herein. Exposure to absolute maximum conditions for any duration may affect device reliability and operational life.



## Document Title

Silicon Carbide Power BJT Double1200 Volt 20 Amp Hermetic MYXB21200-20GAB

## Revision History

| Revision # | History | Release Date | Status |
|---|---|---|---|
| 1.0 | Initial release | March 2014 | Preliminary |