

THREE PHASE DIODE+THYRISTOR

DFA50BA80/160

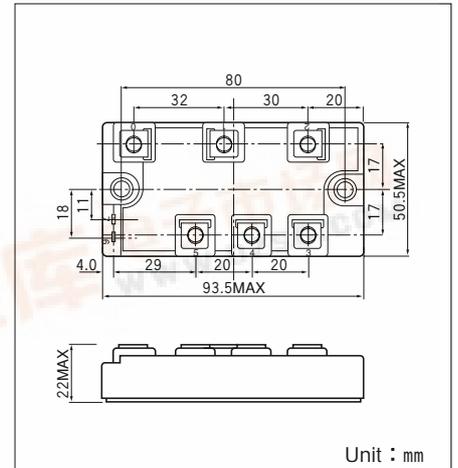
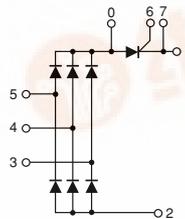
SanRex Power Module, **DFA50BA**, is complex isolated module which is designed for rash current circuit.

It contains six diodes connected in a three phase bridge configuration, and a thyristor connected to a direct current line.

- This Module is designed very compactly. Because diode module and thyristor put together.
- This Module is also isolated type between electorode terminal and mounting base. So you can put this Module and other one together in a same fin.

(Application)

- Inverter for AC or DC motor control, Current stabilized power supply, Switching power supply.



DIODE

Maximum Ratings

(Tj=25°C unless otherwise specified)

| Symbol | Item | Ratings | | Unit |
|--------|-------------------------------------|-----------|------------|------|
| | | DFA50BA80 | DFA50BA160 | |
| VRRM | Repetitive Peak Reverse Voltage | 800 | 1600 | V |
| VRSM | Non-Repetitive Peak Reverse Voltage | 960 | 1700 | V |

| Symbol | Item | Conditions | Ratings | Unit | |
|--------|--------------------------------------|---|-----------------------------------|----------|-----------------|
| Id | Output Current (D.C.) | Three phase full wave, Tc=117°C | 50 | A | |
| IfSM | Surge forward current | 1cycle, 50/60Hz, peak value, non-repetitive | 730/800 | A | |
| Tj | Operating Junction Temperature | | -40 to +150 | °C | |
| Tstg | Storage Temperature | | -40 to +125 | °C | |
| Viso | Isolation Breakdown Voltage (R.M.S.) | A.C. 1minute | 2500 | V | |
| | Mounting Torque | Mounting (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | N·m (kgf·cm) |
| | | Terminal (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | |
| | Mass | Typical Value | 150 | g | |

Electrical Characteristics

| Symbol | Item | Conditions | Ratings | Unit |
|----------|--------------------------------------|-----------------------------------|---------|------|
| IRRM | Repetitive Peak Reverse Current,max. | Tj=150°C, VR=VRRM | 8 | mA |
| VFM | Forward Voltage Drop,max. | Tj=25°C, IF=50A Inst. measurement | 1.30 | V |
| Rth(j-c) | Thermal Impedance, max. | Junction to Case (TOTAL) | 0.25 | °C/W |
| Rth(c-f) | Thermal Impedance, max. | Case to Fin | 0.10 | °C/W |



DFA50BA80/160

● THYRISTOR

■ Maximum Ratings

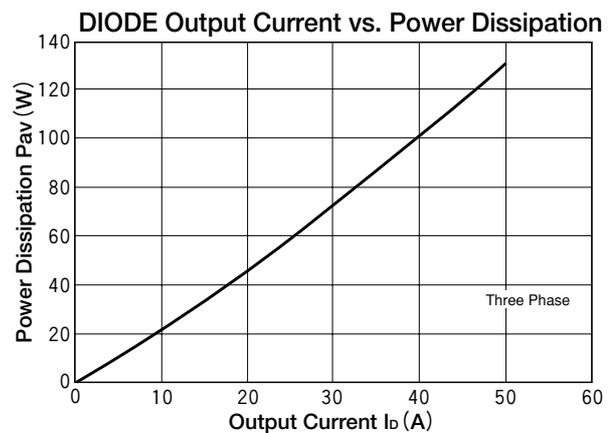
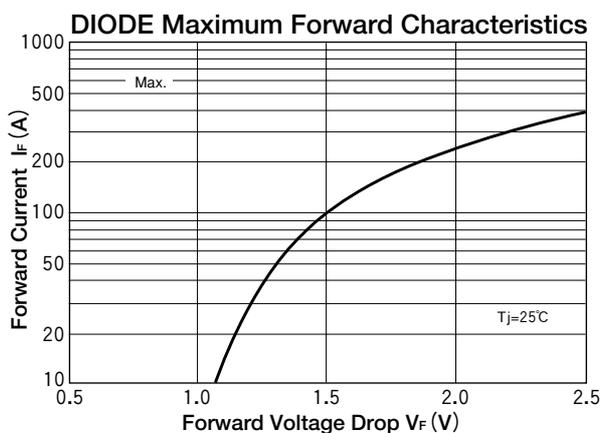
(T_j=25°C unless otherwise specified)

| Symbol | Item | Ratings | | Unit |
|------------------|-------------------------------------|-----------|------------|------|
| | | DFA50BA80 | DFA50BA160 | |
| V _{RRM} | Repetitive Peak Reverse Voltage | 800 | 1600 | V |
| V _{RSM} | Non-Repetitive Peak Reverse Voltage | 960 | 1700 | V |
| V _{DRM} | Repetitive Peak off-State Voltage | 800 | 1600 | V |

| Symbol | Item | Conditions | Ratings | Unit | |
|--------------------|---|--|-----------------------------------|------------------|-----------------|
| I _{T(AV)} | Average On-State Current | Singl phase half wave. 180° conduction, T _c =85°C | 50 | A | |
| I _{TSM} | Surge On-State Current | 1 cycle, 50/60Hz, peak value, non-repetitive | 730/800 | A | |
| I ² t | I ² t | | 2660 | A ² S | |
| di/dt | Critical Rate of Rise of On-State Current | I _G =100mA, V _D =1/2V _{DRM} , di _G /dt=0.1A/μs | 150 | A/μs | |
| V _{ISO} | Isolation Breakdown Voltage (R.M.S.) | A.C. 1minute | 2500 | V | |
| T _j | Operating Junction Temperature | | -40 to +135 | °C | |
| T _{stg} | Storage Temperature | | -40 to +125 | °C | |
| | Mounting Torque | Mounting (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | N·m (kgf·cm) |
| | | Terminal (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | |
| | Mass | Typical Value | 150 | g | |

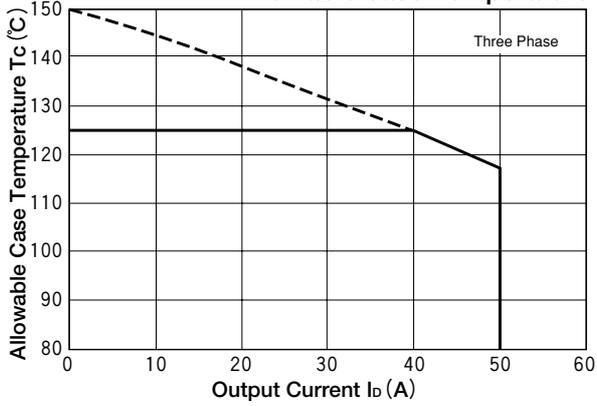
■ Electrical Characteristics

| Symbol | Item | Conditions | Ratings | Unit |
|----------------------|---|---|---------|------|
| I _{DRM} | Repetitive Peak Off-State Current,max. | T _j =135°C, V _D =V _{DRM} | 50 | mA |
| I _{RRM} | Repetitive Peak Reverse Current,max. | T _j =135°C, V _D =V _{RRM} | 50 | mA |
| V _{TM} | Peak On-State Voltage,max. | T _j =25°C, I _{TM} =50A, Inst. measurement | 1.25 | V |
| I _{GT} | Gate Trigger Current,max. | V _D =6V, I _T =1A | 70 | mA |
| V _{GT} | Gate Trigger Voltage,max. | V _D =6V, I _T =1A | 3 | V |
| dv/dt | Critical Rate of Rise of Off-State Voltage,min. | T _j =125°C, V _D =2/3V _{DRM} | 500 | V/μs |
| R _{th(j-c)} | Thermal Impedance, max. | Junction to Case | 0.80 | °C/W |
| R _{th(c-f)} | Thermal Impedance, max. | Case to Fin | 0.10 | °C/W |

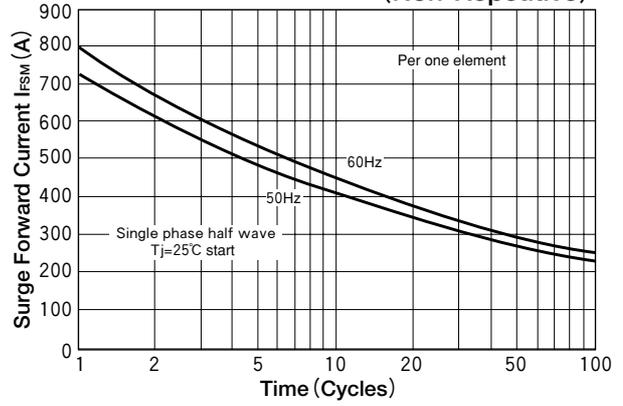


DFA50BA80/160

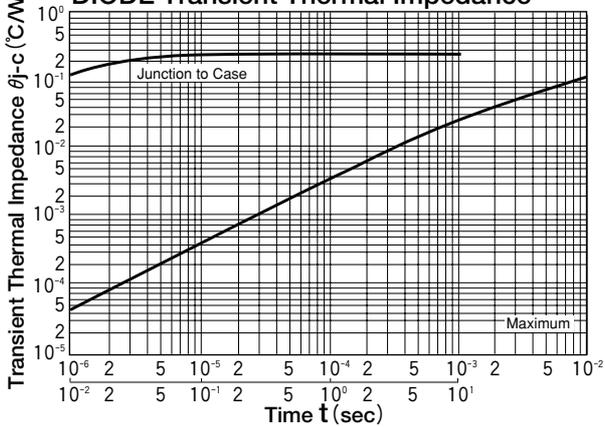
DIODE Output Current vs. Allowable case Temperature



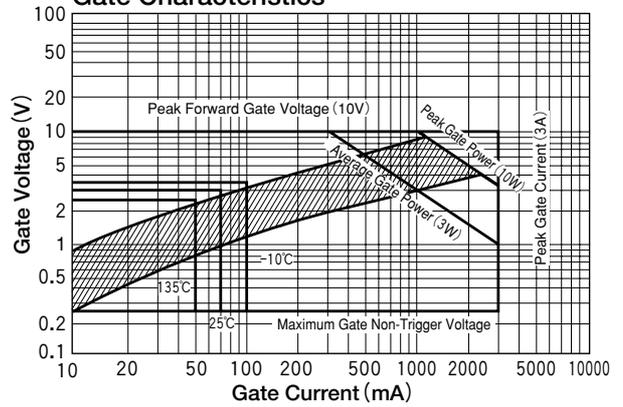
Surge Forward Current Rating (Non-Repetitive)



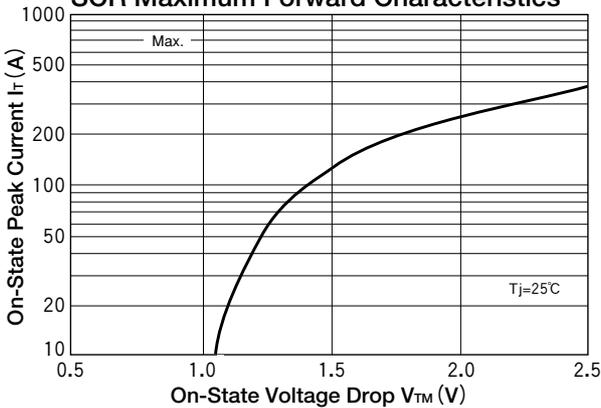
DIODE Transient Thermal Impedance



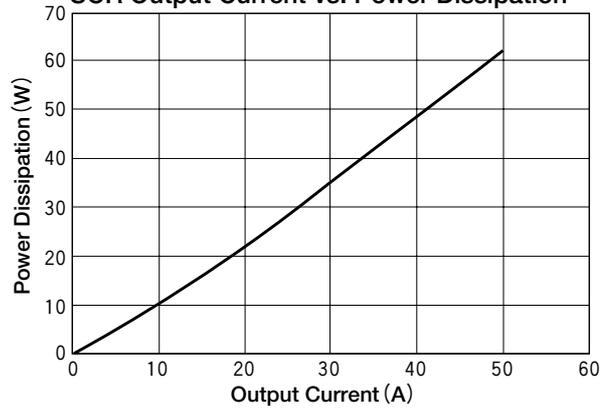
Gate Characteristics



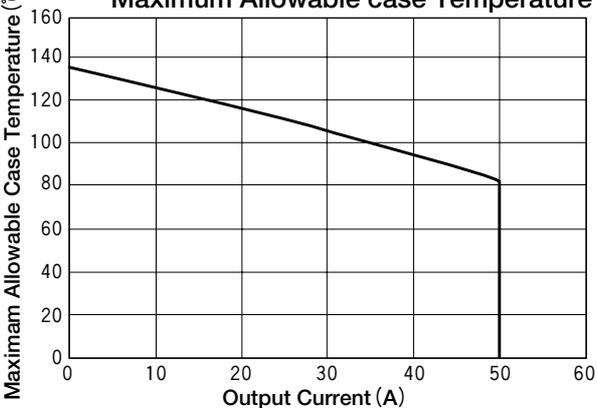
SCR Maximum Forward Characteristics



SCR Output Current vs. Power Dissipation



SCR Output Current vs. Maximum Allowable case Temperature



SCR Transient Thermal Impedance

