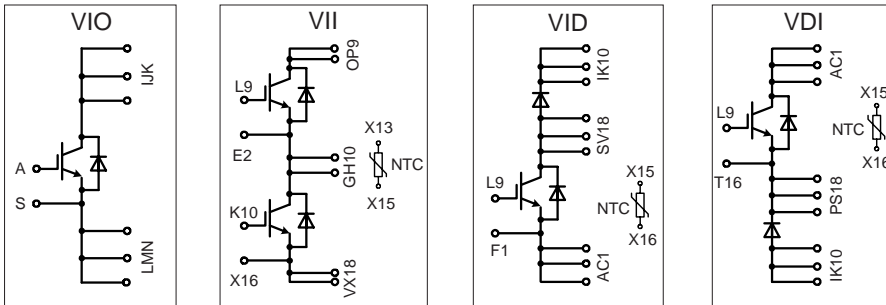


IGBT Modules in ECO-PAC 2

Short Circuit SOA Capability
 Square RBSOA

$I_{C25} = 93 \text{ A}$
 $V_{CES} = 600 \text{ V}$
 $V_{CE(sat) \text{ typ.}} = 2.4 \text{ V}$

Preliminary data sheet



Pin arrangement see outlines

IGBTs

| Symbol | Conditions | Maximum Ratings | |
|-----------------------|--|-----------------|---------------|
| V_{CES} | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$ | 600 | V |
| V_{GES} | | ± 20 | V |
| I_{C25} | $T_C = 25^{\circ}\text{C}$ | 93 | A |
| I_{C80} | $T_C = 80^{\circ}\text{C}$ | 63 | A |
| I_{CM} V_{CEK} | $V_{GE} = \pm 15 \text{ V}; R_G = 15 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$ | 150 | A |
| | | V_{CES} | |
| t_{SC} (SCSOA) | $V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 15 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive | 10 | μs |
| P_{tot} | $T_C = 25^{\circ}\text{C}$ | 294 | W |

Features

- NPT IGBT's
 - positive temperature coefficient of saturation voltage
 - fast switching
- FRED diodes
 - fast reverse recovery
 - low forward voltage
- Industry Standard Package
 - solderable pins for PCB mounting
 - isolated DCB ceramic base plate

Advantages

- space and weight savings
- reduced protection circuits
- leads with expansion bend for stress relief

Typical Applications

- AC and DC motor control
- AC servo and robot drives
- power supplies
- welding inverters

| Symbol | Conditions | Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified) | | | |
|--|--|--|------------------------|----------------------|-----------------|
| | | min. | typ. | max. | |
| $V_{CE(sat)}$ | $I_C = 100 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | 2.4 2.8 | V V | |
| $V_{GE(th)}$ | $I_C = 1.5 \text{ mA}; V_{GE} = V_{CE}$ | 4.5 | | V | |
| I_{CES} | $V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | | 1.4 mA 6.5 mA | |
| I_{GES} | $V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$ | | | 150 nA | |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off} | Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 300 \text{ V}; I_C = 60 \text{ A}$ $V_{GE} = 15/0 \text{ V}; R_G = 15 \Omega$ | | 150 60 450 40 | ns ns ns ns | |
| | | | | 3.2 2.2 | mJ mJ |
| C_{ies} | | $V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$ | | 4.2 | nF |
| R_{thJC} R_{thJH} | | (per IGBT) with heatsink compound ($0.42 \text{ K/m.K}; 50 \mu\text{m}$) | | 0.85 | 0.43 K/W K/W |

IXYS reserves the right to change limits, test conditions and dimensions.

Reverse diodes (FRED)

| Symbol | Conditions | Maximum Ratings | |
|-----------|--------------------------|-----------------|---|
| I_{F25} | $T_C = 25^\circ\text{C}$ | 134 | A |
| I_{F80} | $T_C = 80^\circ\text{C}$ | 82 | A |

| Symbol | Conditions | Characteristic Values | | |
|--------------------------|--|-----------------------|------|------------|
| | | min. | typ. | max. |
| V_F | $I_F = 60\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$ | 1.78 | 1.99 | V |
| I_{RM} t_{rr} | $I_F = 60\text{ A}; di_F/dt = 500\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V}$ | 28 | 100 | A ns |
| R_{thJC} R_{thJH} | with heatsink compound (0.42 K/m.K; 50 μm) | 0.66 | 1.32 | K/W K/W |

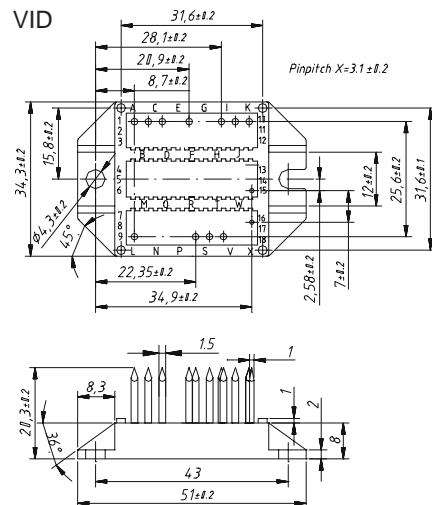
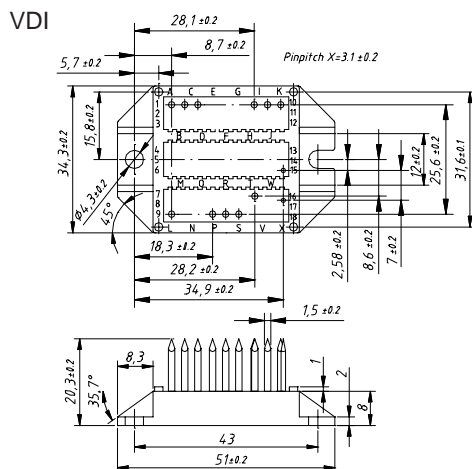
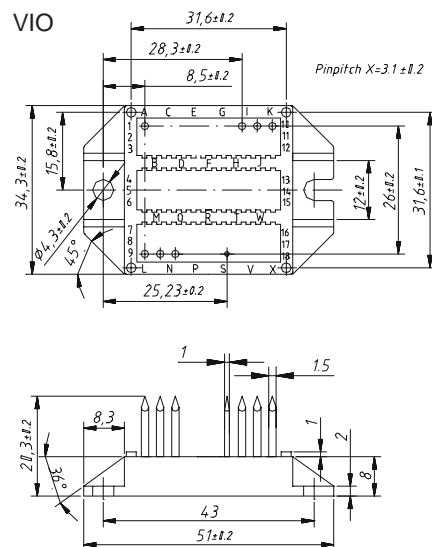
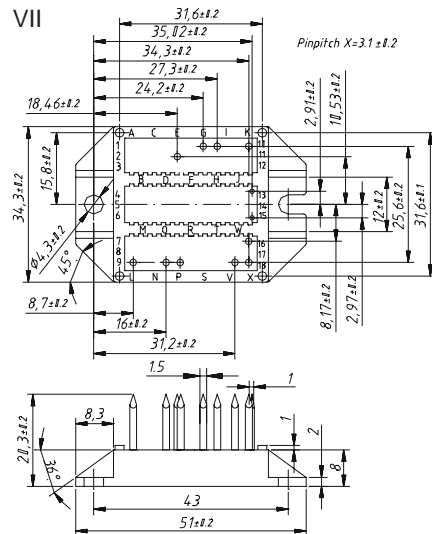
Temperature Sensor NTC

| Symbol | Conditions | Characteristic Values | | |
|-------------|------------------------|-----------------------|------|------------|
| | | min. | typ. | max. |
| R_{25} | $T = 25^\circ\text{C}$ | 4.75 | 5.0 | k Ω |
| $B_{25/50}$ | | | 3375 | K |

Module

| Symbol | Conditions | Maximum Ratings | |
|-----------------------|--|-----------------|------------------|
| T_{VJ} T_{stg} | | -40...+150 | $^\circ\text{C}$ |
| V_{ISOL} | $I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$ | 3000 | V~ |
| M_d | mounting torque (M4) | 1.5 - 2.0 | Nm lb.in. |
| a | Max. allowable acceleration | 50 | m/s^2 |

| Symbol | Conditions | Characteristic Values | | |
|---------------|--|-----------------------|------|------|
| | | min. | typ. | max. |
| d_s | Creepage distance on surface (Pin to heatsink) | 11.2 | | mm |
| d_A | Strike distance in air (Pin to heatsink) | 11.2 | | mm |
| Weight | | 24 | | g |



Data according to IEC 60747 and refer to a single transistor or diode unless otherwise stated. IXYS reserves the right to change limits, test conditions and dimensions.