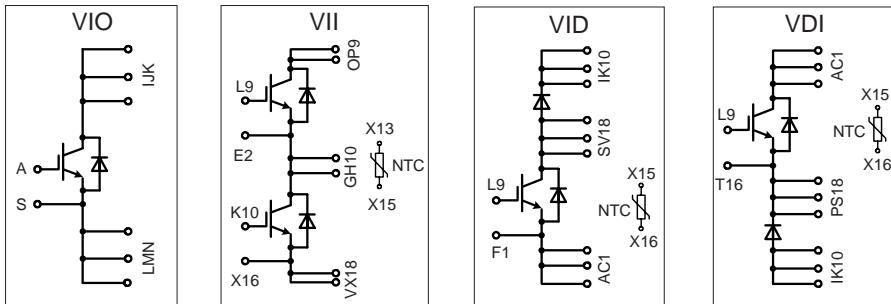


IGBT Modules in ECO-PAC 2

Short Circuit SOA Capability
Square RBSOA

Preliminary data sheet



Pin arrangement see outlines

IGBTs

Symbol	Conditions	Maximum Ratings		
V_{CES}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
V_{GES}		± 20		V
I_{C25}	$T_c = 25^\circ\text{C}$	121		A
I_{C80}	$T_c = 80^\circ\text{C}$	83		A
I_{CM}	$V_{GE} = \pm 15 \text{ V}$; $R_G = 2.2 \Omega$; $T_{VJ} = 125^\circ\text{C}$	200		A
V_{CEK}	RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	360		V
t_{sc} (SCSOA)	$V_{CE} = V_{CES}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 2.2 \Omega$; $T_{VJ} = 125^\circ\text{C}$ non-repetitive	10		μs
P_{tot}	$T_c = 25^\circ\text{C}$	379		W

Symbol	Conditions	Characteristic Values		
		($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_c = 130 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	2.3 2.6	2.9 V	V
$V_{GE(th)}$	$I_c = 1.5 \text{ mA}$; $V_{GE} = V_{CE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.2 mA 7.5 mA	
I_{GES}	$V_{CE} = 0 \text{ V}$; $V_{GE} = \pm 20 \text{ V}$		400 nA	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 300 \text{ V}$; $I_c = 80 \text{ A}$ $V_{GE} = 15/0 \text{ V}$; $R_G = 2.2 \Omega$	25 11 150 30 0.8 2.3	ns ns ns ns 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 K/m.K; 50 μm)	0.66	0.33 K/W K/W	

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I_{C25} = 121 A
 V_{CES} = 600 V
 $V_{CE(\text{sat}) \text{ typ.}}$ = 2.3 V

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

Reverse diodes (FRED)

Symbol	Conditions	Maximum Ratings	
I _{F25}	T _C = 25°C	134.0	A
I _{F80}	T _C = 80°C	82.3	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 80 \text{ A}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	1.85 1.40	2.06	V_V
I_{RM} t_{rr}	$\left. \begin{array}{l} I_F = 60 \text{ A}; dI_F/dt = 500 \text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C} \\ V_R = 300 \text{ V}; V_{GE} = 0 \text{ V} \end{array} \right\}$	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

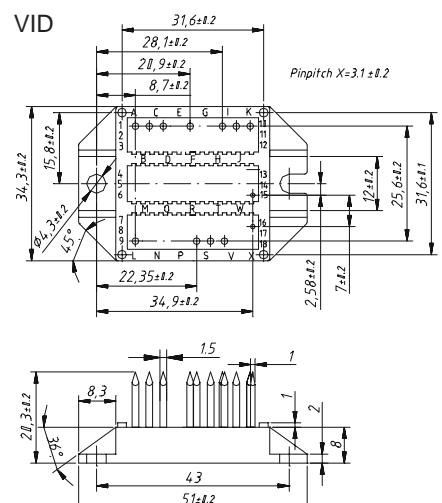
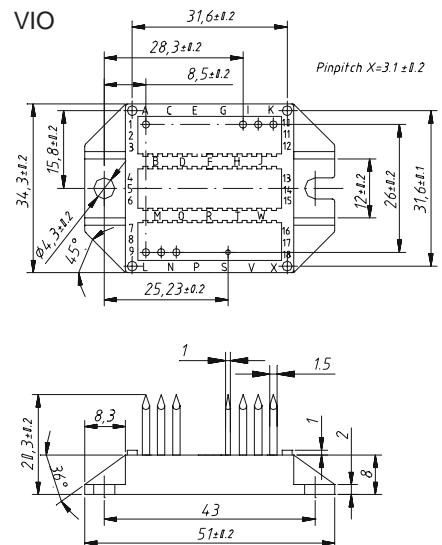
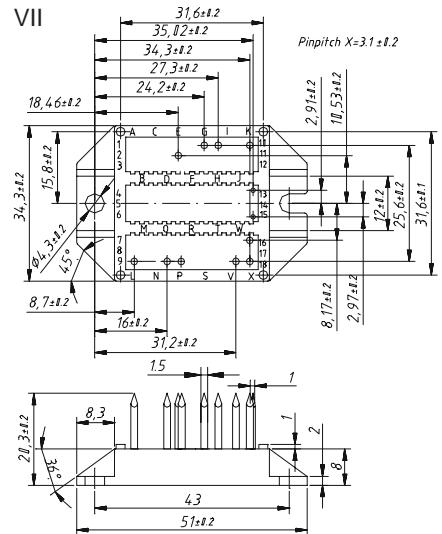
Temperature Sensor NTC

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R_{25}	T = 25°C	4.75	5.0	5.25 kΩ
$B_{25/50}$			3375	K

Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	°C
T_{stg}		-40...+150	°C
V_{ISOL}	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	3000	V~
M_d	mounting torque (M4)	1.5 - 2.0 14 - 18	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.
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