

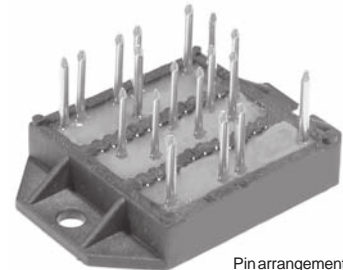
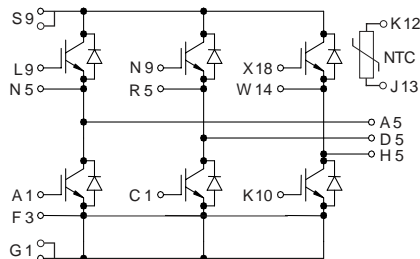
# IGBT Module

Sixpack in ECO-PAC 2

## VWI 6-12P1

$I_{C25} = 6 \text{ A}$   
 $V_{CES} = 1200 \text{ V}$   
 $V_{CE(sat) \text{ typ.}} = 3.9 \text{ V}$

### Preliminary data



Pin arrangement see outlines

### IGBTs

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	1200	V
$V_{GES}$		$\pm 20$	V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$	6	A
$I_{C80}$	$T_C = 80^{\circ}\text{C}$	4.1	A
$I_{CM}$ $V_{CEK}$	$V_{GE} = 15/0 \text{ V}; R_G = 89 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	9.6	A
		$V_{CES}$	
$t_{SC}$ (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = 15/0 \text{ V}; R_G = 89 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	$\mu\text{s}$
$P_{tot}$	$T_C = 25^{\circ}\text{C}$	40	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

### Typical Applications

- AC drives
- power supplies with power factor correction

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 4 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	3.9	4.6	V
$V_{GE(th)}$	$I_C = 0.1 \text{ mA}; V_{GE} = V_{CE}$	3		5 V
$I_{CES}$	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $V_{CE} = 960 \text{ V}; V_{GE} = 0 \text{ V}; T_{VJ} = 125^{\circ}\text{C}$	0.5		0.1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			100 nA
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 4 \text{ A}$ $V_{GE} = 15/0 \text{ V}; R_G = 89 \Omega$		30	ns
			20	ns
			290	ns
			90	ns
$E_{on}$ $E_{off}$			0.4	mJ
			0.2	mJ
$C_{ies}$	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		205	pF
$Q_{Gon}$	$V_{CE} = 960 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 2 \text{ A}$		11	nC
$R_{thJC}$	(per IGBT)			3.1 K/W
$R_{thJH}$	(per IGBT) with heatsink compound		6.2	K/W

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**Diodes**

Symbol	Conditions	Maximum Ratings	
$I_{F25}$	$T_C = 25^\circ\text{C}$	12	A
$I_{F80}$	$T_C = 80^\circ\text{C}$	8	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 4\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		2.4 2.0	V V
$I_{RM}$ $t_{rr}$	$I_F = \dots\text{ A}; di_F/dt = \dots\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V}$		tbd tbd	A ns
$R_{thJC}$ $R_{thJH}$	(per diode) (per diode) with heatsink compound		7.6	3.8 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	5.25 k $\Omega$
$B_{25/50}$			3375	K

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$		-40...+150	$^\circ\text{C}$
$T_{stg}$		-40...+125	$^\circ\text{C}$
$V_{ISOL}$	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	3000	V~
$M_d$	mounting torque (M4)	1.5 - 2.0 14 - 18	Nm lb.in.
$a$	Max. allowable acceleration	50	$\text{m/s}^2$

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
<b>Weight</b>			24	g

**Dimensions in mm (1 mm = 0.0394")**
