



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

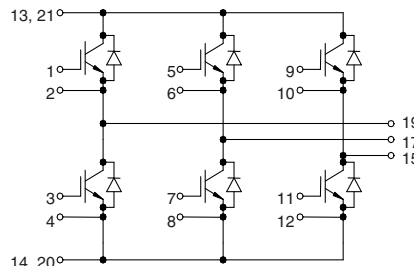


# IGBT Modules

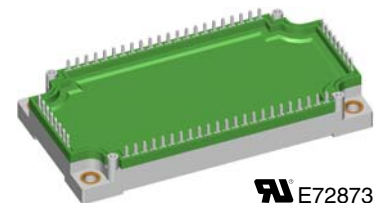
## Sixpack

Short Circuit SOA Capability  
Square RBSOA

Preliminary data



$I_{C25} = 225 \text{ A}$   
 $V_{CES} = 600 \text{ V}$   
 $V_{CE(sat) \text{ typ.}} = 2.0 \text{ V}$



**IXYS** E72873

See outline drawing for pin arrangement

IGBTs			
Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
$V_{GES}$		$\pm 20$	V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$	225	A
$I_{C80}$	$T_C = 80^{\circ}\text{C}$	155	A
<b>RBSOA</b>	$V_{GE} = \pm 15 \text{ V}; R_G = 1.5 \Omega; T_{VJ} = 125^{\circ}\text{C}$ Clamped inductive load; $L = 100 \mu\text{H}$	$I_{CM} = 400$ $V_{CEK} \leq V_{CES}$	A
$t_{SC}$ <b>(SCSOA)</b>	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 1.5 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	$\mu\text{s}$
$P_{tot}$	$T_C = 25^{\circ}\text{C}$	675	W

### Features

- €NPT IGBT technology
- €low saturation voltage
- €low switching losses
- €switching frequency up to 30 kHz
- €square RBSOA, no latch up
- €high short circuit capability
- €positive temperature coefficient for easy parallelling
- €MOS input, voltage controlled
- €ultra fast free wheeling diodes
- €solderable pins for PCB mounting
- €package with copper base plate

### Advantages

- €space savings
- €reduced protection circuits
- €package designed for wave soldering

### Typical Applications

- €AC motor control
- €AC servo and robot drives
- €power supplies

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 200 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.0 2.3	V V	
$V_{GE(th)}$	$I_C = 4 \text{ mA}; V_{GE} = V_{CE}$	4.5		6.5 V	
$I_{CES}$	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1.5	1.8 mA 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, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 300 \text{ V}; I_C = 200 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 1.5 \Omega$		180 50 300 40 4.6 6.3	ns ns ns ns mJ mJ	
$C_{ies}$		$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		9.0	nF
$Q_{Gon}$		$V_{CE} = 300 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 200 \text{ A}$		670	nC
$R_{thJC}$		(per IGBT)			0.18 K/W

### Diodes

Symbol	Conditions	Maximum Ratings	
$I_{F25}$	$T_C = 25^\circ\text{C}$	260	A
$I_{F80}$	$T_C = 80^\circ\text{C}$	165	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 200\text{ A}; V_{GE} = 0\text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	1.9	2.1	V
$I_{RM}$ $t_{rr}$	$I_F = 120\text{ A}; di_F/dt = -1000\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V}$	56		A
		100		ns
$R_{thJC}$	(per diode)			0.3 K/W

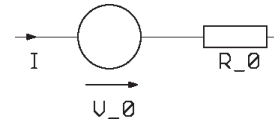
### Module

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-40...+125	°C
$T_{JM}$		+150	°C
$T_{stg}$		-40...+125	°C
$V_{ISOL}$	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	2500	V~
$M_d$	Mounting torque (M5)	3 - 6	Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{pin-chip}$			1.8	mΩ
$d_S$	Creepage distance on surface	10		mm
$d_A$	Strike distance in air	10		mm
$R_{thCH}$	with heatsink compound		0.01	K/W
Weight			300	g

### Equivalent Circuits for Simulation

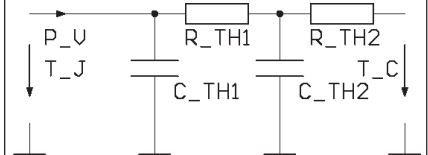
#### Conduction



IGBT (typ. at  $V_{GE} = 15\text{ V}; T_J = 125^\circ\text{C}$ )  
 $V_0 = 1.1\text{ V}; R_0 = 6\text{ m}\Omega$

Free wheeling Diode (typ. at  $T_J = 125^\circ\text{C}$ )  
 $V_0 = 1.1\text{ V}; R_0 = 2\text{ m}\Omega$

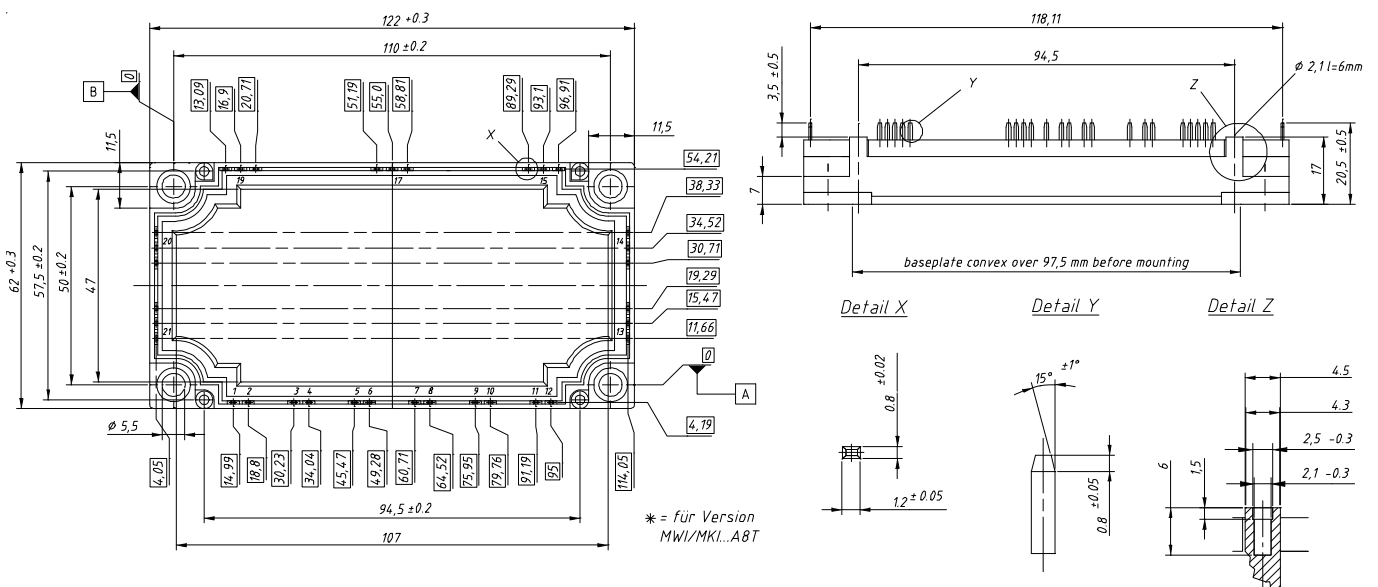
#### Thermal Response



IGBT (typ.)  
 $C_{th1} = 0.397\text{ J/K}; R_{th1} = 0.131\text{ K/W}$   
 $C_{th2} = 2.243\text{ J/K}; R_{th2} = 0.049\text{ K/W}$

Free wheeling Diode (typ.)  
 $C_{th1} = 0.281\text{ J/K}; R_{th1} = 0.236\text{ K/W}$   
 $C_{th2} = 1.945\text{ J/K}; R_{th2} = 0.064\text{ K/W}$

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



20070912a