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!

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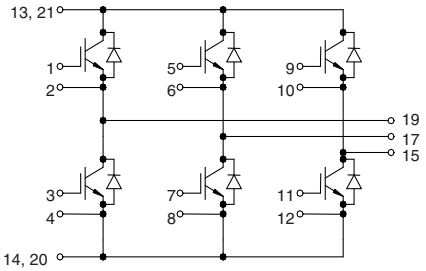
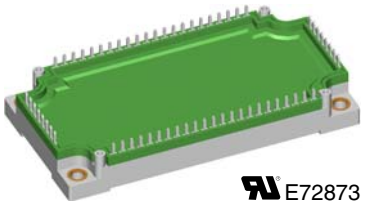
IGBT Modules
Sixpack

Short Circuit SOA Capability
Square RBSOA

Preliminary data

I_{C25} = 170 A
V_{CES} = 600 V
$V_{CE(sat)\ typ.}$ = 2.0 V





See outline drawing for pin arrangement

IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	T_{VJ} = 25°C to 150°C	600	V
V_{GES}		± 20	V
I_{C25}	T_C = 25°C	170	A
I_{C80}	T_C = 80°C	115	A
RBSOA	V_{GE} = ±15 V; R_G = 1.5 Ω; T_{VJ} = 125°C Clamped inductive load; L = 100 µH	I_{CM} = 300 $V_{CEK} \le V_{CES}$	A
t_{SC} (SCSOA)	$V_{CE} = V_{CES}$; V_{GE} = ±15 V; R_G = 1.5 Ω; T_{VJ} = 125°C non-repetitive	10	µs
P_{tot}	T_C = 25°C	515	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{CE(sat)}$	I_C = 150 A; V_{GE} = 15 V; T_{VJ} = 25°C		2.0	2.5	V
	T_{VJ} = 125°C		2.3		V
$V_{GE(th)}$	I_C = 3 mA; $V_{GE} = V_{CE}$	4.5		6.5	V
I_{CES}	$V_{CE} = V_{CES}$; V_{GE} = 0 V; T_{VJ} = 25°C			1.5	mA
	T_{VJ} = 125°C		1.1		mA
I_{GES}	V_{CE} = 0 V; V_{GE} = ± 20 V			400	nA
$t_{d(on)}$	Inductive load, T_{VJ} = 125°C V_{CE} = 300 V; I_C = 150 A V_{GE} = ±15 V; R_G = 1.5 Ω		125		ns
t_r			30		ns
$t_{d(off)}$			225		ns
t_f			35		ns
E_{on}			2.3		mJ
E_{off}			4.6		mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz		6.5		nF
Q_{Gon}	V_{CE} = 300V; V_{GE} = 15 V; I_C = 150 A		520		nC
R_{thJC}	(per IGBT)			0.24	K/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

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

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Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	T_C = 25°C	210	A
I_{F80}	T_C = 80°C	130	A

Symbol	Conditions	Characteristic Values min.	typ.	max.	
V_F	I_F = 150 A; V_{GE} = 0 V; T_{VJ} = 25°C		1.9	2.0	V
	T_{VJ} = 125°C		1.4		V
I_{RM}	I_F = 150 A; di_F/dt = -750 A/µs; T_{VJ} = 125°C		37		A
t_{rr}	V_R = 300 V; V_{GE} = 0 V		100		ns
R_{thJC}	(per diode)			0.41	K/W

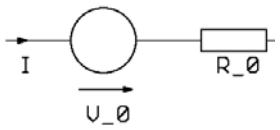
Module

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 mA; 50/60 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

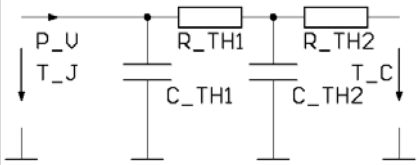
Conduction



IGBT (typ. at V_{GE} = 15 V; T_J = 125°C)
V_0 = 1.1 V; R_0 = 8 mΩ

Free Wheeling Diode (typ. at T_J = 125°C)
V_0 = 1.1 V; R_0 = 2.25 mΩ

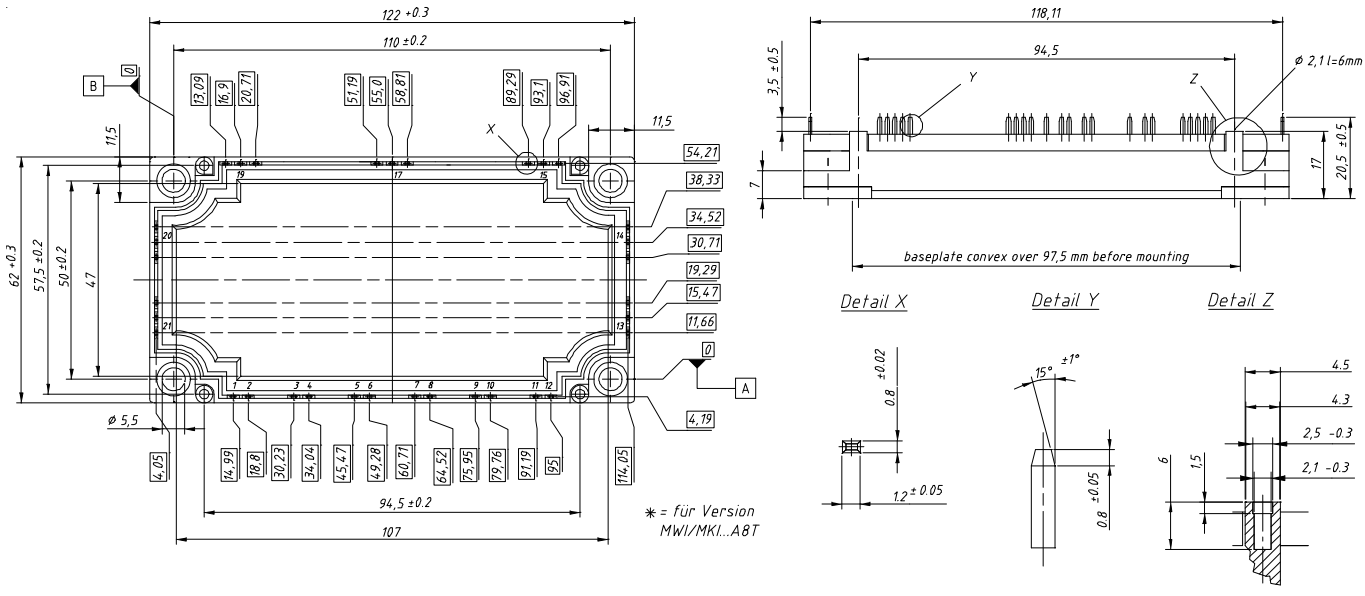
Thermal Response



IGBT (typ.)
C_{th1} = 0.295 J/K; R_{th1} = 0.176 K/W
C_{th2} = 1.750 J/K; R_{th2} = 0.064 K/W

Free Wheeling Diode (typ.)
C_{th1} = 0.21 J/K; R_{th1} = 0.317 K/W
C_{th2} = 1.28 J/K; R_{th2} = 0.093 K/W

Dimensions in mm (1 mm = 0.0394")



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