IGBT Modules
H Bridge

I_{C25} = 125 A
V_{CES} = 1200 V
$V_{CE(sat) typ.}$ = 3.3 V

Short Circuit SOA Capability
Square RBSOA
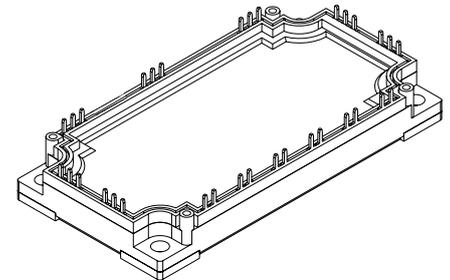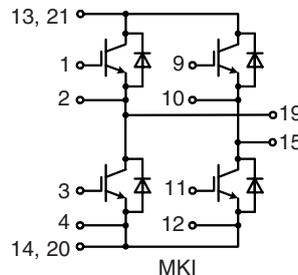
IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	T_{VJ} = 25°C to 150°C	1200	V
V_{GES}		± 20	V
I_{C25}	T_C = 25°C	125	A
I_{C80}	T_C = 80°C	85	A
I_{CM}	V_{GE} = ±15 V; R_G = 5.6 Ω; T_{VJ} = 125°C	200	A
V_{CEK}	RBSOA; clamped inductive load; L = 100 µH	V_{CES}	
t_{SC}	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 5.6 Ω; T_{VJ} = 125°C SCSOA; non-repetitive	10	µs
P_{tot}	T_C = 25°C	640	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	I_C = 100 A; V_{GE} = 15 V; T_{VJ} = 25°C		3.3	3.9 V
	T_{VJ} = 125°C		4.0	V
$V_{GE(th)}$	I_C = 4 mA; V_{GE} = V_{CE}	4.5		6.5 V
I_{CES}	V_{CE} = V_{CES}; V_{GE} = 0 V; T_{VJ} = 25°C			1.3 mA
	T_{VJ} = 125°C		4.0	mA
I_{GES}	V_{CE} = 0 V; V_{GE} = ± 20 V			600 nA
$t_{d(on)}$			130	ns
t_r	Inductive load, T_{VJ} = 125°C		60	ns
$t_{d(off)}$	V_{CE} = 600 V; I_C = 100 A		365	ns
t_f	V_{GE} = ±15 V; R_G = 5.6 Ω		30	ns
E_{on}			12.0	mJ
E_{off}			5.0	mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz		6.5	nF
Q_{Gon}	V_{CE} = 600 V; V_{GE} = ±15 V; I_C = 100 A		1.1	µC
R_{thJC}	(per IGBT)			0.19 K/W

Features

- Fast NPT IGBTs
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
  - short tail current for optimized performance also in resonant circuits
- HiPerFRED™ diode:
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- Industry Standard Package
  - solderable pins for PCB mounting
  - isolated copper base plate

Typical Applications

- motor control
  . DC motor amature winding
  . DC motor excitation winding
  . synchronous motor excitation winding
- supply of transformer primary winding
  . power supplies
  . welding
  . X-ray
  . battery charger

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

Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_C = 25°C$	200	A
I_{F80}	$T_C = 80°C$	130	A

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	$I_F = 100\ A;\ V_{GE} = 0\ V;\ T_{VJ} = 25°C$		2.3	2.6	V
	$T_{VJ} = 125°C$		1.7		V
I_{RM}	$I_F = 120\ A;\ di_F/dt = -750\ A/\mu s;\ T_{VJ} = 125°C$		82		A
t_{rr}	$V_R = 600\ V;\ V_{GE} = 0\ V$		200		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}	$I_{ISOL} \leq 1\ mA;\ 50/60\ Hz$	2500	V~
M_d	Mounting torque (M5)	3 - 6	Nm

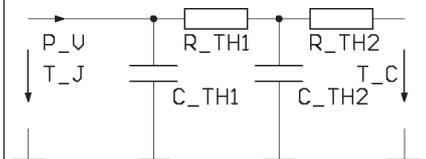| Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
$R_{pin-chip}$			1.8		mΩ
d_S	Creepage distance on surface	10			mm
d_A	Strike distance in air	10			mm
R_{thCH}	with heatsink compound		0.01		K/W
Weight			300		g

Equivalent Circuits for Simulation

Conduction
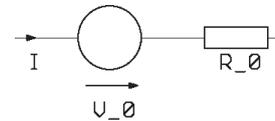
IGBT (typ. at $V_{GE} = 15\ V;\ T_J = 125°C$)
  $V_0 = 2.05\ V$; $R_0 = 19.5\ m\Omega$

Free Wheeling Diode (typ. at $T_J = 125°C$)
  $V_0 = 1.27\ V$; $R_0 = 4.3\ m\Omega$

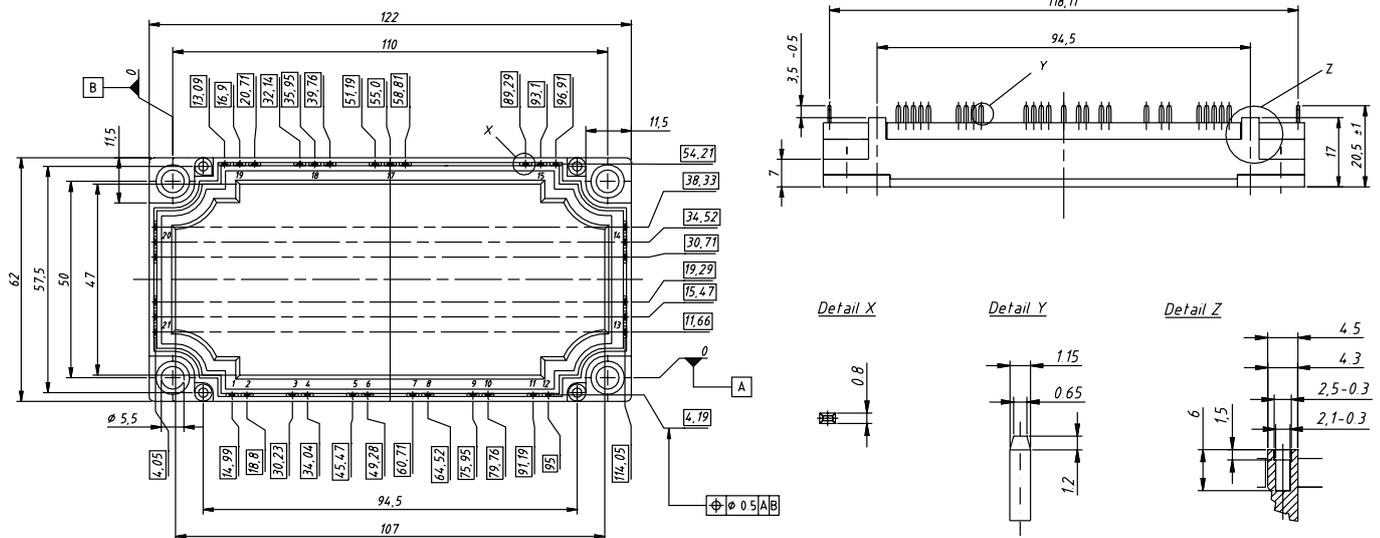**Thermal Response**

IGBT (typ.)
  $C_{th1} = 0.409\ J/K$; $R_{th1} = 0.14\ K/W$
  $C_{th2} = 2.203\ J/K$; $R_{th2} = 0.05\ K/W$

Free Wheeling Diode (typ.)
  $C_{th1} = 0.301\ J/K$; $R_{th1} = 0.24\ K/W$
  $C_{th2} = 2.005\ J/K$; $R_{th2} = 0.062\ K/W$

Dimensions in mm (1 mm = 0.0394")

Detail X Detail Y Detail Z

pins 5, 6, 7, 8 and 17 for MWI only

Mouser Electronics

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IXYS:
  MKI100-12F8