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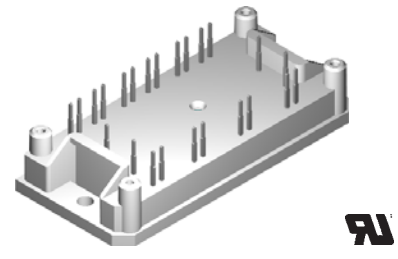
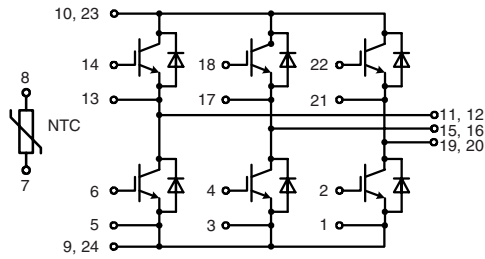
[IXYS Corporation](#)  
[MWI60-06G6K](#)

For any questions, you can email us directly:  
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)

**IXYS** Advanced Technical Information **MWI 60-06 G6K**

**IGBT Module**  
**Sixpack**  
 Square RBSOA

**I<sub>C25</sub> = 60 A**  
**V<sub>CES</sub> = 600 V**  
**V<sub>CE(sat) typ.</sub> = 2.3 V**



**IGBTs**

Symbol	Conditions	Maximum Ratings	
V <sub>CES</sub>	T <sub>VJ</sub> = 25°C to 150°C	600	V
V <sub>GES</sub>		± 20	V
I <sub>C25</sub>	T <sub>C</sub> = 25°C	60	A
I <sub>C80</sub>	T <sub>C</sub> = 80°C	41	A
I <sub>CM</sub>	V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 10 Ω; T <sub>VJ</sub> = 125°C	80	A
V <sub>CEK</sub>	RBSOA; clamped inductive load; L = 100 μH	V <sub>CES</sub>	
P <sub>tot</sub>	T <sub>C</sub> = 25°C	180	W

**Features**

- IGBTs
  - low saturation voltage
  - 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
- UL registered E72873

**Symbol**      **Conditions**      **Characteristic Values**  
 (T<sub>VJ</sub> = 25°C, unless otherwise specified)

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V <sub>CE(sat)</sub>	I <sub>C</sub> = 30 A; V <sub>GE</sub> = 15 V; T <sub>VJ</sub> = 25°C T <sub>VJ</sub> = 125°C		2.3 2.0	V V
V <sub>GE(th)</sub>	I <sub>C</sub> = 0.25 mA; V <sub>GE</sub> = V <sub>CE</sub>	3		5 V
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> ; V <sub>GE</sub> = 0 V; T <sub>VJ</sub> = 25°C T <sub>VJ</sub> = 125°C		1.2	0.2 mA mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V; V <sub>GE</sub> = ± 20 V			100 nA
t <sub>d(on)</sub> t <sub>r</sub> t <sub>d(off)</sub> t <sub>f</sub> E <sub>on</sub> E <sub>off</sub>	Inductive load, T <sub>VJ</sub> = 125°C V <sub>CE</sub> = 400 V; I <sub>C</sub> = 30 A V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 3 Ω		20	ns
			20	ns
			130	ns
			80	ns
			0.6	mJ
			0.5	mJ
C <sub>ies</sub>	V <sub>CE</sub> = 25 V; V <sub>GE</sub> = 0 V; f = 1 MHz		2500	pF
Q <sub>Gon</sub>	V <sub>CE</sub> = 300 V; V <sub>GE</sub> = 15 V; I <sub>C</sub> = 30 A		95	nC
R <sub>thJC</sub> R <sub>thCH</sub>	(per IGBT)		0.7	K/W K/W
		0.25		

**Typical Applications**

- AC drives

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

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**Diodes**

Symbol	Conditions	Maximum Ratings	
$I_{F25}$	$T_C = 25^\circ\text{C}$	48	A
$I_{F80}$	$T_C = 80^\circ\text{C}$	33	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 30\text{ A}; V_{GE} = 0\text{ V}; T_{VJ} = 25^\circ\text{C}$	2.2	2.6	V
		1.7		V
$I_{RM}$ $t_{rr}$	$I_F = 30\text{ A}; di_F/dt = -400\text{ A}/\mu\text{s}; T_{VJ} = 100^\circ\text{C}$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V}$	5		A
		65		ns
$R_{thJC}$ $R_{thCH}$	(per Diode)	0.3		0.9 K/W K/W

**Temperature Sensor NTC**

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{25}$ $B_{25/85}$	$T = 25^\circ\text{C}$	4.45	4.7	5.0 kΩ K

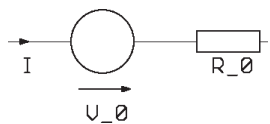
**Module**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-40...+125	°C
$T_{VJM}$		-40...+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 (M4)	2.0 - 2.2	Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$d_s$	Creepage distance on surface	12.7		mm
$d_A$	Strike distance in air	12.7		mm
<b>Weight</b>		40		g

**Equivalent Circuits for Simulation**

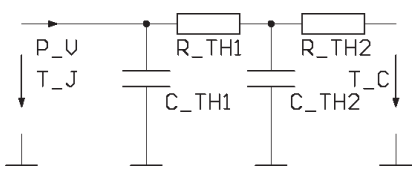
**Conduction**



IGBT (typ. at  $V_{GE} = 15\text{ V}; T_J = 125^\circ\text{C}$ )  
 $V_0 = 1.1\text{ V}; R_0 = 21.5\text{ m}\Omega$

Free Wheeling Diode (typ. at  $T_J = 125^\circ\text{C}$ )  
 $V_0 = 1.20\text{ V}; R_0 = 19\text{ m}\Omega$

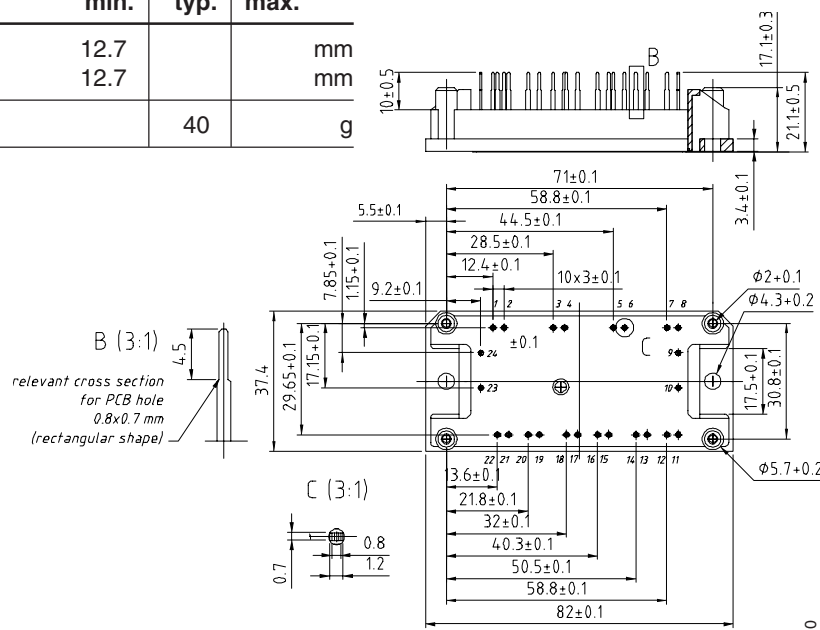
**Thermal Response**



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

Free Wheeling Diode (typ.)  
 $C_{th1} = tbd\text{ J/K}; R_{th1} = tbd\text{ K/W}$   
 $C_{th2} = tbd\text{ J/K}; R_{th2} = tbd\text{ K/W}$

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



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