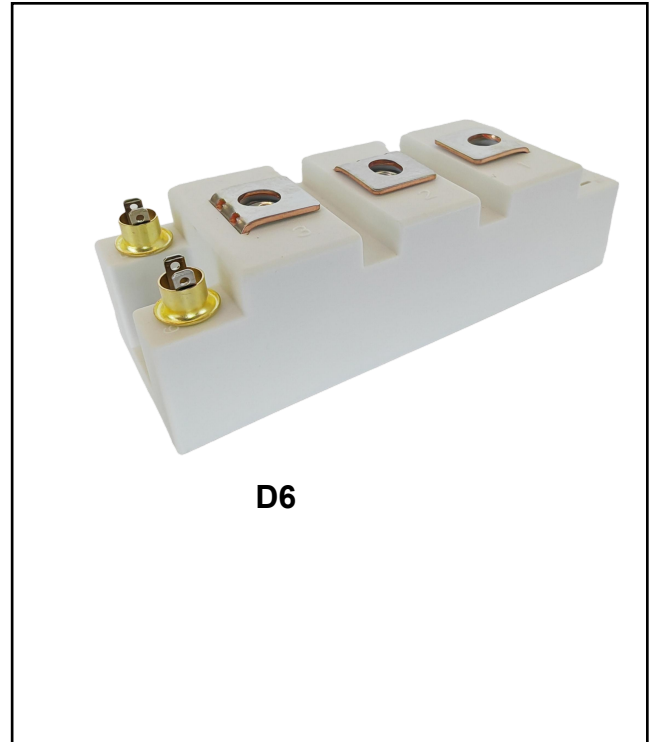


D6 module with AIKO IGBT and emitter controlled diode

Features

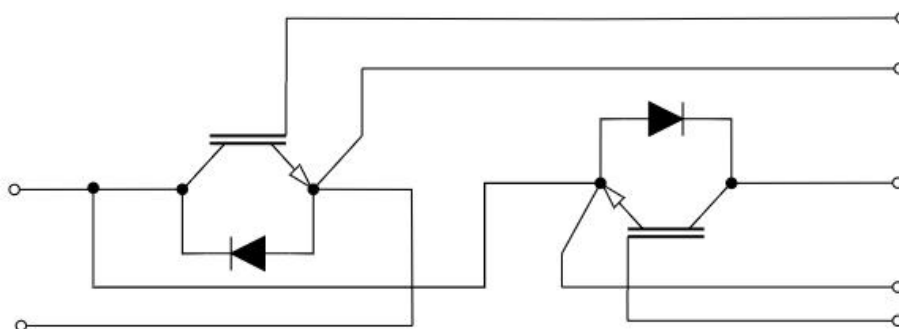
- Electrical features
 - $V_{CES} = 1200\text{ V}$
 - $I_{C\text{ nom}} = 200\text{ A} / I_{CRM} = 400\text{ A}$
 - V_{CESat} with positive temperature coefficient
 - $10\mu\text{s}$ short circuit capability
- Mechanical features
 - Standard housing
 - 2.5 kV AC 1 min insulation
 - High creepage and clearance distances
 - Isolated base plate



Typical Applications

- Inverters
- UPS (Uninterruptible Power Supplies)
- Motor Control

Description



Package Insulation coordination

Symbol	Parameter	Note or test condition	Values	Unit
V_{ISOL}	Isolation test voltage	RMS, f=50Hz, t=60s	2.5	kV
d_{creep}	Creepage distance	terminal to heatsink	17.0	mm
d_{creep}	Creepage distance	terminal to terminal	20.0	mm
d_{clear}	Clearance	terminal to heatsink	17.0	mm
d_{clear}	Clearance	terminal to terminal	9.5	mm
CTI	Comparative tracking index (electrical)		≥175	

Package Characteristic values

Symbol	Description	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
L_{sCE}	Stray Inductance			--	30	--	nH
R_{CC+EE}	Module Lead Resistance, Terminal to Chip	$T_c=25^{\circ}\text{C}$, per switch		--	0.75	--	mΩ
T_{stg}	Storage temperature			-40	--	125	°C
M	Mounting torque for module mounting	-Mounting according to valid application note	M5, Screw	2.5	--	5.0	Nm
M	Terminal connection torque	-Mounting according to valid application note	M6, Screw	3.0	--	5.0	Nm
G	Weight			--	150	--	g

IGBT

Absolute Maximum Ratings (T_c = 25°C unless otherwise noted)

Symbol	Description	Note or test condition	Value	Unit
V _{CES}	Collector-Emitter Voltage	T _{vj} = 25 °C	1200	V
I _{CDC}	Continuous Collector Current @ T _c = 80°C (T _{JMAX} = 175°C)		200	A
I _{CRM}	Repetitive peak collector current	Peak Collector Current@ tp=1ms	400	A
P _{tot}	Total power dissipation	T _c = 25°C, T _{vj max} = 175°C	880	W
V _{GES}	Gate-emitter peak voltage		±30	V

Characteristics (T_c = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Rating			Unit
				Min	Typ	Max	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	IC=200A V _{GE} =15V	T _j =25°C T _j =150°C		1.40 1.60	2.20	V
V _{GE(TH)}	Gate-Emitter Threshold Voltage	I _C = 5mA, V _{CE} = V _{GE}		5.0	6.0	7.0	V
I _{CES}	Collector-Emitter Cutoff Current	V _{GE} = 0V, V _{CE} = 1200V, T _{vj} = 25°C				500	uA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} = ±20V, V _{CE} = 0 V, T _{vj} = 25°C				+/-200	nA
R _{Gint}	Internal Gate Resistance	T _{vj} = 25 °C			3.37		Ω
C _{ies}	Input Capacitance	V _{CE} =30V, V _{GE} =0V, f=1MHz, T _{vj} = 25°C			31.9		nF
C _{oes}	Output Capacitance				0.787		
C _{res}	Reverse Transfer Capacitance				0.158		
Q _g	Total Gate Charge	V _{CC} =960V, I _C =200A, V _{GE} =15V, T _{vj} = 25°C			1.06		uC
t _{d(ON)}	Turn-on Delay Time	V _{CE} =600V, I _C =200A, V _{GE} =15/-5V, R _g =25Ω Inductive Load			387		ns
t _r	Rise Time				262		
t _{d(OFF)}	Turn-Off Delay Time				1307		
t _f	Fall Time				193		
E _{on}	Turn-On Switching Loss				17.931		mJ

E_{off}	Turn-Off Switching Loss	$V_{GE}=15V, V_{CC}=600V, t_{SC} \leq 10\mu s, T_{vj} \leq 150^{\circ}C$	--	9.031	--	
E_{ts}	Total Switching Loss		--	26.961	--	
$I_{C(SC)}$	Short circuit collector current		--	1000	--	A
R_{thJC}	Thermal resistance, junction to case	per IGBT	--	0.15	--	K/W
$T_{vj op}$	Temperature under switching conditions		-40	--	175 ¹⁾	$^{\circ}C$

¹⁾ $T_{vj op} > 150^{\circ}C$ is only allowed for operation at overload conditions.

Diode

Absolute Maximum Ratings ($T_c = 25^{\circ}C$ unless otherwise noted)

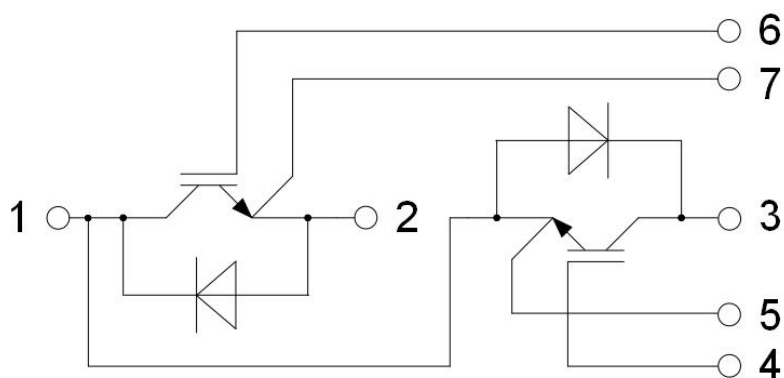
Symbol	Description	Note or test condition	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}C$	1200	V
I_F	Continuous DC forward current		200	A
I_{FRM}	Repetitive peak forward current	$t_P = 1 ms$	400	A

Characteristics ($T_c = 25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_F	Diode Forward Voltage	$I_F=150A$		1.6	2.6	V
T_{rr}	Reverse Recovery Time	$V_{CE}=600V, I_F=200A,$ $V_{GE}=15/-5V$ $R_g=25\Omega$		175		ns
I_{RRM}	Diode Peak Reverse Recovery Current			27		A
Q_{rr}	Reverse Recovery Charge			1.24		μC
E_{rec}	Reverse Recovery Energy			1.23		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode	--	0.3	--	K/W
$T_{vj op}$	Temperature under switching conditions		-40	--	175 ²⁾	$^{\circ}C$

²⁾ $T_{vj op} > 150^{\circ}C$ is only allowed for operation at overload conditions.

Circuit Diagram



Package Dimensions

Dimensions in Millimeters

