

IGBT Modules

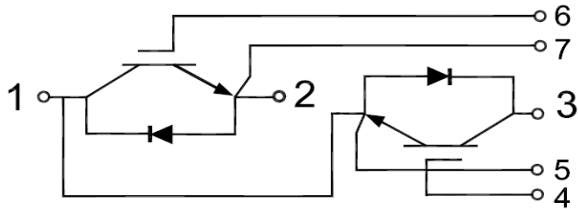


V_{CES} 1200V
I_C 75A

Applications

- High frequency drivers
- Solar inverters
- UPS (Uninterruptible Power Supplies)
- Electric welding machine

Circuit



Features

- High speed IGBT in NPT technology
- Low switching losses
- High short circuit capability(10us)
- Including ultra fast & soft recovery anti-parallel FWD
- Low inductance

Absolute Maximum Ratings (T_C = 25°C unless otherwise specified)

Symbol	Description		Values	Units
V _{CES}	Collector - Emitter Voltage		1200	V
V _{GES}	Gate-Emitter Voltage		±20	V
I _C	DC Collector Current	T _C =25°C	100	A
		T _C =80°C	75	A
I _{CM(1)}	Peak Collector Current Repetitive	T _J = 125°C	150	A
I _F	Diode Continuous Forward Current	T _J = 125°C	75	A
P _D	Maximum Power Dissipation (IGBT)	T _C = 25°C, T _{Jmax} =150°C	625	W
T _J	Maximum Junction Temperature		150	°C
T _{JOP}	Operating Temperature		-40 ~ +150	°C
T _{stg}	Storage Temperature		-40 ~ +125	°C
Viso	Isolation Voltage (All Terminals Shorted)	f=50Hz, 1min	3000	V
Weight	Weight Of Module		155	g
Mounting Torque	Power Terminals Screw:M5		2.5~5	N*m
	Mounting Screw:M6		3~5	N*m

Notes :

(1) Repetitive Rating: Pulse width limited by max. junction temperature



Electrical Characteristics of IGBT ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
OFF Characteristics						
V _{(BR)CES}	Collector-Emitter Breakdown Voltage	V _{GE} = 0V, I _C = 1mA	1200			V
I _{CES}	Collector Leakage Current	V _{CE} =V _{CES} , V _{GE} =0V,			500	uA
		V _{CE} =V _{CES} , V _{GE} =0V, T _J =125°C			5	mA
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} =±20V	-400		400	nA
ON Characteristics						
V _{GE(th)}	Gate - Emitter Threshold Voltage	V _{CE} =V _{GE} , I _C =4mA	5	5.8	6.6	V
V _{CE(sat)}	Collector – Emitter Saturation Voltage	I _C =75A,V _{GE} =15V		3.0		V
		I _C =75A,V _{GE} =15V, T _J =125°C		3.8		V
Dynamic Characteristics						
C _{ies}	Input Capacitance	V _{CE} = 25V, V _{GE} = 0V , f= 1MHz		5.2		nF
C _{oes}	Output Capacitance			0.82		nF
C _{res}	Reverse Transfer Capacitance			0.42		nF
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{CC} = 600V, I _C = 75A , R _G = 10Ω, V _{GE} =±15V , Inductive Load, T _J = 25°C		70		ns
t _r	Rise Time			57		ns
t _{d(off)}	Turn-off Delay Time			253		ns
T _f	Fall Time			27		ns
E _{on}	Turn-on Switching Loss			7.2		mJ
E _{off}	Turn-off Switching Loss			1.8		mJ
t _{d(on)}	Turn-on Delay Time	V _{CC} = 600V, I _C = 75A , R _G = 10Ω, V _{GE} =±15V , Inductive Load, T _J = 125°C		80		ns
t _r	Rise Time			65		ns
t _{d(off)}	Turn-off Delay Time			285		ns
T _f	Fall Time			32		ns
E _{on}	Turn-on Switching Loss			10.5		mJ
E _{off}	Turn-off Switching Loss			2.8		mJ
R _{g-int}	Internal Gate Resistance			3		Ω
I _{SC}	SC data	T _P ≤10us,V _{GE} =15V, V _{CC} =600,V _{CEM} ≤1200V,		530		A

**Electrical Characteristics of FWD** ($T_C = 25^\circ\text{C}$ unless otherwise specified)

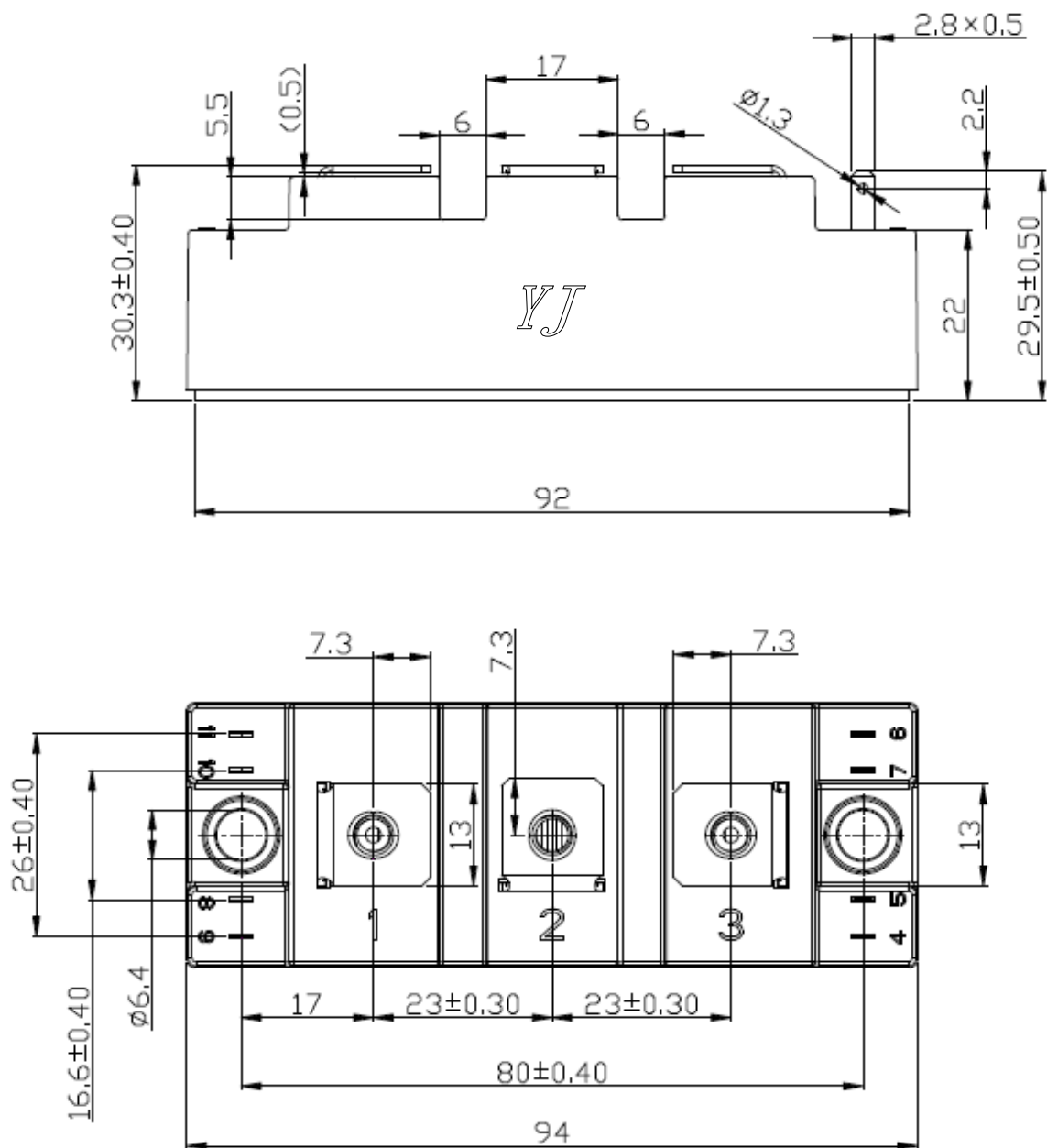
Symbol	Item	Conditions		Values			Units
				Min.	Typ.	Max.	
V_{FM}	Forward Voltage	$I_F = 75\text{A}$, $V_{GE} = 0\text{V}$ $I_F = 75\text{A}$, $di/dt = 1200\text{A}/\mu\text{s}$, $V_{rr} = 600\text{V}$, $V_{GE} = -15\text{V}$	$T_J = 25^\circ\text{C}$		1.9		V
			$T_J = 125^\circ\text{C}$		2.0		
Q_{rr}	Reverse Recovery Charge		$T_J = 25^\circ\text{C}$		4.8		μC
			$T_J = 125^\circ\text{C}$		9.2		
I_{rr}	Peak Reverse Recovery Current		$T_J = 25^\circ\text{C}$		65		A
			$T_J = 125^\circ\text{C}$		80		
E_{rec}	Reverse Recovery Energy		$T_J = 25^\circ\text{C}$		3.0		mJ
			$T_J = 125^\circ\text{C}$		4.5		

Thermal Resistance Characteristics

Symbol	Description	Values			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Junction-To-Case (IGBT Part, Per Leg)			0.20	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-To-Case (Diode Part, Per Leg)			0.38	$^\circ\text{C}/\text{W}$
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)		0.05		$^\circ\text{C}/\text{W}$

Package Outline Information

CASE: C1



Dimensions in mm