

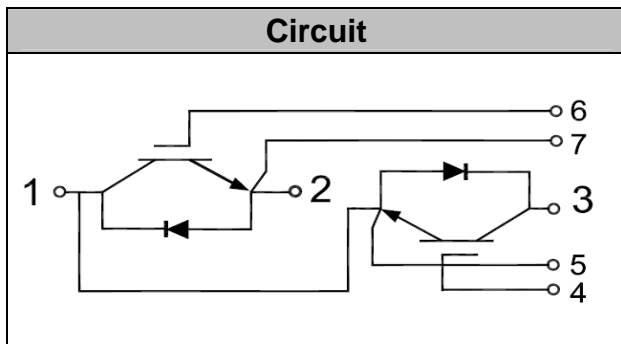
## IGBT Modules



**V<sub>CES</sub>**            1200V  
**I<sub>c</sub>**                 75A

### Applications

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



### 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<sub>C</sub> = 25°C unless otherwise specified)

Symbol	Description	Values	Units	
V <sub>CES</sub>	Collector - Emitter Voltage	1200	V	
V <sub>GES</sub>	Gate-Emitter Voltage	±20	V	
I <sub>C</sub>	DC Collector Current	T <sub>C</sub> =25°C	100	A
		T <sub>C</sub> =80°C	75	A
I <sub>CM(1)</sub>	Peak Collector Current Repetitive	T <sub>J</sub> = 125°C	150	A
I <sub>F</sub>	Diode Continuous Forward Current	T <sub>J</sub> = 125	75	A
P <sub>D</sub>	Maximum Power Dissipation (IGBT)	T <sub>C</sub> = 25°C, T <sub>Jmax</sub> =150°C	625	W
T <sub>J</sub>	Maximum Junction Temperature		150	
T <sub>JOP</sub>	Operating Temperature		-40 ~ +150	
T <sub>stg</sub>	Storage Temperature		-40 ~ +125	
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.	
<b>OFF Characteristics</b>						
$V_{(BR)CES}$	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
		$V_{CE}=V_{CES}, V_{GE}=0V,$ $T_J=125^\circ\text{C}$			5	mA
$I_{GES}$	Gate Leakage Current	$V_{CE}=0V, V_{GE}=\pm 20V$	-400		400	nA
<b>ON Characteristics</b>						
$V_{GE(th)}$	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
		$I_C=75A, V_{GE}=15V,$ $T_J=125^\circ\text{C}$		3.8		V
<b>Dynamic Characteristics</b>						
$C_{ies}$	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
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{CC} = 600V, I_C = 75A,$ $R_G = 10\Omega, V_{GE} = \pm 15V,$ Inductive Load, $T_J = 25^\circ\text{C}$		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	$V_{CC} = 600V, I_C = 75A,$ $R_G = 10\Omega, V_{GE} = \pm 15V,$ Inductive Load, $T_J = 125^\circ\text{C}$		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		$\Omega$
$I_{SC}$	SC data	$T_P \leq 10\mu s, V_{GE} = 15V,$ $V_{CC} = 600V, V_{CEM} \leq 1200V,$		530		A



## Electrical Characteristics of FWD (T<sub>C</sub> = 25°C unless otherwise specified)

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
V <sub>FM</sub>	Forward Voltage	I <sub>F</sub> 75A, V <sub>GE</sub> = 0V	T <sub>J</sub> = 25°C	1.9		V
			T <sub>J</sub> = 125°C	2.0		
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>F</sub> 75A, di/dt = 1200A/μs, V <sub>rr</sub> = 600V, V <sub>GE</sub> = -15V	T <sub>J</sub> = 25°C	4.8		μC
			T <sub>J</sub> = 125°C	9.2		
I <sub>rr</sub>	Peak Reverse Recovery Current	I <sub>F</sub> 75A, di/dt = 1200A/μs, V <sub>rr</sub> = 600V, V <sub>GE</sub> = -15V	T <sub>J</sub> = 25°C	65		A
			T <sub>J</sub> = 125°C	80		
E <sub>rec</sub>	Reverse Recovery Energy	I <sub>F</sub> 75A, di/dt = 1200A/μs, V <sub>rr</sub> = 600V, V <sub>GE</sub> = -15V	T <sub>J</sub> = 25°C	3.0		mJ
			T <sub>J</sub> = 125°C	4.5		

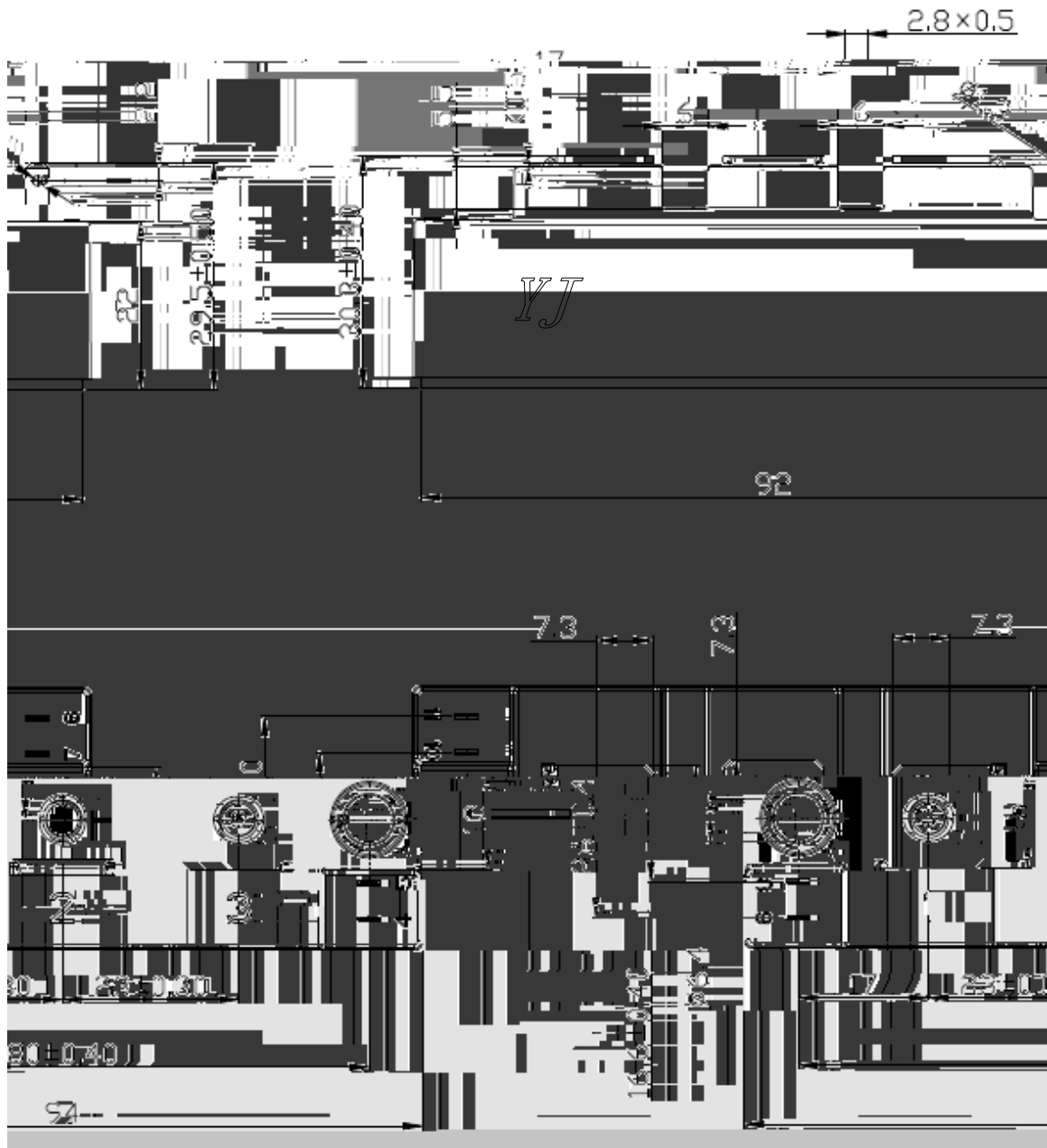
## Thermal Resistance Characteristics

Symbol	Description	Values			Units
		Min.	Typ.	Max.	
R <sub>θJC</sub>	Junction-To-Case (IGBT Part, Per Leg)			0.20	°C/W
R <sub>θJC</sub>	Junction-To-Case (Diode Part, Per Leg)			0.38	°C/W
R <sub>θCS</sub>	Case-To-Sink (Conductive Grease Applied)		0.05		°C/W



**Package Outline Information**

**CASE: C1**



**Dimensions in mm**