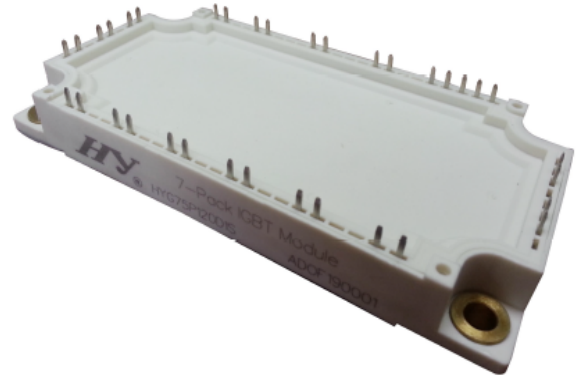


## Features

- Low VCE (sat) trench IGBT
- Low switching losses
- 10us short circuit capability
- Fast & soft reverse recovery FRD
- Maximum junction temperature 150°C
- Temperature sense included
- Industry standard package with soldering pins for PCB mounting



## Typical Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply

## IGBT $T_c=25^\circ\text{C}$ unless otherwise noted

### Maximum Rated Values

Symbol	Description	HYG75P120D1S	Units
$V_{CES}$	Collector-Emitter Voltage $T_j=25^\circ\text{C}$	1200	V
$V_{GES}$	Gate-Emitter Voltage $T_j=25^\circ\text{C}$	$\pm 20$	V
$I_c$	Collector Current	100	A
	Collector Current $T_C=80^\circ\text{C}$	75	
$I_{CM}$	Pulsed Collector Current $t_p=1\text{ms}$	150	A
$P_{tot}$	Total Power Dissipation $T_j=150^\circ\text{C}$	500	W

### Characteristics Values

Symbol	Parameter		Min.	Typ.	Max.	Units
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$T_j=25^\circ\text{C}$	1200			V
$I_{CES}$	Collector Cut- Off Current	$V_{CE}=V_{CES}, V_{GE}=0\text{V}, T_j=25^\circ\text{C}$			2	mA
$I_{GES}$	Gate-Emitter Leakage Current	$V_{GE}=V_{GES}, V_{CE}=0\text{V}, T_j=25^\circ\text{C}$	-500		500	nA
$V_{GE(th)}$	Gate to Emitter Threshold Voltage	$I_C=3\text{mA}, V_{GE}=V_{CE}, T_j=25^\circ\text{C}$	5.0	7.0	9.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	$I_C=75\text{A}, V_{GE}=15\text{V}, T_j=25^\circ\text{C}$		3.0		V
		$I_C=75\text{A}, V_{GE}=15\text{V}, T_j=125^\circ\text{C}$		3.3		
$R_{Gint}$	Integrated Gate Resistor			0		$\Omega$
$Q_g$	Gate Charge	$V_{CE}=600\text{V}, I_C=75\text{A}, V_{GE}=15\text{V}$		---		$\mu\text{C}$
$C_{ies}$	Input Capacitance	$V_{CE}=30\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$		---		nF
$C_{res}$	Reverse Transfer Capacitance				---	
$t_{d(on)}$	Turn - on Delay Time	$V_{CC}=600\text{V}, I_C=75\text{A}, R_G=6.5\Omega,$	$T_{vj}=25^\circ\text{C}$		120	ns
			$T_{vj}=125^\circ\text{C}$		115	ns
$t_r$	Rise Time	Inductive Load	$V_{GE}=\pm 15\text{V}, T_{vj}=25^\circ\text{C}$		60	ns
			$T_{vj}=125^\circ\text{C}$		65	ns
$t_{d(off)}$	Turn - off Delay Time	$V_{CC}=600\text{V}, I_C=75\text{A}, R_G=15\Omega,$	$T_{vj}=25^\circ\text{C}$		340	ns
			$T_{vj}=125^\circ\text{C}$		360	ns
$t_f$	Fall Time	Inductive Load	$V_{GE}=\pm 15\text{V}, T_{vj}=25^\circ\text{C}$		20	ns
			$T_{vj}=125^\circ\text{C}$		55	ns
$E_{on}$	Turn - on Energy	$V_{CC}=600\text{V}, I_C=75\text{A}, R_G=6.5\Omega,$	$T_{vj}=25^\circ\text{C}$		5.2	mJ
			$T_{vj}=125^\circ\text{C}$		6.0	mJ
$E_{off}$	Turn - off Energy	Inductive Load	$V_{GE}=\pm 15\text{V}, T_{vj}=25^\circ\text{C}$		1.3	mJ
			$T_{vj}=125^\circ\text{C}$		2.6	mJ
$I_{sc}$	Short Circuit Current	$t_{ps} \leq 10\mu\text{S}, V_{GE}=15\text{V}$ $T_{vj}=125^\circ\text{C}, V_{CC}=600\text{V}$		----		A
$R_{thJC}$	Junction-to-Case Thermal Resistance ( Per IGBT )				0.33	K/W

### DIODE $T_c=25^\circ\text{C}$ unless otherwise noted

#### Maximum Rated Values

Symbol	Description	HYG75P120D1S	Units
$V_{RRM}$	Repetitive Peak Reverse Voltage $T_j=25^\circ\text{C}$	1200	V
$I_F$	DC Forward Current $T_c=80^\circ\text{C}$	75	A
$I_{FRM}$	Repetitive Peak Forward Current	150	A

### Characteristics Values

Symbol	Parameter		Min.	Typ.	Max.	Units
$V_F$	Forward Voltage	IF=75A , VGE=0V, T <sub>Vj</sub> =25°C IF=75A , VGE=0V, T <sub>Vj</sub> =125°C		1.9 2.0	2.3	V
$t_{rr}$	Reverse Recovery Time	IF=75A , VR=600V diF/dt=-2000A/μs T <sub>Vj</sub> =125°C		125		ns
$I_{RRM}$	Max. Reverse Recovery Current			100		A
$E_{rec}$	Reverse Recovery Charge			6.0		mJ
$R_{thJC}$	Junction-to-Case Thermal Resistance ( Per DIODE )				0.4	K /W

### Module Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units
$V_{iso}$	Isolation Voltage RMS, f=50Hz, t=1min		2500		V
$T_{Vjmax}$	Maximum Junction Temperature			150	°C
$T_{Vjop}$	Operating Temperature	-40		125	°C
Md	Mounting Screw:M5	3		5	N·m
$T_{STG}$	Storage Temperature range	-40		150	°C
Weight				300	g

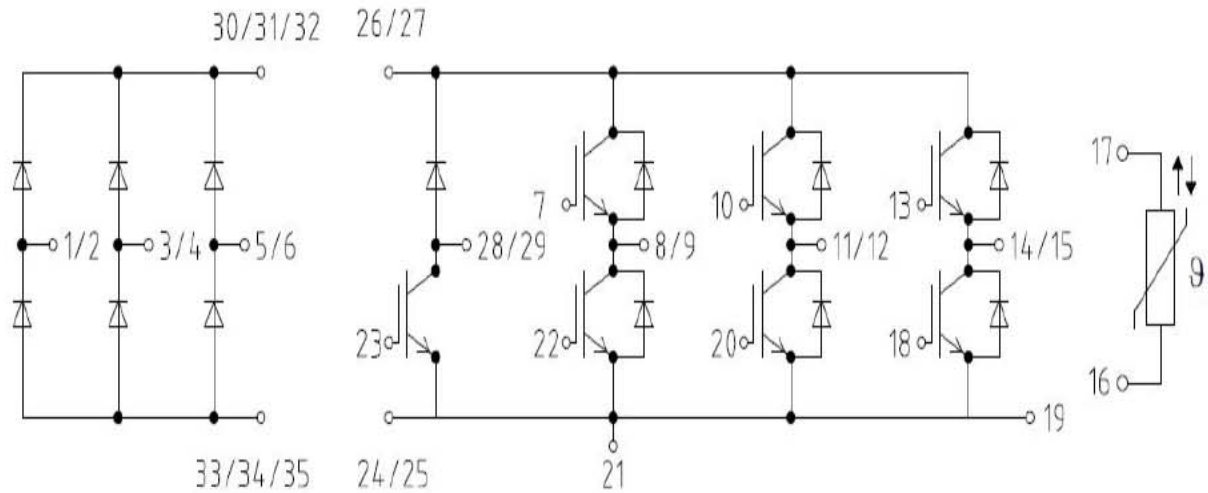


Figure11. Circuit Diagram

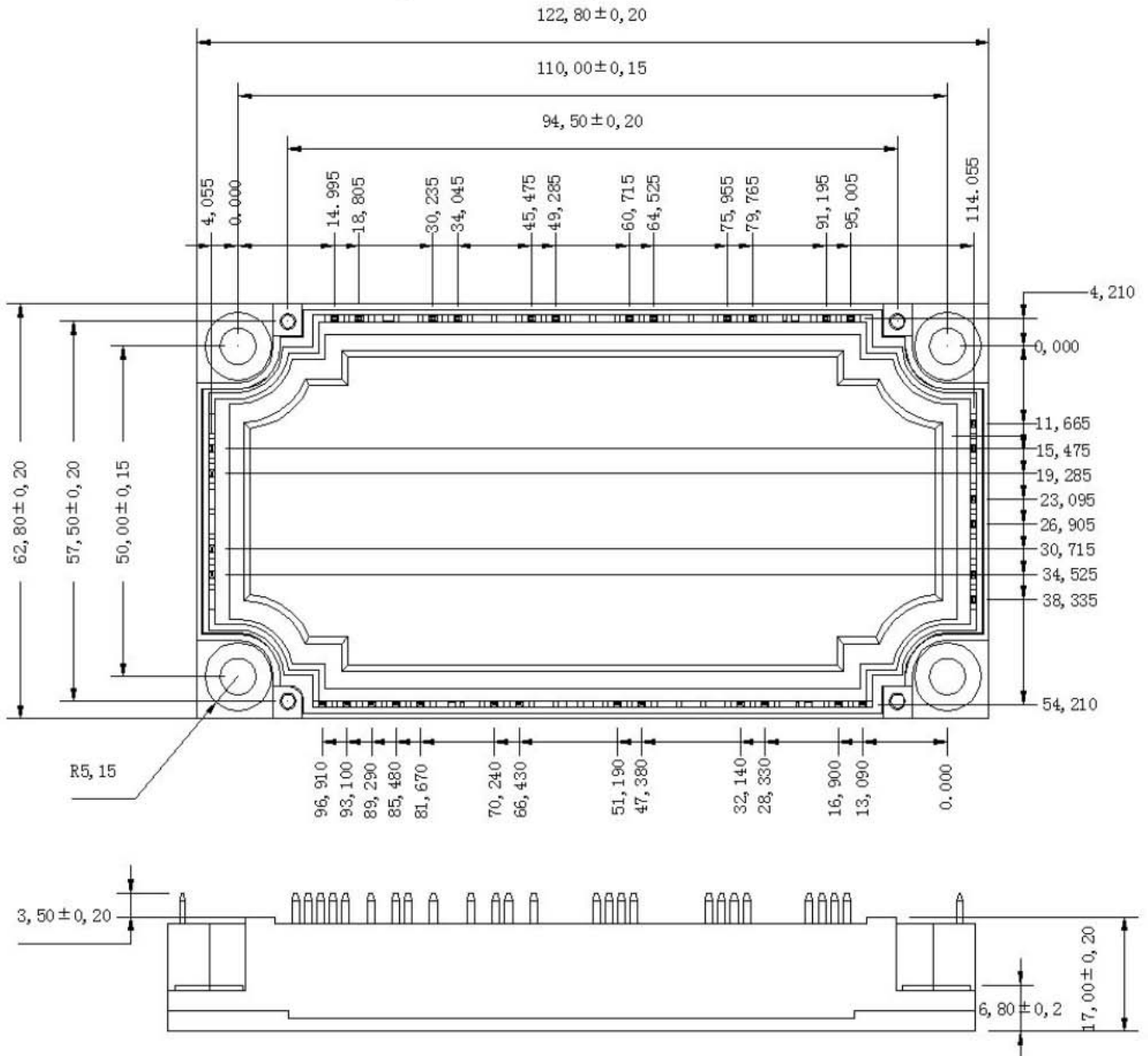


Figure12. Package Dimensions (mm)