Technical datasheet

1. Product Features

1.1 Electrical features

- V_{CES}=1200V
- $I_{C\ nom}$=75A / I_{CRM}=150A
- Low switching losses
- Low inductance
- Fast switching and short tail current
- Integrated NTC temperature sensor
- High power and thermal cycling capability

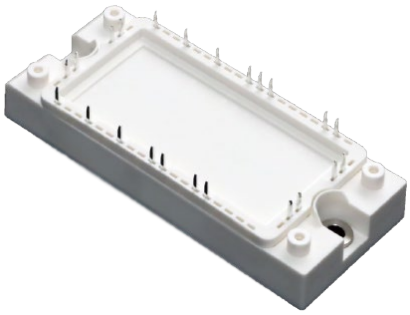

Figure1 IGBT Module

1.2 Mechanical features

- Integrated NTC temperature sensor
- High power and thermal cycling capability
- Al2O3 substrate with low thermal resistance
- Copper base plate

2. Typical Applications

- Switching mode power supply
- Drive inverters with brake system
- Uninterruptible power supply
- AC and DC servo drive amplifier

3. Description

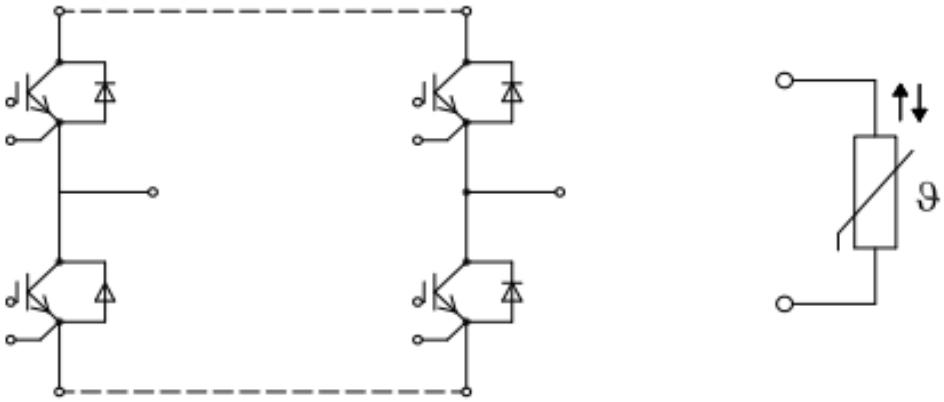

Figure 2 FourPack

4. IGBT, Inverter

4.1 Maximum Rated Values

Parameter	Note or test condition	Symbol	Values	Unit
Collector-emitter voltage 集电极—发射极间电压	T_{vj} = 25°C	V_{CES}	1200	V
Continuous DC collector current 连续集电极电流	T_C = 100°C, T_{vj} max = 150°C	$I_{C\ nom}$	75	A
Repetitive peak collector current 集电极峰值电流	t_P = 1 ms	I_{CRM}	150	A
Gate-emitter peak voltage 栅极－发射极峰值电压		V_{GES}	+/- 30	V

4.2 Characteristic value

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage 集电极－发射极饱和电压	Ic=75A, Vge=15V	T_{vj} = 25°C	$V_{CE,sat}$		1.95	2.3	V
Gate threshold voltage 栅极阈值电压	I_C = 2.6mA, V_{CE} = 10V, T_{vj} = 25°C		$V_{GE,th}$	5.2		6.6	V
Collector-emitter cut-off current 集电极-发射极截止电流	V_{CE} = 1200 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			1	uA
Gate-emitter leakage current 栅极-发射极漏电流	V_{CE} = 0 V, V_{GE} = 30 V, T_{vj} = 25°C		I_{GES}			500	nA
Turn-on delay time, inductive load 开通延迟时间	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V $R_{G,on}$ = 3.3Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$T_{d,on}$		0.1678 0.1765 0.1768		us
Rise time, inductive load 上升时间	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V $R_{G,on}$ = 3.3Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	T_r		0.0387 0.0932 0.0442		us

(table continues...) 待续

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Turn-off delay time, inductive load 关断延迟时间	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V $R_{G,off}$ = 3.3Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$T_{d,off}$		0.1144 0.1255 0.1591		us
Fall time, inductive load 下降时间	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V $R_{G,off}$ = 3.3Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	T_f		0.0695 0.1528 0.1591		us
Turn-on energy loss per pulse 开通损耗能量	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V, di/dt =1361A/μs $R_{G,on}$ = 3.3Ω (T_{vj} = 150°C)	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		7.9548 10.3209 11.4764		mJ
Turn-off energy loss per pulse 关断损耗能量	I_C = 75A, V_{CE} = 600V V_{GE} = +15/-15V, dv/dt =6506V/μs $R_{G,off}$ = 3.3Ω (T_{vj} = 150°C)	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		0.7854 2.4202 2.5718		mJ
SC data 短路数据	V_{GE} ≤15V, V_{CC} =600 V, t_P ≤ 8 μs, T_{vj} = 150°C , C_{GE} = 0.0uF , V_{CEmax} = V_{CES} - L_{sCE} · di/dt		I_{SC}		333.18		A

5. Diode, Inverter

5.1 Maximum Rated Values

Parameter	Note or test condition	Symbol	Values	Unit
Repetitive peak reverse voltage 反向重复峰值电压	T_{vj} = 25°C	V_{RRM}	1200	V
Continuous DC forward current 连续正向直流电流		I_F	75	A
Repetitive peak forward current 正向重复峰值电流	t_P = 1 ms	I_{FRM}	750	A

5.2 Characteristic value

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Forward voltage 正向电压	I_F = 75 A, V_{GE} = 0 V	T_{vj} = 25°C	V_F		1.7	2.1	V

(table continues...) 待续

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Peak reverse recovery current 反向恢复峰值电流	I_F = 75A, V_R = 600V V_{GE} = -15V , - di_F/dt = 2083 A/µs (T_{vj}=150°C)	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		100.27 100.30 100.60		A
Recovered charge 恢复电荷	I_F = 75A, V_R = 600V V_{GE} = -15V , - di_F/dt = 2464 A/µs (T_{vj}=150°C)	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		6.6647 11.684 13.408		µC
Reverse recovery energy 反向恢复损耗（每脉冲）	I_F = 75A, V_R = 600V V_{GE} = -15V , - di_F/dt = 2083 A/µs (T_{vj}=150°C)	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0.7589 2.6536 3.2666		mJ

6. NTC-Thermistor

6.1 Characteristic value

Parameter	Note or test condition	Symbol	Values			Unit
			Min.	Typ.	Max.	
Rated resistance 额定电阻值	Tc = 25°C	R_{25}		5.00		KΩ
B-value B-Z 值	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298, 15K))]$	B_{25}/B_{50}		3375		K

7. Module

7.1 Characteristic value

Parameter	Note or test condition	Symbol	Values			Unit
			Min.	Typ.	Max.	
Isolation Voltage 隔离电压	RMS, f=50HZ,1min	V_{ISOL}			2500	V
Stray inductance module 杂散电感		L_{sCE}		30		nH
Operation Junction Temperature 结温		T_{jop}	-40		150	℃
Storage Temperature Range 存储温度范围		T_{stg}	-40		125	℃
Mounting Torque 安装扭矩	Screw M5	M	3		6	N.m
Weight of Module 重量		G		180		g

8. Circuit Diagram

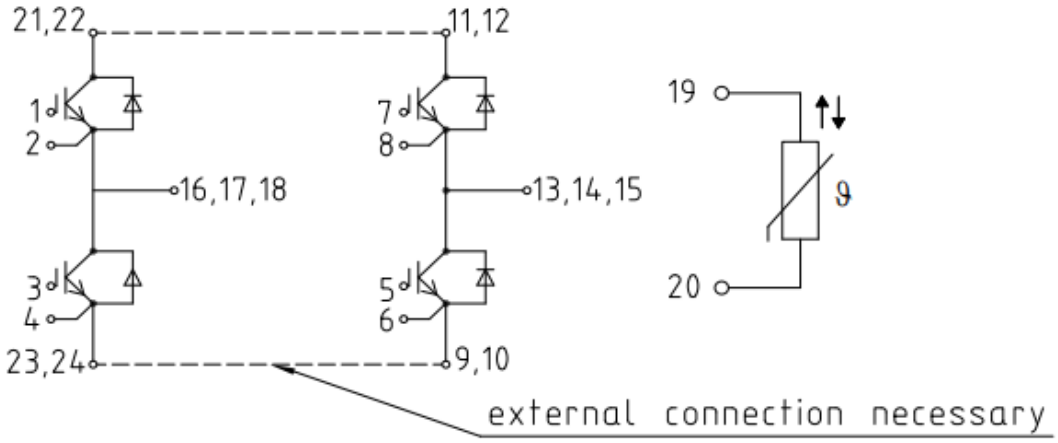

Figure 3

9. Package Outlines

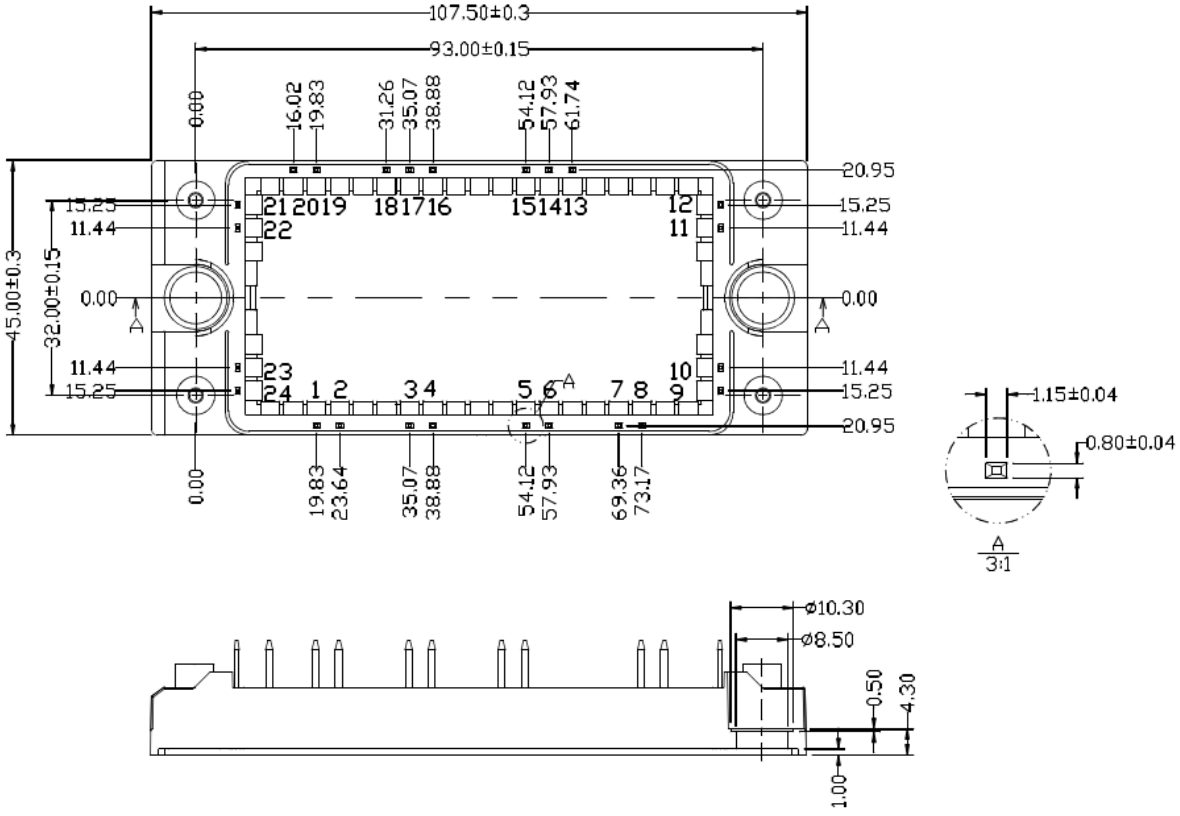

Figure 4