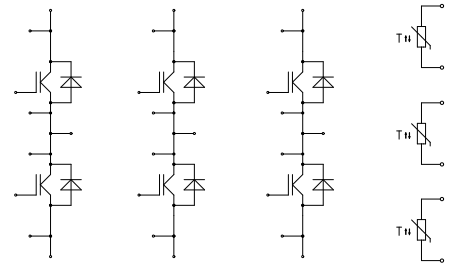
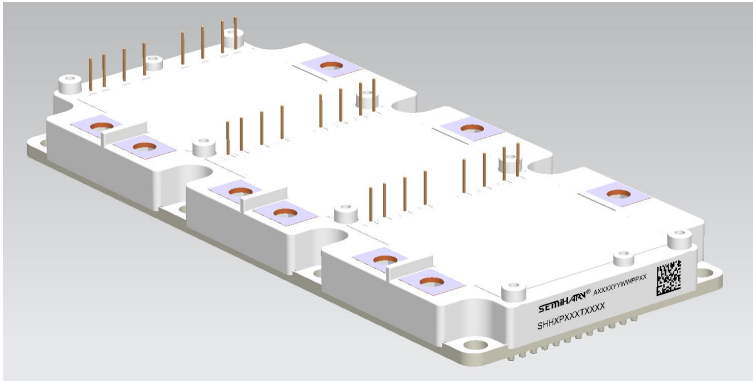


SHH3P900T08H1 采用沟槽栅极/场截止结构 IGBT 和温度检测 NTC

SHH3P900T08H1 with Trench Gate/Field Stop IGBT and NTC


 $V_{CES}=750V$
 $I_{C\ nom}=900A$
典型应用

- 交流马达控制
- 逆变器
- 电机传动
- 太阳能发电

Typical Application

- AC Motor Control
- Inverters
- Motor Drives
- Solar Power

电气特性

- 低导通和开关损耗
- 高短路能力
- 反并联超快速软恢复二极管

Electrical Characteristics

- Ultra Low Conduction and Switching Loss
- High Short Circuit Capability
- Including Ultra Fast & Soft Recovery Anti-parallel FWD

机械特性

- 铝碳化硅基板
- 标准封装

Mechanical Properties

- AlSiC Substrate
- Standard Package

Module Label Code			
Barcode Code 128:		Content of the Code	Digit
		Sample or Mass Production	1
		Module Serial Number	2 - 5
		Datecode (Production Year)	6 - 7
		Datecode (Production Week)	8 - 9
		Production Batch Number	10 - 11
		Production Serial Number	12 - 13
Data Matrix Code:			
	AP006YYWWPPXX		
Prepared by : DHY	Date of publication : 2020-03-14		
Approved by : FJY	Revision : V1.0		

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- 得到质量协议的结论；
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Please note that we strongly recommend this type of application.

- Perform joint risk and quality assessment;
- conclusion of quality agreement;
- Establish joint test and factory product inspection, we can supply according to the actual situation of the test;

If necessary, please give similar instructions to your customers according to actual needs.

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IGBT, 逆变器/ IGBT, Inverter

最大额定值/ Maximum rated Values

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Values	单位/ Unit
集电极-发射极电压/ Collector-emitter voltage	V_{CES}	$T_{vj} = 25^{\circ}\text{C}$	750	V
连续集电极直流电流/ Continuous DC collector current	$I_{C\text{ nom}}$	$T_F = 25^{\circ}\text{C}, T_{vj\text{ max}} = 175^{\circ}\text{C}$	900	A
集电极重复峰值电流/ Repetitive peak collector current	I_{CRM}	$t_p = 1\text{ ms}$	1800	A
总功率损耗/ Total power dissipation	P_{tot}	$T_F = 25^{\circ}\text{C}, T_{vj\text{ max}} = 175^{\circ}\text{C}$	1200	W
栅极-发射极峰值电压/ Gate-emitter peak voltage	V_{GES}		± 20	V

特征值/ Characteristic Values

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Values			单位/ Unit	
			最小/ Min.	典型/ Typ.	最大/ Max.		
集电极-发射极饱和电压/ Collector-emitter saturation voltage	$V_{CE(SAT)}$	$V_{GE} = 15\text{ V},$ $I_C = 900\text{ A}$	$T_{vj} = 25^{\circ}\text{C}$ - $T_{vj} = 125^{\circ}\text{C}$ - $T_{vj} = 150^{\circ}\text{C}$	0.8 - - 1.40 1.51 1.54	2 - -	V	
栅极阈值电压/ Gate threshold voltage	$V_{GE(th)}$	$I_C = 13\text{ mA}, V_{CE} = V_{GE},$ $T_{vj} = 25^{\circ}\text{C}$		4.0	5.92	7.0	V
集电极-发射极截止电流/ Collector-emitter cut-off current	I_{CES}	$V_{CE} = 750\text{ V}, V_{GE} = 0\text{ V}$ $T_{vj} = 25^{\circ}\text{C}$		-	-	0.2	mA
栅极-发射极漏电流/ Gate-emitter leakage current	I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V},$ $T_{vj} = 25^{\circ}\text{C}$		-	-	400	nA
栅极电荷/ Gate charge	Q_G	$V_{CC} = 400\text{ V}, I_C = 450\text{ A},$ $V_{GE} = \pm 15\text{ V}, T_{vj} = 25^{\circ}\text{C}$		-	4862	-	nC
开通延迟时间 (电感负载) / Turn-on delay time	$t_{d(on)}$		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	1.50 1.46 1.44	- - -	μs
上升时间 (电感负载) / Rise time, inductive load	t_r		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	0.23 0.24 0.25	- - -	
关断延迟时间 (电感负载) / Turn-off delay time, inductive load	$t_{d(off)}$	$V_{CE} = 400\text{ V},$ $I_C = 550\text{ A},$ $V_{GE} = +15/-8\text{ V},$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	1.75 1.82 1.83	- - -	
下降时间 (电感负载) / Fall time, inductive load	t_f	$R_{GON} = 5\ \Omega,$ $R_{GOFF} = 5\ \Omega,$ $L_s = 200\ \mu\text{H}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	0.56 0.57 0.54	- - -	
开通损耗能量 (每脉冲) / Turn-on energy loss per pulse	E_{on}		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	15.5 19.9 22.1	- - -	
关断损耗能量 (每脉冲) / Turn-off energy loss per pulse	E_{off}		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	- - -	108.5 109.1 109.7	- - -	
短路数据/ SC data	I_{SC}	$V_{GE} = 15\text{ V}, V_{CC} = 400\text{ V}$ $t_p = 4\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$		-	1921	-	A
结-冷却液热阻/ Thermal resistance, junction-cooling fluid	R_{thJF}	每个 IGBT/ per IGBT		-	-	0.125	K/W
在开关状态下的温度/ Temperature under switching conditions	$T_{vj\text{ op}}$			-40	-	150	$^{\circ}\text{C}$

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二极管, 逆变器/ Diode, Inverter

最大额定值/ Maximum ratings Values

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Values	单位/ Unit
反复重复峰值电压/ Repetitive peak reverse voltage	V_{RRM}	$T_{vj} = 25^{\circ}\text{C}$	750	V
连续正向电流/ Continuous DC forward current	I_F		900	A
正向重复峰值电流/ Repetitive peak forward current	I_{FRM}	$t_p = 1 \text{ ms}$	1800	A

特征值/ Characteristic Values

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Values			单位/ Unit	
			最小/ Min.	典型/ Typ.	最大/ Max.		
正向电压/ Forward voltage	V_F	$V_{GE} = 0 \text{ V},$ $I_F = 900\text{A}$	$T_{vj} = 25^{\circ}\text{C}$	0.8	1.89	2.0	V
			$T_{vj} = 125^{\circ}\text{C}$	-	1.95	-	
			$T_{vj} = 150^{\circ}\text{C}$	-	1.93	-	
反向恢复峰值电流/ Peak reverse recovery current	I_{RM}	$V_R = 400 \text{ V},$ $I_F = 550\text{A}$	$T_{vj} = 25^{\circ}\text{C}$	-	159	-	A
			$T_{vj} = 125^{\circ}\text{C}$	-	204	-	
			$T_{vj} = 150^{\circ}\text{C}$	-	227	-	
恢复电荷/ Recovery charge	Q_r		$T_{vj} = 25^{\circ}\text{C}$	-	9.86	-	μC
			$T_{vj} = 125^{\circ}\text{C}$	-	10.3	-	
			$T_{vj} = 150^{\circ}\text{C}$	-	10.5	-	
反向恢复损耗 (每脉冲) / Reverse recovery energy per pulse	E_{rec}	$I_F = 550 \text{ A},$ $V_R = 400 \text{ V},$ $V_{GE} = -8 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	-	4.27	-	mJ
			$T_{vj} = 125^{\circ}\text{C}$	-	7.26	-	
			$T_{vj} = 150^{\circ}\text{C}$	-	9.16	-	
结-冷却液热阻/ Thermal resistance, junction-cooling fluid	R_{thJF}	每个二极管/ per diode	-	-	0.162	K/W	
在开关状态下的温度/ Temperature under switching conditions	$T_{vj op}$		-40	-	150	$^{\circ}\text{C}$	

负温度系数热敏电阻/ NTC-Thermistor

特征值/ Characteristic Values

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Value	单位/ Unit
额定电阻值/ Rated resistance	R_{25}	$T_{NTC} = 25^{\circ}\text{C}$	5.00	k Ω
R100 偏差/ Deviation of R100	$ \Delta R /R$	$T_{NTC} = 100^{\circ}\text{C}, R_{100} = 493 \Omega$	5	%
B-值/ B-value	$B_{25/50}$	25 和 50 $^{\circ}\text{C}$ 电阻值计算得到/ Calculated from resistance value at 25 $^{\circ}\text{C}$ and 50 $^{\circ}\text{C}$	3375	K
B-值/ B-value	$B_{25/80}$	25 和 80 $^{\circ}\text{C}$ 电阻值计算得到/ Calculated from resistance value at 25 $^{\circ}\text{C}$ and 80 $^{\circ}\text{C}$	3411	K
B-值/ B-value	$B_{25/100}$	25 和 100 $^{\circ}\text{C}$ 电阻值计算得到/ Calculated from resistance value at 25 $^{\circ}\text{C}$ and 100 $^{\circ}\text{C}$	3433	K

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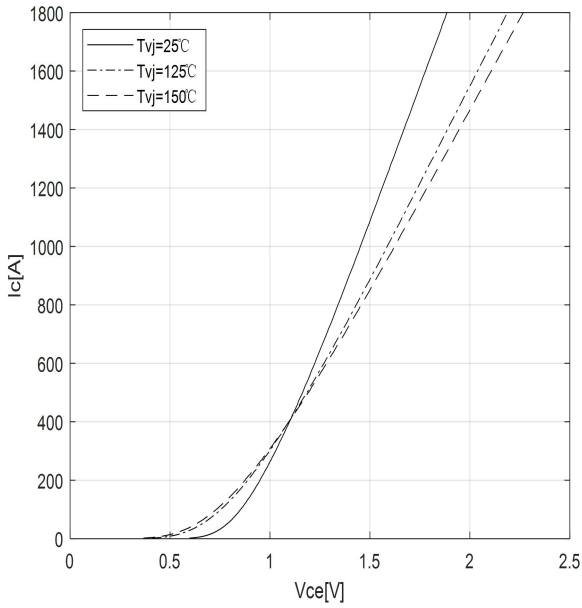
模块/ Module

参数/ Parameter	符号/ Symbol	条件/ Conditions	值/ Values	单位/ Unit
绝缘测试电压/ Isolation test voltage	V _{ISOL}	RMS, f = 0 Hz, t = 1.2 sec	4.7	kV
模块基板材料/ Material of Module baseplate			AlSiC	
内部绝缘材料/ Material of Internal Isolation			Al ₂ O ₃	
爬电距离/ Creepage distance		端子-散热片/ Terminal to heatsink	7.0	mm
		端子- 端子 / terminal to terminal	5.5	
电气间隙/Clearance		端子- 散热片 / terminal to heatsink	7.0	mm
		端子- 端子 / terminal to terminal	5.0	
模块杂散电感/ Stray inductance module	L _S		13	nH
存储温度/ Storage temperature	T _{stg}		-40 ~ 125	°C
模块安装扭矩/ Mounting torque for module mounting	M	螺丝 M6 根据相应的应用手册进行安装/ Screw M6 - Mounting according to valid application note	3.0 ~ 4.5	N·m
端子联接扭矩/ Terminal connection torque	M	螺丝 M6 根据相应的应用手册进行安装/ Screw M6 - Mounting according to valid application note	3.0 ~ 4.5	N·m
重量/ Weight	G		690	g

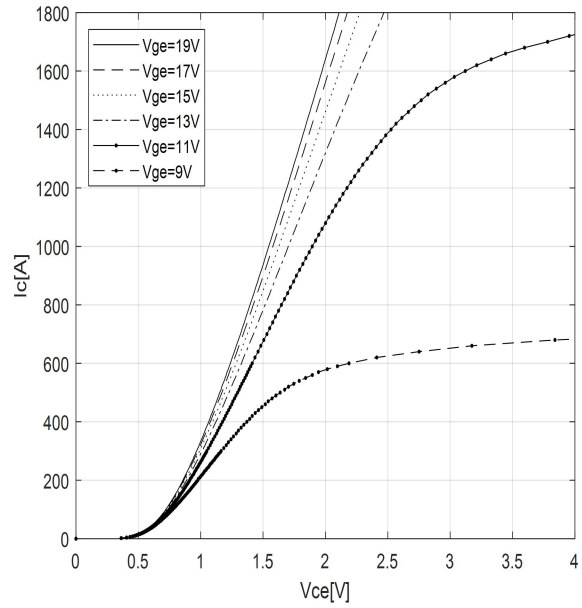
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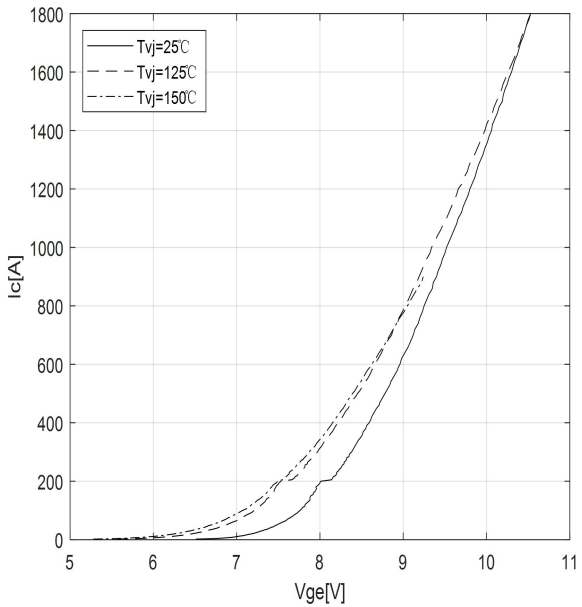
输出特性 IGBT, 逆变器 (典型)
Output characteristic IGBT, Inverter (typical)
 $I_C = f(V_{CE})$
 $V_{GE} = 15\text{ V}$



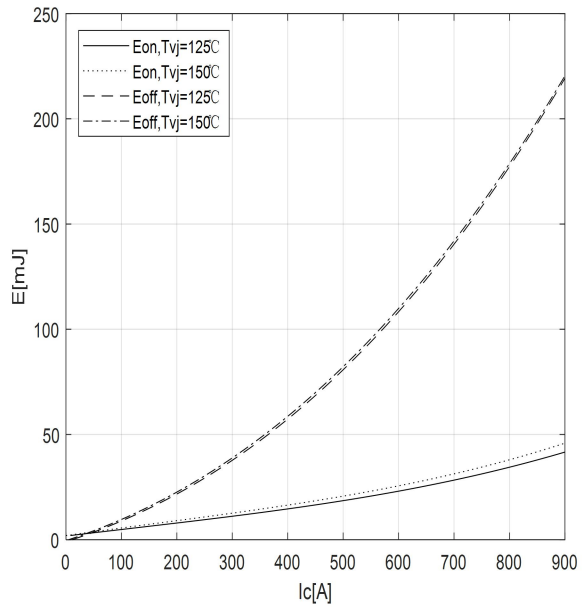
输出特性 IGBT, 逆变器 (典型)
Output characteristic IGBT, Inverter (typical)
 $I_C = f(V_{CE})$
 $T_{vj} = 150^\circ\text{C}$



传输特性 IGBT, 逆变器 (典型)
Transfer characteristic IGBT, Inverter (typical)
 $I_C = f(V_{GE})$
 $V_{CE} = 20\text{ V}$



开关损耗 IGBT, 逆变器 (典型)
Switching losses IGBT, Inverter (typical)
 $E_{on} = f(I_C), E_{off} = f(I_C)$,
 $V_{GE} = \pm 15\text{ V}, R_{on} = 5\ \Omega, R_{off} = 5\ \Omega, V_{CE} = 400\text{ V}$

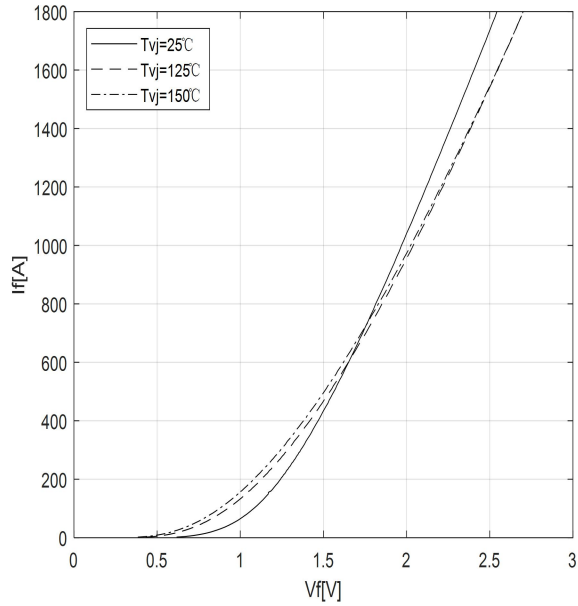
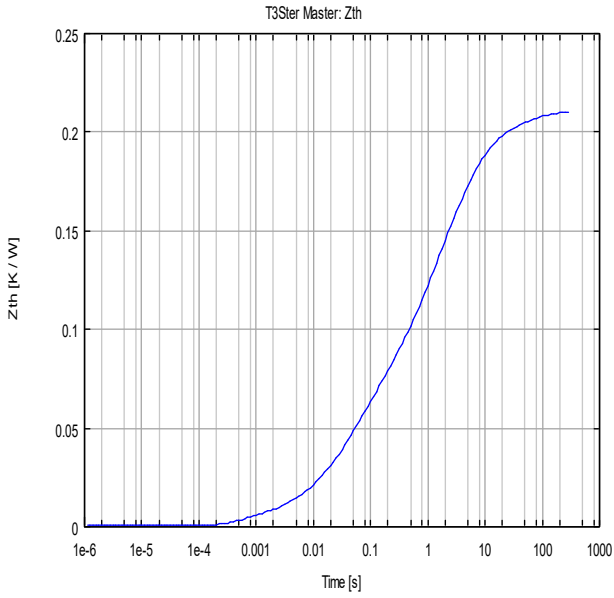


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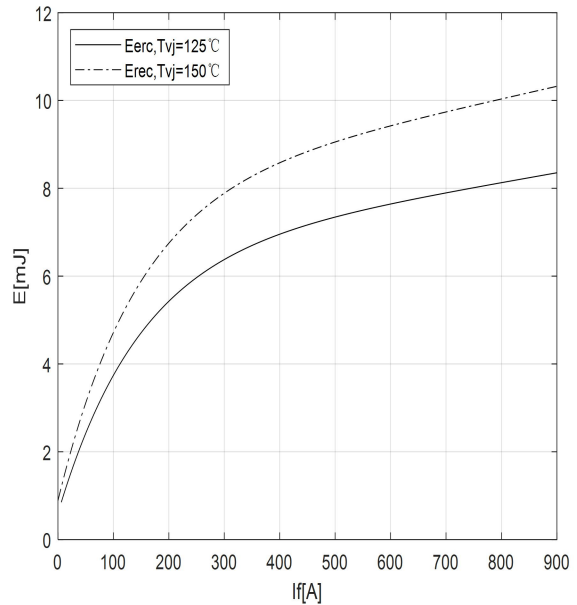
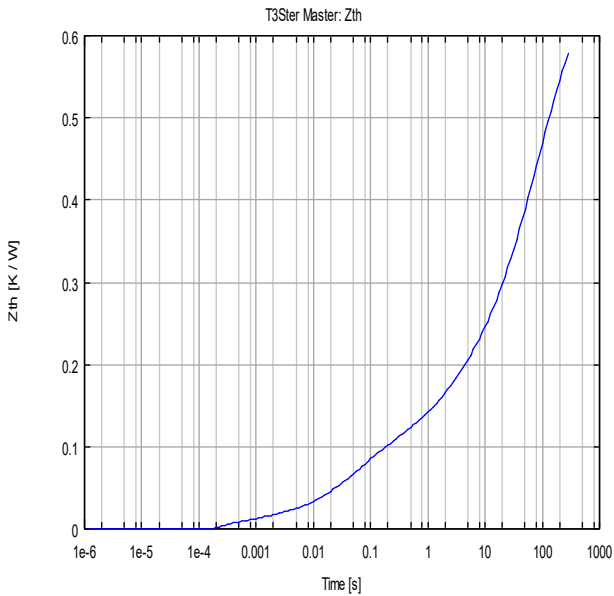
瞬态热阻抗 IGBT, 逆变器 (典型)
 Transient thermal impedance IGBT, Inverter (typical)
 $Z_{thJC} = f(t)$

正向偏压特性 二极管, 逆变器 (典型)
 Forward characteristic of Diode, Inverter (typical)
 $I_F = f(V_F)$



瞬态热阻抗 二极管, 逆变器 (典型)
 Transient thermal impedance Diode, Inverter (typical)
 $Z_{thJC} = f(t)$

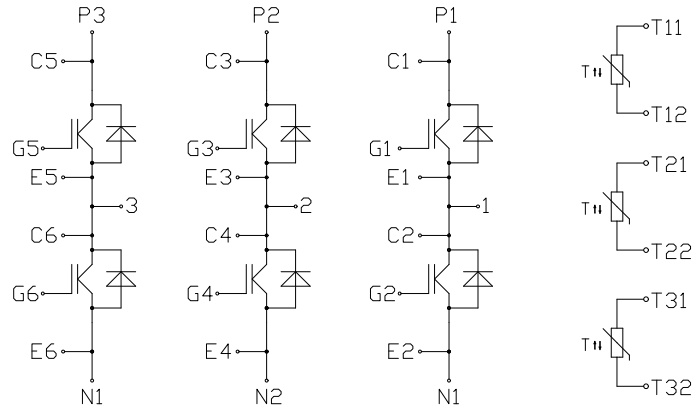
开关损耗 二极管, 逆变器 (典型)
 Switching losses Diode, Inverter (typical)
 $E_{rec} = f(I_F), R_{Gon} = 5 \Omega, V_{CE} = 400 V$



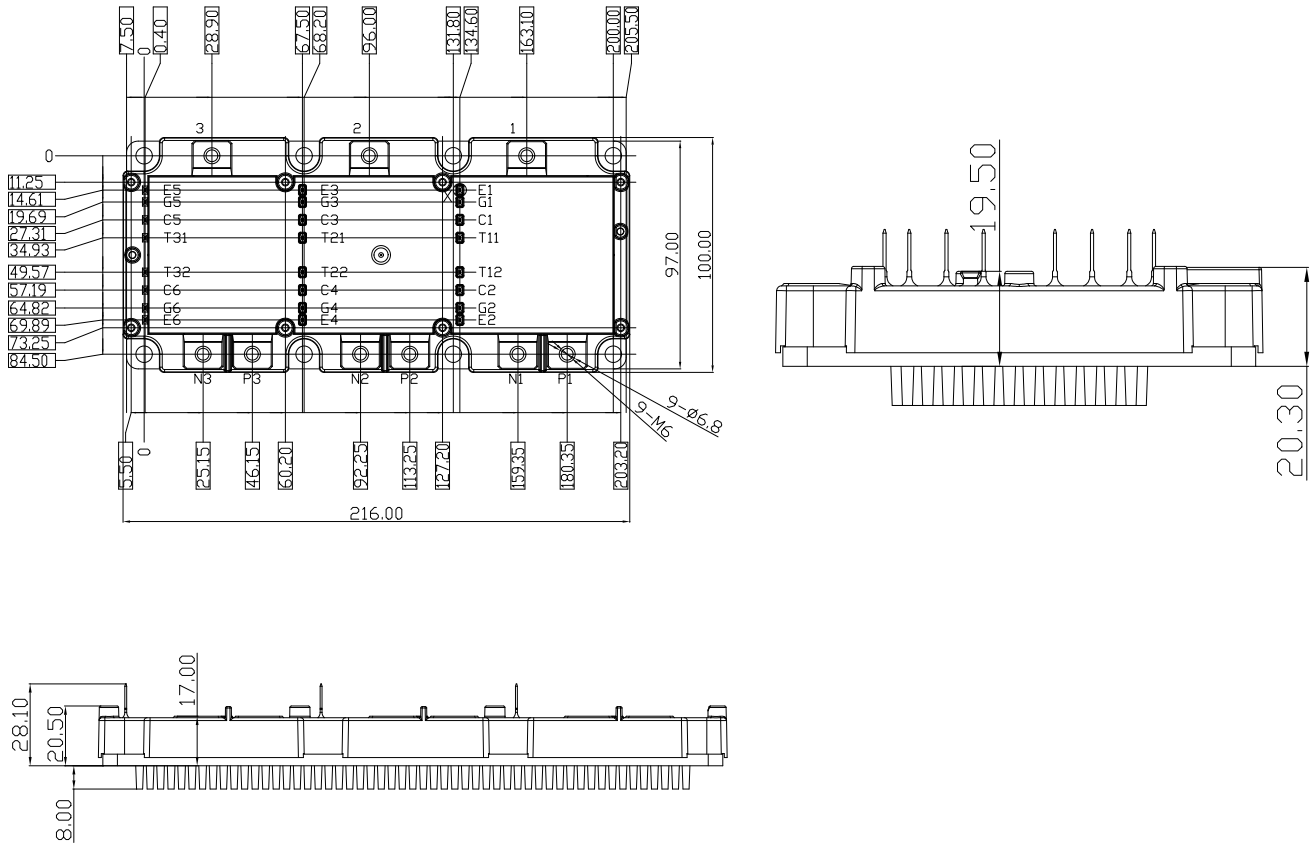
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接线图 / Circuit_diagram_headline



封装尺寸 / Package outlines



单位: mm

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版本履历 / Revision History

Page or Reference	Description of change
V1.0	Initial Datasheet.

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