SDI015E120T1P

中恒微半导体
IGBT&SiC | Power to create

➢ 产品外观 / Appearance

V_{CES} = 1200V

$I_{C\ nom}$ = 110 A/ I_{CRM} =380 A

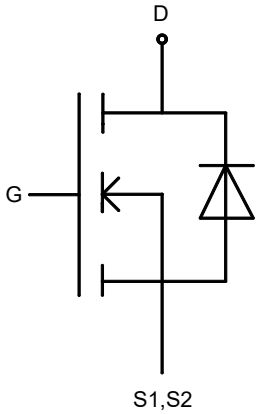
➢ 特性 / Features

a.	High Current Density	高电流密度
b.	Low Switching Losses	低开关损耗
c.	High Speed Switching	高频开关
d.	High Reliability Module	高可靠性模块

➢ 用途 / Applications

a.	High Frequency Switching Application	高频开关应用
b.	DC/DC Converter	DC/DC 整流器
c.	Solar Applications	伺服应用
d.	Uninterruptible Power Supply	UPS 不间断电源

➢ 电路拓扑 / Circuit Topology



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MOSFET

最大额定值/ Maximum Rated Values

漏极-源极电压 Drain-source voltage	T_j = 25℃	V_{DSS}	1200	V
连续漏极直流电流 DC drain current	V_{GS} = 18 V, $T_{j\,max}$ = 150℃	$I_{D\,nom}$	110	A
漏极重复峰值电流 Pulse drain current		$I_{D\,(Pulse)}$	380	A
栅极-源极电压 Gate-source voltage		V_{GSS}	-8/+22	V
存储结温 Operating and Storage Temperature		T_{stg}	-40 to +175	℃

电特性/ Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Parameter	Test Conditions		Symbol	Min	Typ	Max	Unit
漏极-源极导通电阻 Drain-Source on resistance	I_D = 60 A, V_{GS} = 18 V	T_j = 25℃ T_j = 125℃ T_j = 175℃	$R_{DS\,on}$		15.0 21.7 27.2		mΩ
栅极阈值电压 Gate threshold voltage	I_C = 28 mA, V_{CE} = V_{GE}, T_j = 25℃		V_{GSth}	2.3	2.8	4	V
栅极电荷 Total gate charge	V_{DD}=800 V, I_D=60 A, V_{GS}=-4/+18V		Q_G		180		nC
栅极-源极电荷 Gate to source Charge			Q_{gs}		66		
栅极-漏极电荷 Gate to Drain Charge			Q_{gd}		36		
内部栅极电阻 Internal gate resistor	Tj = 25℃		R_{Gint}		0.9		Ω
跨导 Trans-conductance	V_{DS}=20 V, I_D=100 A		g_{fs}		42		S
输入电容 Input capacitance	f = 1 MHz, V_{DS} = 1000 V, V_{GS} = 0 V		C_{iss}		5469		pF
输出电容 Output capacitance			C_{oes}		235		
反向传输电容 Reverse transfer capacitance			C_{rss}		17.5		
集电极-源极截止电流 Collector-source cut-off current	V_{DS} = 1200 V, V_{GS} = 0 V, T_j = 25℃		I_{DSS}			100	uA
栅极-源极漏电流 Gate-source leakage current	V_{DS} = 0 V, V_{GS} = +22/-10V, T_j = 25℃		I_{GSS}			200	nA
开通损耗能量 Turn−on Switching Loss per Pulse	I_D = 100 A, V_{DS} = 800 V $V_{GS(on)}$ = 18 V, $V_{GS(off)}$ = -5 V, R_G = 15 Ω Inductive Load	T_J = 25℃ T_J = 150℃ T_J = 175℃	E_{on}		3.3 3.2 3.0		mJ
关断损耗能量 Turn off Switching Loss per Pulse		T_J = 25℃ T_J = 150℃ T_J = 175℃	E_{off}		1.5 1.3 1.0		
芯片 – 外壳热阻 Thermal Resistance − chip−to−case	每个 MOSFET / per MOSFET		R_{thJC}			0.54	℃/W
开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		150	℃

体二极管/ Body Diode

最大额定值/Maximum Rated Values

反向重复峰值电压 Repetitive peak reverse voltage	Tj = 25℃	V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current		I_F	110	A

电特性/ Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Parameter	Test Conditions		Symbol	Min	Typ	Max	Unit
正向电压 Forward voltage	I_F = 50 A, V_{GS} = 0 V	T_j = 25℃ T_j = 175℃	V_{SD}		4.0 3.5		V
反向恢复峰值电流 Peak reverse recovery current	I_{SD} = 100 A, V_R = 800 V Inductive Load,		I_{RM}		52		A
反向恢复时间 Reverse recovery time			T_{rr}		66		ns
恢复电荷 Recovered charge			Q_r		1830		nC
在开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		175	℃

模块/ Module

绝缘配置 / Insulation Coordination

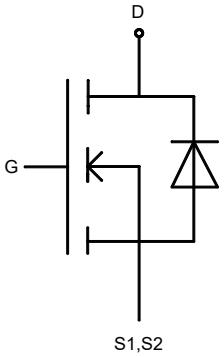
Parameter	Test Conditions	Symbol	Typ.	Unit
隔离试验电压 Isolation test voltage	RMS, f = 50 Hz, t = 1 min	V_{ISOL}	4.0	kV
模块基板材料 Material of module baseplate			Cu	
内部隔离 Internal Isolation	基本绝缘 (class 1, IEC61140) Basic insulation (class 1, IEC61140)		Si_3N_4	
爬电距离 Creepage distance	端子至散热器/ terminal to heatsink 端子至端子/ terminal to terminal	dCreep	14.5 13.0	mm
间距 Clearance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal	dClear	12.5 10.0	mm
相对漏电起痕指数 Comparative tracking index		CTI	> 400	

特征值 / Characteristic Values

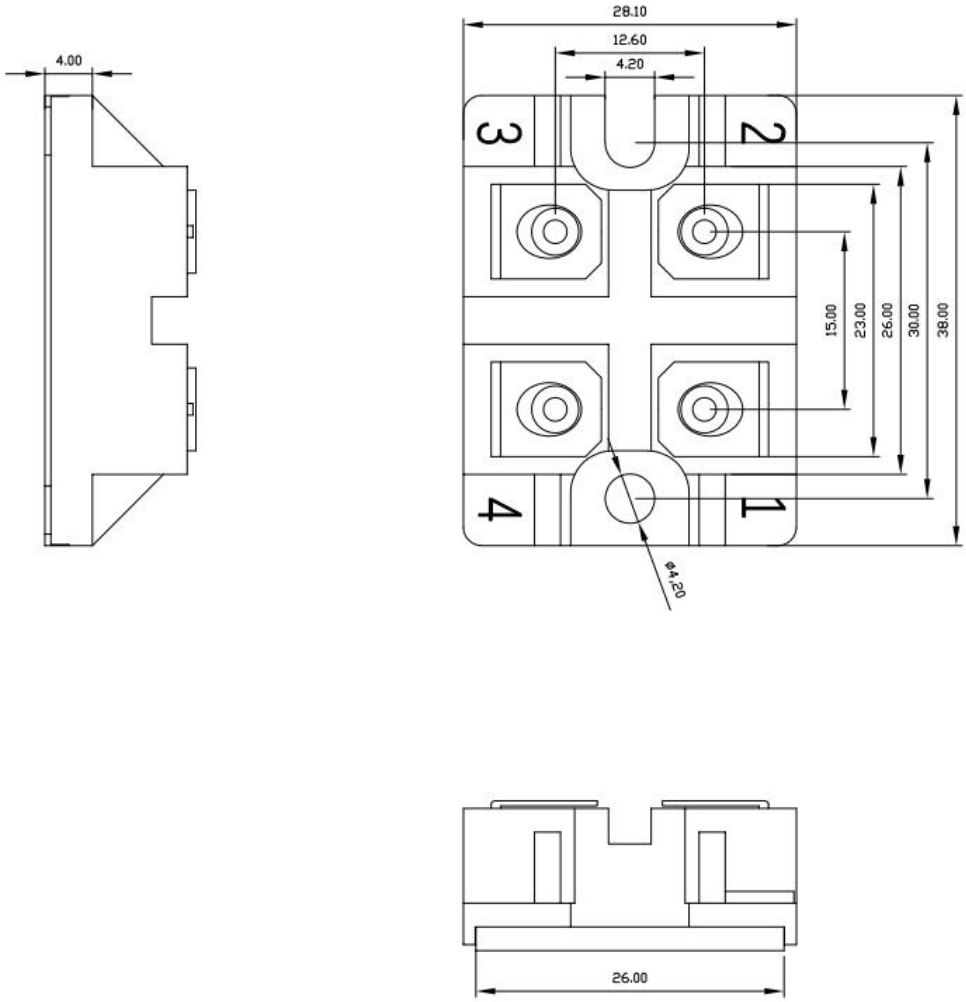
Parameter		Symbol	Min	Typ	Max	Unit
杂散电感，模块 Stray inductance module		L_{sCE}		20		nH
储存温度 Storage temperature		T_{stg}	-40		125	℃
模块安装的安装扭距 Mounting torque for module	螺丝 M3 / Screw M3	M	2.5		5.0	Nm
重量 Weight		G		30		g

封装/Package

电路拓扑/Circuit Topology



封装尺寸 / Package outlines



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