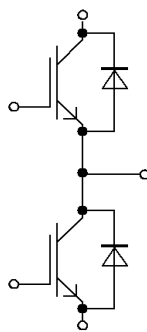
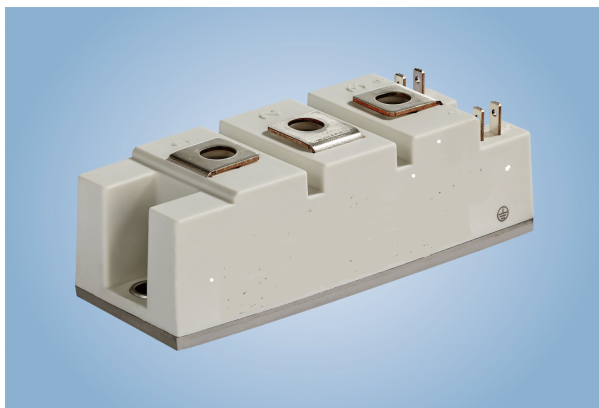


技术信息 / Technical Information

IGBT-模块
IGBT-Module

目标数据 / Target Data



$V_{CES} = 1200V$
 $I_{C\ nom} = 50A / I_{CRM} = 100A$

典型应用

- 工业焊机

Typical Applications

- Welding

电气特性

- 低开关损耗
- $T_{vj\ op} = 125^{\circ}C$
- 超快速IGBT芯片

Electrical Features

- Low Switching Losses
- $T_{vj\ op} = 125^{\circ}C$
- Ultra fast IGBT Chips

机械特性

- 铜基板
- 标准封装

Mechanical Features

- Copper Base Plate
- Standard Housing

IGBT, 逆变器 / IGBT, Inverter

最大额定值 / Maximum Rated Values

集电极 - 发射极电压 Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
连续集电极直流电流 Continuous DC collector current	$T_C = 70^{\circ}\text{C}, T_{vj\max} = 125^{\circ}\text{C}$	$I_{C\text{nom}}$	50	A
集电极重复峰值电流 Repetitive peak collector current	$t_P = 1\text{ms}$	I_{CRM}	100	A
总功率损耗 Total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj\max} = 125^{\circ}\text{C}$	P_{tot}	145	W
栅极 - 发射极峰值电压 Gate-emitter peak voltage		V_{GES}	+/-20	V

特征值 / Characteristic Values

			min.	typ.	max.	
集电极 - 发射极饱和电压 Collector-emitter saturation voltage	$I_C = 50\text{A}, V_{GE} = 15\text{V}$ $I_C = 50\text{A}, V_{GE} = 15\text{V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	$V_{CE\text{sat}}$	2,15 2,50	2,40	V V
栅极阈值电压 Gate threshold voltage	$I_C = 1,70\text{mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,25	5,80	6,25 V
栅极电荷 Gate charge	$V_{GE} = -15\text{V} \dots +15\text{V}$		Q_G	0,23		μC
内部栅极电阻 Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	0,0		Ω
输入电容 Input capacitance	$f = 1\text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{V}, V_{GE} = 0\text{V}$		C_{ies}	3,00		nF
反向传输电容 Reverse transfer capacitance	$f = 1\text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{V}, V_{GE} = 0\text{V}$		C_{res}	0,16		nF
集电极-发射极截止电流 Collector-emitter cut-off current	$V_{CE} = 1200\text{V}, V_{GE} = 0\text{V}, T_{vj} = 25^{\circ}\text{C}$		I_{CES}		1,0	mA
栅极-发射极漏电流 Gate-emitter leakage current	$V_{CE} = 0\text{V}, V_{GE} = 20\text{V}, T_{vj} = 25^{\circ}\text{C}$		I_{GES}		100	nA
开通延迟时间(电感负载) Turn-on delay time, inductive load	$I_C = 50\text{A}, V_{CE} = 1200\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Gon} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_{don}	0,21 0,24		μs μs
上升时间(电感负载) Rise time, inductive load	$I_C = 50\text{A}, V_{CE} = 1200\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Gon} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_r	0,05 0,06		μs μs
关断延迟时间(电感负载) Turn-off delay time, inductive load	$I_C = 50\text{A}, V_{CE} = 1200\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Goff} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_{doff}	0,39 0,45		μs μs
下降时间(电感负载) Fall time, inductive load	$I_C = 50\text{A}, V_{CE} = 1200\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Goff} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_f	0,02 0,045		μs μs
开通损耗能量(每脉冲) Turn-on energy loss per pulse	$I_C = 50\text{A}, V_{CE} = 1200\text{V}, L_S = 35\text{nH}$ $V_{GE} = \pm 15\text{V}$ $R_{Gon} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	E_{on}	6,50 9,00		mJ mJ
关断损耗能量(每脉冲) Turn-off energy loss per pulse	$I_C = 50\text{A}, V_{CE} = 1200\text{V}, L_S = 35\text{nH}$ $V_{GE} = \pm 15\text{V}$ $R_{Goff} = 15\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	E_{off}	1,90 2,80		mJ mJ
短路数据 SC data	$V_{GE} \leq 15\text{V}, V_{CC} = 800\text{V}$ $V_{CE\text{max}} = V_{CES} - L_{sCE} \cdot di/dt$ $t_P \leq 10\mu\text{s}, T_{vj} = 125^{\circ}\text{C}$		I_{SC}	150		A
结 - 外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT		R_{thJC}		0,700	K/W
外壳 - 散热器热阻 Thermal resistance, case to heatsink	每个 IGBT / per IGBT $\lambda_{\text{Paste}} = 1\text{W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1\text{W}/(\text{m}\cdot\text{K})$		R_{thCH}	0,0900		K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj\text{op}}$	-40	125	$^{\circ}\text{C}$

二极管, 逆变器 / Diode, Inverter 最大额定值 / Maximum Rated Values

反向重复峰值电压 Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current		I_F	25	A
正向重复峰值电流 Repetitive peak forward current	$t_P = 1 \text{ ms}$	I_{FRM}	50	A
I^2t -值 I^2t - value	$V_R = 0 \text{ V}, t_P = 10 \text{ ms}, T_{vj} = 125^{\circ}\text{C}$	I^2t	140	A^2s

特征值 / Characteristic Values

			min.	typ.	max.	
正向电压 Forward voltage	$I_F = 25 \text{ A}, V_{GE} = 0 \text{ V}$ $I_F = 25 \text{ A}, V_{GE} = 0 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	V_F	1,70 1,70	2,15	V V
结 - 外壳热阻 Thermal resistance, junction to case	每个二极管 / per diode		R_{thJC}		1,60	K/W
外壳 - 散热器热阻 Thermal resistance, case to heatsink	每个二极管 / per diode $\lambda_{\text{Paste}} = 1 \text{ W}/(\text{m}\cdot\text{K}) / \lambda_{\text{grease}} = 1 \text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}	0,150		K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj \text{ op}}$	-40	125	$^{\circ}\text{C}$

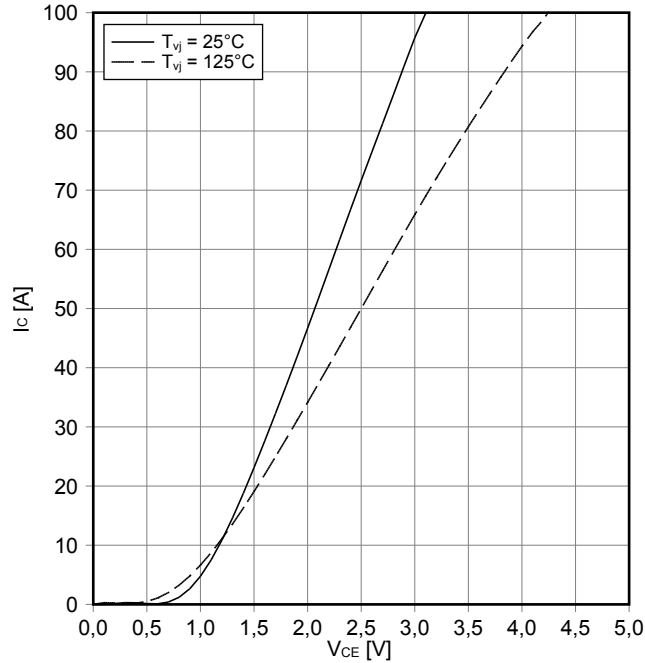
模块 / Module

绝缘测试电压 Isolation test voltage	RMS, $f = 50 \text{ Hz}, t = 1 \text{ min.}$	V_{ISOL}	2,5	kV
模块基板材料 Material of module baseplate			Cu	
内部绝缘 Internal isolation	基本绝缘 (class 1, IEC 61140) basic insulation (class 1, IEC 61140)		Al_2O_3	
爬电距离 Creepage distance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal		21,5 13,0	mm
电气间隙 Clearance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal		21,5 5,0	mm
相对电痕指数 Comperative tracking index		CTI	> 200	

			min.	typ.	max.	
外壳 - 散热器热阻 Thermal resistance, case to heatsink	每个模块 / per module $\lambda_{\text{Paste}} = 1 \text{ W}/(\text{m}\cdot\text{K}) / \lambda_{\text{grease}} = 1 \text{ W}/(\text{m}\cdot\text{K})$	R_{thCH}		0,05		K/W
杂散电感, 模块 Stray inductance module		L_{sCE}		30		nH
储存温度 Storage temperature		T_{stg}	-40		125	$^{\circ}\text{C}$
模块安装的安装扭矩 Mounting torque for modul mounting	螺丝 M6 根据相应的应用手册进行安装 Screw M6 - Mounting according to valid application note	M	3,00		5,00	Nm
端子联接扭矩 Terminal connection torque	螺丝 M5 根据相应的应用手册进行安装 Screw M5 - Mounting according to valid application note	M	2,5	-	5,0	Nm
重量 Weight		G		160		g

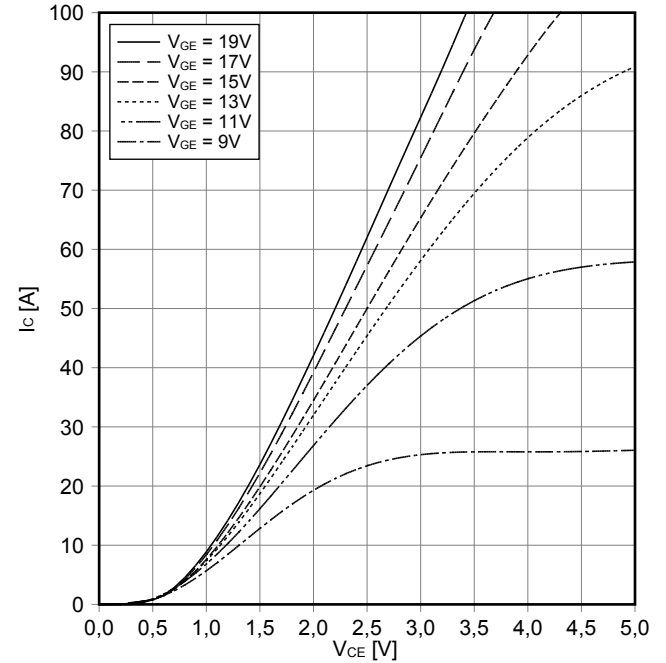
输出特性 IGBT, 逆变器 (典型)
output characteristic IGBT, Inverter (typical)

$I_C = f(V_{CE})$
 $V_{GE} = 15\text{ V}$



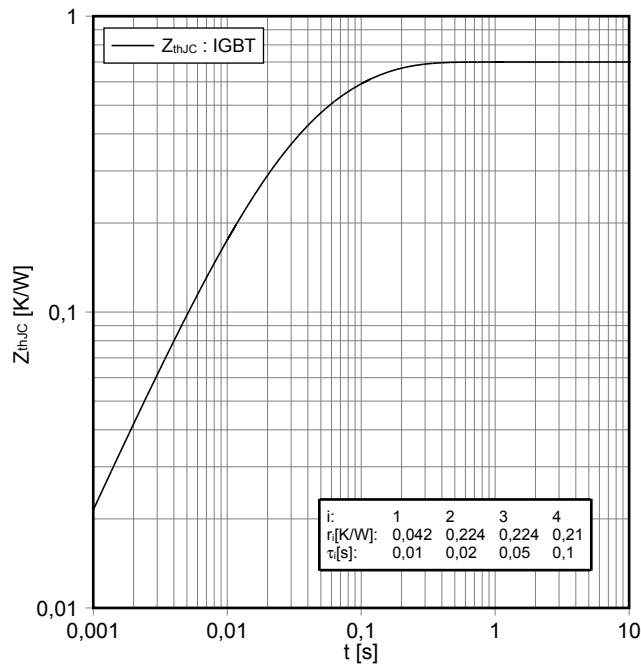
输出特性 IGBT, 逆变器 (典型)
output characteristic IGBT, Inverter (typical)

$I_C = f(V_{CE})$
 $T_{vj} = 125^\circ\text{C}$



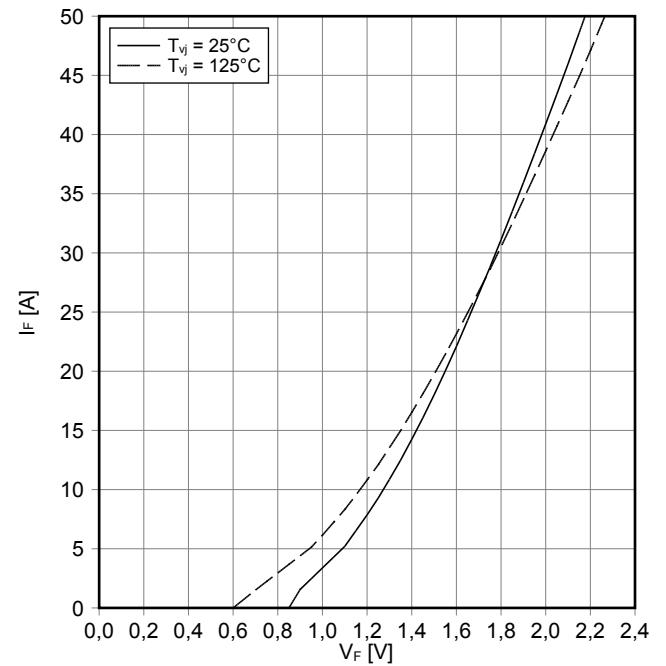
瞬态热阻抗 IGBT, 逆变器
transient thermal impedance IGBT, Inverter

$Z_{thJC} = f(t)$

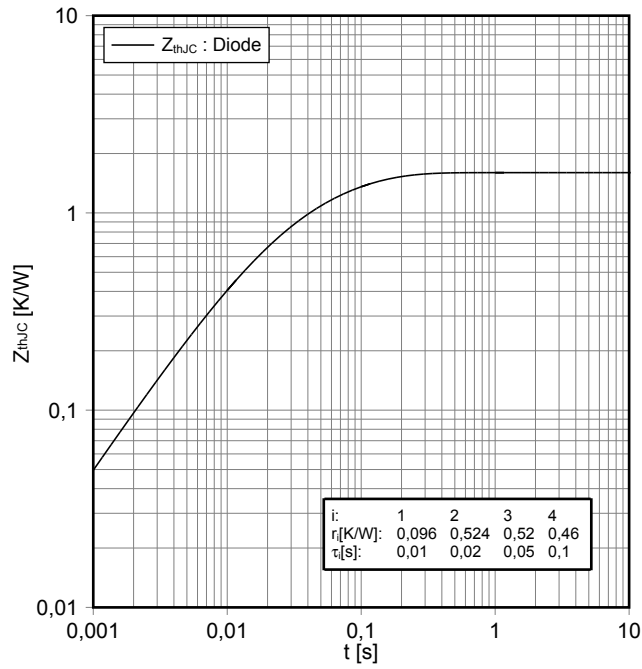


正向偏压特性 二极管, 逆变器 (典型)
forward characteristic of Diode, Inverter (typical)

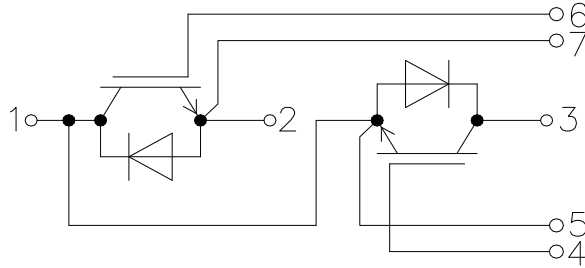
$I_F = f(V_F)$



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



接线图 / Circuit diagram



封装尺寸 / Package outlines

