技术信息 / Technical Information

IGBT-模块
IGBT-modules

FZ2400R17KF6C_B2

IHM-A Modul mit low loss IGBT2 and Emitter Controlled Diode
IHM-A module with low loss IGBT2 and Emitter Controlled Diode

初步数据
Preliminary Data

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°C T_{vj} = 125°C	V_{CES}	1700 1700		V
连续集电极直流电流 Continuous DC collector current	T_C = 80°C, $T_{vj\,max}$ = 150°C T_C = 25°C, $T_{vj\,max}$ = 150°C	$I_{C\,nom}$ I_C	2400 3800		A A
集电极重复峰值电流 Repetitive peak collector current	t_P = 1 ms	I_{CRM}	4800		A
总功率损耗 Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 150°C	P_{tot}	18,0		kW
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 = 2400 A, V_{GE} = 15 V I_C = 2400 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C	$V_{CE\,sat}$		2,60 3,10	3,10 3,60	V V
栅极阈值电压 Gate threshold voltage	I_C = 190 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	4,5	5,5	6,5	V
栅极电荷 Gate charge	V_{GE} = -15 V ... +15 V		Q_G		29,0		µC
内部栅极电阻 Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,44		Ω
输入电容 Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		160		nF
反向传输电容 Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		8,00		nF
集电极-发射极截止电流 Collector-emitter cut-off current	V_{CE} = 1700 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}		0,06	4,5	mA
栅极-发射极漏电流 Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			400	nA
开通延迟时间(电感负载) Turn-on delay time, inductive load	I_C = 2400 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,on}$		0,30 0,30		µs µs
上升时间(电感负载) Rise time, inductive load	I_C = 2400 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_r		0,23 0,23		µs µs
关断延迟时间(电感负载) Turn-off delay time, inductive load	I_C = 2400 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,off}$		1,50 1,50		µs µs
下降时间(电感负载) Fall time, inductive load	I_C = 2400 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_f		0,18 0,19		µs µs
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	I_C = 2400 A, V_{CE} = 900 V, L_S = 50 nH V_{GE} = ±15 V R_{Gon} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{on}		750		mJ mJ
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	I_C = 2400 A, V_{CE} = 900 V, L_S = 50 nH V_{GE} = ±15 V R_{Goff} = 0,6 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{off}		1050		mJ mJ
短路数据 SC data	V_{GE} ≤ 15 V, V_{CC} = 1000 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 10 µs, T_{vj} = 125°C	I_{SC}		9600		A
结 - 外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT		R_{thJC}			7,00	K/kW
外壳 - 散热器热阻 Thermal resistance, case to heatsink	每个 IGBT / per IGBT λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)		R_{thCH}		10,0		K/kW
在开关状态下温度 Temperature under switching conditions			$T_{vj\,op}$	-40		125	°C

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初步数据
Preliminary Data

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°C T_{vj} = 125°C	V_{RRM}	1700 1700	V
连续正向直流电流 Continuous DC forward current		I_F	2400	A
正向重复峰值电流 Repetitive peak forward current	t_P = 1 ms	I_{FRM}	4800	A
I2t-值 I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C	I²t	1500	kA²s
最小开通时间 Minimum turn-on time		$t_{on\ min}$	10,0	µs

特征值 / Characteristic Values

			min.	typ.	max.	
正向电压 Forward voltage	I_F = 2400 A, V_{GE} = 0 V I_F = 2400 A, V_{GE} = 0 V	V_F		2,10 2,10	2,50 2,50	V V
反向恢复峰值电流 Peak reverse recovery current	I_F = 2400 A, - di_F/dt = 11000 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	I_{RM}		1750 2200		A A
恢复电荷 Recovered charge	I_F = 2400 A, - di_F/dt = 11000 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	Q_r		530 960		µC µC
反向恢复损耗（每脉冲） Reverse recovery energy	I_F = 2400 A, - di_F/dt = 11000 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	E_{rec}		320 600		mJ mJ
结 - 外壳热阻 Thermal resistance, junction to case	每个二极管 / per diode	R_{thJC}			12,0	K/kW
外壳 - 散热器热阻 Thermal resistance, case to heatsink	每个二极管 / per diode λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)	R_{thCH}		16,0		K/kW
在开关状态下温度 Temperature under switching conditions		$T_{vj\ op}$	-40		125	°C