



PRODUCT FEATURES

电气特性:

- 1700V FS+Trench
1700V 沟槽栅/场终止工艺
- Low Switching Loss
低开关损耗
- Short-Circuit Duration
短路耐量: 10 μ S
- Positive Temperature Coefficient
正温度系数

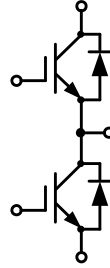
APPLICATIONS

典型应用:

- Frequency Converter
变频器
- UPS
UPS电源
- High Frequency Switching Power Supply
高频开关电源

Equivalent Circuit and Package

A2 Series



最大额定值 / Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
集电极-发射极电压 Collector-Emitter voltage	$T_{vj}=25^{\circ}\text{C}$	V_{CES}	1700	V
连续集电极直流电流 Continuous DC collector current	$T_C=100^{\circ}\text{C}, T_{vj\max}=175^{\circ}\text{C}$	$I_{C\text{nom}}$	75	A
集电极重复峰值电流 Repetitive peak collector current	$t_p=1\text{ms}$	I_{CRM}	150	A
总功率损耗 Total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj\max}=175^{\circ}\text{C}$	P_{tot}	600	W
栅极-发射极电压 Gate emitter voltage		V_{GE}	± 20	V

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
集电极-发射极饱和电压 Collector-Emitter saturation voltage	$V_{GE}=15\text{V}, I_C=75\text{A}$ $V_{GE}=15\text{V}, I_C=75\text{A}$ $V_{GE}=15\text{V}, I_C=75\text{A}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=125^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$	$V_{CE\text{sat}}$	1.77 2.02 2.09	2.30	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C = 2.6\text{mA}, V_{GE} = V_{CE}$	$T_{vj}=25^{\circ}\text{C}$	$V_{GE(\text{th})}$	4.90	5.50	6.10
栅电荷 Gate charge	$V_{GE}=-15\text{V}\dots+15\text{V}$		Q_G	0.62		μC
内部栅极电阻			$R_{G\text{int}}$	8.50		Ω

特征值 / Characteristic Values

Internal gate resistor						
输入电容 Input capacitance	f=1MHz, V _{CE} =25 V, V _{GE} =0 V	T _{vj} =25°C	C _{ies}	8.67	nF	
反向传输电容 Reverse transfer capacitance			C _{res}	0.28		
集电极-发射极截止电流 Collector-emitter cut-off current	V _{CE} =1700V, V _{GE} =0 V	T _{vj} =25°C	I _{CES}		1	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}		100	nA
开通延迟时间 Turn-on delay time	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	t _{d on}	157		
		T _{vj} =125°C		171		
		T _{vj} =150°C		171		
上升时间 Rise time	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	t _r	36	ns	
		T _{vj} =125°C		41		
		T _{vj} =150°C		44		
关断延迟时间 Turn-off delay time	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	t _{d off}	302		
		T _{vj} =125°C		347		
		T _{vj} =150°C		364		
下降时间 Fall time	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	t _f	401		
		T _{vj} =125°C		158		
		T _{vj} =150°C		154		
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	E _{on}	11.73	mJ	
		T _{vj} =125°C		16.25		
		T _{vj} =150°C		17.55		
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	I _C =75A, V _{CE} =900 V V _{GE} =±15 V, R _G =2Ω (电感负载) / (inductive load)	T _{vj} =25°C	E _{off}	13.82		
		T _{vj} =125°C		16.61		
		T _{vj} =150°C		16.75		
短路数据 SC data	V _{GE} ≤15V, V _{cc} =900V V _{CEmax} =V _{CES} -L _{sce} ·di/dt t _p ≤10us, T _{vj} =150°C		I _{SC}	477		A
结-外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT		R _{thJC}		0.25	K/W
在开关状态下温度 Temperature under switching conditions			T _{vj op}	-40	150	°C

Diode 最大额定值 / Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
反向重复峰值电压 Repetitive peak reverse voltage	T _{vj} =25°C	V _{RRM}	1700	V
连续正向直流电流 Continuous DC forward current		I _F	75	A
正向重复峰值电流 Repetitive peak forward current	t _p =1ms	I _{FRM}	150	A
P _t 值 P _t -value	t _p =10ms, sin180°, T _j =150°C	P _t	1100	A ² s

Diode 特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=75A, V_{GE}=0V$ $I_F=75A, V_{GE}=0V$ $I_F=75A, V_{GE}=0V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_F	1.81 1.89 1.87	2.30	V
反向恢复峰值电流 Peak reverse recovery current	$I_F=75A,$ $-di_F/dt=1428A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=900V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	I_{RM}	64 72 77		A
恢复电荷 Recovered charge	$I_F=75A,$ $-di_F/dt=1428A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=900V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	Q_r	12.30 19.50 23.20		μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=75A,$ $-di_F/dt=1428A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=900V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{rec}	6.51 10.74 12.98		mJ
结-外壳热阻 Thermal resistance, junction to case	每个二极管 / per diode		R_{thJC}		0.46	K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj op}$	-40	150	$^{\circ}C$

模块 / Module

Parameter	Conditions	Symbol	Value			Unit
绝缘测试电压 Isolation test voltage	RMS, f=50Hz, t=1min	V_{ISOL}	4000			V
内部绝缘 Internal isolation			Al_2O_3			
储存温度 Storage temperature		T_{stg}	-40		125	$^{\circ}C$
模块安装的扭矩 Mounting torque for modul mounting		M	3.0		6.0	Nm
重量 Weight		W		152		g

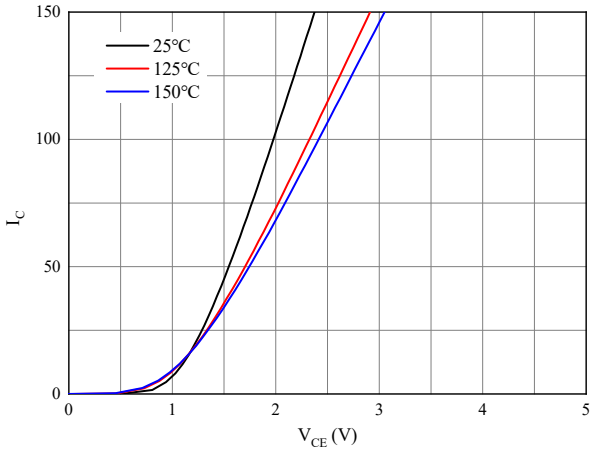


图 1. 典型输出特性 ($V_{GE}=15V$)
Figure 1. Typical output characteristics ($V_{GE}=15V$)

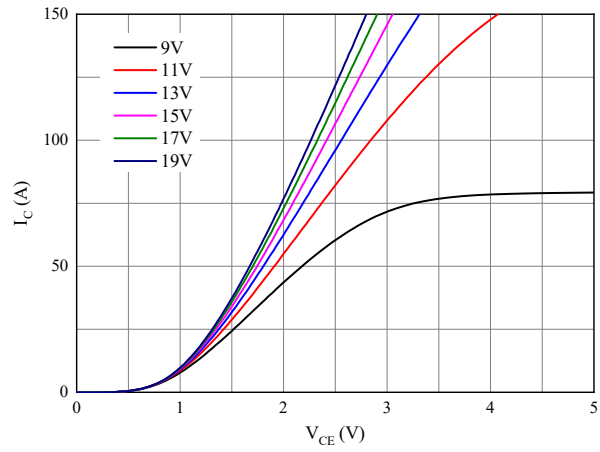


图 2. 典型输出特性 ($T_{vj}=150^{\circ}C$)
Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)

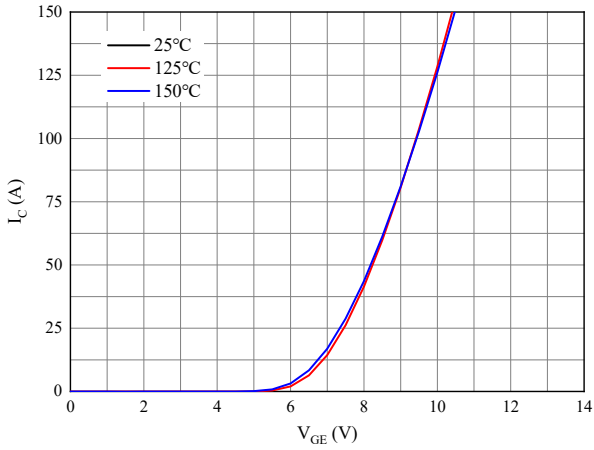


图 3. 典型传输特性 ($V_{CE}=20V$)
Figure 3. Typical transfer characteristic ($V_{CE}=20V$)

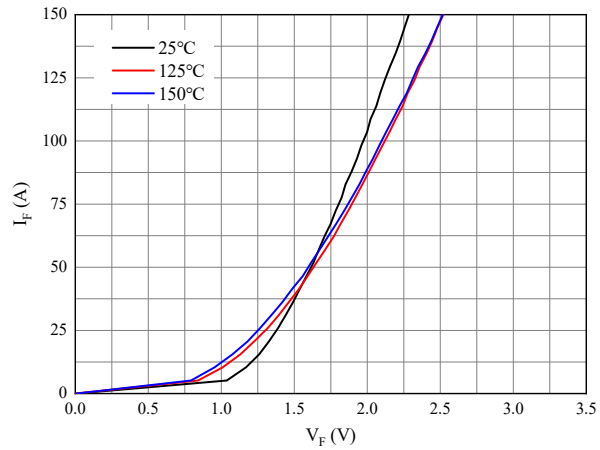


图 4. 正向偏压特性 二极管
Figure 4. Forward characteristic of Diode

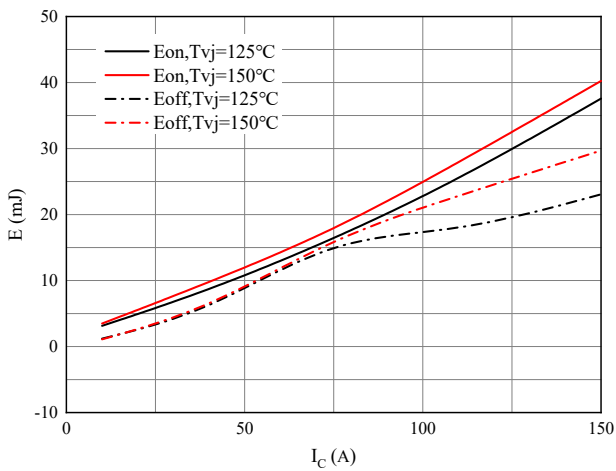


图 5. 开关损耗 逆变器
Figure 5. Switching losses of IGBT
 $V_{GE}=\pm 15V, R_{Gon}=2\Omega, R_{Goff}=2\Omega, V_{CE}=900V$

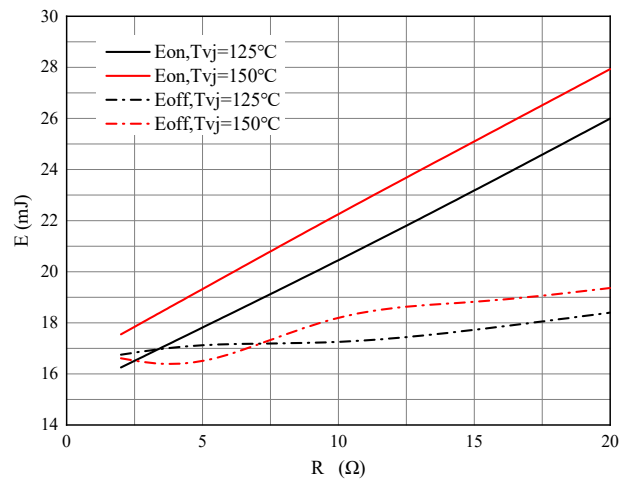


图 6. 开关损耗 逆变器
Figure 6. Switching losses of IGBT
 $V_{GE}=\pm 15V, I_C=75A, V_{CE}=900V$

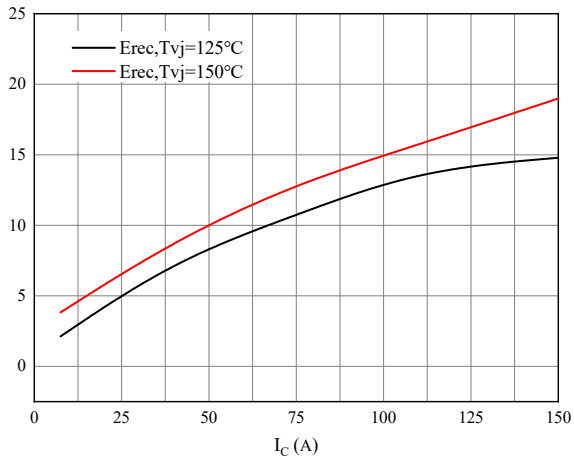


图 7. 开关损耗 二极管

Figure 7. Switching losses of Diode
 $R_{Gon}=2\Omega$, $V_{CE}=900V$

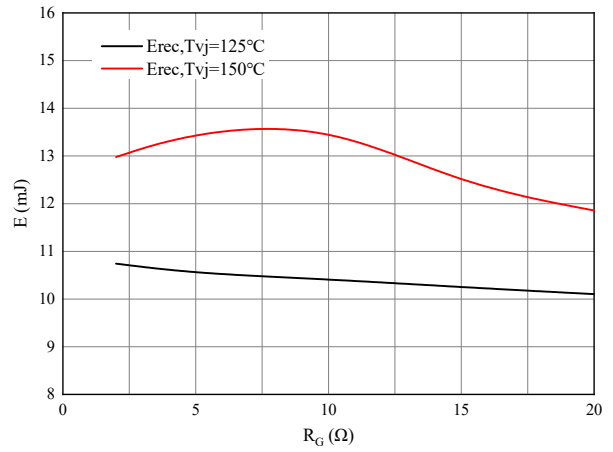


图 8. 开关损耗 二极管

Figure 8. Switching losses of Diode
 $I_F=75A$, $V_{CE}=900V$

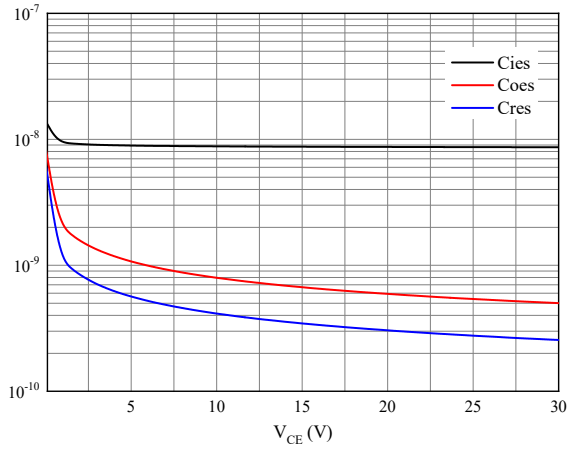
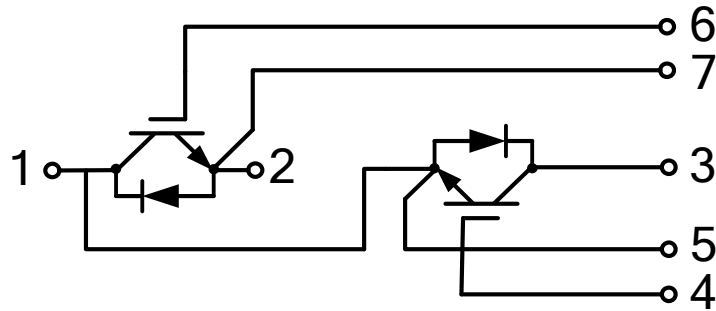


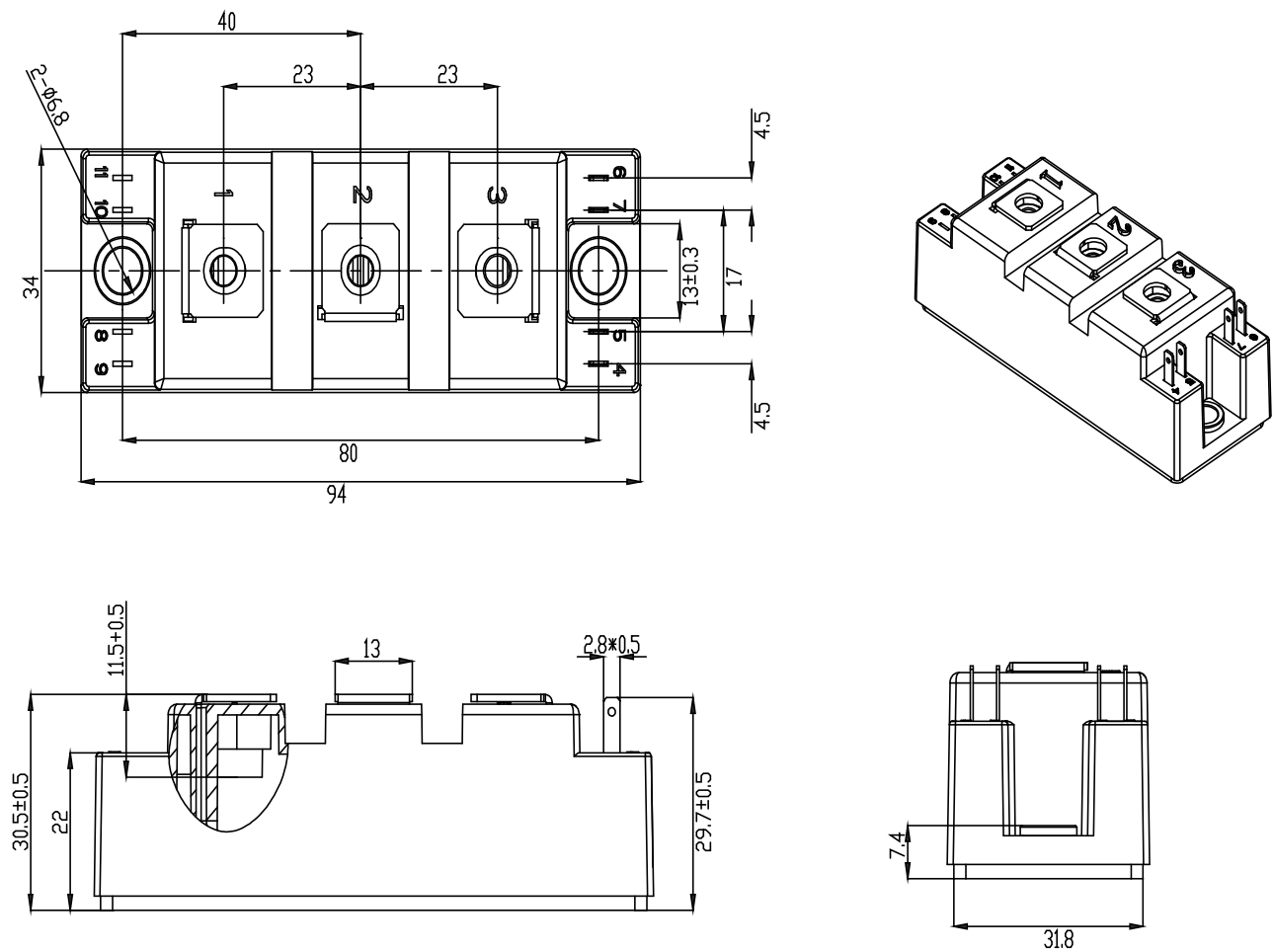
图 9. 电容特性

Figure 9. Capacitance characteristic
 Figure 9. Capacitance characteristic

接线图 / Circuit diagram



封装尺寸 / Package outlines



Unit:mm