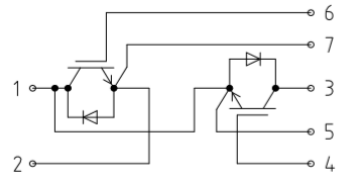
IGBT 34mm 半桥模块

Features 产品特性

- 1200V 50A $V_{CE(sat)(typ.)}$= 2.1V
- Trench Field-stop Technology 沟槽栅场截止技术
- High RBSOA Capability 高 RBSOA 性能
- Low Turn-off Losses 低关断损耗



Typical Application 典型应用

- Welder / Power Supply 电焊机 / 电源
- UPS / Inverter 不间断电源 / 逆变器
- Industrial motor driver 工业电机驱动器

IGBT Maximum Rated Values

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage（T_{vj}=25℃） 集电极-发射极电压	1200	V
V_{GES}	Gate-Emitter Voltage 栅极-发射极峰值电压	± 20	V
I_C	Continuous Collector Current （T_C=80℃,$T_{vj\ max}$=150℃） 集电极连续直流电流	50	A
I_{CRM}	Repetitive Peak Collector Current 集电极可重复峰值电流	100	A
P_D	Maximum Power Dissipation (T_C=25℃,$T_{vj\ max}$=150℃) 总功率损耗	200	W

IGBT Characteristics

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage 集电极-发射极饱和压降	V_{GE}=15V, I_C=50A T_{vj}=25℃	1.6	2.1	2.5	V

$V_{GE(th)}$	Gate Threshold Voltage 栅极阈值电压	$V_{GE}=V_{CE}$, I_C=1.7mA T_{vj}=25℃		5.2	5.8	6.4	V
Cies	Input Capacitance 输入电容	V_{CE}=25V V_{GE}=0V f=1MHz T_{vj}=25℃		-	3.6	-	nF
Cres	Reverse Transfer Capacitance 反向传输电容			-	0.14	-	nF
I_{CES}	Collector-Emitter Leakage Current 集电极-发射极关断漏电流	V_{CE}=1200V, V_{GE}=0V T_{vj}=25℃		-	-	10	uA
I_{GES}	Gate-Emitter Leakage Current, Forward 栅极发射极漏电流	V_{GE}=20V, V_{CE}=0V T_{vj}=25℃		-	-	500	nA
	Gate-Emitter Leakage Current, Reverse 栅极发射极反向漏电流	V_{GE}=-20V, V_{CE}=0V T_{vj}=25℃		-	-	-500	nA
$t_{d(on)}$	Turn-on Delay Time 开通延迟时间，感性负载	V_{CE} = 600V I_C = 50A V_{GE} = ±15V R_{Gon} = 2.0Ω	T_{vj}=25℃	-	40	-	ns
t_r	Turn-on Rise Time 上升时间，感性负载		T_{vj}=25℃	-	24	-	ns
$t_{d(off)}$	Turn-off Delay Time 关断延迟时间，感性负载	V_{CE} = 600V I_C = 50A V_{GE} = ±15V R_{Goff} = 2.0Ω	T_{vj}=25℃	-	230	-	ns
t_f	Turn-off Fall Time 下降时间，感性负载		T_{vj}=25℃	-	160	-	ns
Eon	Turn-on Switching Loss 开通损耗，感性负载	V_{CE} = 600V I_C = 50A V_{GE} = ±15V R_{Gon} = 2.0Ω R_{Goff} = 2.0Ω	T_{vj}=25℃	-	2	-	mJ
Eoff	Turn-off Switching Loss 关断损耗，感性负载		T_{vj}=25℃	-	3	-	mJ
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to Case 结-壳热阻	Per IGBT/单个 IGBT		-	0.16	-	K/W
$T_{vj\ op}$	Temperature Under Switching Condition 工作温度			-40	-	175	℃

Diode Maximum Rated Values

Symbol	Parameter	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage 可重复反向峰值电压	1200	V
I_F	Continuous DC Forward Current 可连续正向直流电流	50	A
I_{FRM}	Repetitive Peak Collector Current 可重复正向峰值电流	100	A

Diode Characteristics

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage 正向通态压降	I_F = 50A V_{GE} = 0V	T_{vj}=25℃	-	2.0	2.4	V
I_{RM}	Peak Reverse Recovery Current 反向恢复峰值电流	Rg=15Ω L=100uH I_F = 50A V_R=600V V_{GE} = ±15V	T_{vj}=25℃	-	-	-	A
Q_{rr}	Reverse Recovery Charge 反向恢复电荷		T_{vj}=25℃	-	-	-	uC
E_{rec}	Reverse Recovery Energy 反向恢复损耗		T_{vj}=25℃	-	-	-	mJ
$T_{vj\ op}$	Temperature Under Switching Condition 工作温度			-40	-	150	℃

Module

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
R_{thc-h}	Thermal Resistance，Case to Heatsink 外壳-散热片热阻	Per Module/每个模块		0.25		K/W
T_{stg}	Storage Temperature 存储温度		-40		150	℃

M	Module Mounting Torque 模块安装扭矩	M6 screws	3.0		6.0	Nm
M	Terminal Mounting Torque 端子安装扭矩	M6 screws	3.0		6.0	Nm
G	Weight 重量			310		g

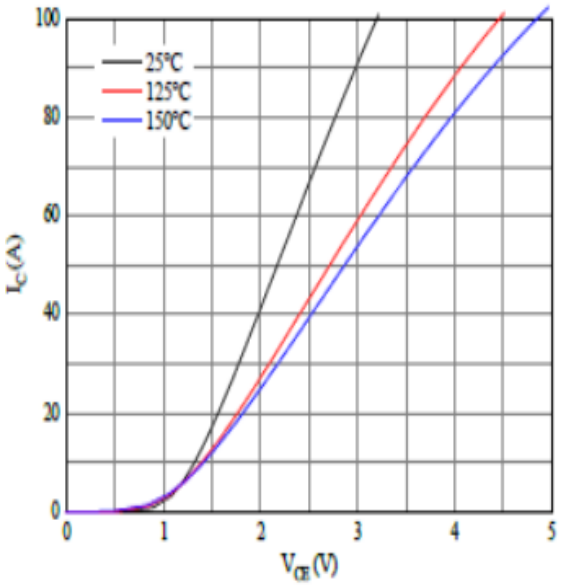
V_{ISO}	Isolation Test Voltage 绝缘测试电压	RMS, f=50 Hz, t=1 min	2.5	kV

Typical Performance Characteristics

IGBT output characteristics（typical）

$I_C = f(V_{CE})$

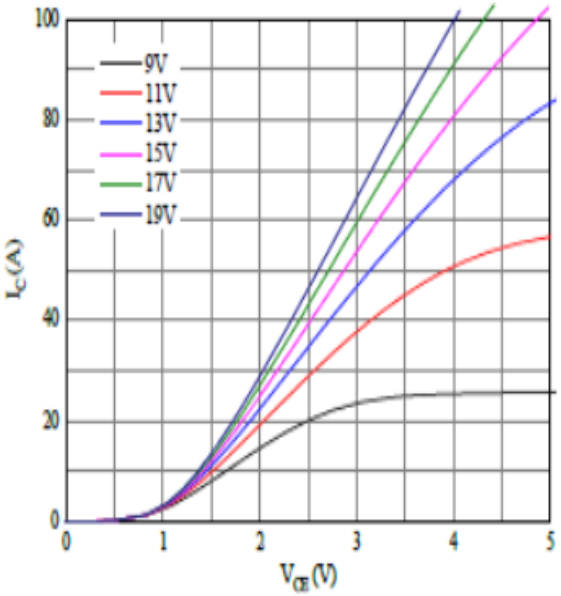
V_{GE} = 15V



IGBT output characteristics（typical）

$I_C = f(V_{CE})$

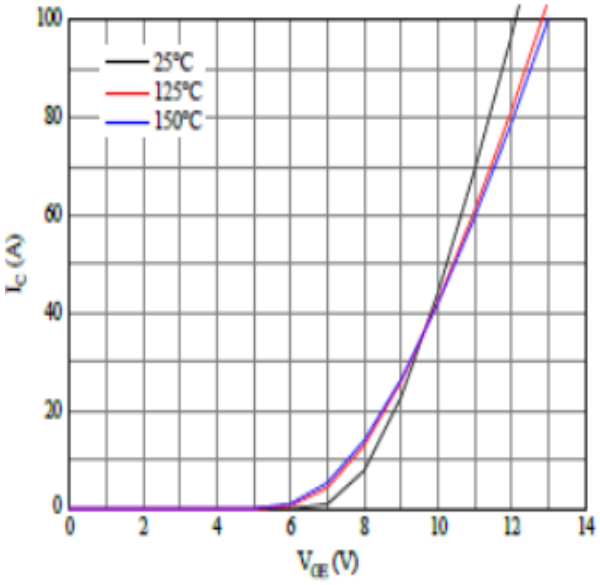
T_c = 125℃



IGBT Transfer characteristics（typical）

$I_C = f(V_{CE})$

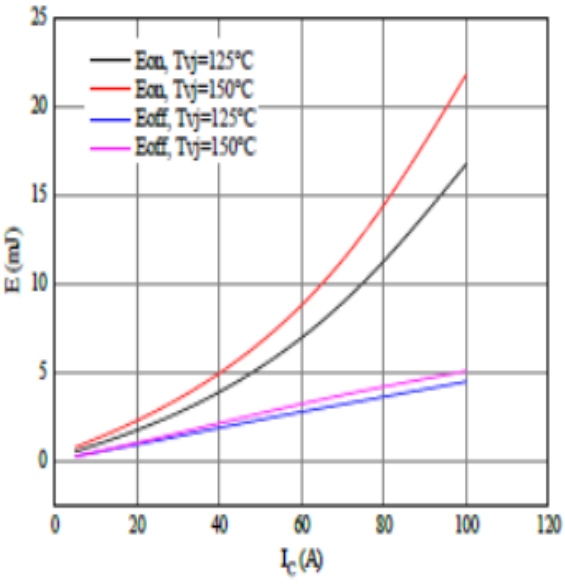
V_{CE} = 20V



IGBT Switching losses（typical）

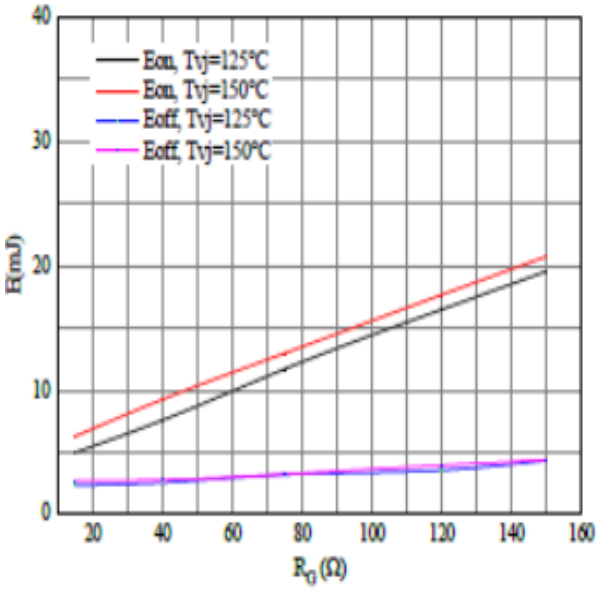
$E_{on} = f(I_C), E_{off} = f(I_C), V_{GE} = \pm 15V$

R_{Gon} = 2.0Ω, R_{Goff} = 2.0Ω, V_{CE} = 600V



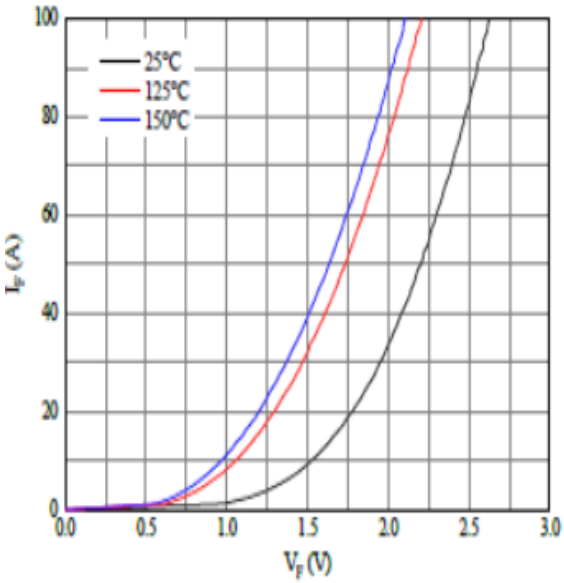
IGBT Switching losses（typical）

V_{GE} = ±15V,I_C = 50A, V_{CE} = 600V

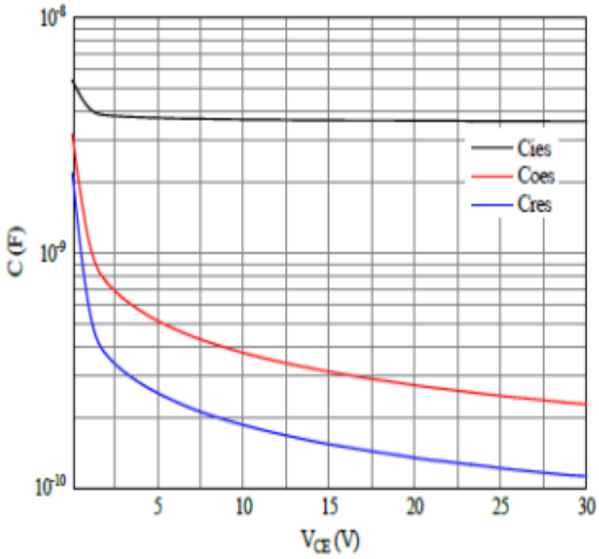


Diode Forward characteristics

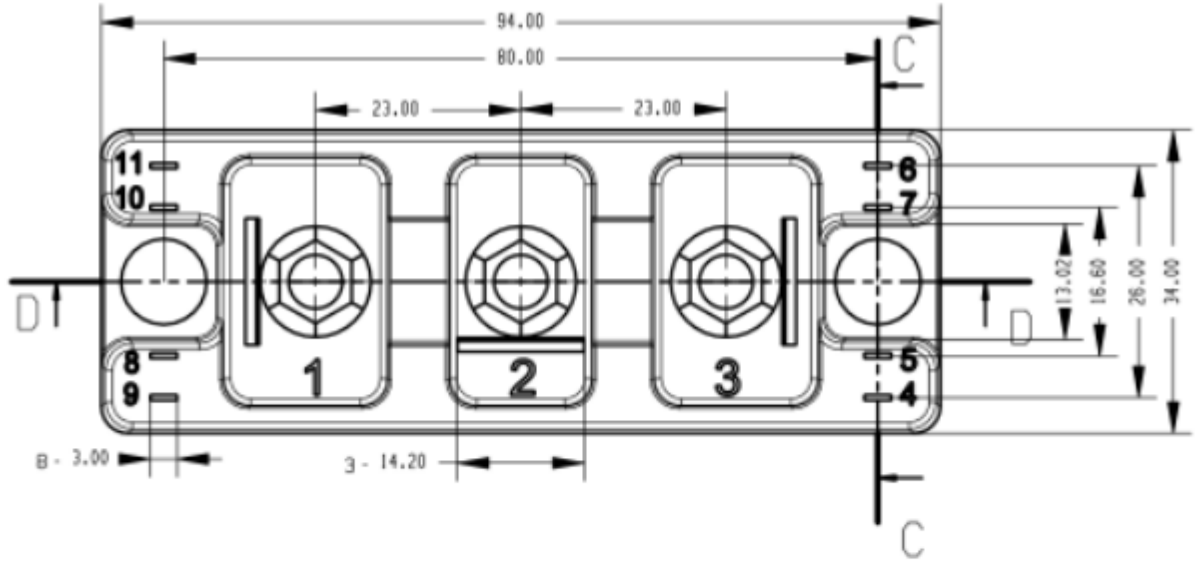
$I_F = f(V_F)$

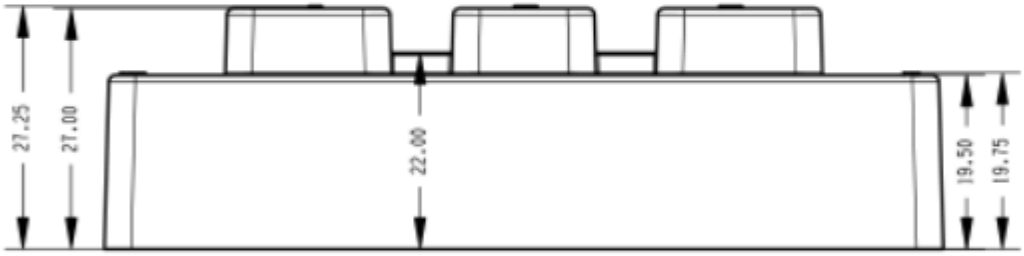


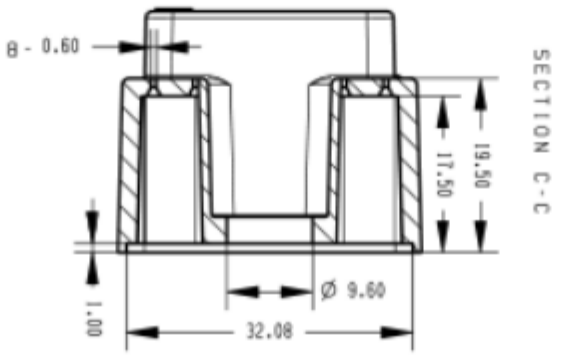
Capacitance characteristic



Package Dimension(unit：mm)







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