1. Product Features

1.1 Electrical features

- V_{CES}=1700V
- $I_{C\,nom}$=75A / I_{CRM}=150A
- Low switching losses
- Low inductance
- Fast switching and short tail current
- High power and thermal cycling capability

Figure1 IGBT Module

1.2 Mechanical features

- Al_2O_3 substrate with low thermal resistance
- Copper base plate

2. Typical Applications

- High Frequency Switching Application
- Motor drives
- UPS system

3. Description

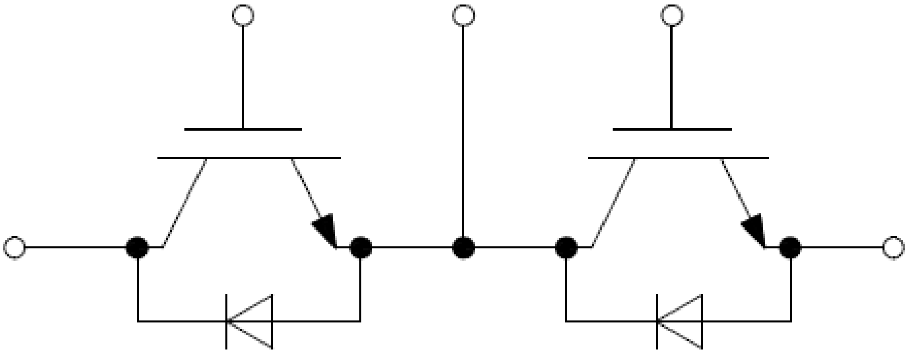


Figure 2 Half Bridge

4. IGBT, Inverter

4.1 Maximum Rated Values

Parameter	Note or test condition	Symbol	Values	Unit
Collector-emitter voltage 集电极—发射极间电压	T_{vj} = 25°C	V_{CES}	1700	V
Continuous DC collector current 连续集电极电流	T_C = 100°C, T_{vj} max = 150°C	$I_{C\ nom}$	75	A
Repetitive peak collector current 集电极峰值电流	t_P = 1 ms	I_{CRM}	150	A
Total power dissipation 总功率损耗	T_C = 25°C, $T_{vj\ max}$ = 175°C	P_{tot}	592	W
Gate-emitter peak voltage 栅极一发射极峰值电压		V_{GES}	+/- 20	V

4.2 Characteristic value

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage 集电极－发射极饱和电压	I_C = 75 A, V_{GE} = 15 V	T_{vj} = 25°C	$V_{CE,sat}$		1.78		V
		T_{vj} = 125°C			2.05		V
		T_{vj} = 150°C			2.12		V
Gate threshold voltage 栅极阈值电压	I_C = 3mA, V_{CE} = V_{GE}, T_{vj} = 25°C		$V_{GE,th}$	4.9	5.5	6.1	V
Collector-emitter cut-off current 集电极-发射极截止电流	V_{CE} = 1700 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			1	mA
Gate-emitter leakage current 栅极-发射极漏电流	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Turn-on delay time, inductive load 开通延迟时间	I_C = 75A, V_{CE} = 900V	T_{vj} = 25°C	$t_{d,on}$		0.25		us
	V_{GE} = +15/-15V						us
	$R_{G,on}$ = 20Ω						us
Rise time, inductive load 上升时间	I_C = 75A, V_{CE} = 900V	T_{vj} = 25°C	t_r		0.04		us
	V_{GE} = +15/-15V						us
	$R_{G,on}$ = 20Ω						us

(table continues...) 待续

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Turn-off delay time, inductive load 关断延迟时间	I_C = 75A, V_{CE} = 900V V_{GE} = +15/-15V $R_{G,on}$ = 20Ω	T_{vj} = 25°C	$t_{d,off}$		0.55		us us us
Fall time, inductive load 下降时间	I_C = 75A, V_{CE} = 900V V_{GE} = +15/-15V $R_{G,on}$ = 20Ω	T_{vj} = 25°C	t_f		0.21		us us us
Turn-on energy loss per pulse 开通损耗能量	I_C = 75A, V_{CE} = 900V, L_s=30nH V_{GE} = +15/-15V, di/dt =1390A/µs $R_{G,on}$ = 20Ω (T_{vj} = 25°C)	T_{vj} = 25°C	E_{on}		17.6		mJ mJ mJ
Turn-off energy loss per pulse 关断损耗能量	I_C = 75A, V_{CE} = 900V, L_s=30nH V_{GE} = +15/-15V, dv/dt =5160V/µs $R_{G,off}$ = 20Ω (T_{vj} = 25°C)	T_{vj} = 25°C	E_{off}		11.7		mJ mJ mJ
Thermal resistance, junction to case 结一外壳热阻	Per IGBT		$R_{th,JC}$			0.25	K/W

5. Diode, Inverter

5.1 Maximum Rated Values

Parameter	Note or test condition	Symbol	Values	Unit
Repetitive peak reverse voltage 反向重复峰值电压	T_{vj} = 25°C	V_{RRM}	1700	V
Continuous DC forward current 连续正向直流电流		I_F	75	A
Repetitive peak forward current 正向重复峰值电流	t_P = 1 ms	I_{FRM}	150	A

5.2 Characteristic value

Parameter	Note or test condition		Symbol	Values			Unit
				Min.	Typ.	Max.	
Forward voltage 正向电压	I_F = 75 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		2.28 1.90 1.44		V V V

(table continues...) 待续

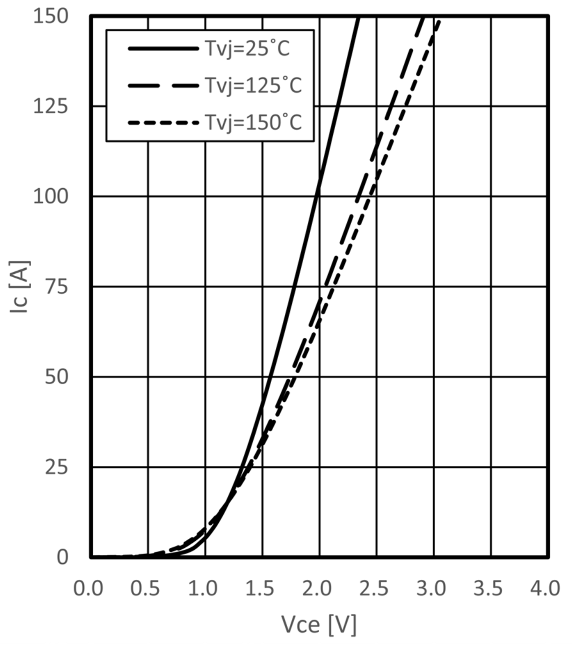
Parameter	Note or test condition		Symbol	Values Min.	 Typ.	 Max.	Unit
Peak reverse recovery current 反向恢复峰值电流	I_F = 75A, V_R = 900V V_{GE} = -15V , - di_F/dt = 2665 A/µs $R_{G,off}$ = 20Ω (T_{vj} = 25°C)	T_{vj} = 25°C	I_{RM}		80.7		A A A
Recovered charge 恢复电荷	I_F = 75A, V_R = 900V V_{GE} = -15V , - di_F/dt = 2665 A/µs $R_{G,off}$ = 20Ω (T_{vj} = 25°C)	T_{vj} = 25°C	Q_r		7.53		µC µC µC
Reverse recovery energy 反向恢复损耗（每脉冲）	I_F = 75A, V_R = 900V V_{GE} = -15V , - di_F/dt = 2665 A/µs $R_{G,off}$ = 20Ω (T_{vj} = 25°C)	T_{vj} = 25°C	E_{rec}		2.47		mJ mJ mJ
Thermal resistance, junction to case 结一外壳热阻	Per diode		$R_{th,JC}$			0.71	K/W

6. Module

6.1 Characteristic value

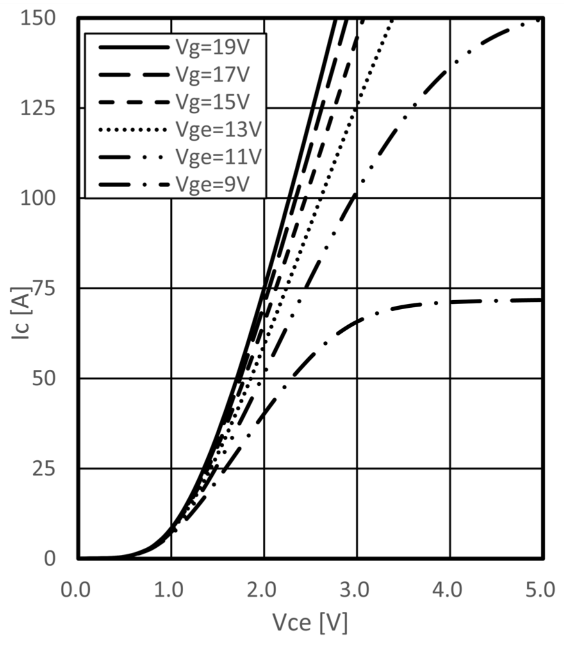
Parameter	Note or test condition	Symbol	Values Min.	 Typ.	 Max.	Unit
Isolation Voltage 隔离电压	RMS, f=50HZ,1min	V_{ISOL}			2500	V
Stray inductance module 杂散电感		L_{sCE}		30		nH
Operation Junction Temperature 结温		T_{jop}	-40		150	˚C
Storage Temperature Range 存储温度范围		T_{stg}	-40		125	˚C
Mounting Torque 安装扭矩	Screw M6	M	3.0		5.0	N.m
Terminal Connection Torque 端子扭矩	Screw M5	M	2.5		5.0	N.m
Weight of Module 重量		G		160		g

7. Characteristics Diagrams



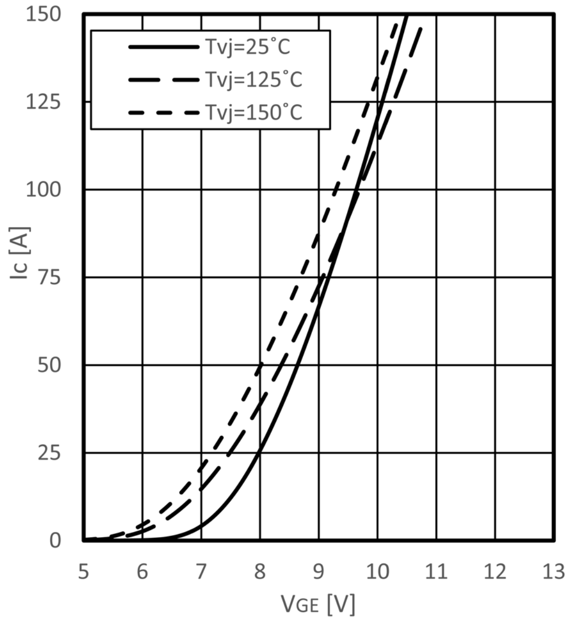
Output characteristic IGBT (typical)

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



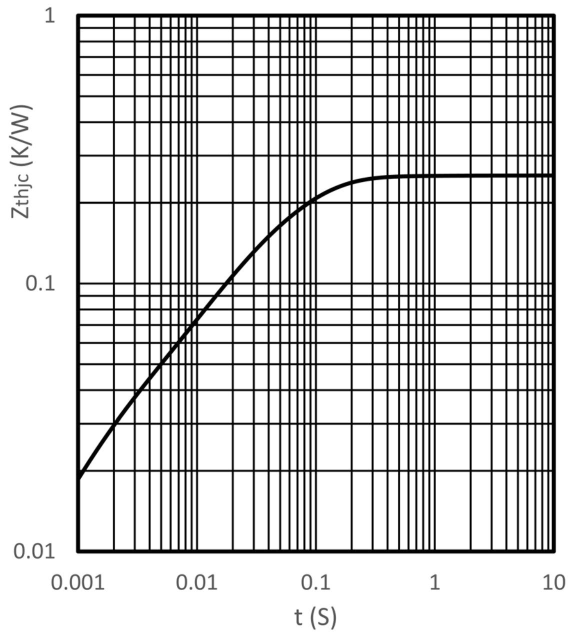
Output characteristic IGBT (typical)

$I_C = f\ (V_{CE})\ T_{vj} = 150°C$



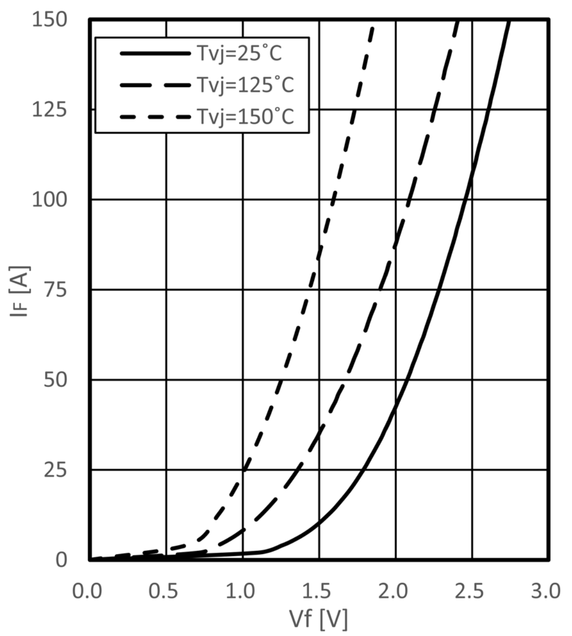
Transfer characteristic IGBT (typical)

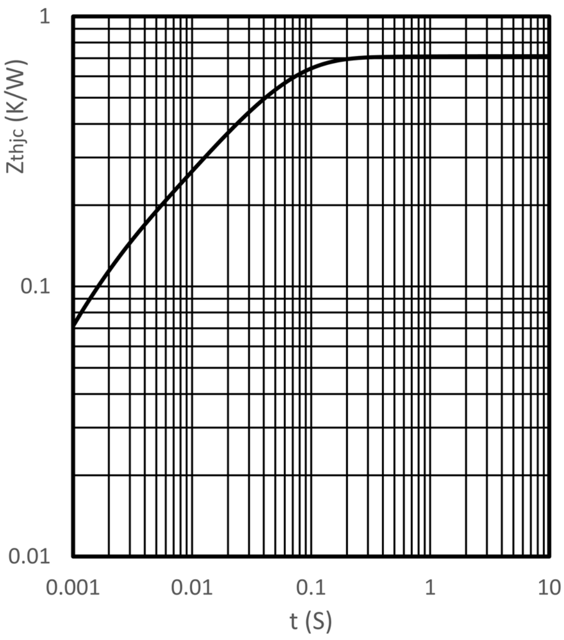
$I_C = f\ (V_{GE})\ V_{CE} = 20V$



Transient thermal impedance IGBT

Z_{thJC}=f(t)





Forward characteristic of Diode (typical) $I_F=f(V_F)$	**Transient thermal impedance Diode** $Z_{thJC} = f(t)$

8. Circuit Diagram

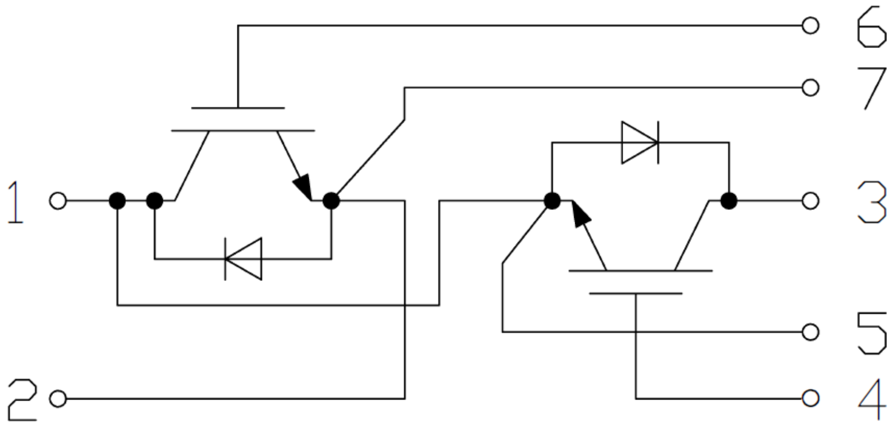


Figure 3

9. Package Outlines

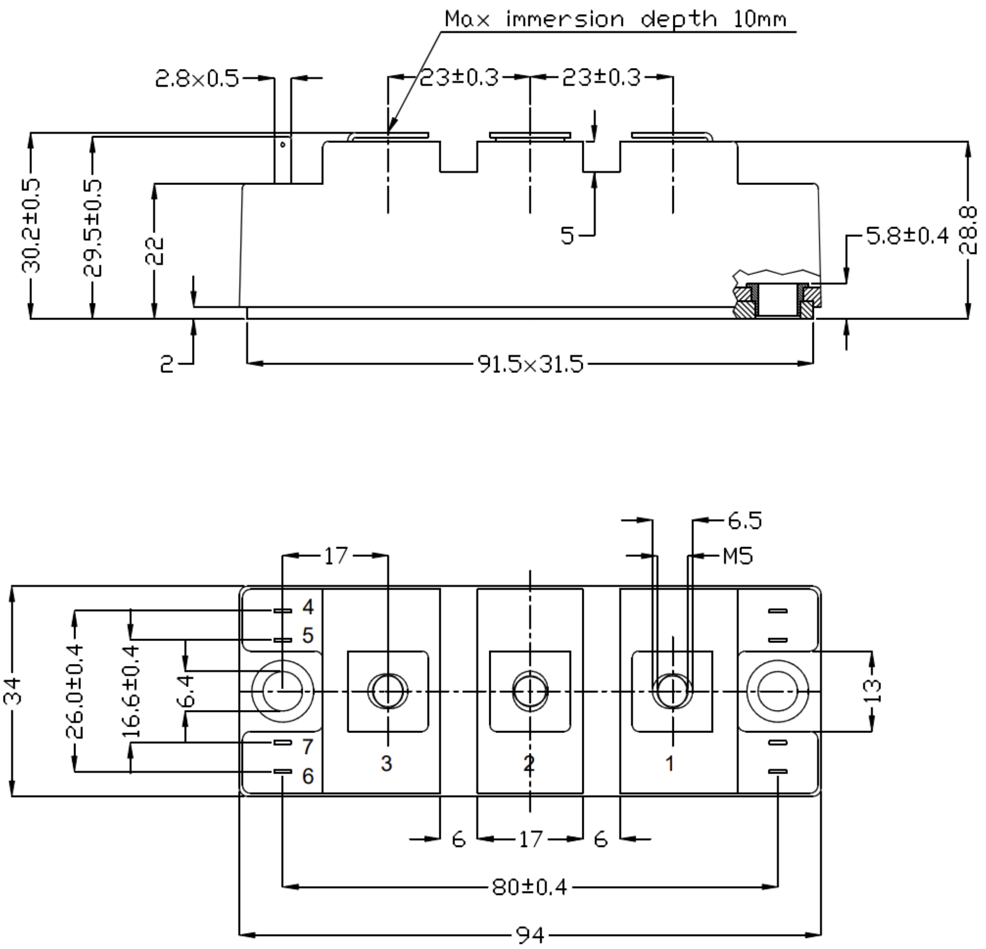


Figure 4