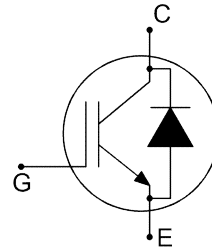
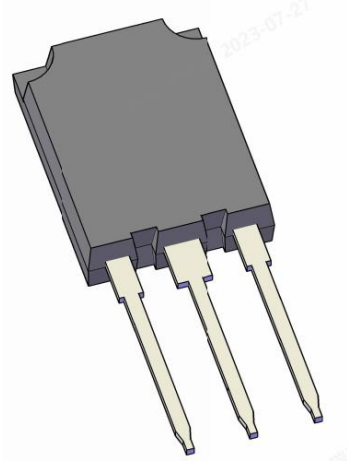


Q package: 750V 200A IGBT module



等效电路图  
Equivalent Circuit Schematic

**Features:**

- 750V 200A,  $V_{CE(sat)} = 1.35V@25^{\circ}C$
- Micro pattern trench/FS technology
- Low switching losses
- High SC capability
- High reliability

**产品特性:**

- 750V 200A,  $V_{CE(sat)} = 1.35V@25^{\circ}C$
- 微沟槽/场终止技术
- 低开关损耗
- 高短路能力
- 高可靠性

**Typical Applications:**

- Automotive Applications
- Motor Drives
- Inverters

**典型应用:**

- 汽车应用
- 电机驱动
- 逆变器

**IGBT, Inverter / IGBT, 逆变部分**
**Maximum Rated Values / 最大标称参数**

Collector-emitter voltage 集电极-发射极电压	$T_{vj}=25^{\circ}\text{C}$	$V_{CES}$	750	V
Continuous DC collector current 集电极连续直流电流	$T_C=25^{\circ}\text{C}, T_{vj\max}=175^{\circ}\text{C}$	$I_{C\text{ nom}}$	200	A
	$T_C=65^{\circ}\text{C}, T_{vj\max}=175^{\circ}\text{C}$	$I_C$	/	A
Repetitive peak collector current 集电极可重复峰值电流	$t_p=1\text{ms}$	$I_{CRM}$	400	A
Total power dissipation 功率损耗	$T_C=25^{\circ}\text{C}, T_{vj\max}=175^{\circ}\text{C}$	$P_{\text{tot}}$	/	W
Gate-emitter peak voltage 门极-发射极峰值电压		$V_{GES}$	$\pm 20$	V

**Characteristic Values / 性能参数**

				min.	typ.	max.	
Collector-emitter saturation voltage 集电极-发射极饱和压降	$I_C=200\text{A}, V_{GE}=15\text{V}$ $I_C=200\text{A}, V_{GE}=15\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$	$V_{CE\text{sat}}$	-	1.35 1.50		V
Gate threshold voltage 门极阈值电压	$V_{CE}=V_{GE}, I_C=4\text{mA}$	$T_{vj}=25^{\circ}\text{C}$	$V_{GE\text{th}}$	5.00	6.00	7.00	V
Internal gate resistor 内置门极电阻		$T_{vj}=25^{\circ}\text{C}$	$R_{G\text{int}}$	-	1.50	-	$\Omega$
Input capacitance 输入电容	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=100\text{kHz}$	$T_{vj}=25^{\circ}\text{C}$	$C_{\text{ies}}$	-	29.2	-	nF
Reverse transfer capacitance 反向传输电容	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=100\text{kHz}$	$T_{vj}=25^{\circ}\text{C}$	$C_{\text{res}}$	-	0.4	-	nF
Gate charge 门极电荷	$V_{GE}=\pm 15\text{V}$		$Q_G$	-	TBD	-	$\mu\text{C}$
Collector-emitter cut-off current 集电极-发射极关断漏电流	$V_{CE}=750\text{V}, V_{GE}=0\text{V}$	$T_{vj}=25^{\circ}\text{C}$	$I_{CES}$	-	-	20	$\mu\text{A}$
Gate-emitter leakage current 门极-发射极漏电流	$V_{CE}=0\text{V}, V_{GE}=20\text{V}$	$T_{vj}=25^{\circ}\text{C}$	$I_{GES}$	-	-	200	nA
Turn-on delay time, inductive load 开通延迟时间, 感性负载	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{on}}=2.0\Omega$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$t_{\text{don}}$	-	/	-	ns
Rise time, inductive load 上升时间, 感性负载	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{on}}=2.0\Omega$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$t_r$	-	/	-	ns
Turn-off delay time, inductive load 关断延迟时间, 感性负载	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{off}}=10\Omega$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$t_{\text{doff}}$	-	/	-	ns
Fall time, inductive load 下降时间, 感性负载	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{off}}=10\Omega$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$t_f$	-	/	-	ns
Turn-on energy loss per pulse 开通损耗	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{on}}=2.0\Omega,$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$E_{\text{on}}$	-	/	-	mJ
Turn-off energy loss per pulse 关断损耗	$I_C=200\text{A}, V_{CE}=470\text{V}$ $V_{GE}=-8\text{V}/15\text{V } R_{G\text{off}}=10\Omega$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$E_{\text{off}}$	-	/	-	mJ
SC data 短路耐量	$V_{CC}=470\text{V}, V_{GE}=-8\text{V}/15\text{V}$	$T_{vj}=175^{\circ}\text{C}$	$t_{\text{psc}}$	5	-	-	$\mu\text{s}$
Thermal resistance, junction to case 结-壳热阻	IGBT		$R_{\text{thjc}}$	-	/	-	K/W

Temperature under switching conditions 工作温度	$t_{op}$ continuous	$T_{vj\ op}$	-40	-	175	°C
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## Diode, Inverter / 二极管, 逆变部分

### Maximum Rated Values / 最大标称参数

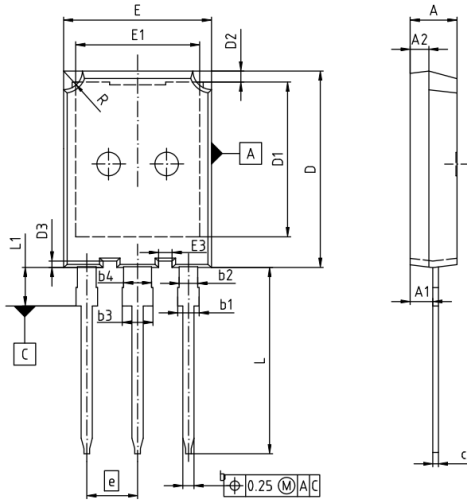
Repetitive peak reverse voltage 可重复反向峰值电压	$T_{vj}=25^{\circ}\text{C}$	$V_{RRM}$	750	V
Continuous DC forward current 可连续正向直流电流		$I_{Fnom}$	200	A
Repetitive peak forward current 可重复正向峰值电流	$I_{FRM}=2\times I_F$	$I_{FRM}$	400	A

### Characteristic Values / 性能参数

			min.	typ.	max.		
Forward voltage <sup>1)</sup> 正向通态压降	$I_F=200\text{A}, V_{GE}=0\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$V_F$	-	1.75 1.70	-	V
Reverse recovery time 反向恢复时间	$I_F=200\text{A}, V_R=470\text{V}$ $di_F/dt=7143\text{A}/\mu\text{s}(T_{vj}=150^{\circ}\text{C})V_{GE}=-8\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$t_{rr}$	-	/	-	ns
Peak reverse recovery current 反向恢复峰值电流	$I_F=200\text{A}, V_R=470\text{V}$ $di_F/dt=7143\text{A}/\mu\text{s}(T_{vj}=150^{\circ}\text{C})V_{GE}=-8\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$I_{RM}$	-	/	-	A
Recovery charge 反向恢复电荷	$I_F=200\text{A}, V_R=470\text{V}$ $di_F/dt=7143\text{A}/\mu\text{s}(T_{vj}=150^{\circ}\text{C})V_{GE}=-8\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$Q_R$	-	/	-	$\mu\text{C}$
Reverse recovery energy 反向恢复损耗	$I_F=200\text{A}, V_R=470\text{V}$ $di_F/dt=7143\text{A}/\mu\text{s}(T_{vj}=150^{\circ}\text{C})V_{GE}=-8\text{V}$	$T_{vj}=25^{\circ}\text{C}$ $T_{vj}=150^{\circ}\text{C}$ $T_{vj}=175^{\circ}\text{C}$	$E_{rec}$	-	/	-	mJ
Thermal resistance, junction to case 结-壳热阻	FRD		$R_{thjc}$	-	/	-	K/W
Temperature under switching conditions 工作温度	$t_{op}$ continuous		$T_{vj\ op}$	-40	-	175	°C

## Package Dimension / 封装尺寸

Dimensions in Millimeters / 毫米为单位



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.90	5.10	0.193	0.201
A1	2.31	2.51	0.091	0.099
A2	1.90	2.10	0.075	0.083
b	1.16	1.26	0.046	0.050
b1	1.96	2.25	0.077	0.089
b2	1.96	2.06	0.077	0.081
c	0.59	0.66	0.023	0.026
D	20.90	21.10	0.823	0.831
D1	16.25	16.85	0.640	0.663
D2	1.05	1.35	0.041	0.053
D3	0.58	0.78	0.023	0.031
E	15.70	15.90	0.618	0.626
E1	13.10	13.50	0.516	0.531
E3	1.35	1.55	0.053	0.061
e	5.44 (BSC)		0.214 (BSC)	
N	3		3	
L	19.80	20.10	0.780	0.791
L1	-	4.30	-	0.169
R	1.90	2.10	0.075	0.083