

HE100R065F7HS

High Performance Field Stop IGBT Power Transistor

Product features/产品特点

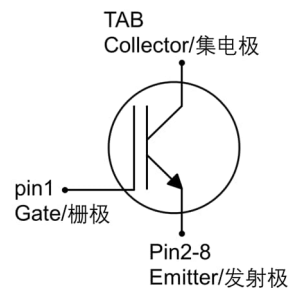
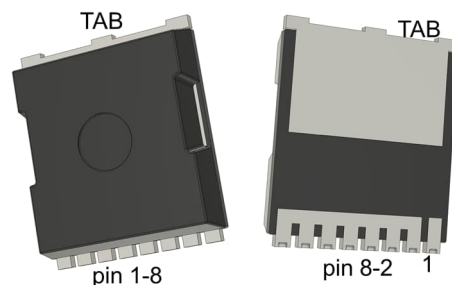
- High current capability
高电流能力
- Advanced Trench+FS IGBT technology
先进的沟槽栅+场截止技术
- Low conduction loss
低传导损耗
- Fast switching
快速切换
- Maximum junction temperature: $T_{vj,MAX}=175\text{ }^{\circ}\text{C}$
最高结温 $T_{vj,MAX}=175\text{ }^{\circ}\text{C}$
- Halogen free, RoHS compliant
无卤, 符合RoHS

Applications/应用领域

- UPS (Uninterruptible Power Supplies)
不间断电源 (UPS)
- Solar inverter
太阳能逆变器
- Welding
电焊接

Key performance parameters/关键性能参数

Parameter/参数	Value/值	Unit/单位
V_{CE}	650	V
I_c	100	A
$V_{CEsat,typ}$	1.57	V



Package Parameters/封装信息

Type/型号	Package/封装	Marking/标识	Packaging method/包装方式
HE100R065F7HS	TOLL	HE100R065HS	Tape and Reel/卷带包装

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1. Maximum ratings at $T_{vj}=25^{\circ}\text{C}$, unless otherwise specified.

最大额定值 默认 $T_{vj}=25^{\circ}\text{C}$ 除非另有说明

Table 1 Characteristic values/特征值

Parameter 参数	Symbol 符号	Test condition 测试条件	Value 值	Unit 单位
Collector-to-emitter voltage 集电极-发射极电压	V_{CE}	$T_{vj}\geq 25^{\circ}\text{C}$	650	V
DC Collector current 集电极连续直流电流	I_C^1	$T_C=25^{\circ}\text{C}$	200	A
		$T_C=100^{\circ}\text{C}$	100	
Pulsed Collector current 集电极脉冲电流	I_{Cpuls}^2		400	A
Turn off safe operating area 关断安全工作区	— ²	$V_{CE}\leq 650\text{V}, T_{vj}\leq 175^{\circ}\text{C}$	400	A
Gate-emitter voltage 栅极-发射极峰值电压	V_{GE}		± 20	V
Transient gate-emitter voltage 瞬态栅极-发射极电压	V_{GE}	$t_p\leq 10\mu\text{s}, D<0.01$	± 30	V
Power dissipation 总耗散功率	P_{tot}	$T_C=25^{\circ}\text{C}$	395	W
		$T_C=100^{\circ}\text{C}$	197	

1. Limited by $T_{vj}(\text{max})$ /受限于最高结温
2. Pulse width t_p limited by $T_{vj}(\text{max})$ /脉宽受限于最大结温



2. Package
封装

Table 2 Characteristic values/特征值

Parameter 参数	Symbol 符号	Test condition 测试条件	Value/值			Unit 单位
			Min.	Typ.	Max.	
Operating Junction Temperature 可工作结温	T_{vj}		-40		175	°C
Storage Temperature Range 储存温度	T_{stg}		-55		175	°C
Soldering temperature, reflow solderin 焊接温度，回流焊	T_{sold}	Reflow MSL1			260	°C
IGBT thermal resistance,junction-to-case IGBT 芯片到壳热阻	$R_{th(j-C)}$				0.38	K/W
Thermal resistance,junction-to-ambient 结到环境热阻	$R_{th(j-A)}$				61	K/W



3. Static electrical characteristic at $T_{vj}=25^{\circ}\text{C}$, unless otherwise specified.

静态电气特性 默认 $T_{vj}=25^{\circ}\text{C}$ 除非另有说明

Table 3 Characteristic values/特征值

Parameter 参数	Symbol 符号	Test condition 测试条件	Value/值			Units 单位
			Min.	Typ.	Max.	
Collector - Emitter breakdown voltage 集电极-发射极击穿电压	$V_{(BR)CES}$	$V_{GE}=0V, I_C=0.25mA$	650			V
Collector-Emitter Saturation voltage 集电极-发射极饱和压降	V_{CEsat}	$V_{GE}=15V, I_C=100A$		1.57	1.73	V
Gate threshold voltage 门极开启阈值电压	V_{GETh}	$V_{GE}=V_{CE}, I_C=1mA$	4.5	5.4	6.5	V
Gate to Emitter Leakage current 门极-发射极漏电流	I_{GES}	$V_{GE}=30V, V_{CE}=0V$			200	nA
		$V_{GE}=-30V, V_{CE}=0V$			-200	
Zero gate voltage collector current 集电极-发射极漏电流	I_{CES}	$V_{CE}=650V, V_{GE}=0V$			300	μA
Integrated gate resistor 内部门极电阻	R_G	$f=1MHz$		1.01		Ω

4. Dynamic electrical characteristic at $T_{vj}=25^{\circ}\text{C}$, unless otherwise specified.

动态电气特性 默认 $T_{vj}=25^{\circ}\text{C}$ 除非另有说明

Table 4 Characteristic values/特征值

Parameter 参数	Symbol 符号	Test condition 测试条件	Value/值			Units 单位
			Min.	Typ.	Max.	
Input capacitance 输入电容	C_{ies}	$V_{GE}=0V, V_{CE}=25V,$ $f=1MHz$		4020		pF
Output capacitance 输出电容	C_{oes}			205		
Reverse transfer capacitance 反向传输电容	C_{res}			18		
Total gate charge 门极电荷	Q_g	$V_{GE}=15V,$ $I_C=100A, V_{CC}=520V$		205		nC



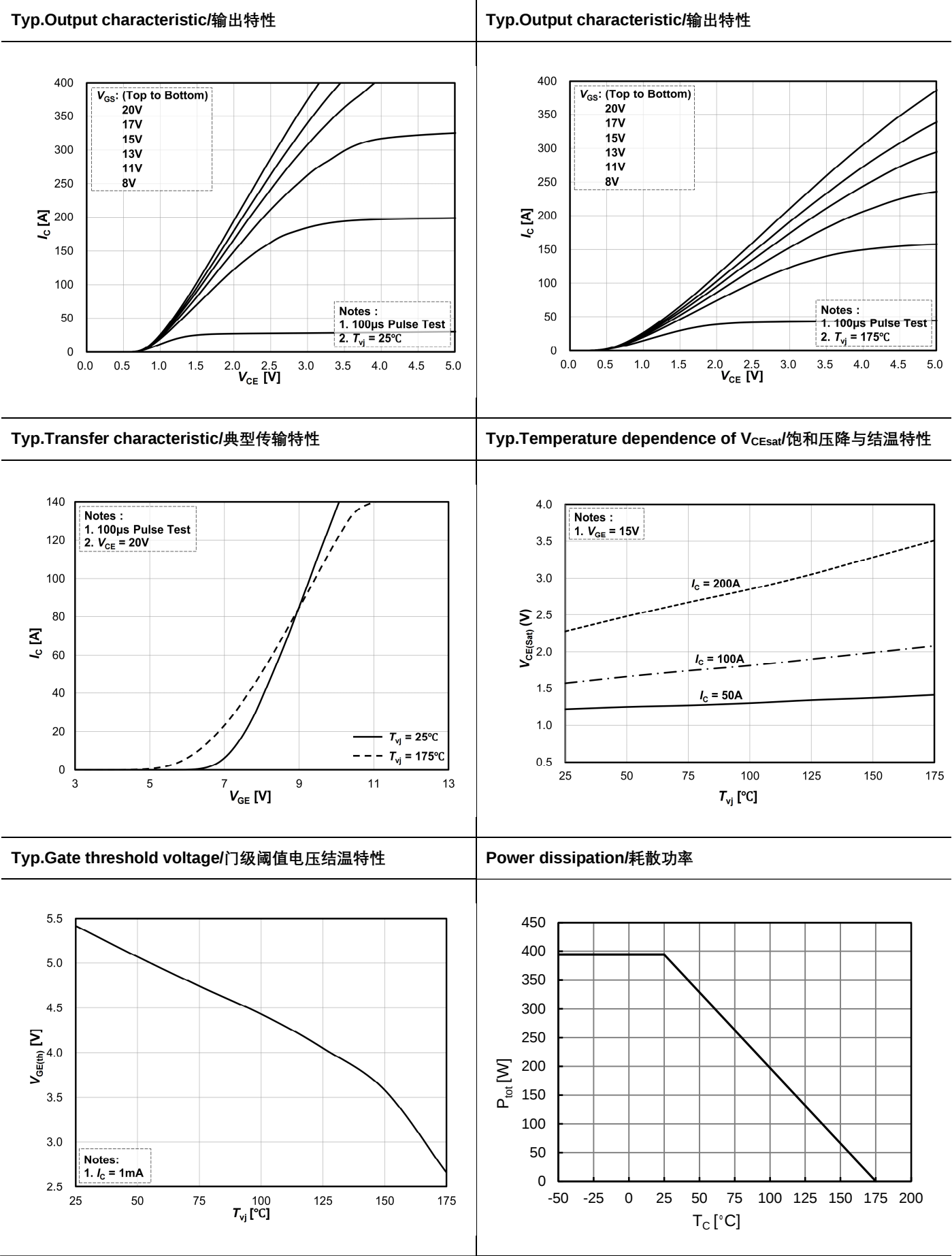
5. Switching characteristic inductive load at $T_{vj}=25^{\circ}\text{C}$, unless otherwise specified.
开关特性感性负载 默认 $T_{vj}=25^{\circ}\text{C}$ 除非另有说明

Table 5 IGBT Characteristic values/IGBT特征值

Parameter 参数	Symbol 符号	Test condition 测试条件		Value/值			Units 单位	
				Min.	Typ.	Max.		
Turn-on delay time 开启延迟时间	t _{d(on)}	V _{GE} =0/15V V _{CC} =400V I _C =100A R _{G(on)} =5Ω R _{G(off)} =5Ω	T _{vj} =25°C		43		ns	
			T _{vj} =175°C		45			
Rise time 上升时间	t _r		T _{vj} =25°C		102		ns	
			T _{vj} =175°C		102			
Turn-off delay time 关闭延迟时间	t _{d(off)}		T _{vj} =25°C		213		ns	
			T _{vj} =175°C		255			
Fall time 下降时间	t _f		T _{vj} =25°C		32		ns	
			T _{vj} =175°C		48			
Turn-on switch loss 单次开启损耗	E _{on}		T _{vj} =25°C		4.93		mJ	
			T _{vj} =175°C		5.71			
Turn-off switch loss 单次关闭损耗	E _{off}		T _{vj} =25°C		2.38		mJ	
			T _{vj} =175°C		3.12			
Total switching energy 总开关损耗	E _{ts}		T _{vj} =25°C		7.31		mJ	
			T _{vj} =175°C		8.84			



6. Characteristics diagrams
特性曲线

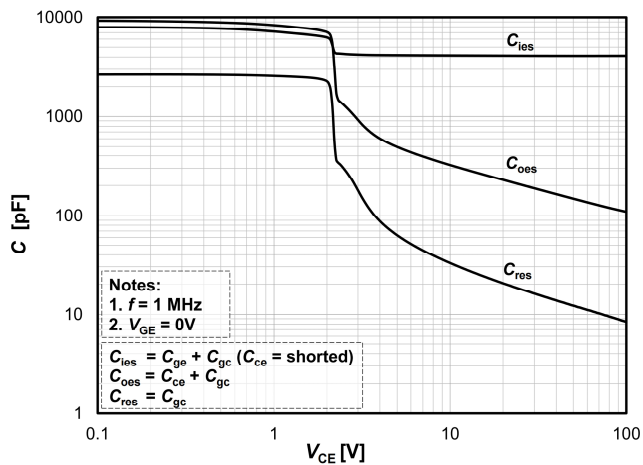


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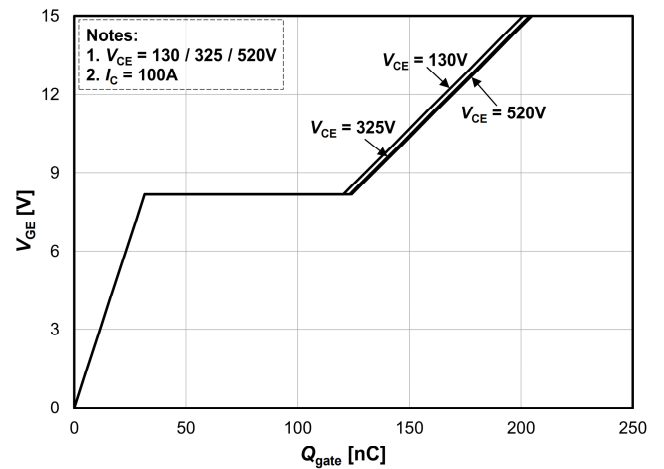
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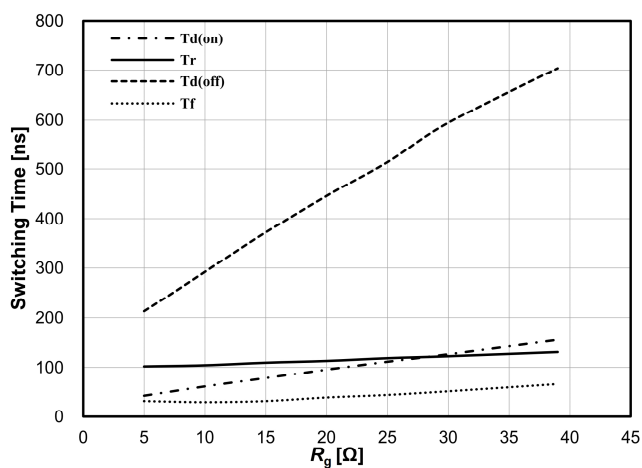
Typ.Capacitances/电容特性



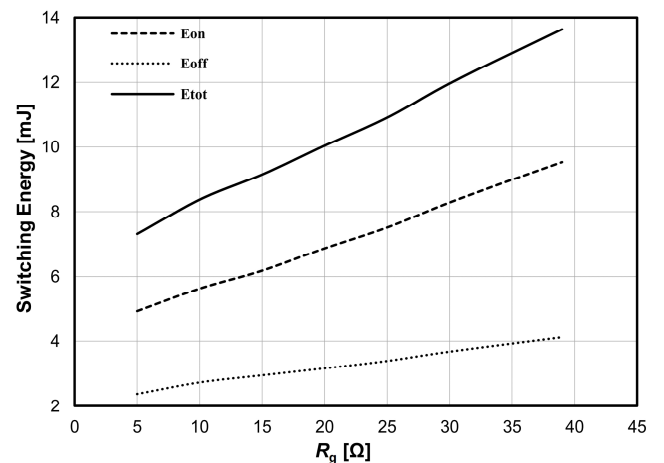
Typ.Gate charge/门级电荷



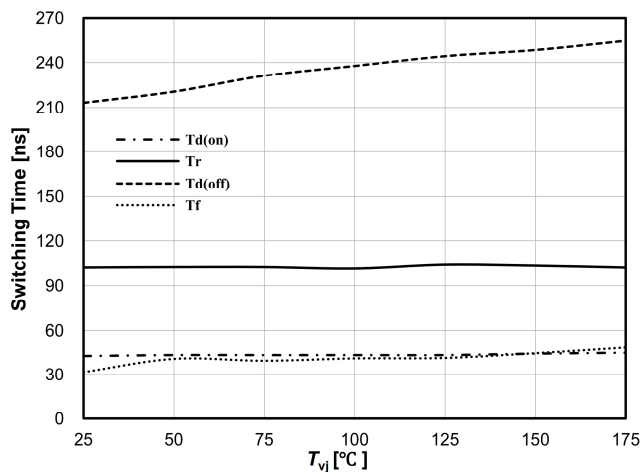
Typ.Switching times vs resistance/开关时间与门级电阻特性



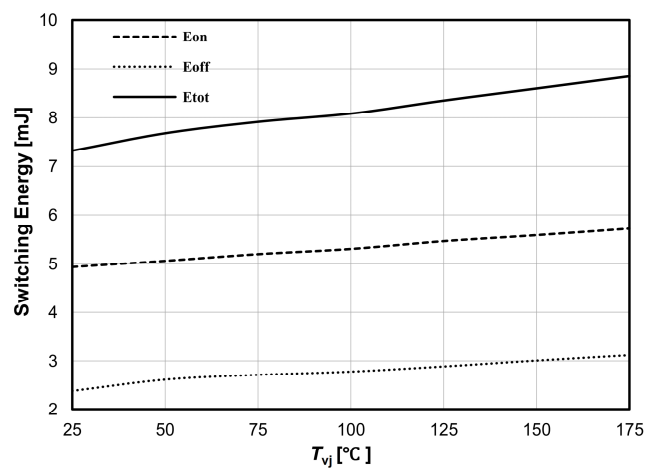
Typ.Switching losses vs resistance/动态损耗与门级电阻特性



Typ.Switching times vs temperature/开关时间与结温特性

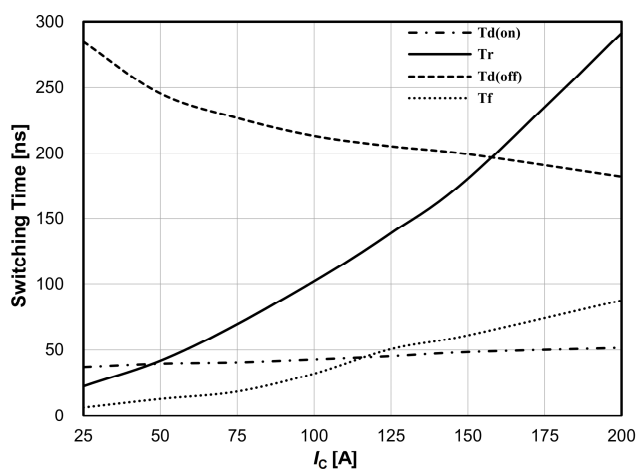


Typ.Switching losses vs temperature/动态损耗与结温特性

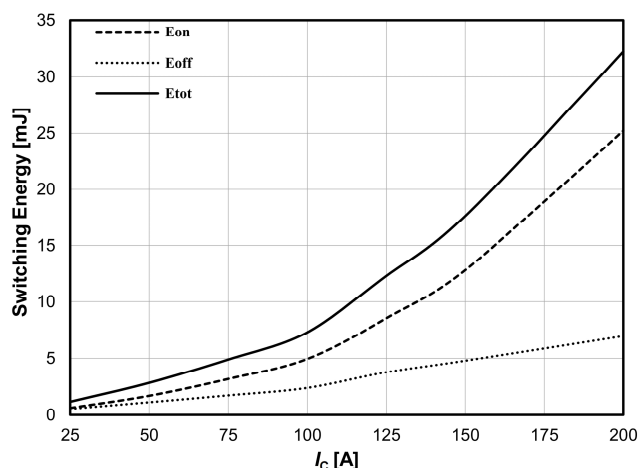




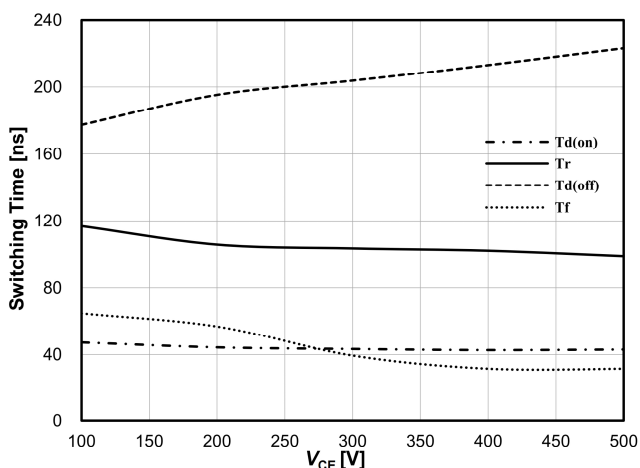
Typ.Switching times vs current/开关时间与电流特性



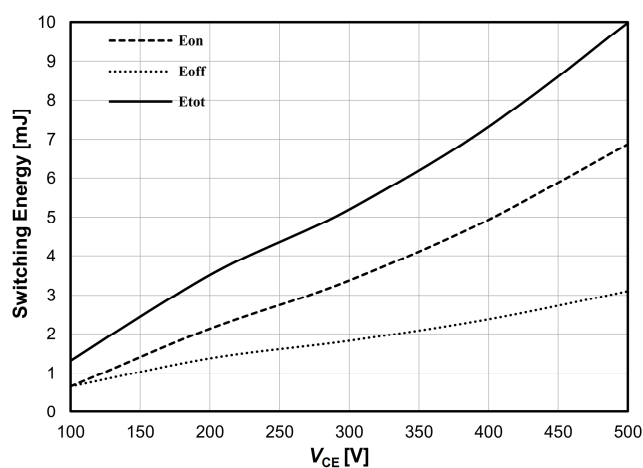
Typ.Switching losses vs current/动态损耗与电流特性



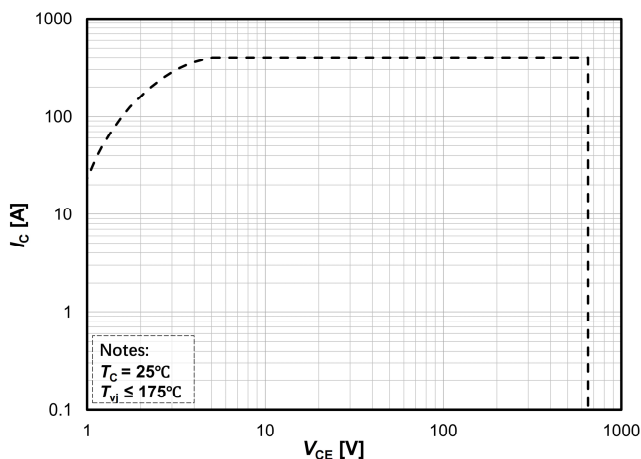
Typ.Switching times vs voltage/开关时间与电压特性



Typ.Switching losses vs voltage/动态损耗与电压特性



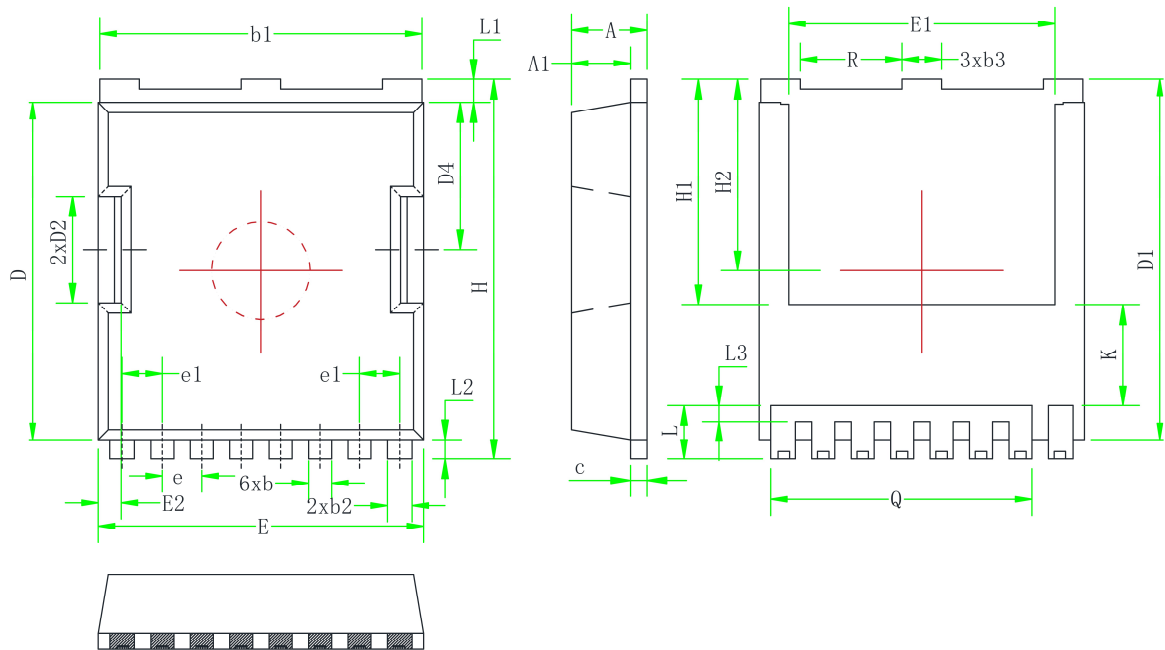
Reverse bias safe operating area/反偏安全工作区





7. Package outline
封装外形

Figure 1. Outline TOLL, dimensions in mm/ TOLL外形尺寸（毫米）



Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	2.25	2.30	2.35	E	9.85	9.90	9.95
A1	1.75	1.80	1.85	E1	8.00	8.10	8.20
b	0.65	0.70	0.75	E2	0.65	0.70	0.75
b1	9.75	9.80	9.85	H	11.60	11.70	11.80
b2	0.70	0.75	0.80	H1	6.95 BSC		
b3	1.15	1.20	1.25	H2	5.90 BSC		
c	0.45	0.50	0.55	K	3.10 REF		
D	10.35	10.40	10.45	L	1.55	1.65	1.75
D1	11.00	11.10	11.20	L1	0.65	0.70	0.75
D2	3.25	3.30	3.35	L2	0.50	0.60	0.70
D4	4.50	4.55	4.60	L3	0.40	0.50	0.60
e	1.20 BSC			Q	7.95 REF		
e1	1.225 BSC			R	3.00	3.10	3.20



8. Revision history
修订历史

Table 6 Date and version number/日期与版本号

Date日期	Revision版本	Changes更改内容
2026-04-16	Rev.G1.0	Target Datasheet (目标规格书)

9. Matters needing attention
注意事项

Important Technical Guidance, Application Policy, and Copyright Notice
重要技术指南、应用规范与版权声明

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