

HR20065H6W
650V-20A Ultrafast Recovery Diode

Product features/产品特点

- Top side cooling technology
顶部散热技术
- Epitaxial planar technology
外延平面工艺
- Ultrafast recovery time
超快速恢复时间
- 5th Generation soft fast recovery characteristic
第5代软快恢复特性
- Low forward voltage and low leakage current
低正向压降、低漏电流
- High surge current ability
高浪涌电流能力
- Halogen free, RoHs compliant
无卤，符合RoHs

Applications/应用领域

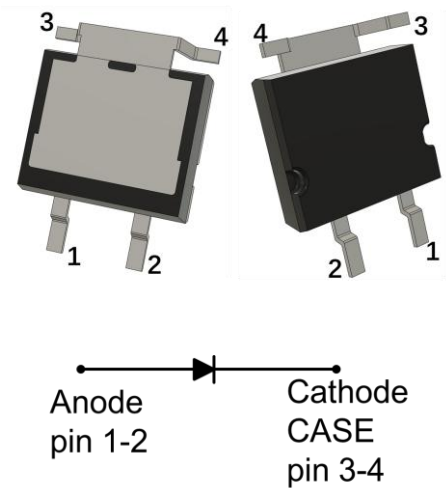
- Switching mode power supply,uninterruptible supply
开关电源、不间断电源
- Electric welder
电焊机
- Inverter,converter
逆变器、变频器
- motor drive
电机驱动

Key performance parameters/关键性能参数

Parameter/参数	Value/值	Unit/单位
V _{RRM}	650	V
I _F	20	A
V _{F.typ}	1.35	V

Package parameters/封装信息

Type/型号	Package/封装	Marking/标识	Packaging method/包装方式
HR20065H6W	TSC263-4L	HR20065W	Tape and Reel/卷带包装



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

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

Table 1 Maximum ratings/最大额定值

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value 值	Unit 单位
Repetitive peak reverse voltage 重复峰值反向电压	V_{RRM}		650	V
Crest working reverse voltage 最高工作反向电压	V_{RWM}		650	V
Average Forward Current 平均正向电流	$I_{F,AV}$	$T_C=100^{\circ}\text{C}$	20	A
Surge non-repetitive forward current, sine halfwave 非重复峰值正向浪涌电流, 正弦半波	$I_{F,SM}$	$T_C=25^{\circ}\text{C}, t_p=10\text{ms}$	150	A
I^2t for fusing, sine halfwave 电流时间积分, 正弦半波	I^2t	$T_C=25^{\circ}\text{C}, t_p=10\text{ms}$	112.5	A
Power dissipation 总耗散功率	P_{tot}	$T_C=25^{\circ}\text{C}$	176	W
		$T_C=100^{\circ}\text{C}$	88	



2. Thermal characteristics

热特性

Table 2 Thermal characteristics/热特性

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value/值			Unit 单位
			Min.	Typ.	Max.	
Storage temperature 存储温度	T_{stg}		-55		175	°C
Operating junction temperature 工作结温	T_j		-55		175	°C
Thermal resistance, junction-case 结-壳热阻	$R_{th(j-c)}$			0.61	0.85	K/W
Thermal resistance, junction-ambient 结-环境热阻	$R_{th(j-a)}$				61	K/W
Soldering temperature, reflow solderin 焊接温度, 回流焊	T_{sold}	reflow MSL1			260	°C

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3. Electrical characteristics at $T_J=25^{\circ}\text{C}$, unless otherwise specified.

电气特性 默认 $T_J=25^{\circ}\text{C}$ 除非另有说明

Table 3 Static characteristics/静态特性

Parameter 参数	Symbol 符号	Test conditions 测试条件		Value/值			Unit 单位
				Min.	Typ.	Max.	
DC blocking voltage 直流阻断电压	V_{DC}	$I_R=50\mu\text{A}$		650			V
Forward voltage 正向压降	V_F	$I_F=20\text{A}$	$T_J=25^{\circ}\text{C}$		1.35	1.6	V
			$T_J=125^{\circ}\text{C}$		1.18	1.5	
Reverse leakage current 反向漏电流	I_R	$V_R=650\text{V}$	$T_J=25^{\circ}\text{C}$			2	μA
			$T_J=125^{\circ}\text{C}$			20	

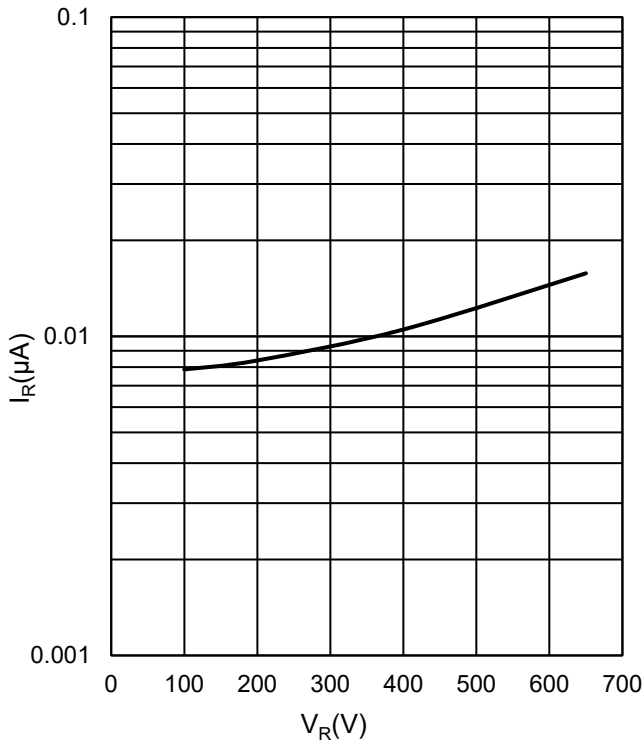
Table 4 Dynamic characteristics/动态特性

Parameter 参数	Symbol 符号	Test conditions 测试条件		Value/值			Unit 单位
				Min.	Typ.	Max.	
Recovered recovery time 反向恢复时间	t_{rr}	$I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$			35	45	ns
		$I_F=1\text{A}, V_R=30\text{V}, di_F/dt=-200\text{A}/\mu\text{s}$			29		

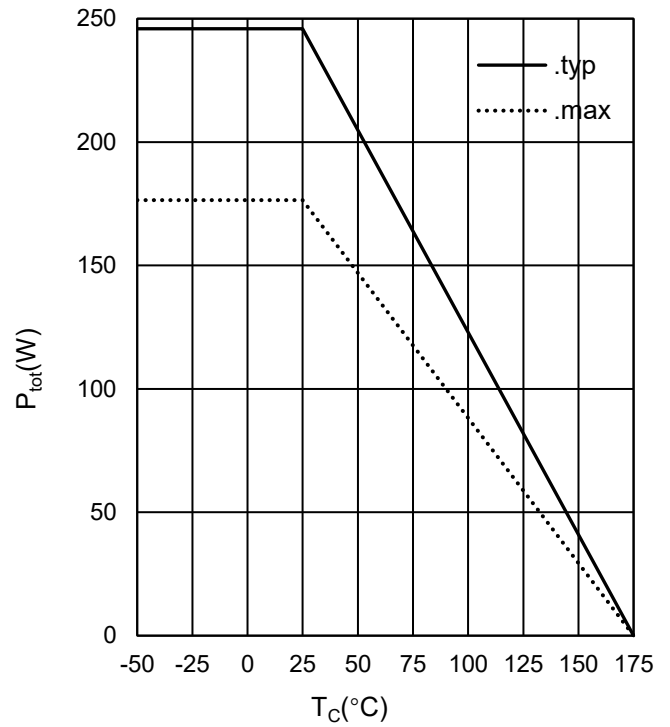
4. Electrical characteristics diagrams

电气特性图表

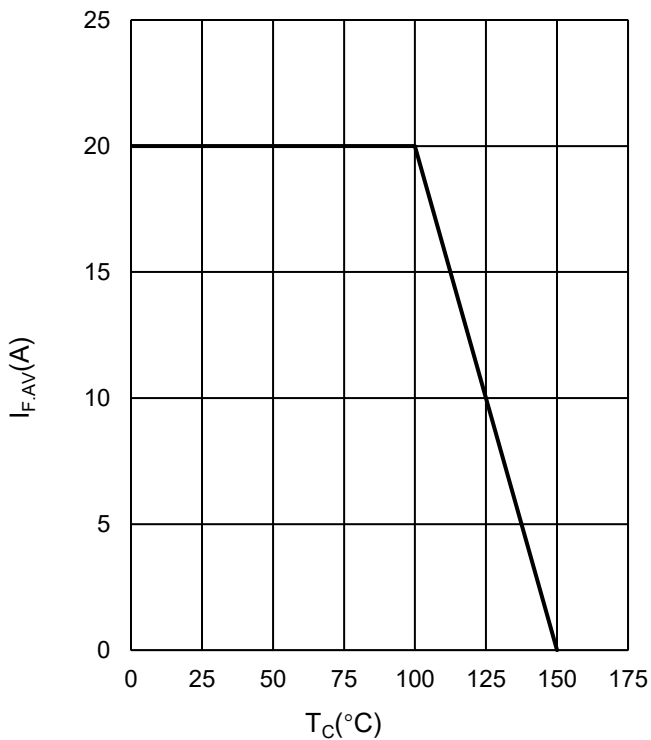
Typ.Reverse current of voltage /典型漏电流与电压函数
 $I_R=f(V_R)$; $T_j=25^\circ\text{C}$



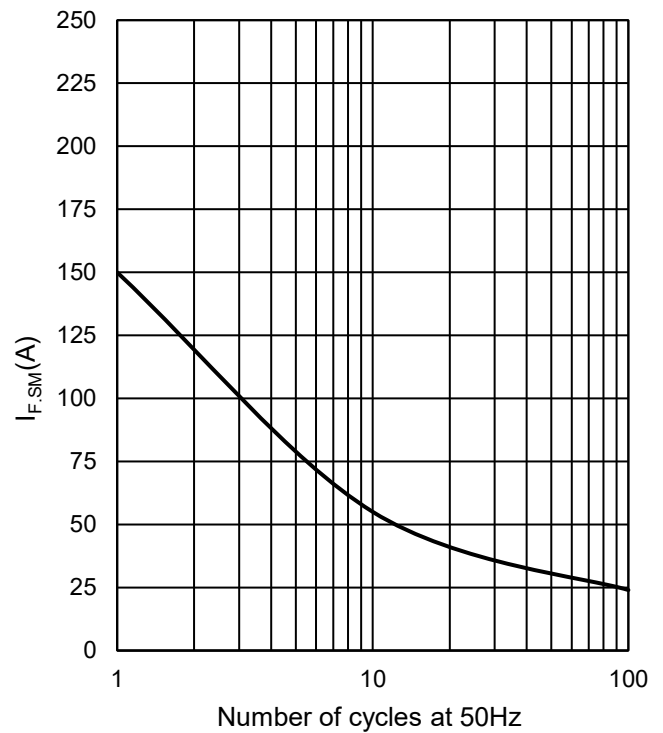
Power dissipation/耗散功率
 $P_{\text{tot}}=f(T_c)$; @ $R_{\text{th(j-c)}}$



Forward current derating curve/正向电流降额曲线
 $I_F=f(T_c)$;



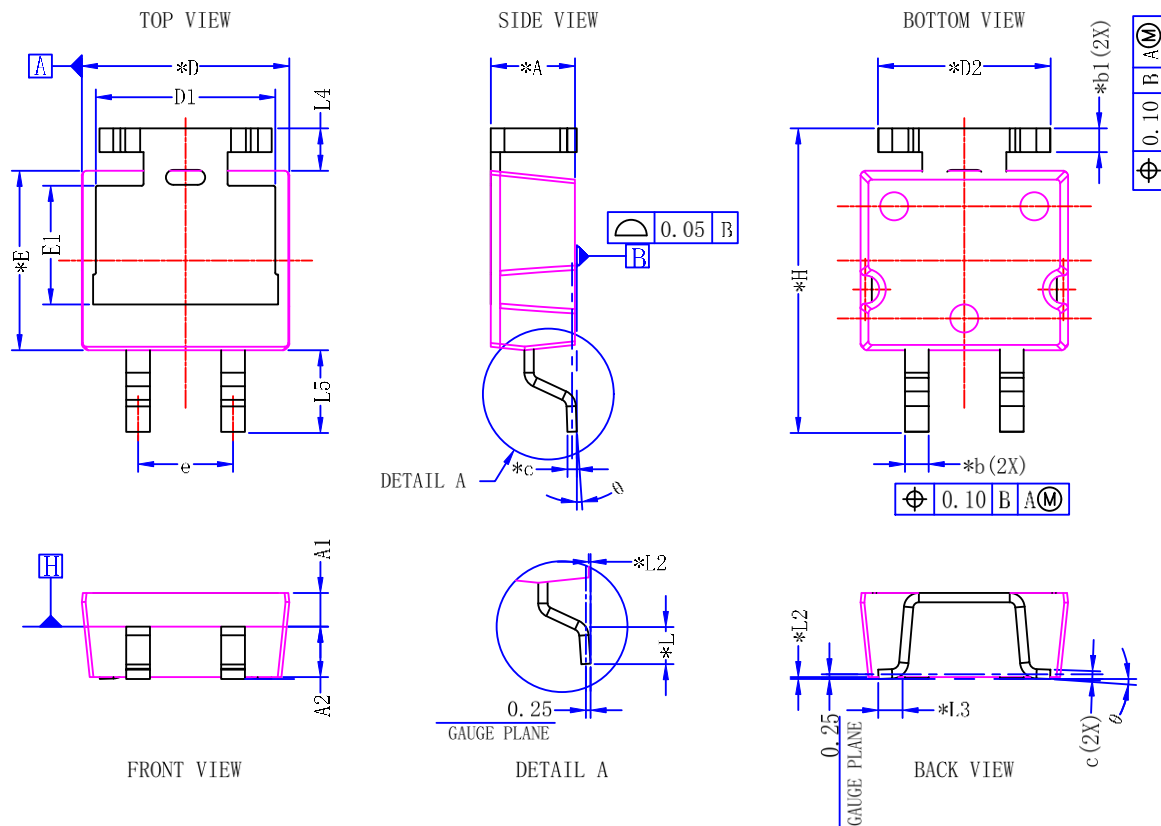
Max.non-repetitive peak forward surge current/ $I_{F,SM}$ 峰值曲线
 $I_F=f(N_{\text{Cycles}})$; @ 10ms single half sine-wave



5. Package outline

封装外形

Figure 1. Outline TSC263-4L, dimensions in mm/TSC263-4L外形尺寸 (毫米)



DIM SYMBOL	MIN.	TYP.	MAX.	DIM SYMBOL	MIN.	TYP.	MAX.
*A	4.40	4.50	4.60	*E	9.45	9.60	9.75
A1	1.75	1.80	1.85	E1	6.15	6.35	6.55
A2	2.65	2.70	2.75	e	5.08 BSC		
*b	1.22	1.27	1.32	*H	16.02	16.22	16.42
*b1	1.22	1.27	1.32	*L	1.70	1.90	2.10
*c	0.45	0.50	0.55	*L2	0.05	0.10	0.15
*D	10.95	11.10	11.25	*L3	1.10	1.30	1.50
D1	9.50	9.60	9.70	L4	2.27 REF		
*D2	9.00	9.20	9.40	L5	4.15	4.35	4.55
				Θ	0°	-	8°

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETER. ANGLES ARE IN DEGREE.
- DIMENSION "D" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS. INTERLEAD FLASH SHALL NOT EXCEED 0.150 MM PER SIDE. DIMENSION "E" DOES NOT INCLUDE MOLD FLASH, GATE BURRS, THE GATE BURRS SHALL NOT EXCEED 0.15MM.
- DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.

注:

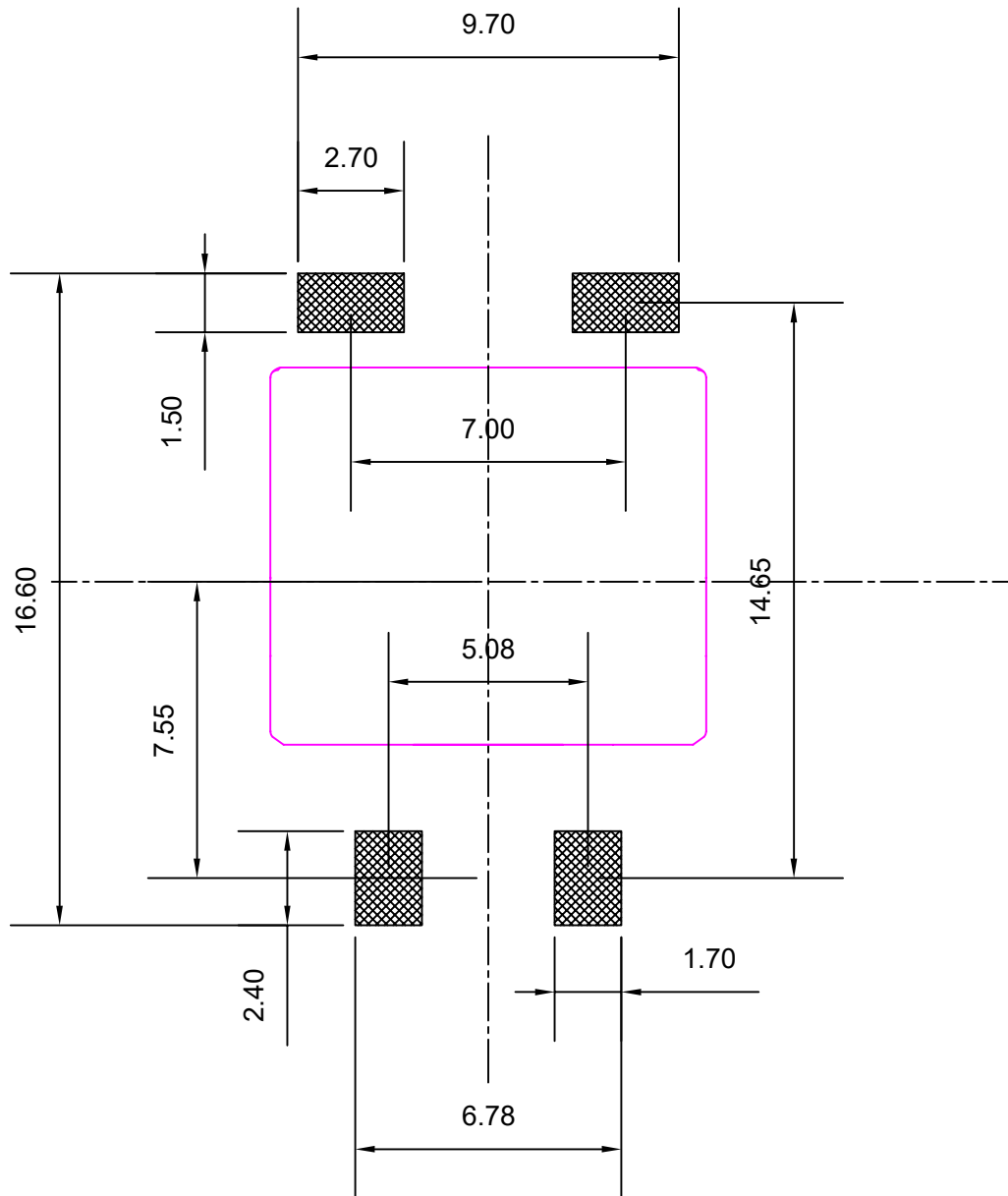
- 所有尺寸均以毫米为单位。角度以度为单位。
- 尺寸 D 不包括引脚间飞边或突出物。引脚间飞边在每侧不得超过0.15mm。尺寸 E 不包括模具飞边、浇口残余物，浇口残余物不得超过0.15mm。
- 尺寸 D、E 是在塑胶本体的最外极限确定的，不包括模具飞边、连接条残余、浇口残余和引脚间飞边，但包括塑胶本体顶部和底部之间可能存在的任何不匹配或错位。



6. Recommended Land Pattern

推荐焊盘尺寸

Figure 2. TSC263-4L Effective Solderable Area for Reflow Soldering/ TSC263-4L 回流焊接有效可焊面积



solder land/焊盘区域

----- Package Reference Centerline/封装参考中心线

dimensions in mm/单位为毫米

注:

所示焊盘尺寸仅供参考。为确保最佳散热性能及焊接质量, 建议根据实际应用中的 PCB 板材、层数及散热设计对焊盘进行优化调整
The land pattern dimensions provided are for reference only. To achieve optimal thermal performance, actual design adjustments should be considered based on the specific PCB materials, layer stack-up, and thermal dissipation requirements.



7. Revision history
修订历史

Table 5 Date and version number/日期与版本号

Date日期	Revision版本	Changes更改内容
2026-03-28	Rev. G 1.0	Target Datasheet (目标规格书)

8. Matters needing attention
注意事项

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