

HMS020N10H6M

100V N-Channel SGT Power MOSFET

Product features/产品特点

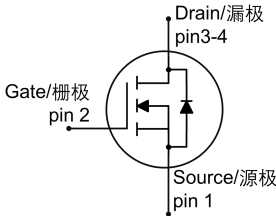
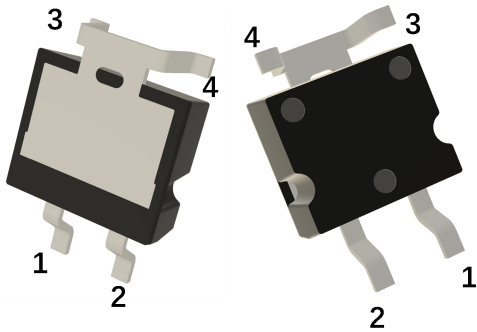
- Top side cooling technology
顶部散热技术
- Uses advanced SGT technology
采用先进的SGT技术
- Extremely low specific on-resistance
极低导通电阻
- Low thermal resistance
低热阻能力
- 100% UIS Tested
100% UIS测试
- Halogen free, RoHS compliant
无卤，符合RoHS

Applications/应用领域

- DC/DC converter
DC/DC转换器
- Motor control
电机控制
- Power switch
开关电源

Key performance parameters/关键性能参数

Parameter	Value	Unit
V_{DS}	100	V
$R_{DS(on),typ}$	2.1	mΩ
I_D	259	A



Package parameters/封装信息

Type/型号	Package/封装	Marking/标识	Packaging method/包装方式
HMS020N10H6M	TSC263-4L	HMS020N10M	800pcs-Tape&Reel/卷带包装(单卷800颗)



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 Maximum ratings/最大额定值

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value 值	Unit 单位
Drain-source voltage 漏极-源极电压	V_{DSS}	$T_{vj}\geq 25^{\circ}\text{C}$	100	V
Maximum gate source voltage 栅源最大电压	$V_{GS,MAX}$		± 20	V
Drain current 连续漏极电流	I_D	$T_C=25^{\circ}\text{C}$ ¹	259	A
		$T_C=100^{\circ}\text{C}$	152	
Peak drain current ² 峰值漏极电流	I_{DM}	$T_C=25^{\circ}\text{C}$	1036	A
Avalanche energy, single pulse 单脉冲雪崩能量	E_{AS}	$V_{DD}=50\text{V}, V_{GS}=10\text{V}, L=0.1\text{mH}$	205	mJ
Power dissipation 总耗散功率	P_{tot}	$T_C=25^{\circ}\text{C}$	543	W

1. Limited by $T_{vj}(\text{max})$ /受限于最大结温

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



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		150	°C
Operating junction Temperature 工作结温	T_{vj}		-55		150	°C
Thermal resistance, junction-case 结-壳热阻	$R_{th(j-c)}$			0.18	0.23	°C/W
Thermal resistance, junction-ambient 结-环境热阻	$R_{th(j-a)}$			30		°C/W
Soldering temperature, reflow solderin 焊接温度, 回流焊	T_{sold}	reflow MSL1			260	°C



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

电气特性 默认 $T_{vj}=25^{\circ}\text{C}$ 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.	
Drain-source breakdown voltage 漏源击穿电压	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	100			V
Gate threshold voltage 门极开启阈值电压	$V_{GS(th)}$	$I_D=250\mu\text{A}, V_{DS}=V_{GS}$	2.2	3.0	3.8	V
Drain-source on-state resistance 漏极-源极导通电阻	$R_{DS(on)}$	$I_D=100\text{A}, V_{GS}=10\text{V}$		2.1	2.3	m Ω
Zero gate voltage drain current 集电极-发射极漏电	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	μA
Gate to source Leakage current 门极-源极漏电流	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=20\text{V}$			100	nA
		$V_{DS}=0\text{V}, V_{GS}=-20\text{V}$			100	
Forward transconductance 正向跨导	g_{fs}	$I_D=100\text{A}, V_{DS}=5\text{V}$		188		S
Integrated gate resistor 内部门极电阻	R_G	$f=1\text{MHz}$		1.6		Ω

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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.	
Input capacitance 输入电容	C_{iss}	$V_{DS}=50V$, $V_{GS}=0V$, $f=1MHz$		10120		pF
Output capacitance 输出电容	C_{oss}			1360		
Reverse transfer capacitance 反向传输电容	C_{rss}			50		
Total gate charge 总栅极电荷	$Q_{G(tot)}$	$V_{DD}=50V$, $I_D=100A$, $V_{GS}=0-10V$		176		nC
Gate source charge 栅-源极电荷	Q_{GS}			47		
Gate-drain charge 栅-漏极电荷	Q_{GD}			54		
Turn-on delay time 开启延迟时间	$t_{d(on)}$	$V_{DD}=50V$, $V_{GS}=10V$, $I_D=100A$, $R_{G(ext)}=6\Omega$		85		ns
Rise time 上升时间	t_r			137		
Turn-off delay time 关闭延迟时间	$t_{d(off)}$			92		
Fall time 下降时间	t_f			98		

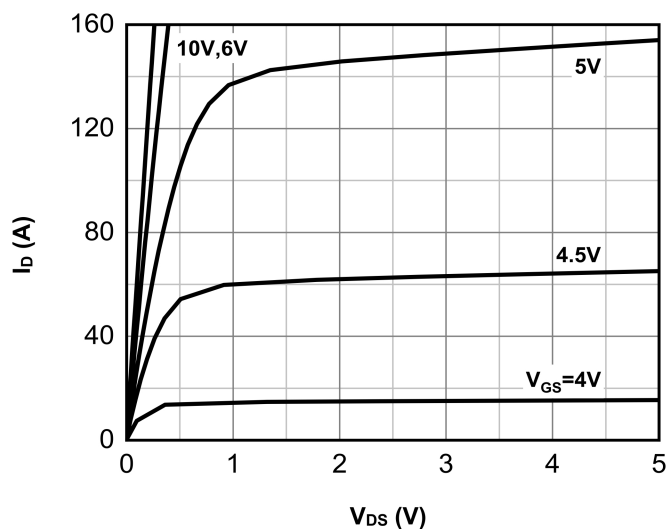
Table 5 Reverse diode characteristics/体二极管反向特性

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value/值			Unit 单位
			Min.	Typ.	Max.	
Drain-source reverse voltage 体二极管正向压降	V_{SD}	$I_S=100A, V_{GS}=0V$		0.9	1.2	V
Body diode reverse recovery time 反向恢复时间	t_{rr}	$V_{DD}=50V$, $I_S=50A$, $dis/dt=-100A/\mu s$		79		ns
Body diode reverse recovery charge 反向恢复电荷	Q_{rr}			180		nC

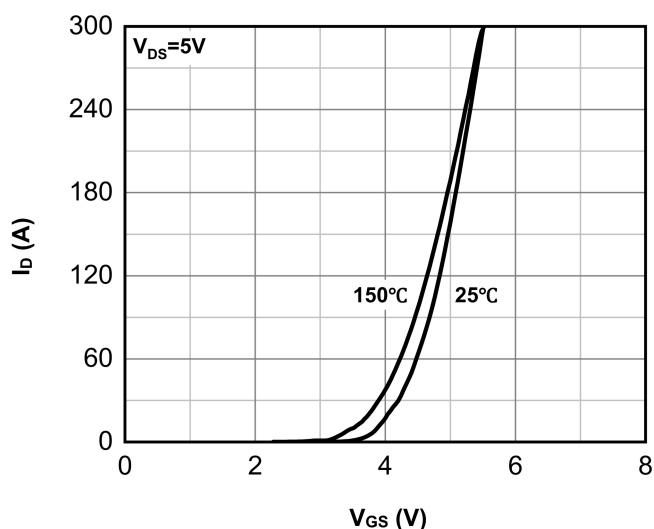
4. Electrical characteristics diagrams

电气特性图表

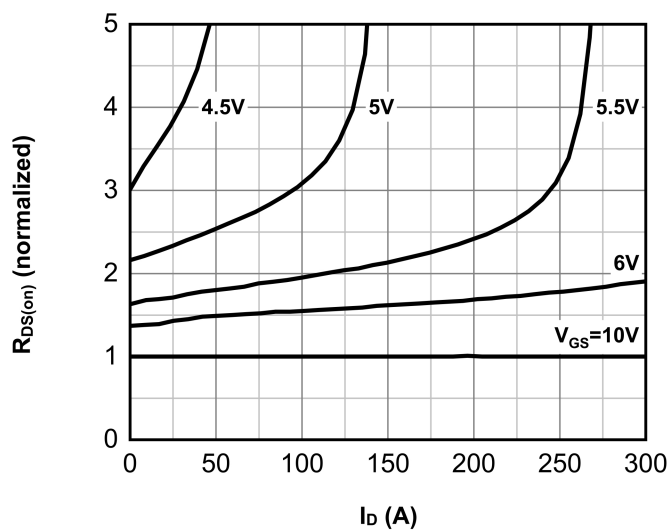
Typ. Output characteristic/典型输出特性



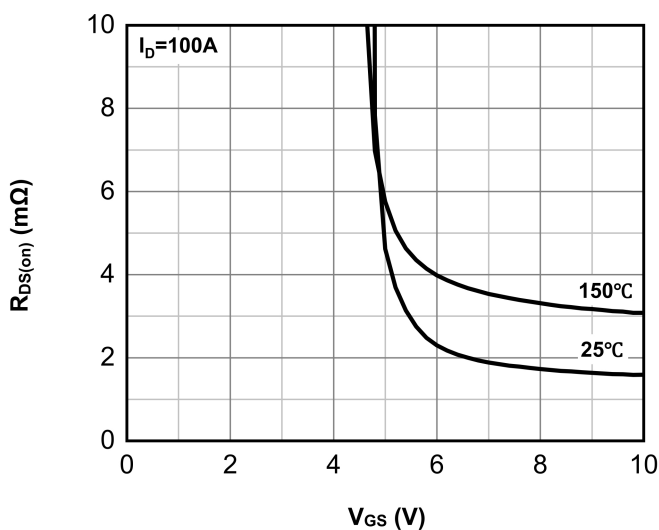
Typ. Transfer characteristic/典型传输特性



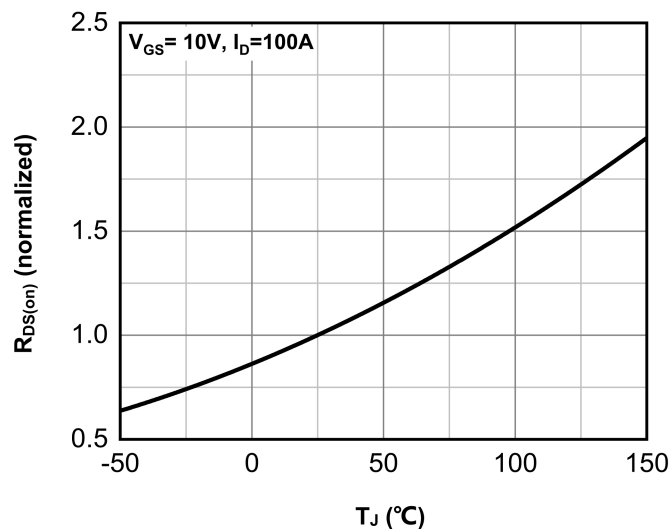
Typ. Drain-source on-state resistance/典型漏源导通电阻



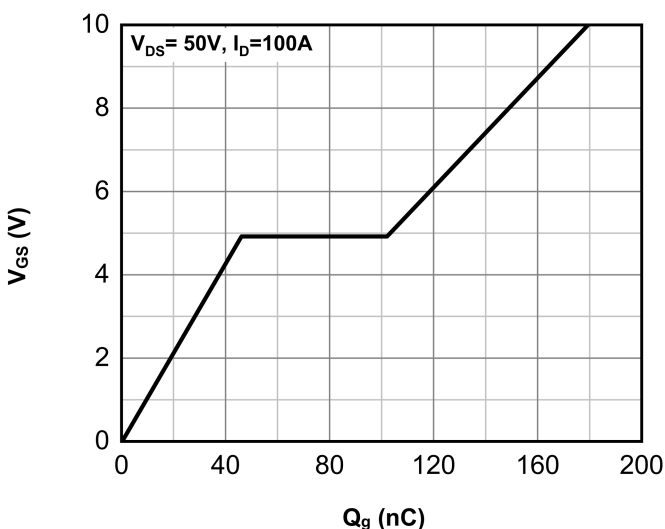
Typ. Drain-source on-state resistance/典型漏源导通电阻



Drain-source on-state resistance/典型漏源导通电阻

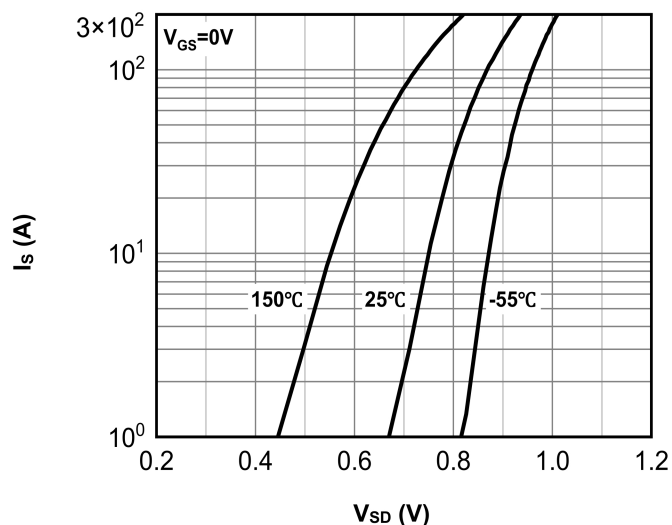


Typ. Gate charge/典型门级电荷

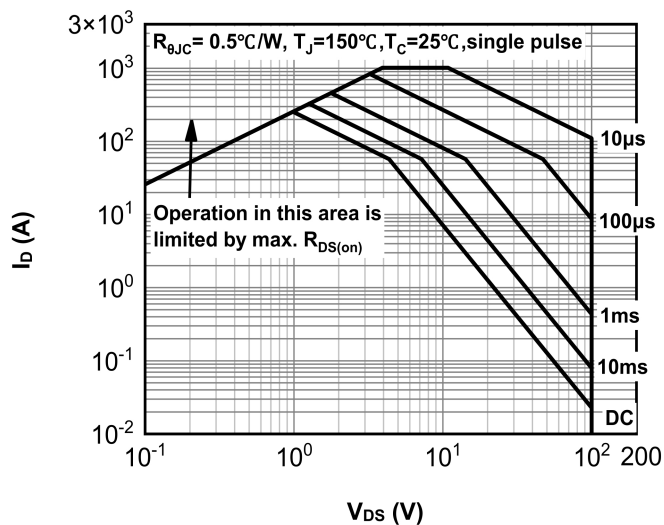




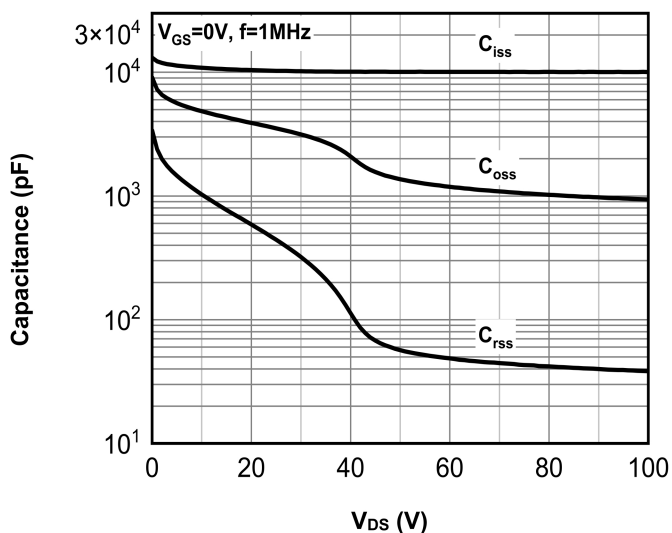
Typ.Reverse drain current characteristics/典型二极管特性



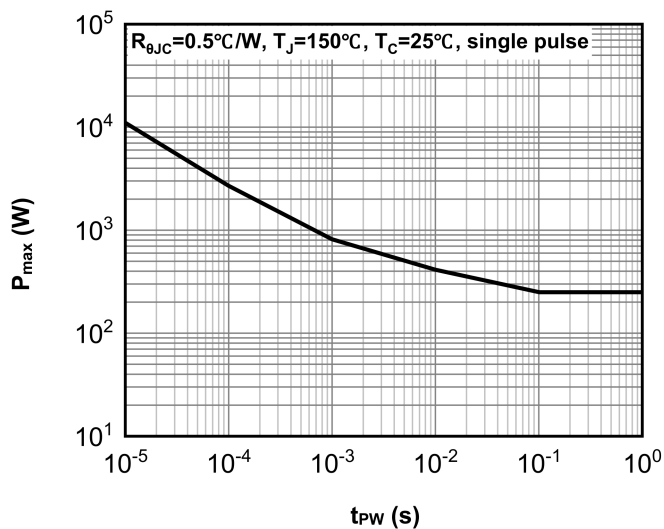
Safe operating area/安全工作区



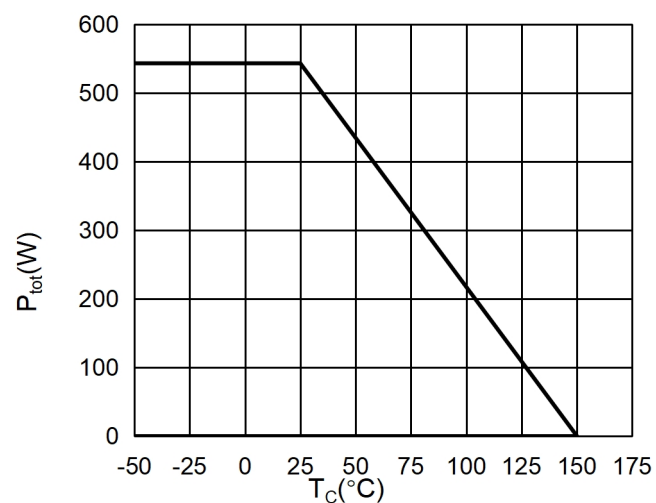
Typ.Capacitances characteristic/典型电容特性



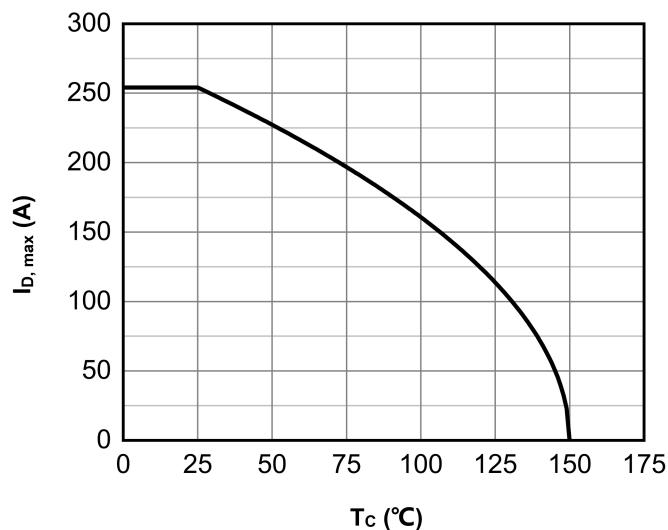
Max.Single pulse power dissipation/单脉冲最大耗散功率



Power dissipation/耗散功率

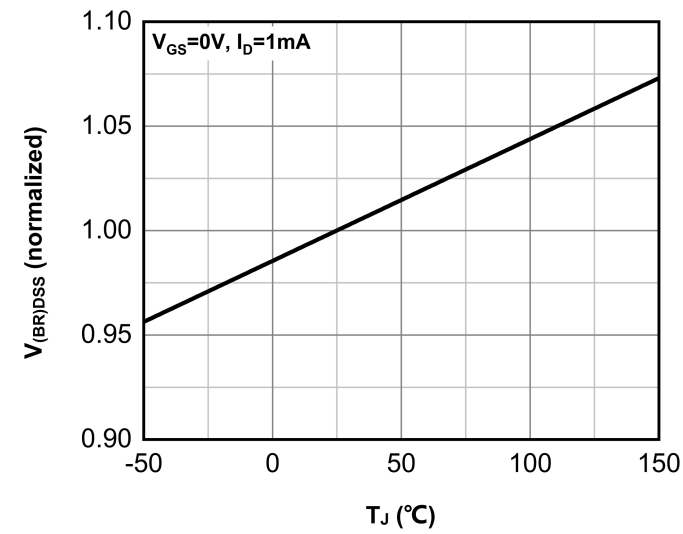


Continuous drain current/连续漏极电流与壳温

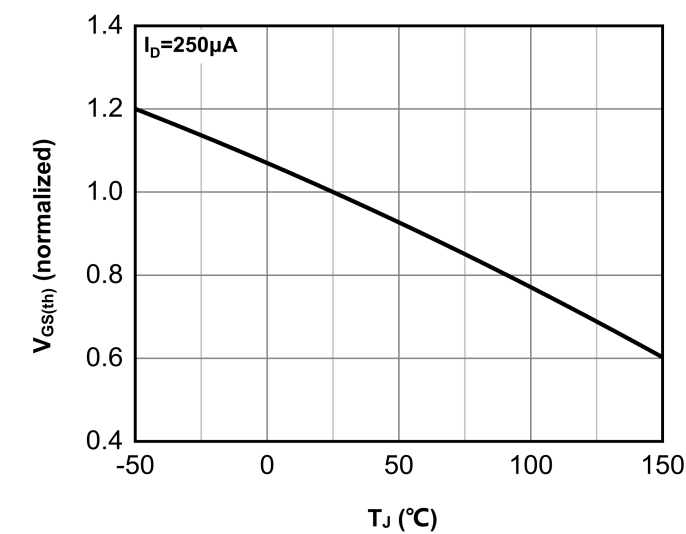




$V_{(BR)DSS}$ vs junction temperature/漏源击穿电压与结温特性



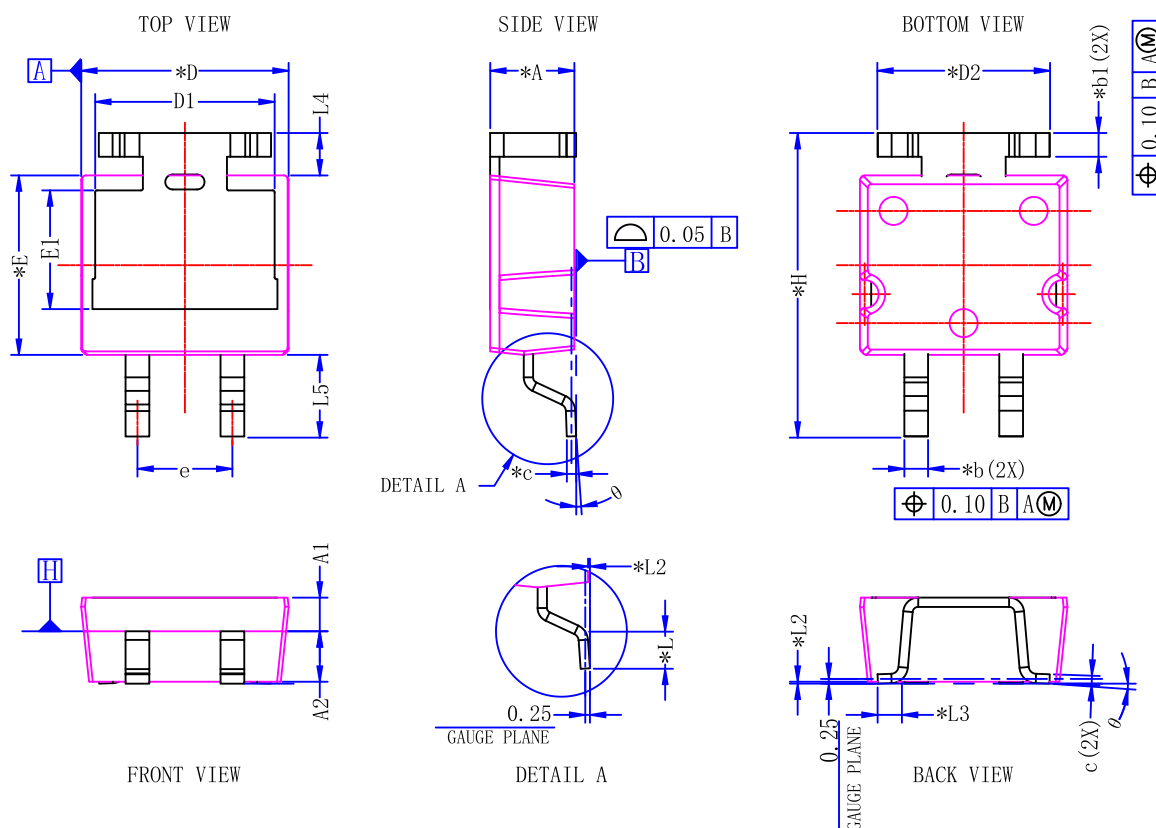
Typ. Gate threshold voltage/门级阈值电压结温特性



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.

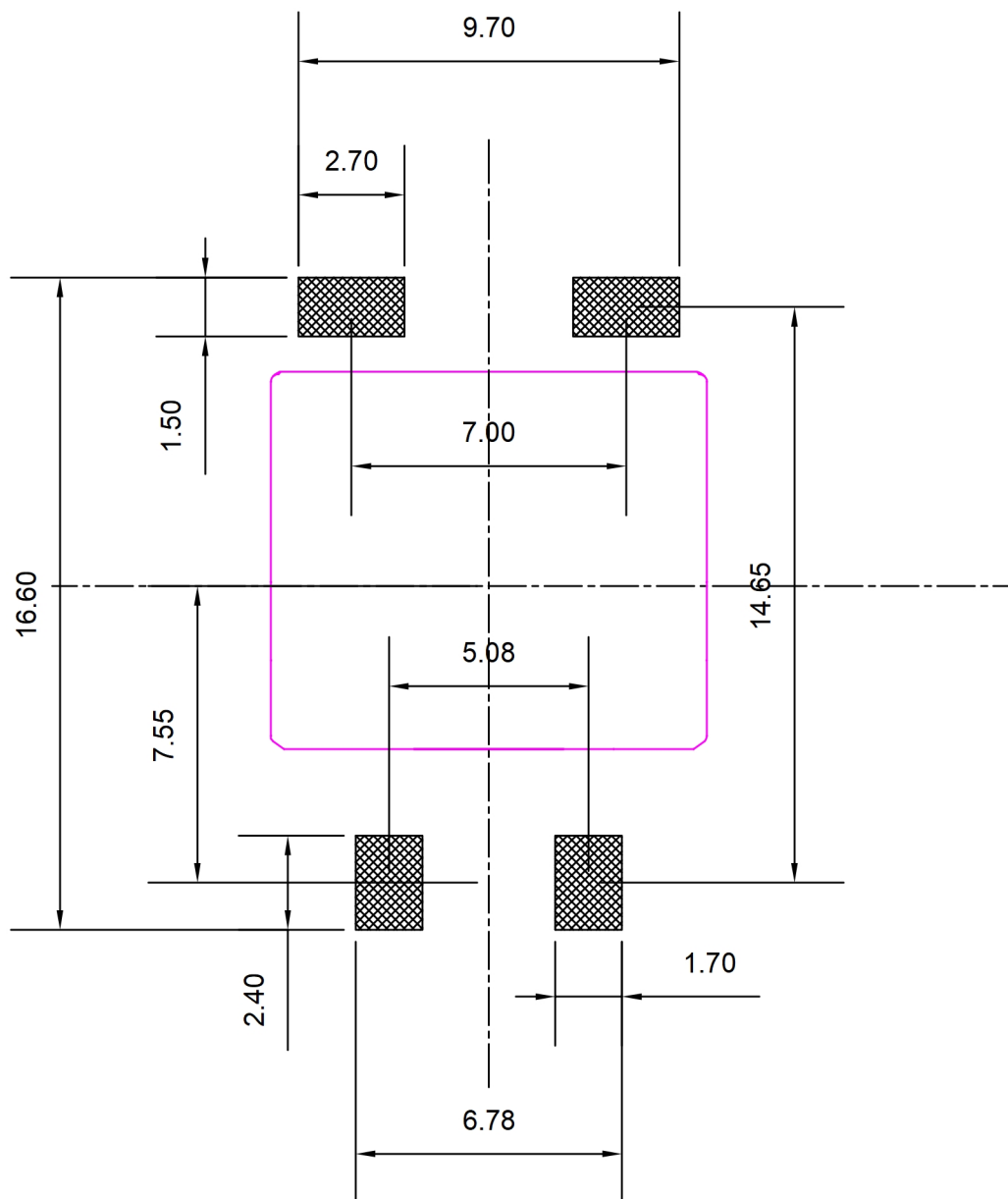
注:

- 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 6 Date and version number/日期与版本号

Date日期	Revision版本	Changes更改内容
2026-05-15	Rev. G 1.0	Target Datasheet (目标规格书)

8. Matters needing attention

注意事项

Appendix 1. Important Technical Guidance, Application Policy, and Copyright Notice/重要技术指南、应用规范与版权声明

[Data and Design Guidance]

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