

单 P 沟道 MOSFET

ELM6040P03A-S

<http://www.elm-tech.com>

■概要

ELM6040P03A-S 是 P 沟道低输入电容，低工作电压，低导通电阻的大电流 MOSFET。

■特点

- $V_{ds} = -30V$
- $I_d = -4A$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 42m\Omega$ ($V_{gs} = -10V$)

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

项目	记号	规格范围	单位	备注	
漏极 - 源极电压	V_{ds}	-30	V		
栅极 - 源极电压	V_{gs}	± 20	V		
漏极电流 (定常)	I_d	$T_a = 25^\circ C$	-4.0	A	3
		$T_a = 70^\circ C$	-3.2		
漏极电流 (脉冲)	I_{dm}	-24	A	1, 2	
容许功耗	P_d	1.25	W		
低减热率	$K\theta$	0.01	W/ $^\circ C$		
结合部温度及保存温度范围	T_j, T_{stg}	-55~+150	$^\circ C$		

■热特性

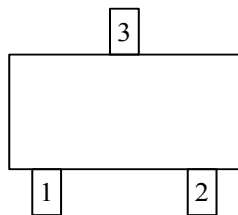
项目	记号	典型值	最大值	单位	备注
最大结合部 - 周围环境 (安装 PCB)	$R\theta_{ja}$	-	100	$^\circ C/W$	3
最大接合部 - 封装外周围环境	$R\theta_{jc}$	-	45	$^\circ C/W$	

备注:

1. 脉冲宽度受最大结合部温度限制;
2. 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$;
3. 安装在表面为 FR-4 板的 $1in^2$ 铜垫上时; 另外, 安装在最小的铜垫上时为 $270^\circ C/W$ 。

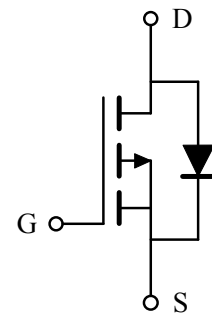
■引脚配置图

SOT-23(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■回路



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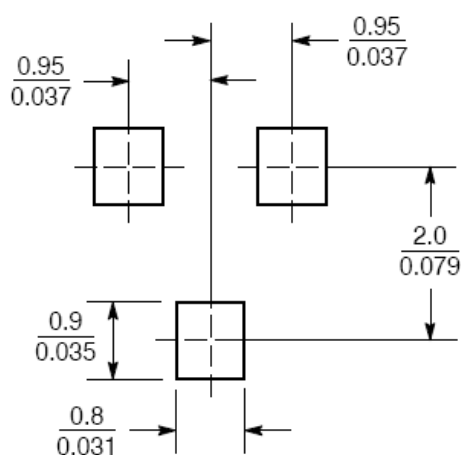
■电特性

如没有特别注明时, $T_a=25^{\circ}\text{C}$

项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV_{dss}	$I_d=-250\mu\text{A}, V_{gs}=0\text{V}$	-30	-	-	V
栅极接地时漏极电流	I_{dss}	$V_{ds}=-24\text{V}, V_{gs}=0\text{V}$	-	-	-1	μA
		$V_{ds}=-24\text{V}, V_{gs}=0\text{V}$ $T_a=70^{\circ}\text{C}$	-	-	-10	
栅极漏电流	I_{gss}	$V_{ds}=0\text{V}, V_{gs}=\pm 20\text{V}$	-	-	± 100	nA
栅极阈值电压	$V_{gs(th)}$	$V_{ds}=V_{gs}, I_d=-250\mu\text{A}$	-2	-	-4	V
漏极 - 源极导通电阻 (注)	$R_{ds(on)}$	$V_{gs}=-10\text{V}, I_d=-4\text{A}$	-	42	53	$\text{m}\Omega$
正向跨导 (注)	G_{fs}	$V_{ds}=-10\text{V}, I_d=-3\text{A}$	-	3.4	-	S
二极管正向压降 (注)	V_{sd}	$I_s=-1\text{A}, V_{gs}=0\text{V}$	-	-0.78	-1.20	V
动态特性						
输入电容	C_{iss}	$V_{gs}=0\text{V}, V_{ds}=-25\text{V}, f=1\text{MHz}$	-	482	-	pF
输出电容	C_{oss}		-	65	-	pF
反馈电容	C_{rss}		-	50	-	pF
开关特性						
总栅极电荷 (注)	Q_g	$V_{gs}=-10\text{V}, V_{ds}=-24\text{V}$ $I_d=-4\text{A}$	-	10.3	-	nC
栅极 - 源极电荷 (注)	Q_{gs}		-	2.5	-	nC
栅极 - 漏极电荷 (注)	Q_{gd}		-	2.8	-	nC
导通延迟时间 (注)	$t_{d(on)}$	$V_{gs}=-10\text{V}, V_{ds}=-15\text{V}$ $I_d=-4\text{A}, R_{gen}=1\Omega$	-	7.6	-	ns
导通上升时间 (注)	t_r		-	15.8	-	ns
关闭延迟时间 (注)	$t_{d(off)}$		-	34.8	-	ns
关闭下降时间 (注)	t_f		-	12.6	-	ns
寄生二极管反向恢复时间	t_{rr}	$V_{gs}=0\text{V}, I_f=-1\text{A}$	-	8.2	-	ns
寄生二极管反向恢复电荷	Q_{rr}	$dI_f/dt=100\text{A}/\mu\text{s}$	-	3.3	-	nC

注) 脉冲测试: 脉冲宽度 $\leq 300\mu\text{s}$, 占空比 $\leq 2\%$;

■参考焊盘图

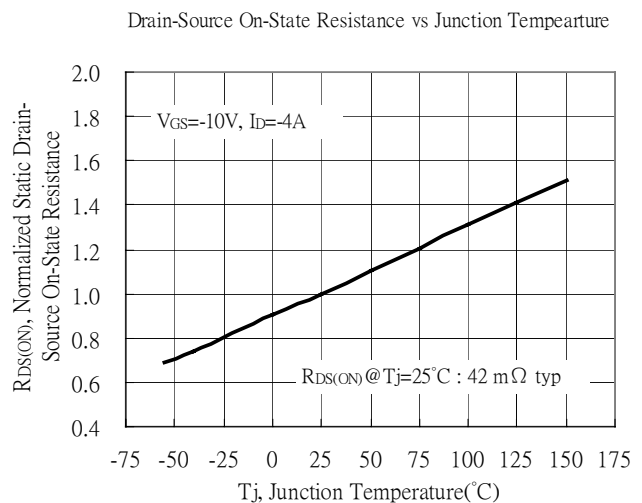
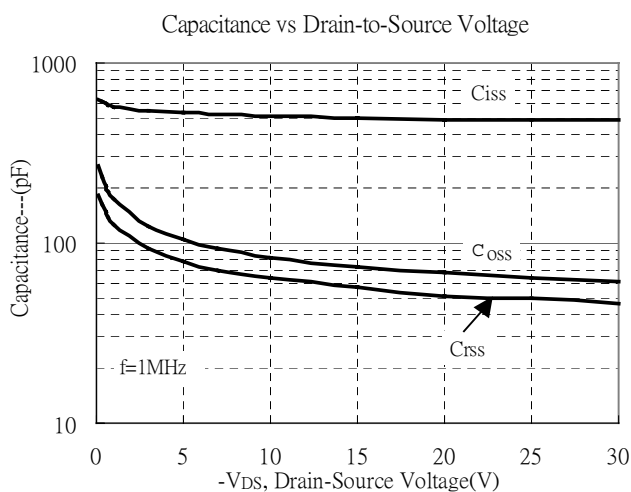
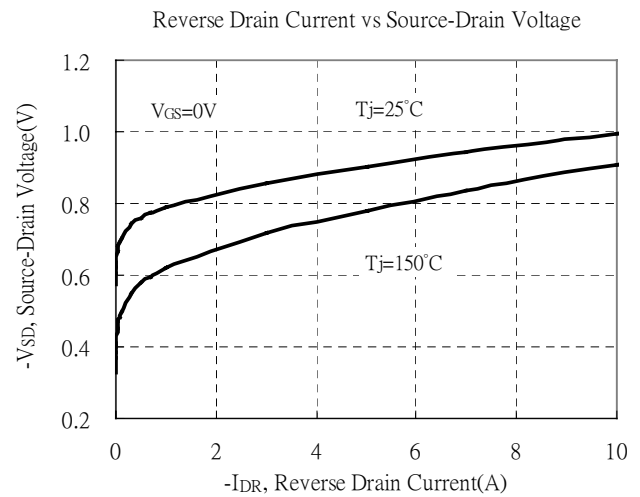
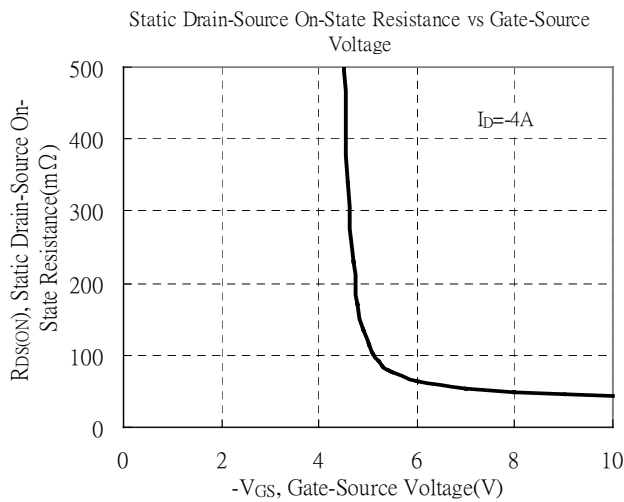
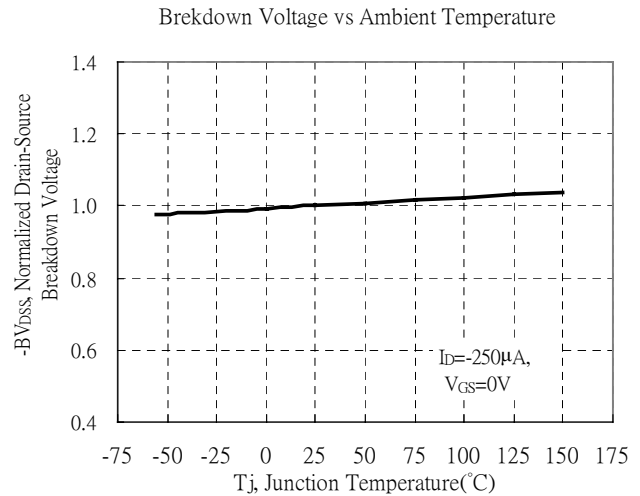
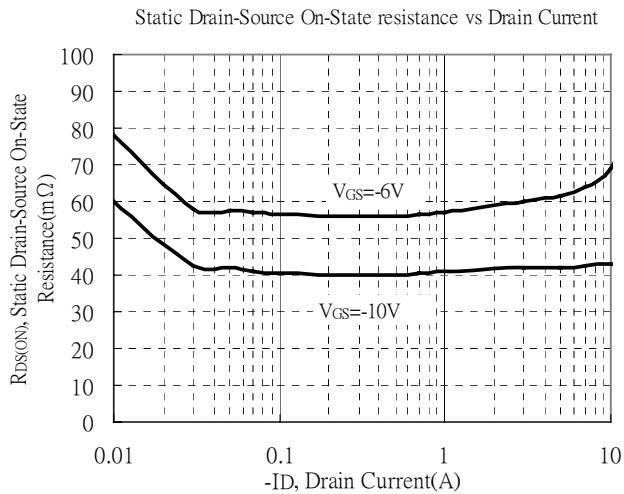


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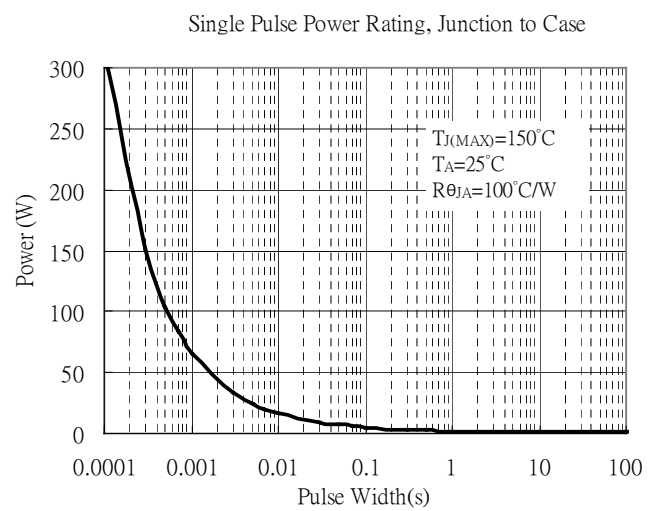
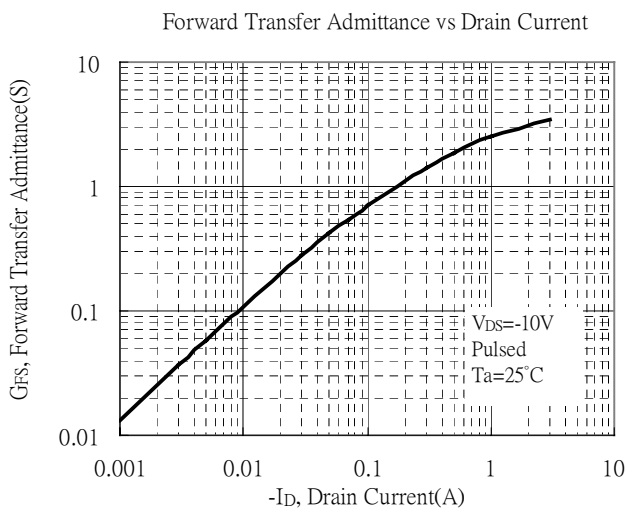
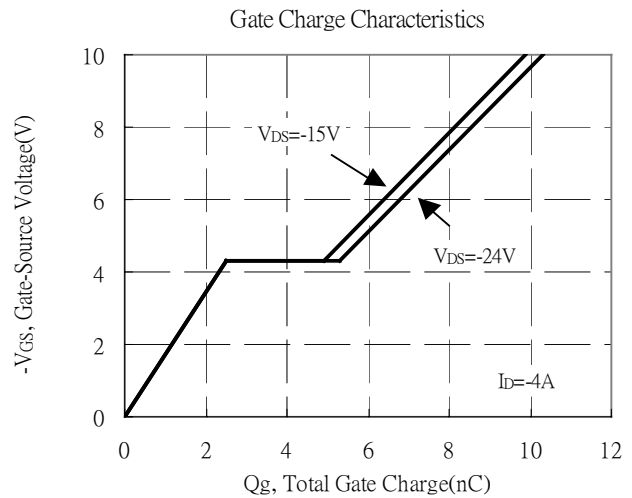
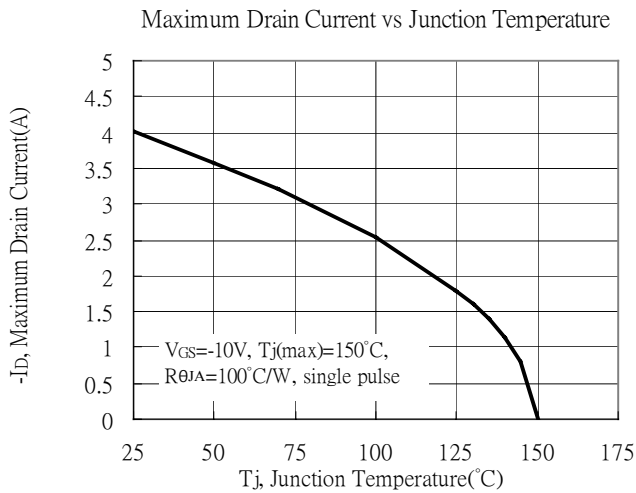
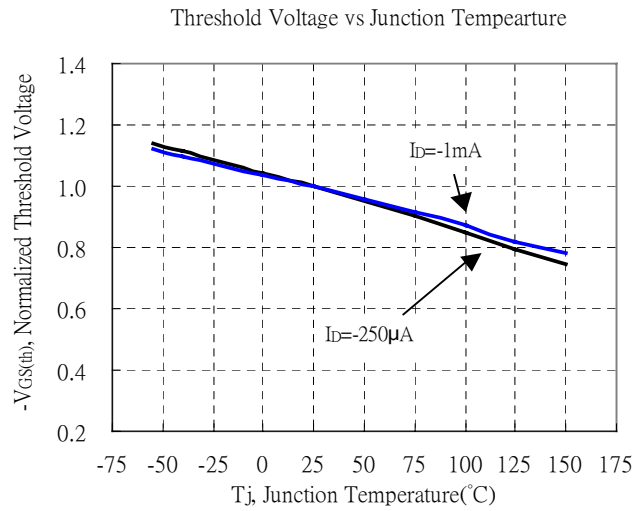
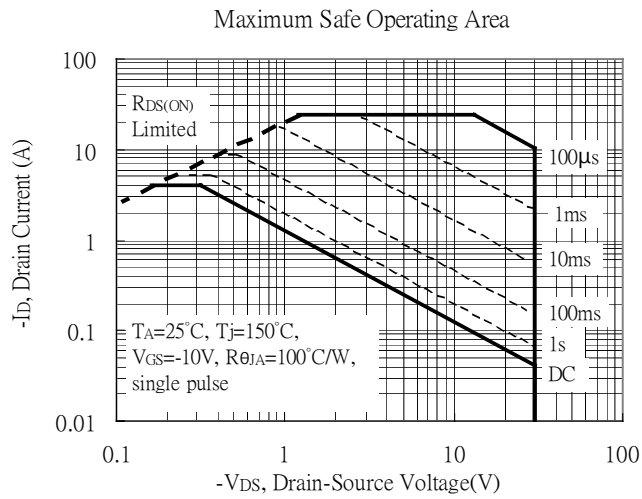
标准特性和热特性曲线



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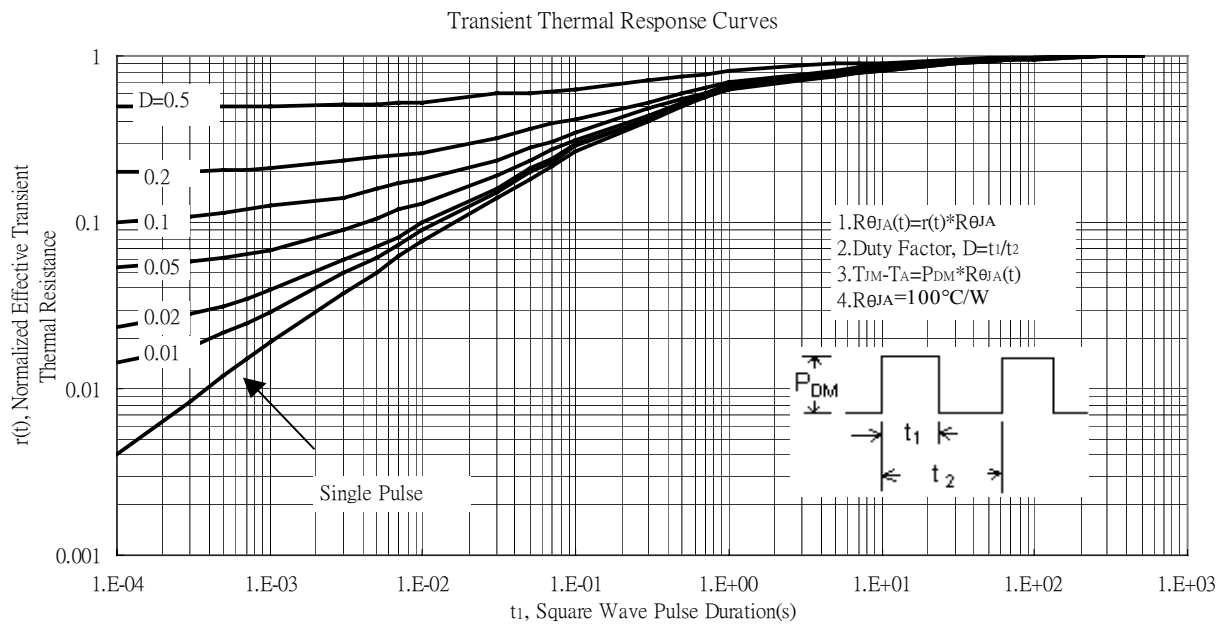
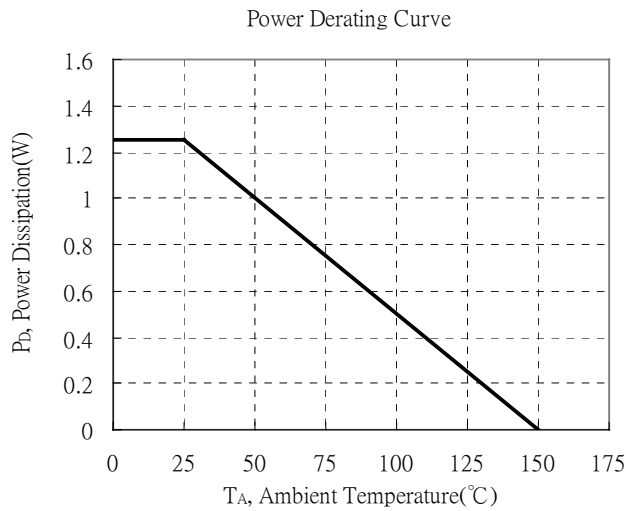
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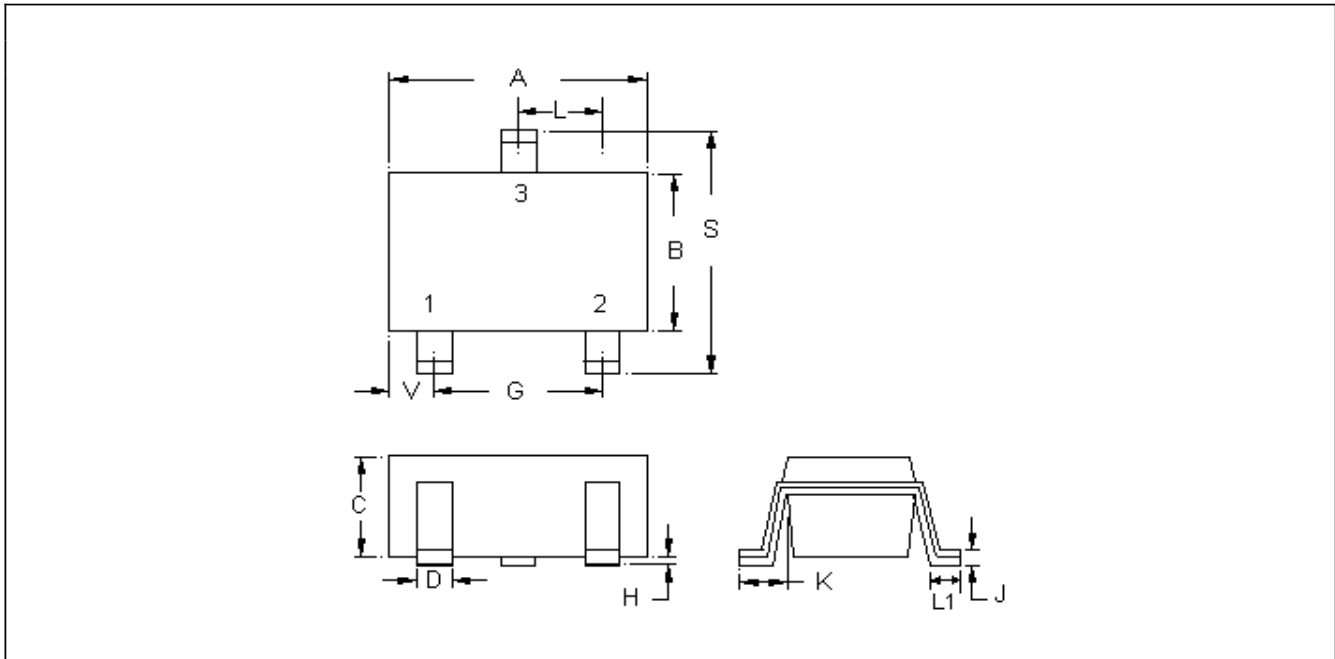


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■ SOT-23 尺寸



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

Notes: 1. Controlling dimension: millimeters.

2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

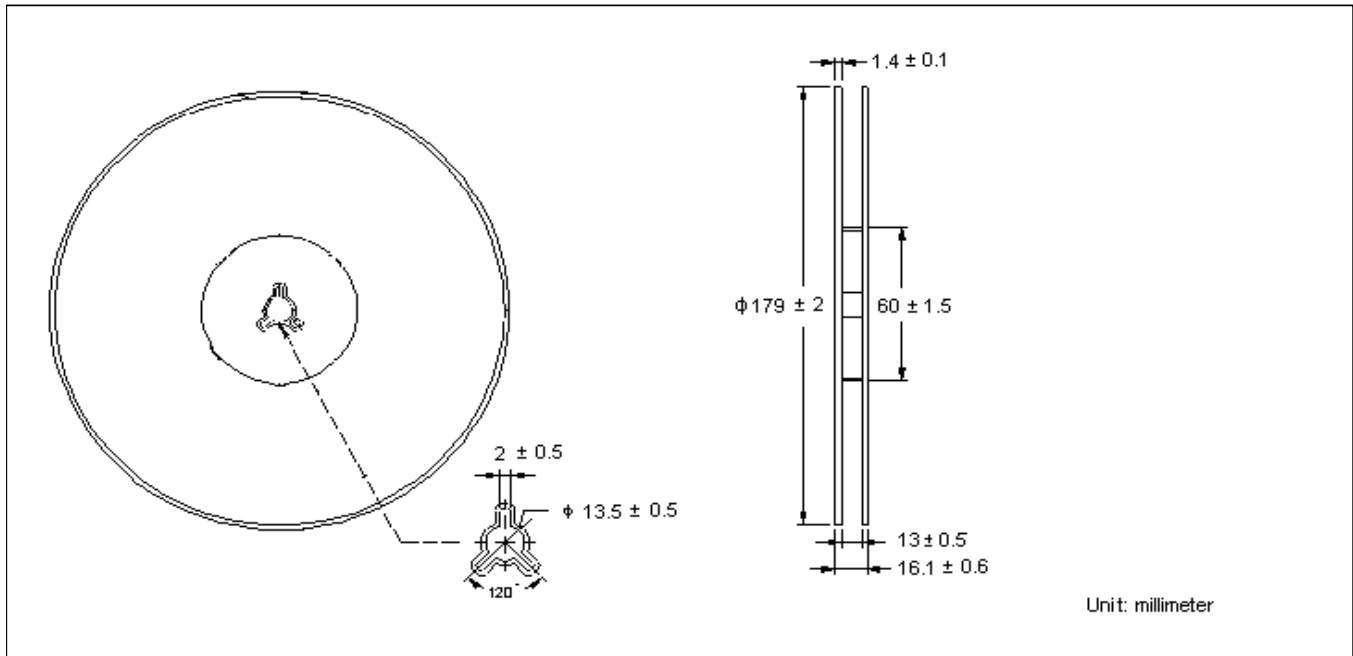
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■ 卷带和载带尺寸

· 卷带



· 载带

