

### 描述 / Descriptions

SOT-23 塑封封装 N 沟道 MOS 场效应管。  
N-CHANNEL MOSFET in a SOT-23 Plastic Package.

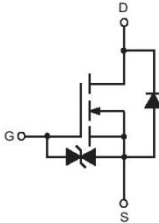
### 特征 / Features

灵敏的控制级触发电流和很低的维持电流。静电保护达 2KV，无卤产品。  
Sensitive gate trigger current and Low Holding current.ESD protected up to 2KV,HF Product.

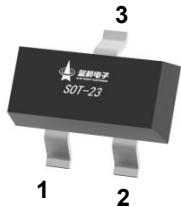
### 用途 / Applications

用作一般的开关和相位控制。  
Intended for use in general purpose switching and phase control applications.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : G      PIN 2 : S      PIN 3 : D

### 印章代码 / Marking

Marking	HSA
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**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Drain Current – Continuous	$I_D$	170	mA
Drain Current– Pulsed	$I_D(T_C=25^\circ C)$	680	mA
Continuous Drain–Source	$I_S$	170	mA
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D$	0.36	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	350	$^\circ C/W$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain–Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS(1)}$	$V_{DS}=100V$ $V_{GS}=0V$			1.0	$\mu A$
	$I_{DSS(2)}$	$V_{DS}=100V$ $V_{GS}=0V$ $T_J=85^\circ C$			30	$\mu A$
Gate–Body Leakage.	$I_{GSS}$	$V_{GS}=\pm 20$ $V_{DS}=0V$			$\pm 10$	$\mu A$
On–State Drain Current	$I_{D(on)}$	$V_{DS}=5.0V$ $V_{GS}=10V$	0.68			A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.5	2.0	2.5	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	$V_{GS}=10V$ $I_D=0.17A$		3.3	6.0	$\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=4.5V$ $I_D=0.17A$		4.0	10	$\Omega$
Drain–Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=0.34A$		0.8	1.3	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		73		pF
Output Capacitance	$C_{oss}$			7		pF
Reverse Transfer Capacitance	$C_{rss}$				3.4	pF
Turn–On Delay Time	$t_{d(on)}$	$I_D=0.28A$ $V_{GS}=10V$ $V_{DD}=30V$ $R_G=6.0\Omega$		1.8		ns
Turn–On Rise Time	$t_r$				11	ns
Turn–Off Delay Time	$t_{d(off)}$				19	ns
Turn–Off Fall Time	$t_f$				2.6	ns

电参数曲线图 / Electrical Characteristic Curve

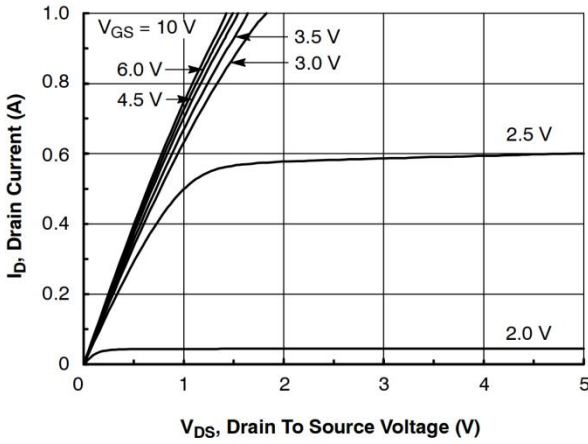


Figure 1. On-Region Characteristics

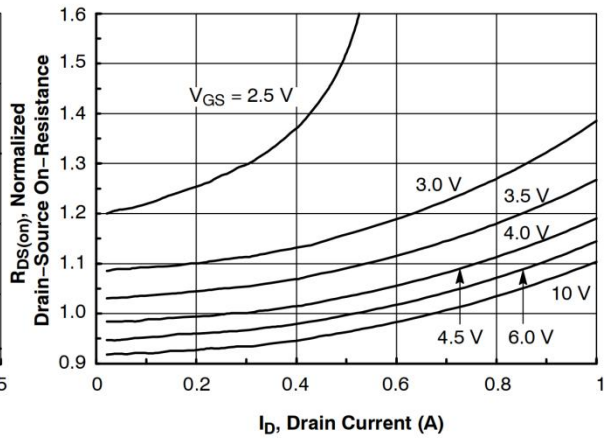


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

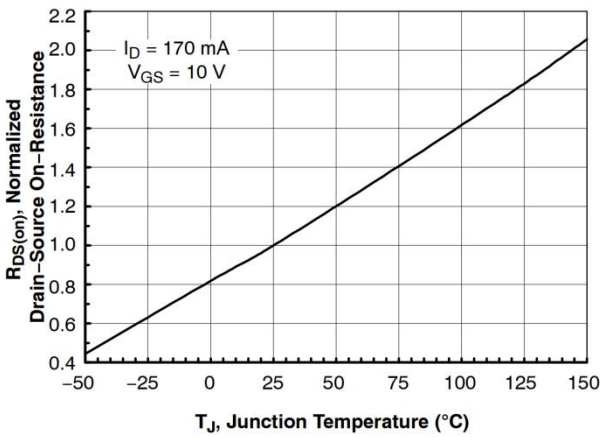


Figure 3. On-Resistance Variation with Temperature

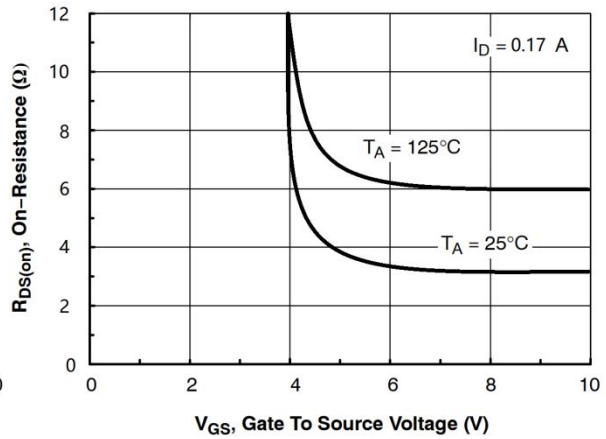


Figure 4. On-Resistance Variation with Gate-to-Source Voltage

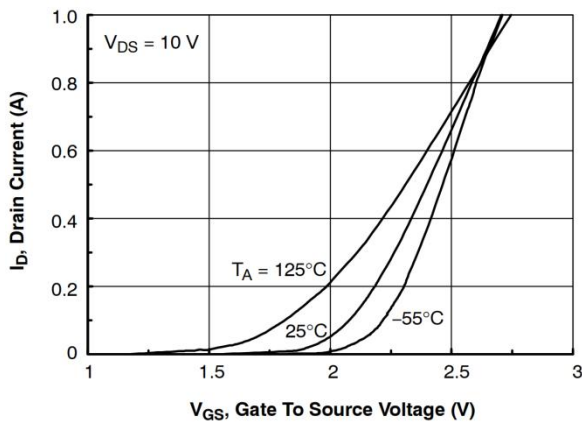


Figure 5. Transfer Characteristics

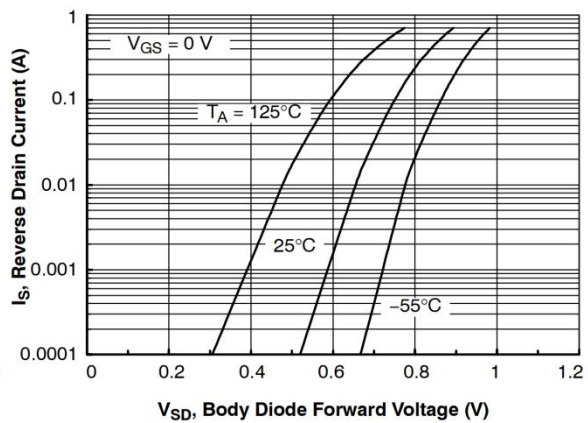
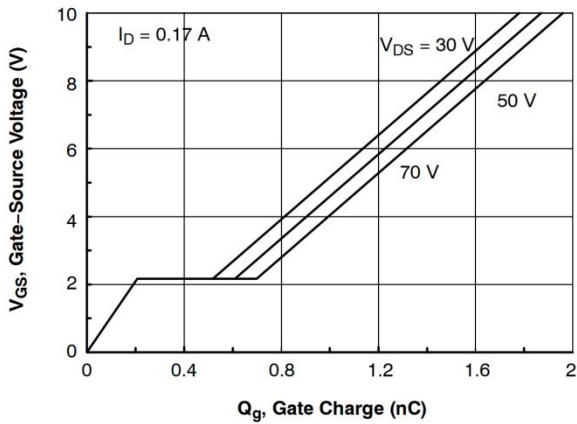
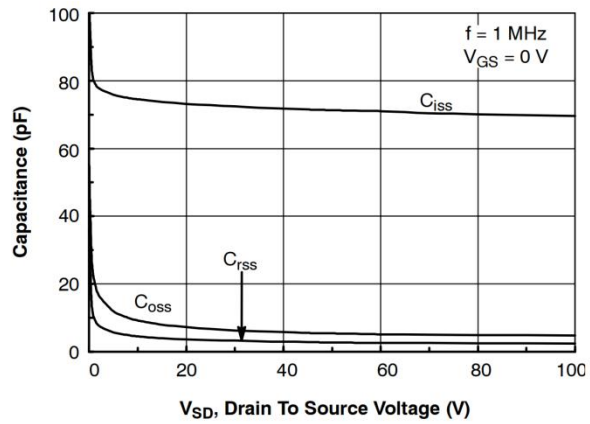


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

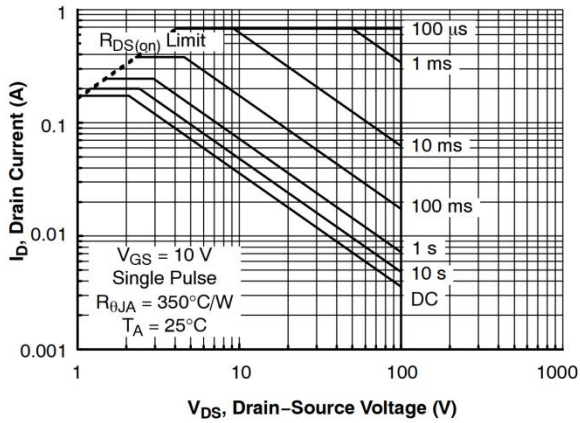
**电参数曲线图 / Electrical Characteristic Curve**



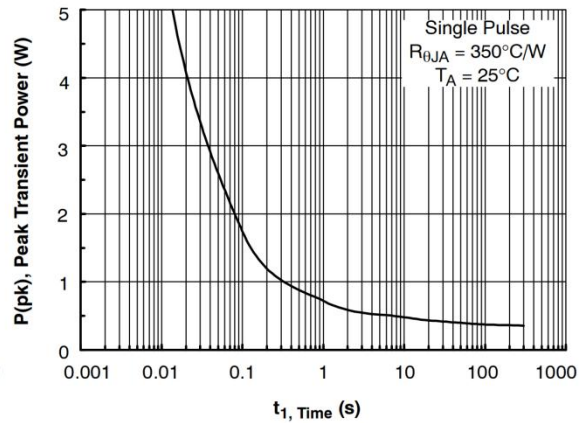
**Figure 7. Gate Charge Characteristics**



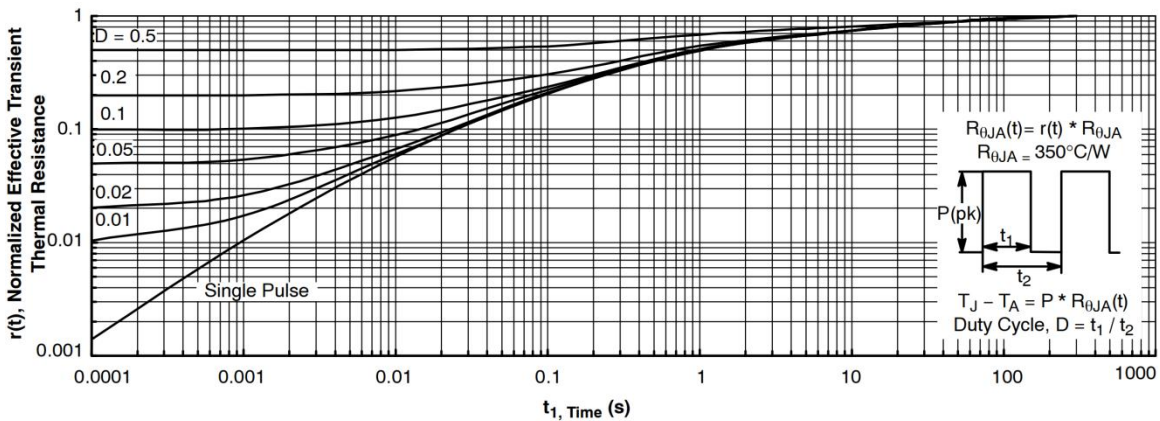
**Figure 8. Capacitance Characteristics**



**Figure 9. Maximum Safe Operating Area**



**Figure 10. Single Pulse Maximum Power Dissipation**

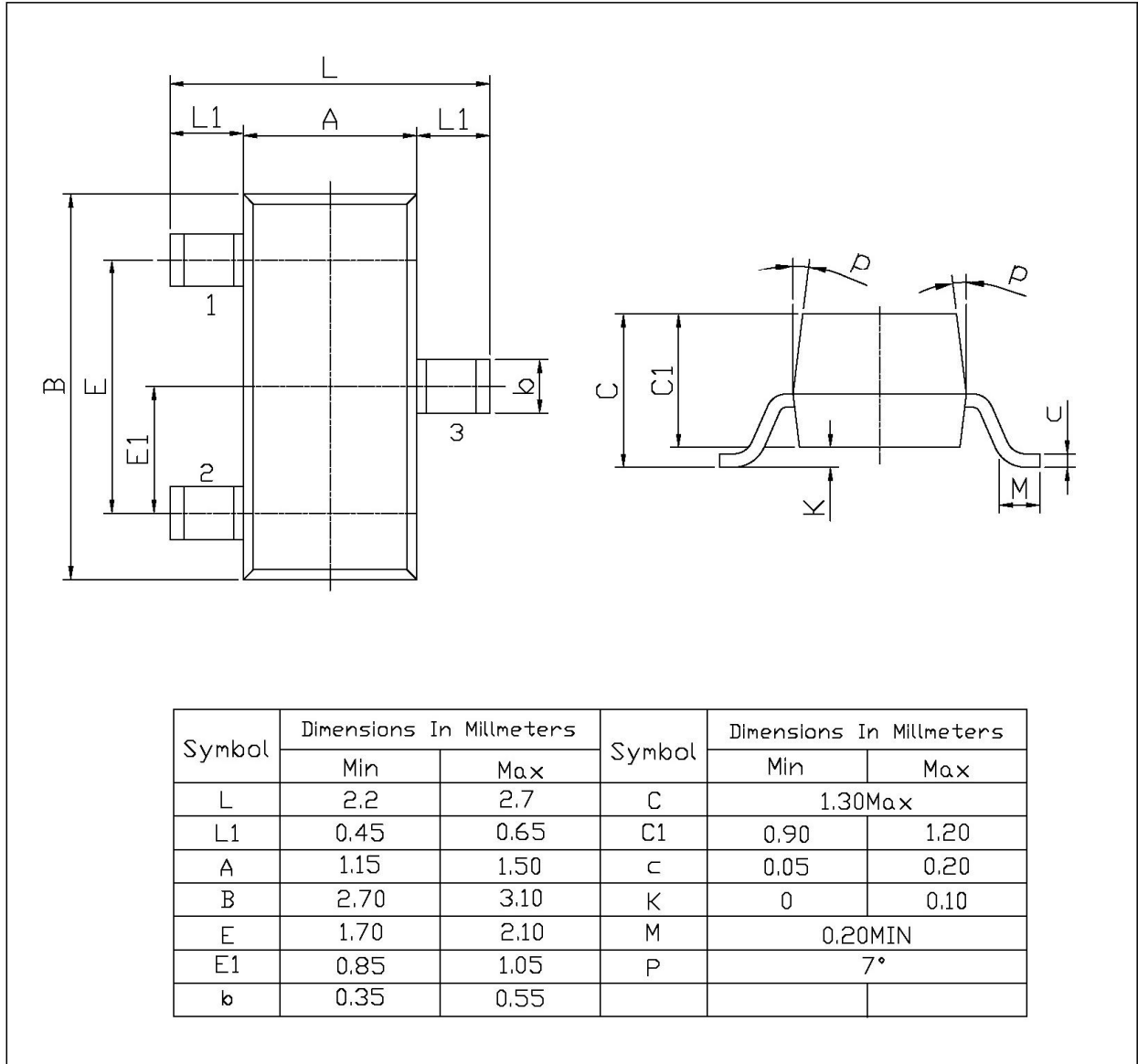


**Figure 11. Transient Thermal Response Curve**

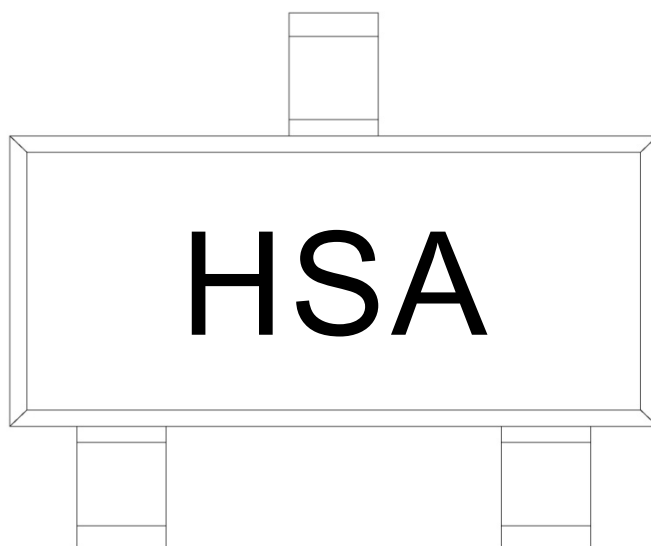
外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



说明：

H： 为公司代码

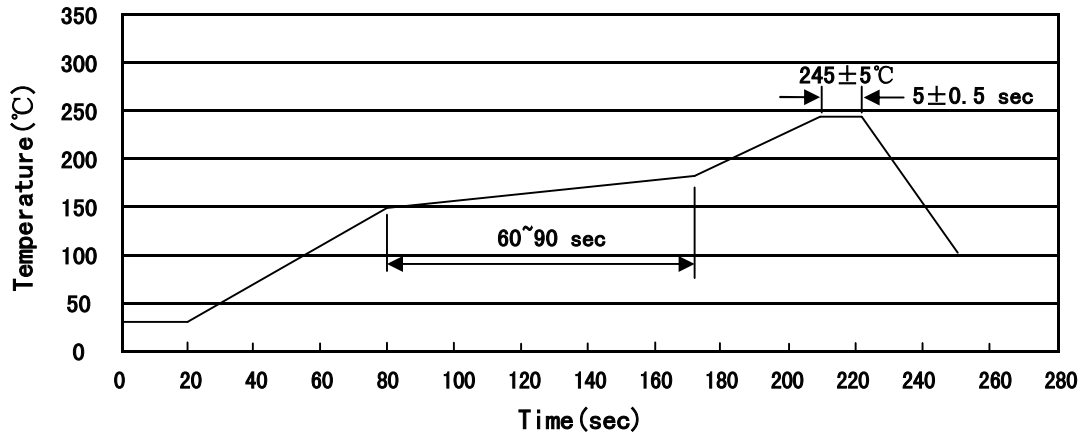
SA： 为型号代码

Note:

H: Company Code

SA: Product Type

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**



说明：

- 1、预热温度 150 ~ 180°C，时间 60 ~ 90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOT-23	3,000	10	30,000	6	180,000	7" ×8	180×120×180	390×385×205

**使用说明 / Notices**