

## 描述 / Descriptions

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

## 特征 / Features

ESD 防护，耗尽型 (  $V_{GS(th)}$  典型值 -1.8V )。

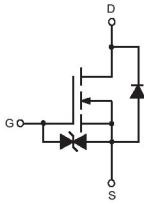
ESD Improved capability, Depletion mode ( $V_{GS(th)}$  = -1.8V, type).

## 用途 / Applications

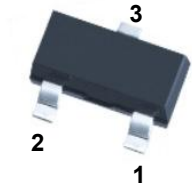
适用于高压开关驱动电路。

This device is suitable for load switch of high voltage.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1 : S

PIN 2 : G

PIN 3 : D

## 印章代码 / Marking

Marking	H501
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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	$V_{DS}$	600	V
Drain Current - Continuous	$I_D(T_C=25^{\circ}C)$	30	mA
Drain Current - Continuous	$I_D(T_C=70^{\circ}C)$	24	mA
Drain Current- Pulsed	$I_{DM}$	120	mA
Continuous Source Current	$I_S$	25	mA
Maximum Pulsed Current	$I_{SM}$	100	mA
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Gate source ESD	$V_{ESD}$	300	V
Power Dissipation	$P_D$	0.5	W
Junction-to-Ambient	$R_{\theta JA}$	250	$^{\circ}C/W$
Junction Temperature Range	$T_J$	150	$^{\circ}C$
Storage Temperature Range	$T_{STG}$	-55 to 150	$^{\circ}C$
Temperature for Soldering	$T_L$	300	$^{\circ}C$

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

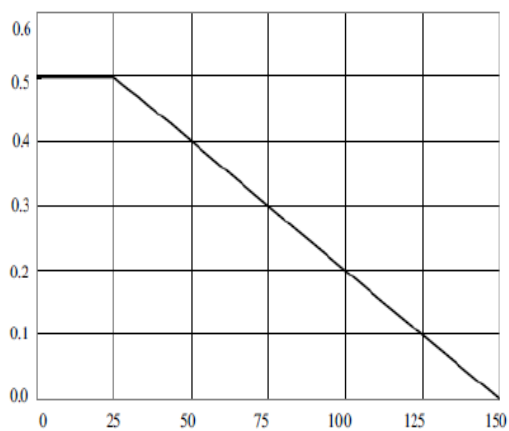
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=-5.0V$ $I_D=250\mu A$	600			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=25V$ $V_{GS}=0V$	12			mA
Gate-Body Leakage.	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 10$	$\mu A$
Off-state Drain to Source Current	$I_{D(off)}$	$V_{DS}=600V$ $V_{GS}=5.0V$			0.1	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=3.0V$ $I_D=8.0\mu A$	-2.7	-1.8	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)(1)}$	$V_{GS}=0V$ $I_D=3.0mA$		400	700	$\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=10V$ $I_D=16mA$		500	800	$\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=50V$ $I_D=0.01A$	0.008	0.017		S
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=-5.0V$ $I_F=16mA$			1.2	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=-5.0V$ $f=1.0MHz$		50		pF
Output Capacitance	$C_{oss}$			4.53		pF
Reverse Transfer Capacitance	$C_{rss}$			1.08		pF

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

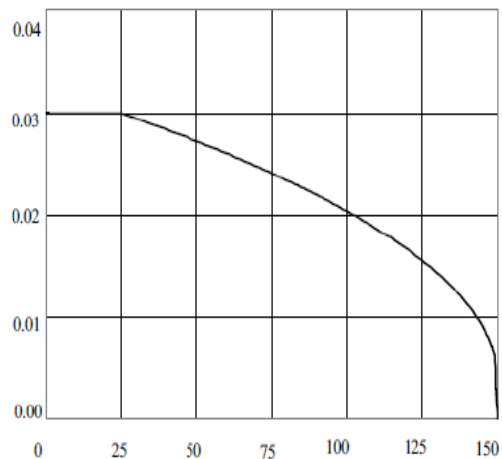
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	$t_{d(on)}$	$I_D=0.01A$ $V_{DD}=300V$ $R_G=6.0\Omega$ $V_{GS}=-5.0\sim 7.0V$		9.9		ns
Turn-On Rise Time	$t_r$			55.8		ns
Turn-Off Delay Time	$t_{d(off)}$			56.4		ns
Turn-Off Fall Time	$t_f$			136		ns
Total Gate Charge	$Q_g$	$I_D=0.01A$ $V_{DD}=400V$ $V_{GS}=-5V\text{to}5V$		1.14		nC
Gate to Source Charge	$Q_{gs}$			0.5		nC
Gate to Drain ("Miller") Charge	$Q_{gd}$			0.37		nC
Reverse Recovery Time	$t_{rr}$	$I_F=0.01A$ $T_J=25^\circ C$ $V_R=300V$ $dI_F/dt=100A/us$		243		ns
Reverse Recovery Charge	$Q_{rr}$			636		nC

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

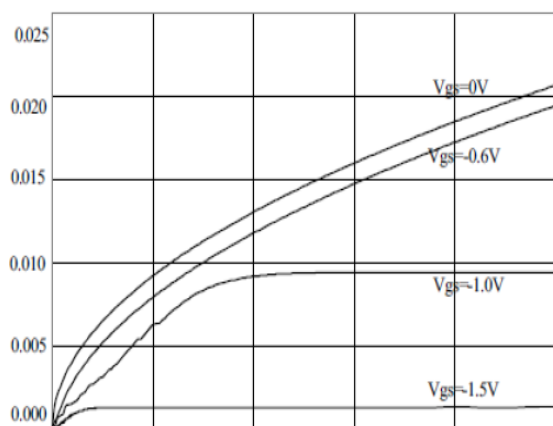
**PD – TC**



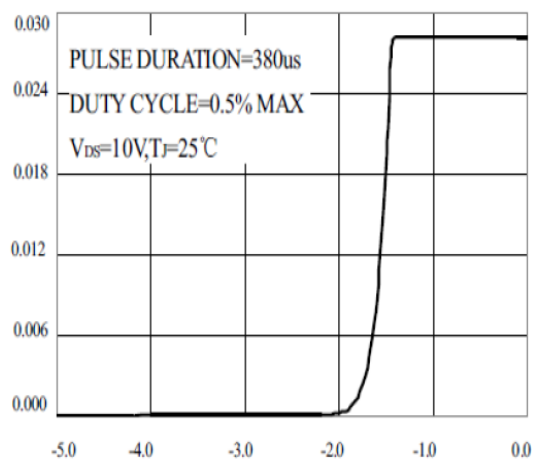
**ID – TC**



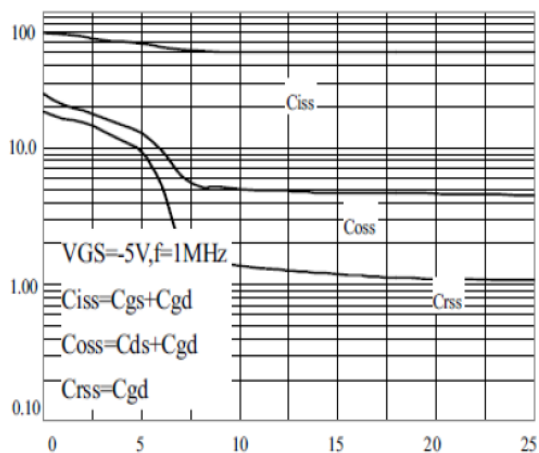
**ID – VDS**



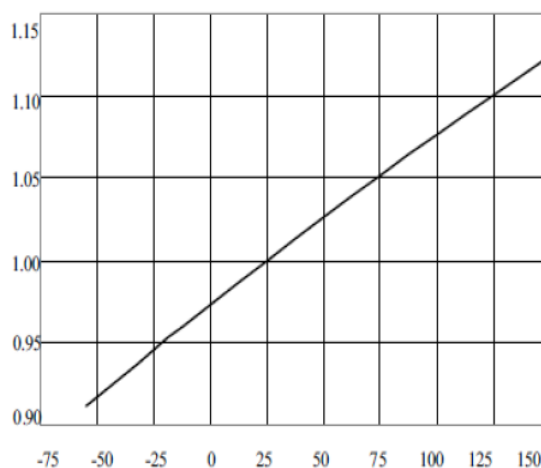
**ID – VGS**



**Ciss, Coss, Crss – VDS**



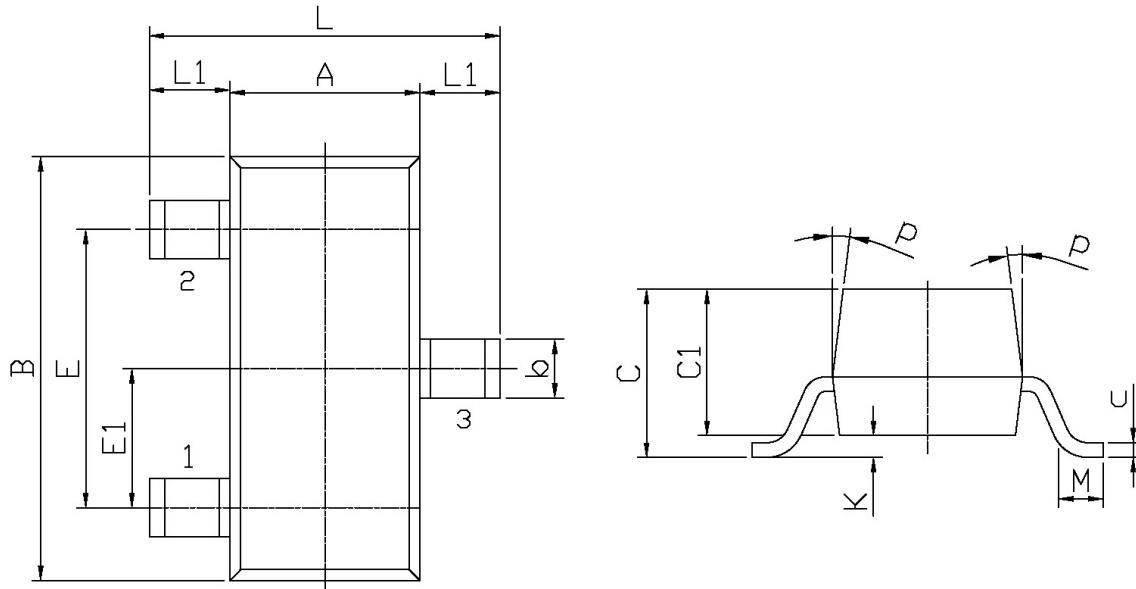
**BVDSS – Tj**



外形尺寸图 / Package Dimensions

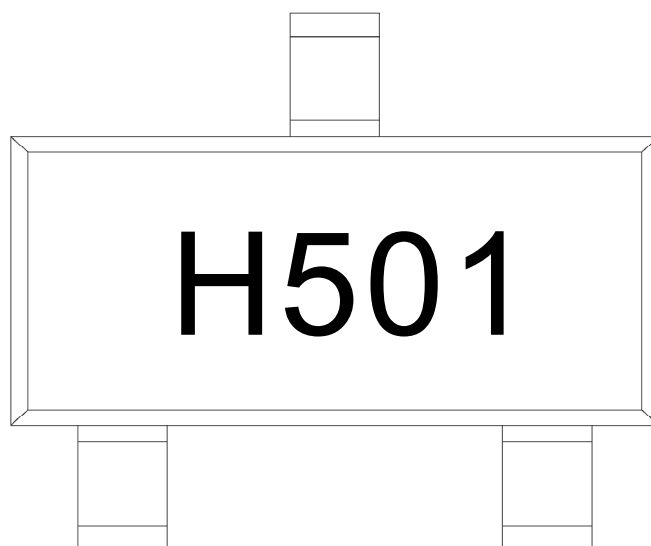
SOT-23

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

**印章说明 / Marking Instructions**



说明：

H: 为公司代码

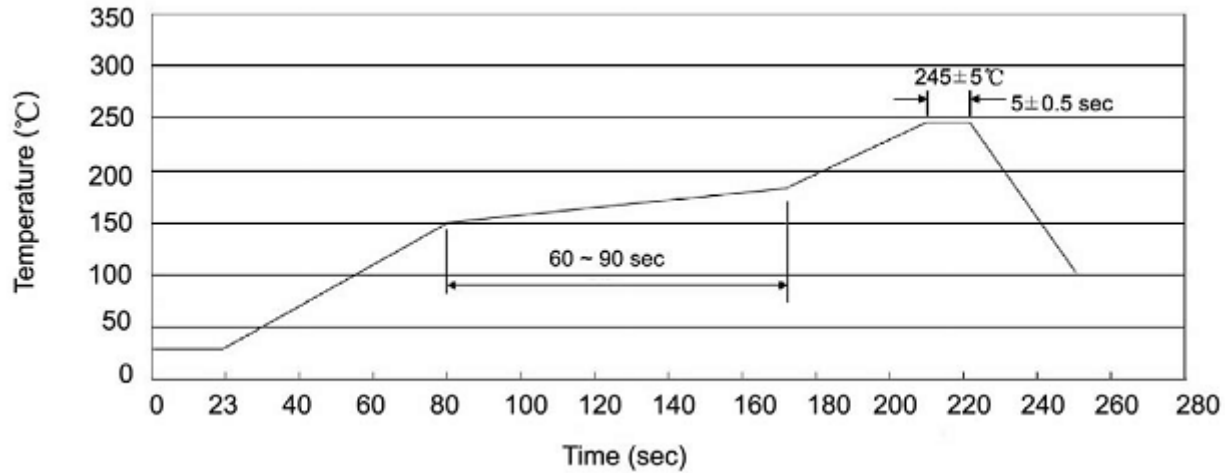
501： 为型号代码

Note:

H： Company Code.

501: 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 25 ~ 150°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:25~150°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	8	240,000	7" ×8	180×120×180	385×257×392

### 使用说明 / Notices