

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)。

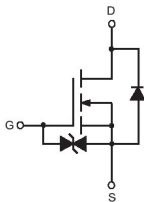
ESD Improved capability, Depletion mode ($V_{GS(th)}$ = -1.8V, type).

用途 / Applications

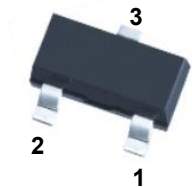
适用于高压开关驱动电路。

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	$I_D(T_C=25^{\circ}\text{C})$	30	mA
Drain Current - Continuous	$I_D(T_C=70^{\circ}\text{C})$	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}	± 20	V
Gate source ESD	V_{ESD}	300	V
Power Dissipation	P_D	0.5	W
Junction-to-Ambient	$R_{\theta JA}$	250	$^{\circ}\text{C}/\text{W}$
Junction Temperature Range	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Temperature for Soldering	T_L	300	$^{\circ}\text{C}$

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

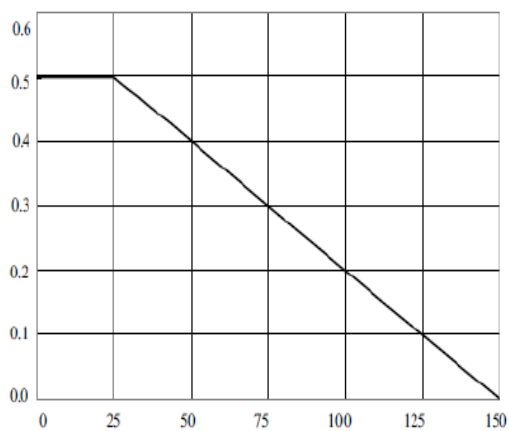
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=-5.0\text{V}$ $I_D=250\mu\text{A}$	600			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$	12			mA
Gate-Body Leakage.	I_{GSS}	$V_{GS}=\pm 20\text{V}$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

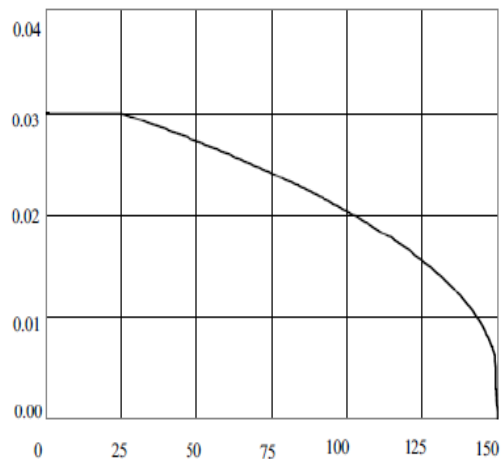
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	$t_{d(on)}$	$I_D=0.01A$ $V_{DD}=300V$ $R_G=6.0\Omega$ $V_{GS}=-5.0\sim 7.0V$		9.9		ns
Turn-On Rise Time	t_r			55.8		ns
Turn-Off Delay Time	$t_{d(off)}$			56.4		ns
Turn-Off Fall Time	t_f			136		ns
Total Gate 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

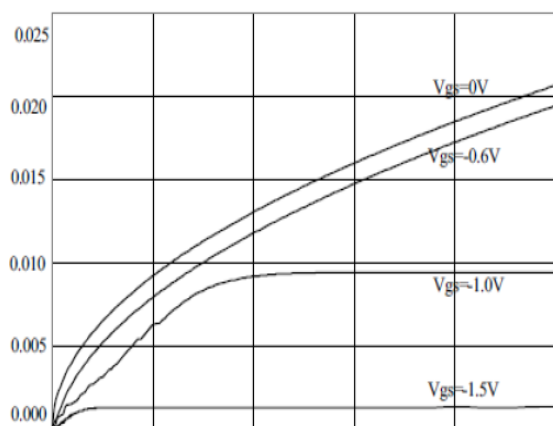
PD – TC



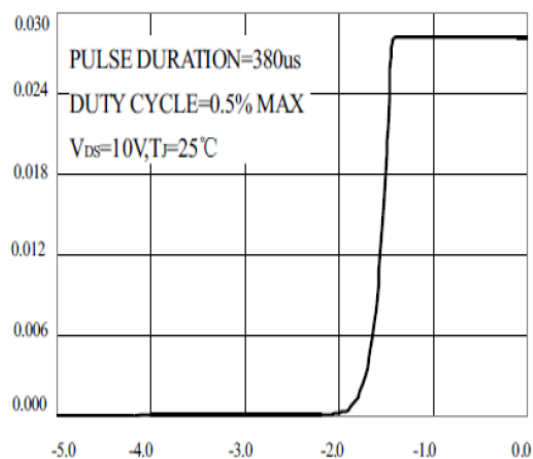
ID – TC



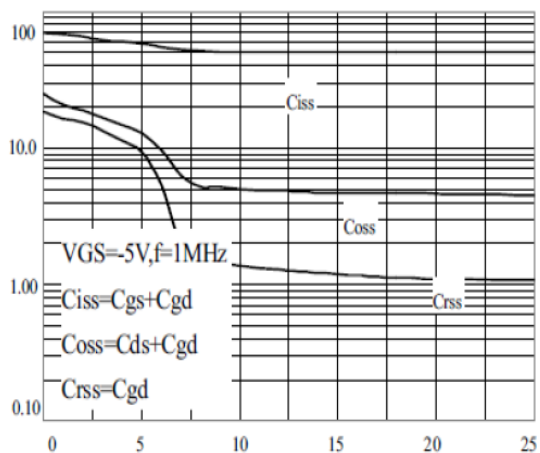
ID – VDS



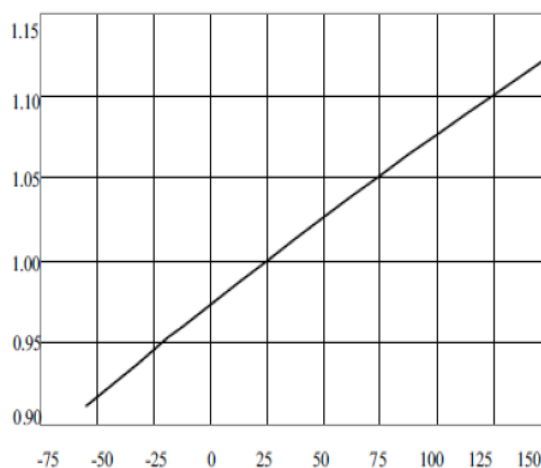
ID – VGS



Ciss, Coss, Crss – VDS



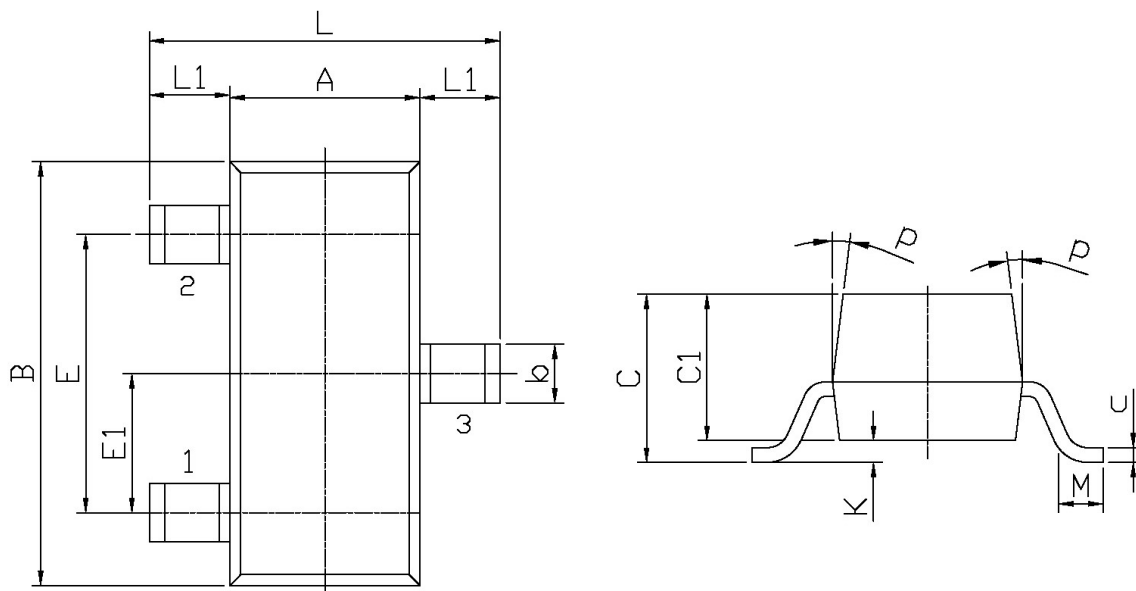
BVDSS – Tj



外形尺寸图 / Package Dimensions

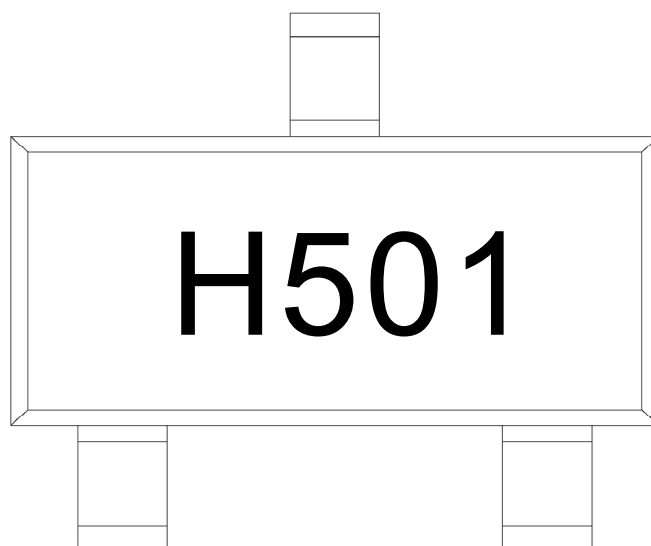
SOT-23

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

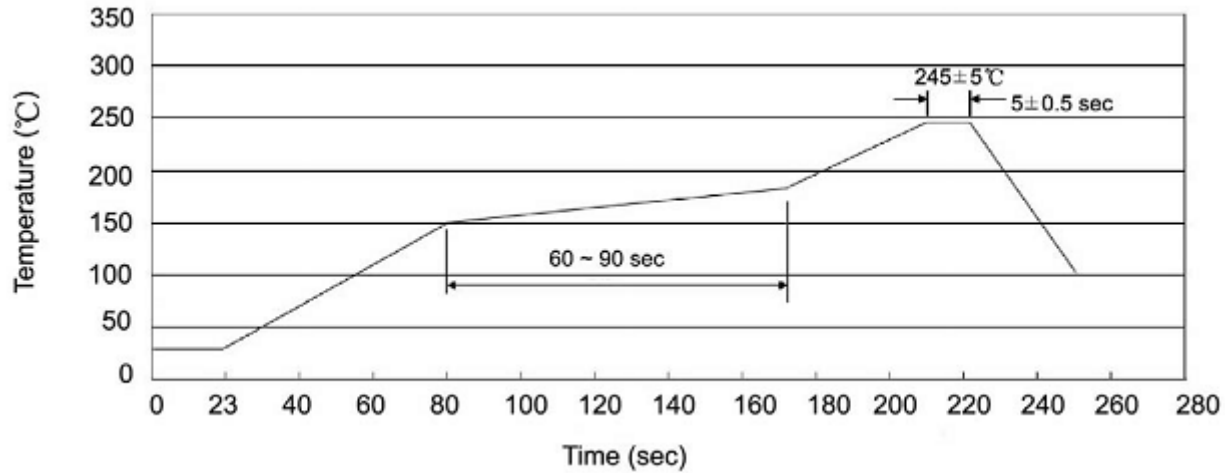
501： 为型号代码

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 ³)		
	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