

N6002NZ

N-沟道场效应晶体管
600V, 2A, 4.4Ω

R07DS1041CC0100
Rev.1.00
2013年2月18日

概述

N6002NZ 是一款为大电流开关应用而设计的 N-沟道场效应晶体管。

特性

- 低漏极/源极通态电阻

$$R_{DS(on)} = 4.4\Omega \text{ 最大值} (V_{GS} = 10 \text{ V}, I_D = 1.0 \text{ A})$$

- 低输入电容值低

$$C_{iss} = 400\text{pF} \text{ 典型值} (V_{DS} = 10\text{V}, V_{GS} = 0 \text{ V})$$

- 大电流

$$I_{D(DC)} = \pm 2.0 \text{ A}$$

- 符合 RoHS 规定

订购信息

订购型号	引脚镀层	包装	封装
N6002NZ-S29-AY*1	纯锡 (锡制)	管装 75 片/管	TO-251 0.3g 典型值

注释: *1. 无铅 (本产品在外部电极不含有铅.)

绝对最大额定值

($T_a = 25^\circ\text{C}$)

参数	符号	额定值	单位
漏极/源极电压 ($V_{GS} = 0 \text{ V}$)	V_{DSS}	600	V
栅极/源极电压 ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 30	V
漏极电流 (DC)	$I_{D(DC)}$	± 2.0	A
脉冲漏极电流 ^{注1}	$I_{D(pulse)}$	± 8.0	A
总耗散功率 ($T_c = 25^\circ\text{C}$)	P_{T1}	20	W
总耗散功率 ($T_a = 25^\circ\text{C}$)	P_{T2}	1.0	W
容许沟道温度	T_{ch}	150	$^\circ\text{C}$
储存温度	T_{stg}	-55 至 150	$^\circ\text{C}$
单脉冲雪崩电流 ^{注2}	I_{AS}	2.0	A
单脉冲雪崩能量 ^{注2}	E_{AS}	2.7	mJ

热阻值

沟道-外壳间热阻	$R_{th(ch-c)}$	6.25	$^\circ\text{C/W}$
沟道与周围环境之间的热阻抗值	$R_{th(ch-a)}$	125	$^\circ\text{C/W}$

注释: *1. $PW \leq 10 \mu\text{s}$, 占空比 $\leq 1\%$

*2. 起动 $T_{ch} = 25^\circ\text{C}$, $R_G = 25 \Omega$, $V_{DD} = 150 \text{ V}$, $V_{GS} = 20 \rightarrow 0 \text{ V}$, $L = 1\text{mH}$

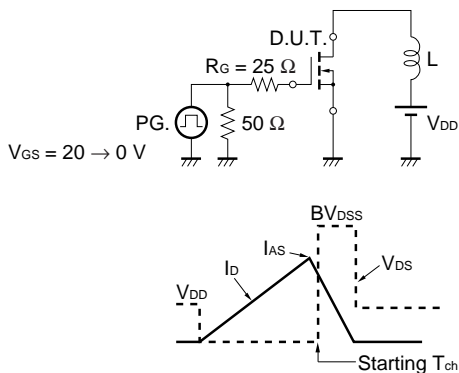
电气特性

(Ta = 25°C)

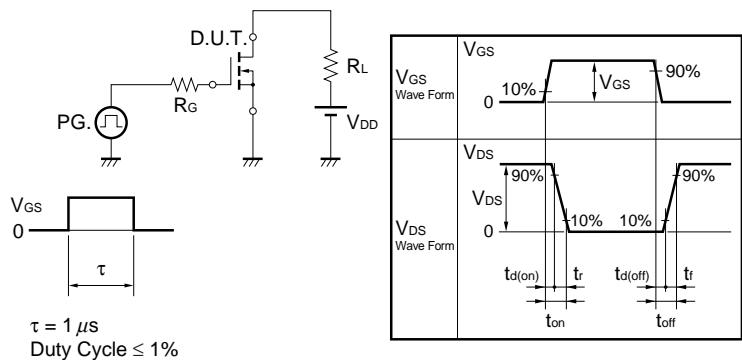
参数	符号	最小.	典型	最大	单位	测定条件
漏极截止电流	I_{DSS}			1	μA	$V_{DS} = 600 V, V_{GS} = 0 V$
栅极截止电流	I_{GSS}			± 100	nA	$V_{GS} = \pm 30 V, V_{DS} = 0 V$
栅极阈值电压	$V_{GS(off)}$	2.0	3.0	4.0	V	$V_{DS} = 10V, I_D = 1mA$
正向传输导纳 ^{注3}	$ y_{fs} $	0.5	1.2		S	$V_{DS} = 10 V, I_D = 1.0 A$
漏极/源极通态电阻 ^{注3}	$R_{DS(on)}$		3.7	4.4	Ω	$V_{GS} = 10 V, I_D = 1.0 A$
输入电容	C_{iss}		400		pF	$V_{DS} = 10 V,$
输出电容	C_{oss}		147		pF	$V_{GS} = 0 V,$
反向传输电容量	C_{rss}		36		pF	$f = 1 MHz$
开启延迟时间	$t_{d(on)}$		10		ns	$V_{DD} = 150 V, I_D = 1.0 A,$
上升时间	t_r		4.4		ns	$V_{GS} = 10 V,$
关断延迟时间	$t_{d(off)}$		20		ns	$R_G = 10 \Omega$
下降时间	t_f		12		ns	
栅极充电电荷量	Q_G		11		nC	$V_{DD} = 450 V,$
栅极/源极充电电荷量	Q_{GS}		2.8		nC	$V_{GS} = 10 V,$
栅极/漏极充电电荷量	Q_{GD}		4.8		nC	$I_D = 2.0 A$
体二极管正向电压 ^{注3}	$V_{F(S-D)}$		0.85	1.5	V	$I_F = 2.0 A, V_{GS} = 0 V$
体二极管反向恢复时间	t_{rr}		220		ns	$I_F = 2.0 A, V_{GS} = 0 V,$
体二极管反向恢复电荷	Q_{rr}		580		nC	$di/dt = 50 A/\mu s$

注：3. 脉冲测试

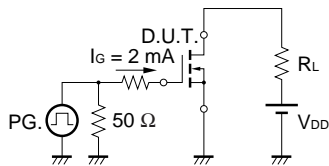
测试电路 1 抗雪崩能力



测试电路 2 开关时间

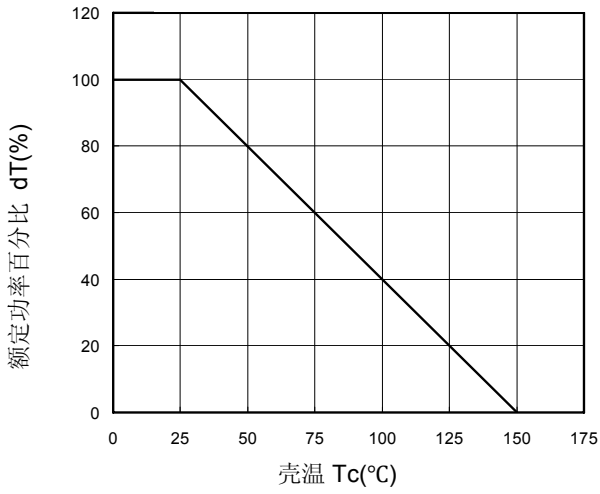


测试电路 3 栅极电荷量

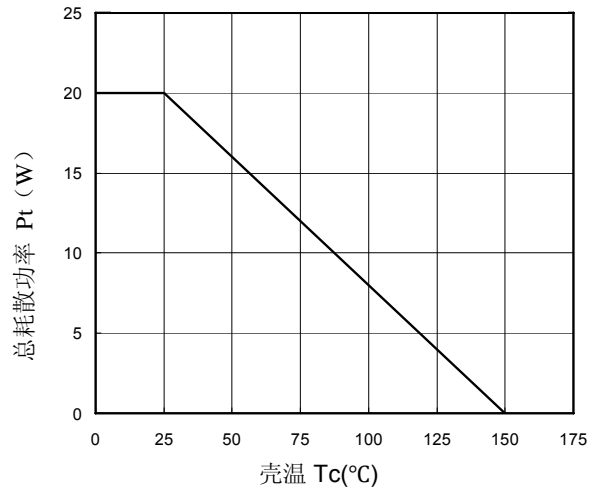


典型特性曲线($T_a = 25^\circ\text{C}$)

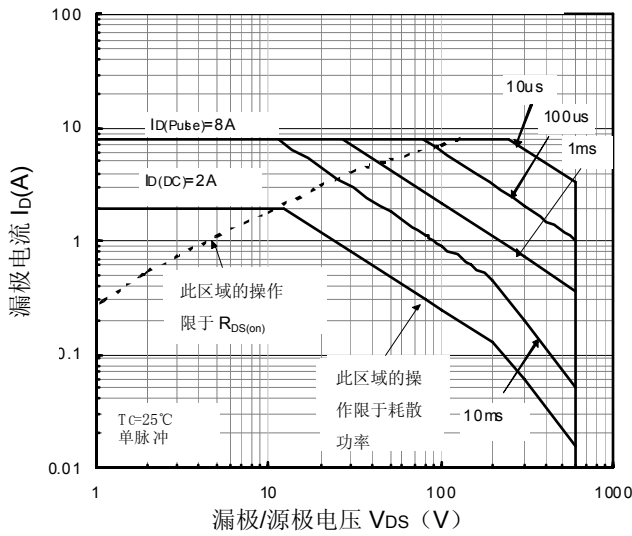
正向偏压安全工作区的降额系数



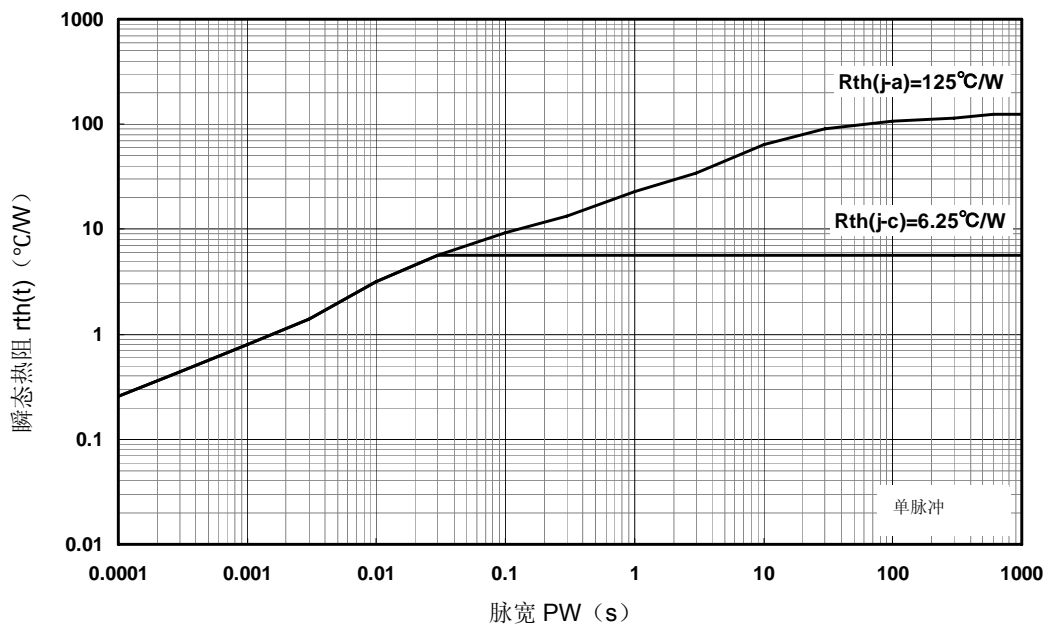
总耗散功率-壳温



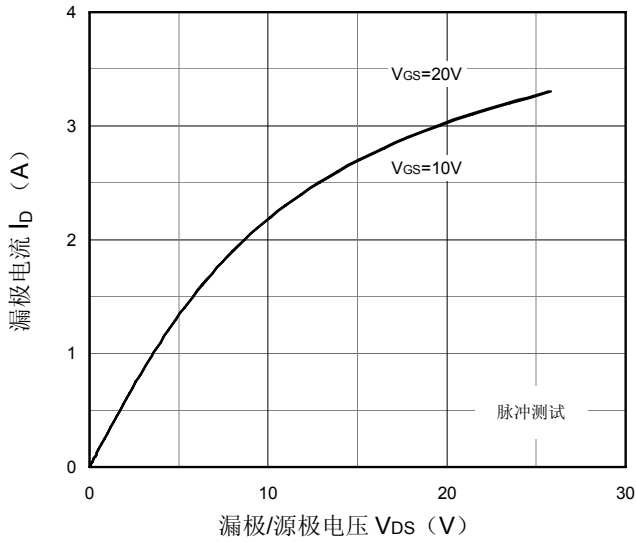
最大安全工作区域



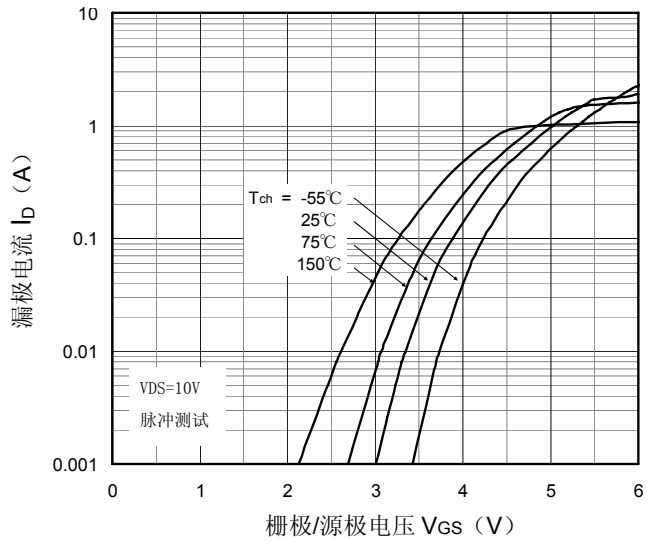
瞬态热阻值特性



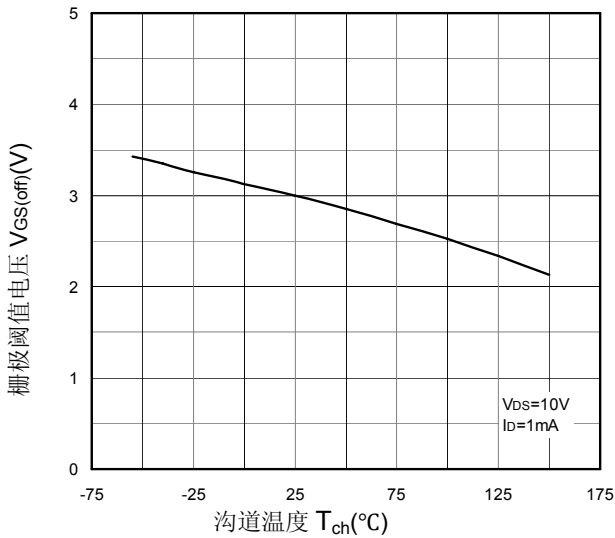
典型输出特性



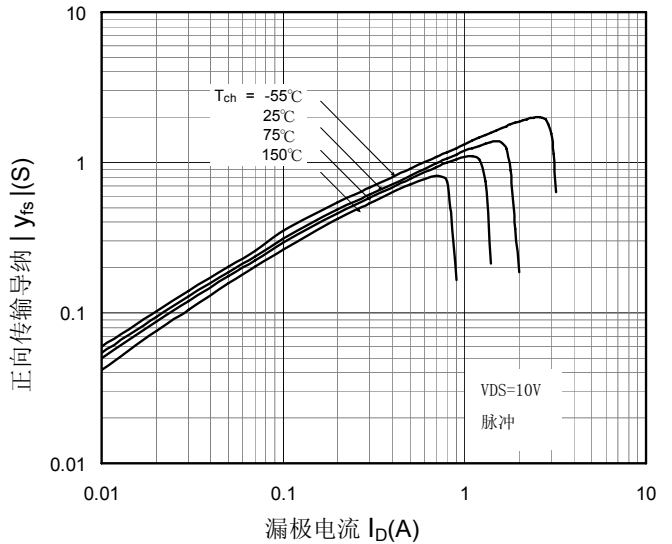
典型传输特性



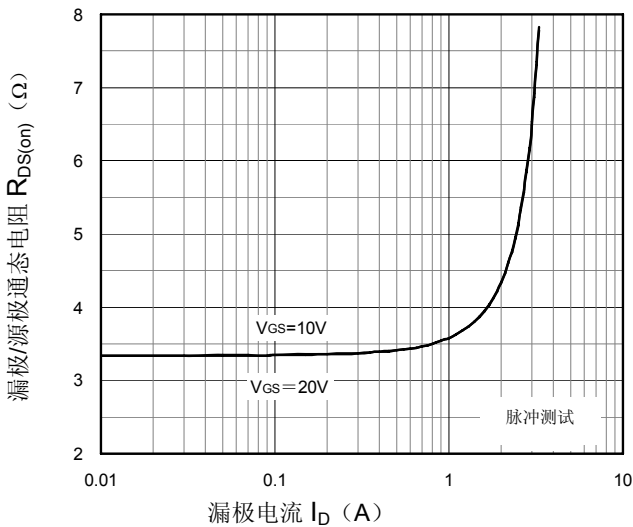
栅极阈值电压-沟道温度



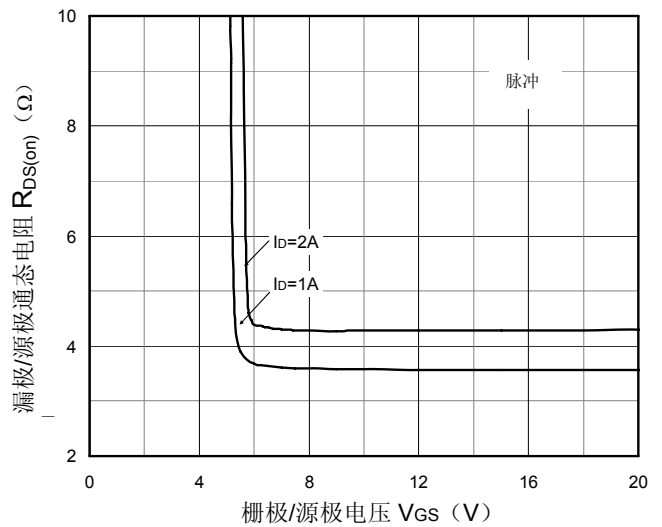
正向传输导纳-漏极电流



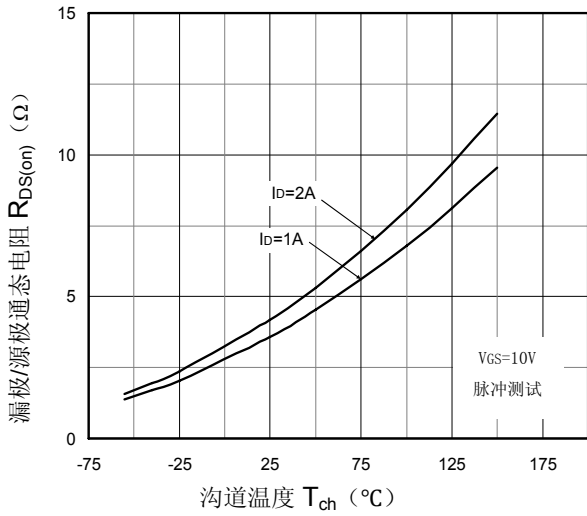
漏极/源极通态电阻-漏极电流



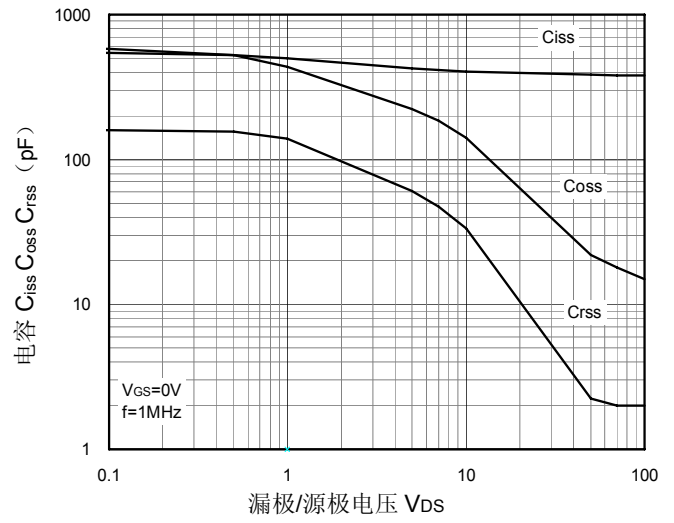
漏极/源极通态电阻-栅极/源极电压



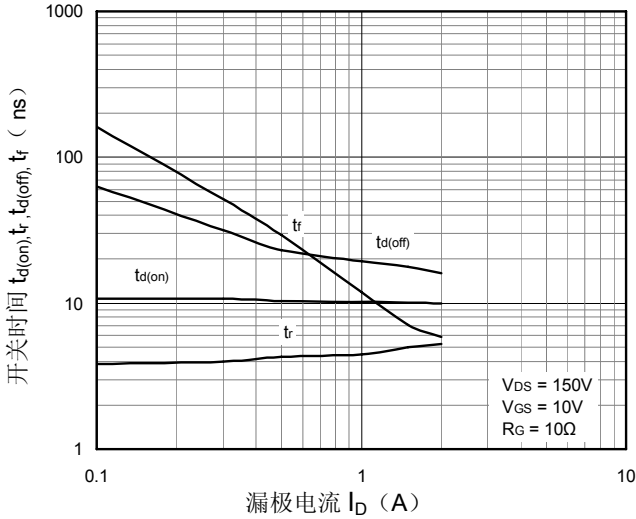
漏极/源极通态电阻-沟道温度



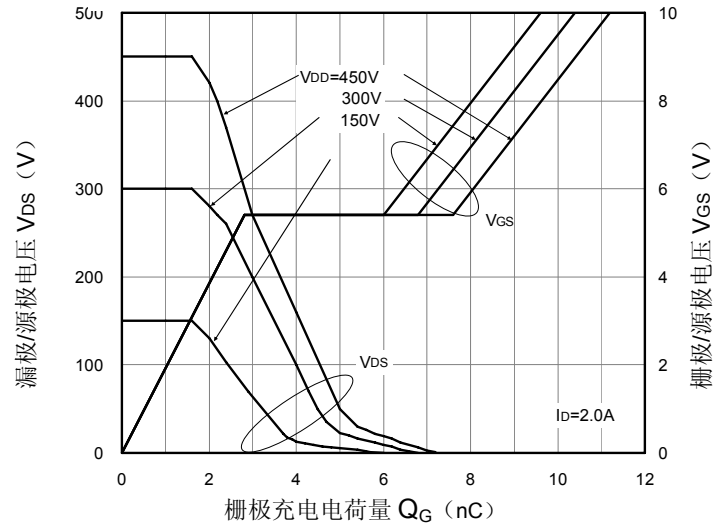
电容-漏极/源极电压



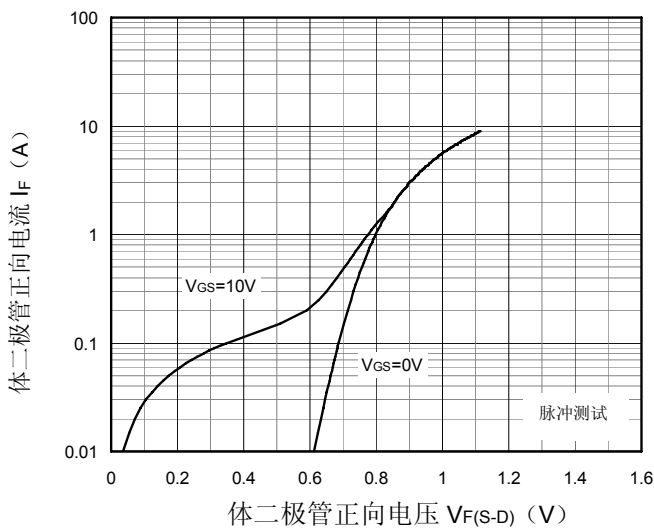
开关特性



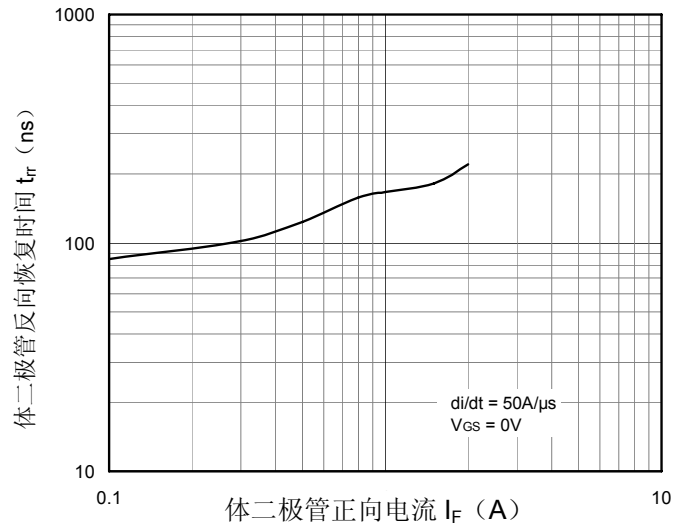
输入时序特性



体二极管正向电流-正向电压

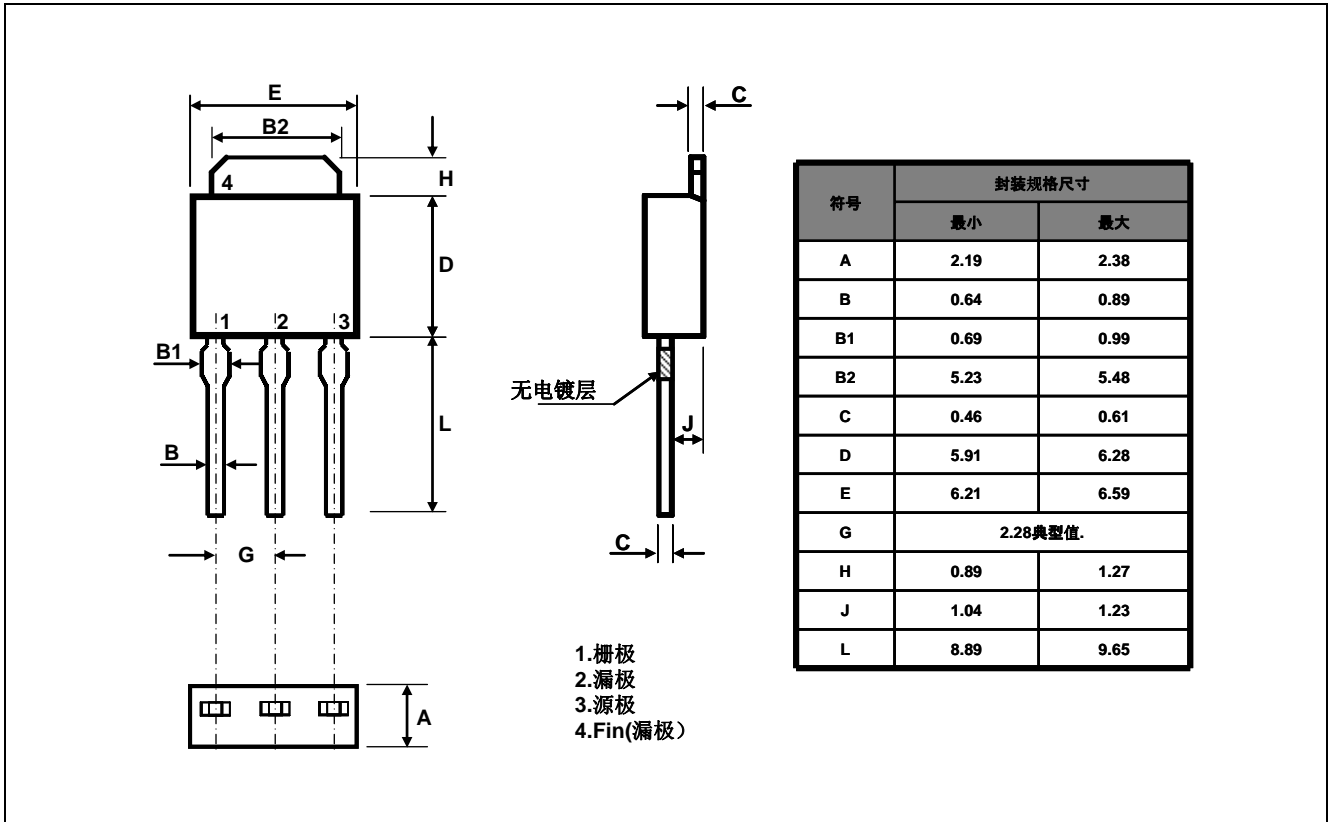


体二极管反向恢复时间-正向电流

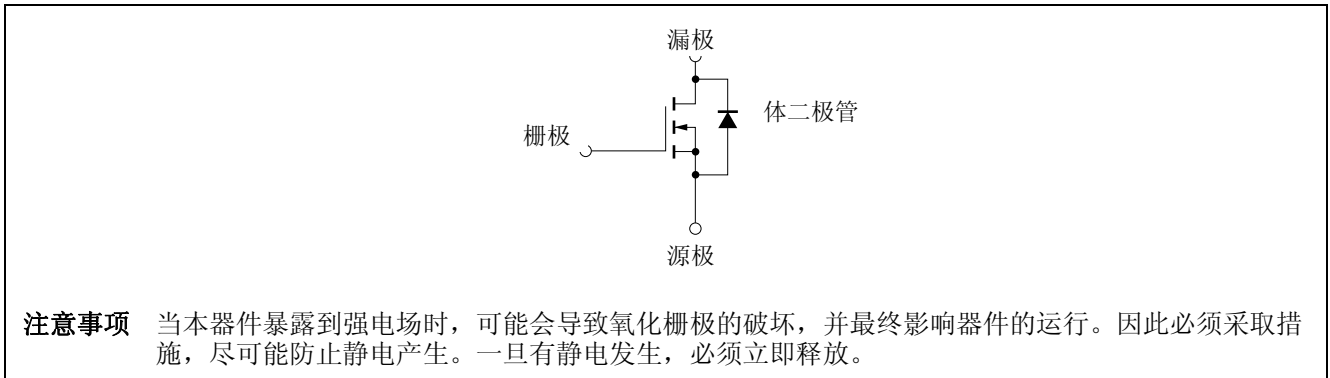


封装形式 (单位: mm)

TO-251



等效电路



修订历史	N6002NZ 数据手册
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修订版	日期	描述	
		页码	概要
1.00	2013年2月18日	-	第一版发行

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