钍地半导体
Tudi Semiconductor

Product Specification

TUDI-KID6500x

高电压大电流达林顿晶体管阵列

网址 www.sztdbdt.com

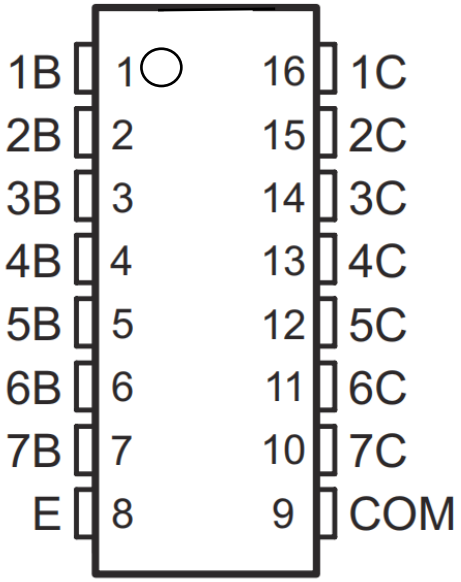
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

特点

- ●500mA 额定集电极电流（单路输出）
- ●高电压输出：50V
- ●输出钳位二极管
- ●可兼容各类逻辑的输入
- ●继电器驱动器应用

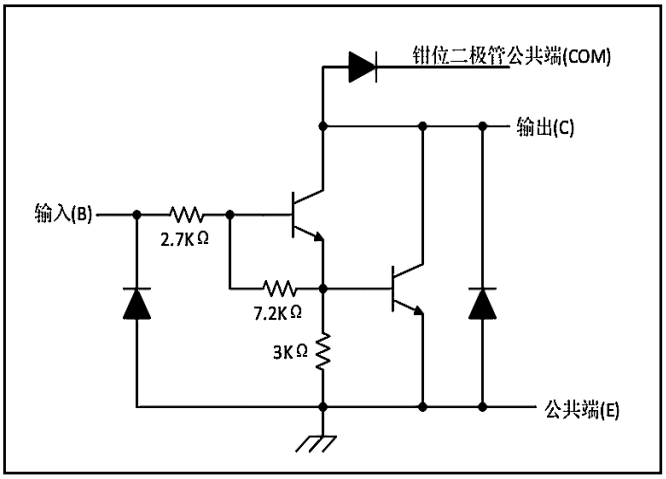


说明

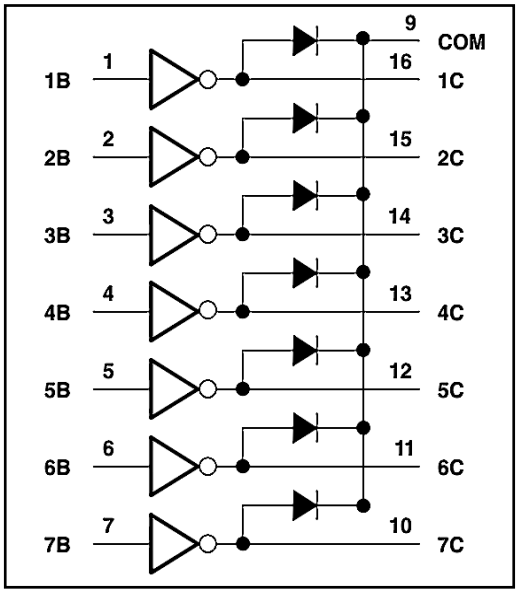
KID65001 器件为高电压、大电流达林顿晶体管阵列。 每款器件均由 7 个 NPN 达林顿对组成，这些达林顿对 具有高压输出，带有用于开关感性负载的共阴极钳位二极管。单个达林顿对的集电极电流额定值为 500mA。将达林顿对并联可以实现更大的电流。

KID65002 器件专门设计用于 14V 至 25V PMOS 器 件。该器件的每个输入端都有一个串联的齐纳二极管和 电阻，可将输入电流控制在安全范围内。KID65003 器 件的每个达林顿对都具有一个 2.7kΩ 的串联基极电阻 器，可直接与 TTL 或 5V CMOS 器件配合使用。

KID65004 器件具有一个 10.5kΩ 串联基极电阻器，可直接从使用 6V 至 15V 电源电压的 CMOS 器件上运行。KID65004 器件所需的输入电流低于 KID65003 器件的输入电流，所需的电压小于KID65002 器件所需的电压。



单路驱动电路原理图



简化版方框图

应用

●继电器驱动器●灯驱动器●显示屏驱动器●线路驱动器●逻辑缓冲器

引脚功能

引脚		I/O(1)	说明
名称	编号		
1B	1	I	达林顿基极输入
2B	2	I	达林顿基极输入
3B	3	I	达林顿基极输入
4B	4	I	达林顿基极输入
5B	5	I	达林顿基极输入
6B	6	I	达林顿基极输入
7B	7	I	达林顿基极输入
E	8	—	所有通道共享的共发射极(通常与地面相连)
COM	9	—	反激二极管的共阴极节点(用于感性负载)
7C	10	O	达林顿集电极输出
6C	11	O	达林顿集电极输出
5C	12	O	达林顿集电极输出
4C	13	O	达林顿集电极输出
3C	14	O	达林顿集电极输出
2C	15	O	达林顿集电极输出
1C	16	O	达林顿集电极输出

极限参数

极限参数	
存储温度:	65℃~150℃
工作温度范围:	40℃~85℃
结温度范围:	40℃~150℃
输入电压:	0.3V~30V
输出电压:	55V
射极到基极的最高耐压:	6.0V
集电极持续工作电流:	500mA
基极持续工作电流:	25mA

电参数

参数	测试图	测试条件		65003	65004	单位
				最小值典型值最大值	最小值典型值最大值	
Vi(on) 导通状态输入电压	图6	VCE=2V	Ic=125mA		5	V
			Ic=200mA	2.4	6	
			Ic=250mA	2.7		
			Ic=275mA		7	
			Ic=300mA	3		
			Ic=350mA		8	
VOH 开关后高电平输出电压	图10	Vs=50V,Io=300mA		Vs -20	Vs -20	mV
VCE(sat) 集电极-发射极饱和电压	图5	I=250μA, Ic=100mA		0.9 1.1	0.9 1.1	V
		I=350μA, Ic=200mA		1 1.3	1 1.3	
		I=500μA, Ic=350mA		1.2 1.6	1.2 1.6	
CEX 集电极截止电流	图1	VCE=50V, I=0		50	50	μA
	图2	VCE=50V, TA=70℃	I=0	100	100	
			Vi=6V		500	
VF 钳位正向电压	图8	IF=350mA		1.7 2	1.7 2	V
I(off) 关断状态输入电流	图3	VCE=50V, TA=70℃,	Ic=500μA	50 65	50 65	μA
I 输入电流	图4	V=3.85V		0.93 1.35		mA
		V=5V			0.35 0.5	
		V=12V			1 1.45	
IR 钳位反向电流	图7	VR=50V		50	50	μA
		VR=50V TA=70℃		100	100	
Ci 输入电容		Vi=0, f=1MHz		15 25	15 25	pF

参数	测试图	测试条件		65002	单位
				最小值 典型值 最大值	
Vi(on) 导通状态输入电压	图6	VCE=2V, Ic=300mA		13	V
VOH 开关后高电平输出电压	图10	Vs=50V,Io=300mA		Vs -20	mV
VCE(sat) 集电极-发射极饱和电压	图4	I=250μA, Ic=100mA		0.9 1.1	V
		I=350μA, Ic=200mA		1 1.3	
		I=500μA, Ic=350mA		1.2 1.6	
VF 钳位正向电压	图7	IF=350mA		1.7 2	V
CEX 集电极截止电流	图1	VCE=50V, I=0		50	μA
	图2	VCE=50V, TA=70℃	I=0	100	
			V=6V	500	
I(off) 关断状态输入电流	图2	VCE=50V, c=500μA		50 65	μA
I 输入电流	图3	Vi=17V		0.82 1.25	mA
IR 钳位反向电流	图6	VR=50V TA=70℃		100	μA
		VR=50V		50	
C 输入电容		Vi=0, f=1MHz		25	pF

（除非特殊说明：V ＋＝5V，Ta＝25℃）

开关特性

参数	测试条件	65001/65002/65003/65004			单位
		最小值	典型值	最大值	
tpLH 传播延迟时间，低电平到高电平输出	请参阅图9		0.25	1	μS
tPHL 传播延迟时间，高电平到低电平输出	请参阅图9		0.25	1	μS

电路测试

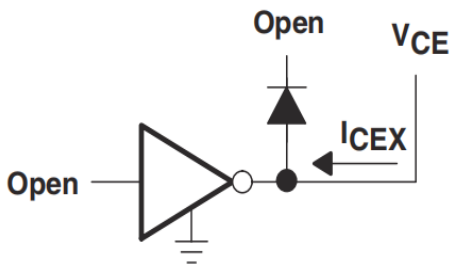


图1

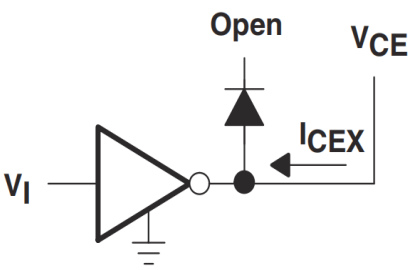


图2

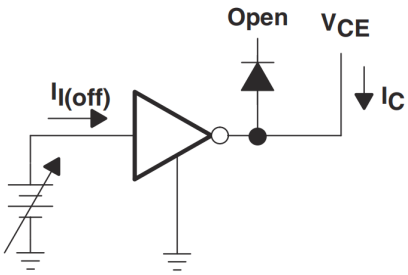


图3

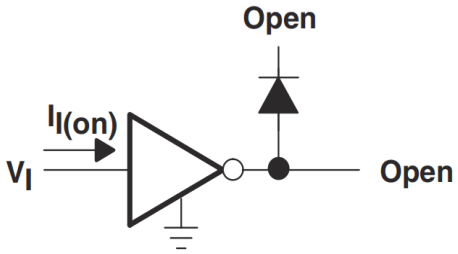


图4

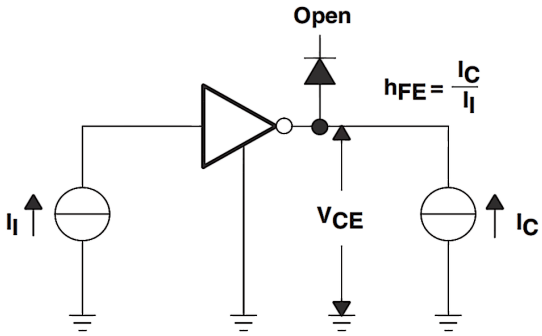


图5

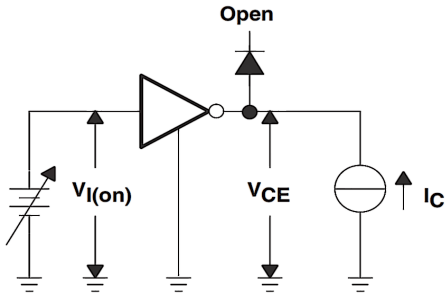


图6

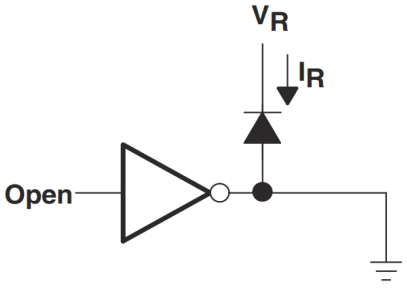


图7

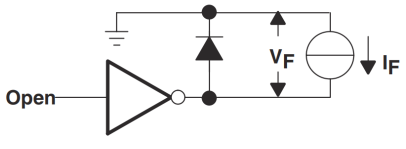


图8

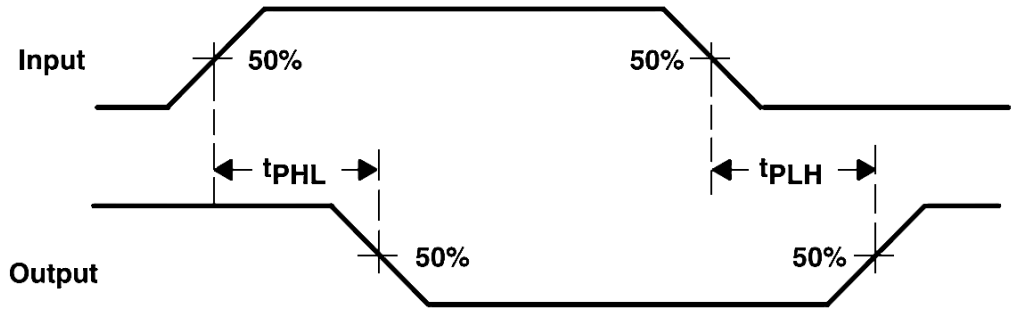


图9

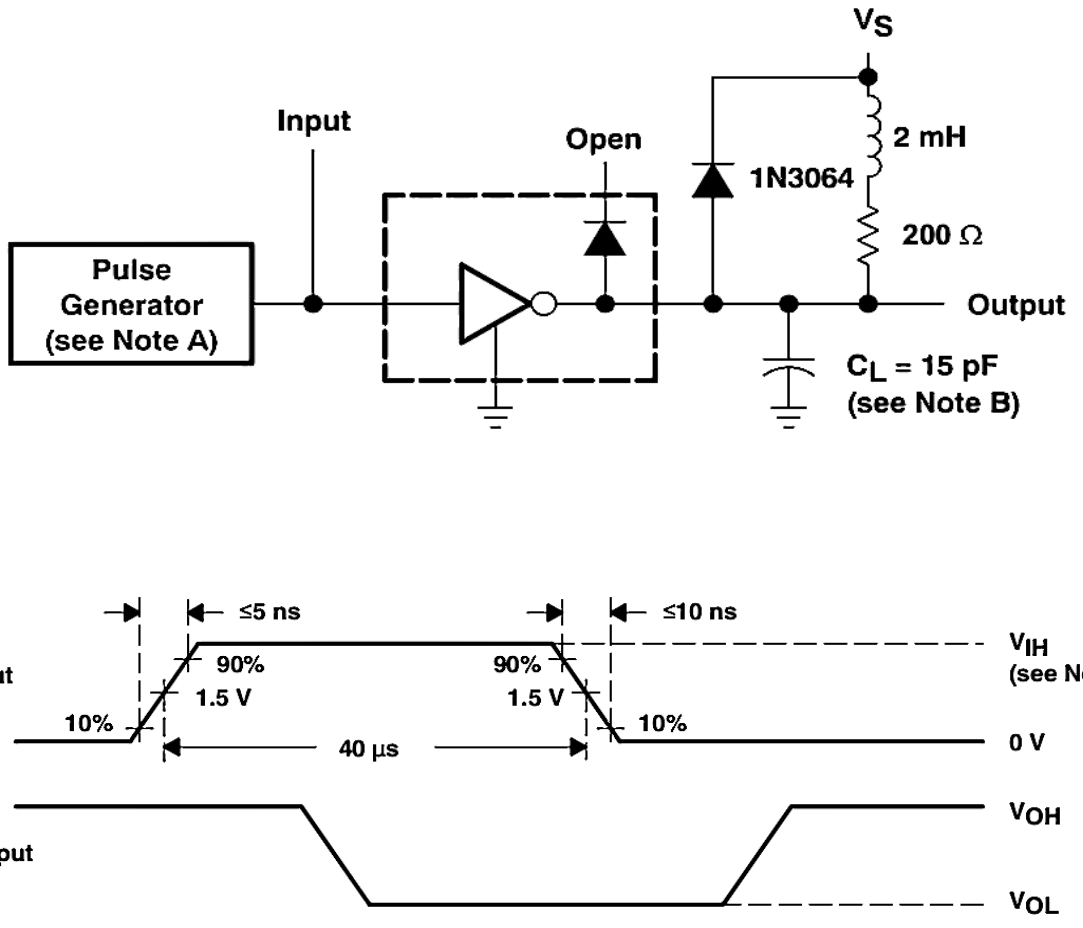
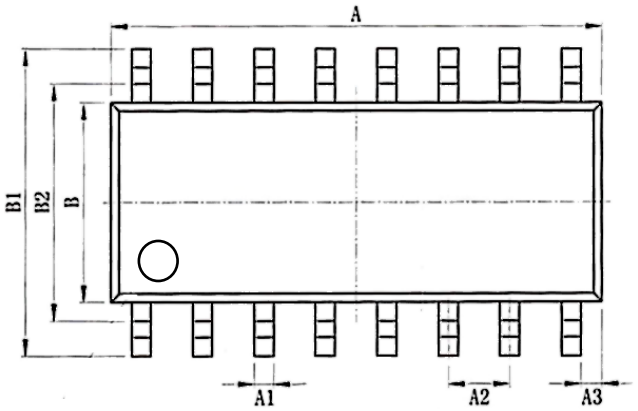
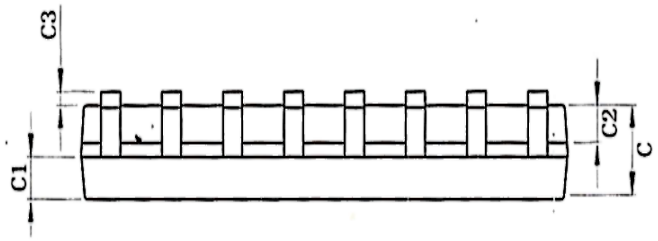


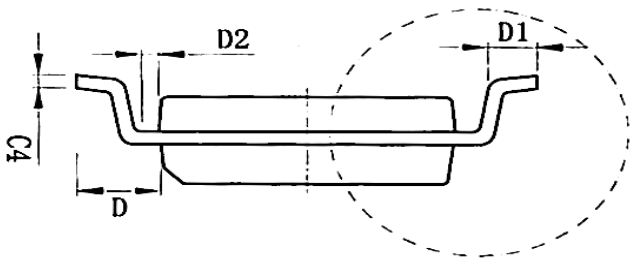
图10

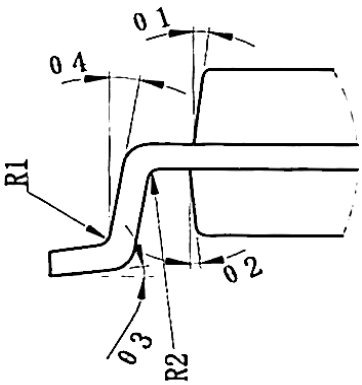
注：1、极限值是指超出该范围，器件有可能被损坏，并非器件的正常工作条件范围。 电参数表提供了器件的工作条件范围；
2、除特别指明外，所有条件适用于达林顿阵列；
3、通常条件下，每路输出在 70°C、$V^{CE\ (Sat)}$ = 1.6V 下脉冲宽度为 20ms 的持续工作

Package SOP16



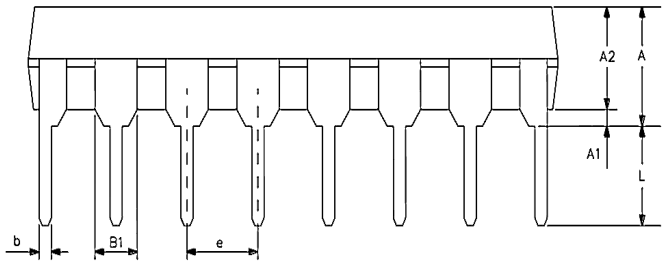


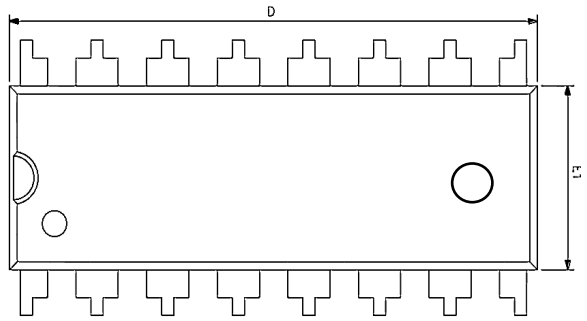


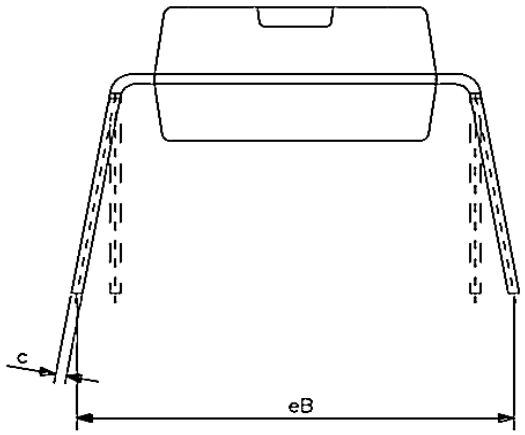


SIZE / SYMBOL	MIN./mm	MAX./mm
A	9.80	10.00
A1	0.356	0.456
A2	1.27TYP	
A3	0.302TYP	
B	3.85	3.95
B1	5.84	6.24
B2	5.00 TYP	
C	1.40	1.60
C1	0.61	0.71
C2	0.54	0.64
C3	0.05	0.25
C4	0.203	0.233
D	1.05 TYP	
D1	0.40	0.70
D2	0.15	0.25
R1	0.20TYP	
R2	0.20TYP	
θ1	8°~12°TYP4	
θ2	8°~12°TYP4	
θ3	0°~8°	
θ4	4°~12°	

Package DIP16







SIZE / SYMBOL	MIN./mm	MAX./mm
A2	3.20	3.60
A1	0.51	___
A	3.60	5.33
L	3.00	3.60
b	0.36	0.56
B1	1.52	
D	18.80	19.94
E1	6.20	6.60
e	2.54	
C	0.20	0.36
eB	7.62	9.30
R	0.20TYP	
R1	0.30TYP	
θ	0°	8°
θ1	45°TYP	
02	12°TYP	
03	0°	8°
04	0°	10°

订购信息

Order Number	Package	Package Quantity	Marking On The park	Temperature
KID65001AF-TUDI	SOP16	Tape,Reel,2500	KID65001AF	-40℃ to 85℃
KID65001AP-TUDI	DIP16	Tube,25,A box of 1000	KID65001AP	
KID65002AF-TUDI	SOP16	Tape,Reel,2500	KID65002AF	
KID65002AP-TUDI	DIP16	Tube,25,A box of 1000	KID65002AP	
KID65003AF-TUDI	SOP16	Tape,Reel,2500	KID65003AF	
KID65003AP-TUDI	DIP16	Tube,25,A box of 1000	KID65003AP	
KID65004AF-TUDI	SOP16	Tape,Reel,2500	KID65004AF	
KID65004AP-TUDI	DIP16	Tube,25,A box of 1000	KID65004AP	

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