Silicon NPN Bipolar Transistor for Low-frequency Amplification 3DD5011A9

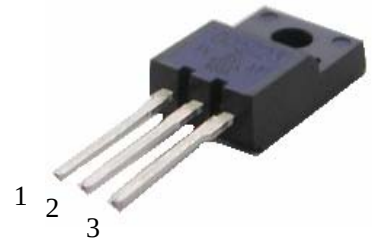
1 Description:

3DD5011A9, silicon NPN low frequency power transistor, is used to colour TV switching regulator.
Package: TO-220F.

Typical Data		
V_{CEO}	600	V
I_C	10	A
P_{tot} (T_C=25℃)	40	W

2 Characteristics:

- **Low switching power dissipation**
- **Low reversing leaking current**
- **Good high-temperature characteristic**
- **Good current characteristic**
- **High reliability**

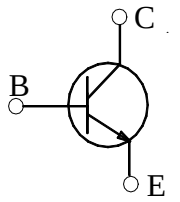


1. B 2. C 3. E

3 Application:

The device is mainly used in 14 and 21 inch colour TV switching regulator.

Equivalent circuit



The name and content of poisonous and harmful material in products

Part's Name	hazardous substance					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
CONTENT	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Lead Frame	○	○	○	○	○	○
Molding Compound	○	○	○	○	○	○
Chip	○	○	○	○	○	○
Wire Bonding	○	○	○	○	○	○
Solder	×	○	○	○	○	○
Note	○: means the hazardous material is under the criterion of SJ/T11363-2006. ×: means the hazardous material exceeds the criterion of SJ/T11363-2006. The plumbum element of solder exist in products presently, but within the allowed range of Eurogroup's ROHS.					

4 Electrical Characteristics

Maximum Ratings

Except for Other Prescription，T_a= 25℃

Parameter Note		Symbol	Rating	Unit
Collector-Base Breakdown Voltage		V_{CBO}	900	V
Collector-Emitter Breakdown Voltage		V_{CEO}	600	V
Emitter-Base Breakdown Voltage		V_{EBO}	9	V
Collector Current		I_C	10	A
Power Dissipation	Ta=25℃	P_{tot}	2	W
	Tc=25℃		40	
Junction Temperature		T_j	150	℃
Storage Temperature		T_{stg}	−55～150	℃

Electrical characteristics

Except for Other Prescription，T_a= 25℃

Parameter Note	Symbol	Test Conditions	Criterion			Unit
			Min	Typ	Max	
Collector-Base Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Collector- Emitter Cutoff Current	I_{CEO}	V_{CE}=600V, I_B=0			100	μA
Emitter-Base Cutoff Current	I_{EBO}	V_{EB}=9V, I_C=0			10	μA
Collector-Base Breakdown Voltage	V_{CBO}	I_{CB}=1mA, I_E=0	900			V
Collector-Emitter Breakdown Voltage	V_{CEO}	I_{CE}=5mA,I_B=0	600			V
Emitter-Base Breakdown Voltage	V_{EBO}	I_{EB}=1mA, I_C=0	9			V
DC Current Gain	h_{FE}[a]	V_{CE}=5V, I_C=1A	15		30	
Ratio Between $h_{FE1}$of Low Current and h_{FE2} of High Current	h_{FE1}	h_{FE1}: V_{CE}=5V, I_C=5A	6			
	h_{FE2}	h_{FE2}: V_{CE}=5V, I_C=1mA	10			
Collector-Emitter Saturation Voltage	$V_{CE\ sat}$[a]	I_C=4A, I_B=0.8A		0.25	1	V
Base-Emitter Saturation Voltage	$V_{BE\ sat}$[a]	I_C=4A, I_B=0.8A		0.88	1.5	V
Storage Time	t_s	UI9600，I_C=0.5A		7.5	10	μs
Fall Time	t_f			0.6	1	μs
Transition Frequency	f_T	V_{CE}=10V, I_C=0.1A f=0.3MHz	4	12		MHz
a: Impulse tp≤300μs, δ≤2%						

5 Typical Characteristics

Figure 1 Safe Operating Area

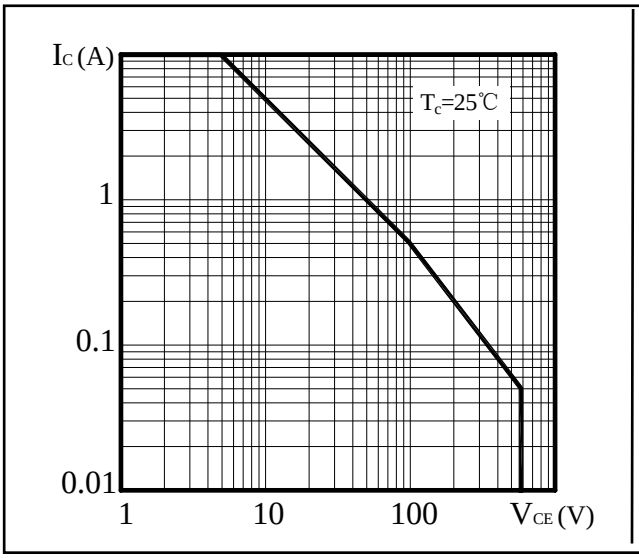


Figure2 Power Derating(P_{tot}-T)

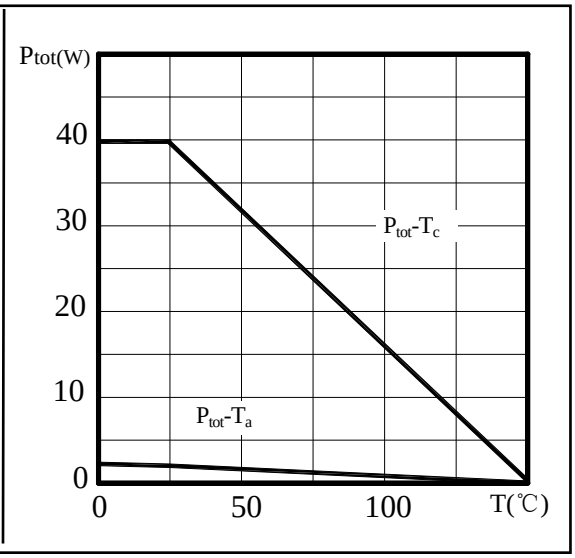


Figure 3 I_C-V_{CE} Characteristics(Typical)

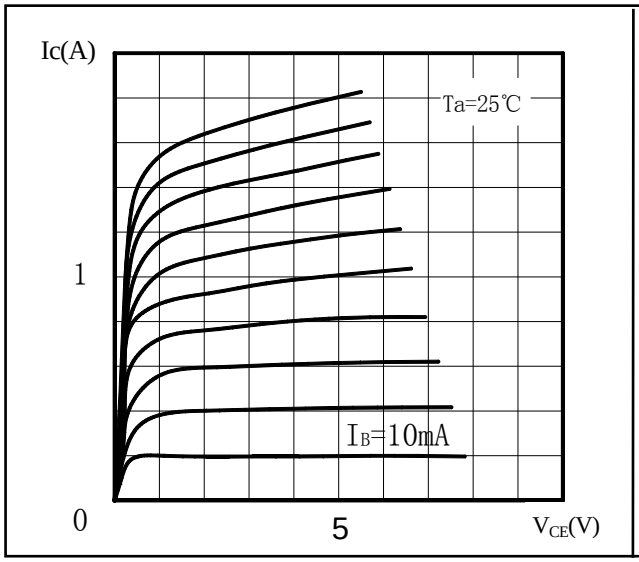


Figure 4 h_{FE}-I_C Characteristics(Typical)

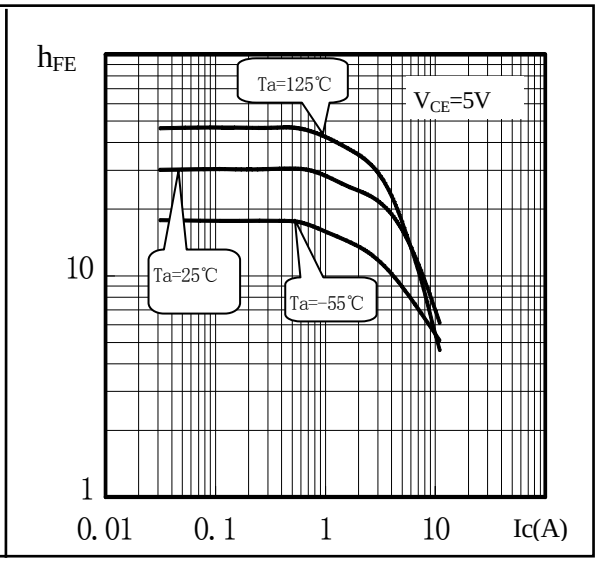


Figure 5 $V_{CE}(sat)$-I_C Characteristics(Typical)

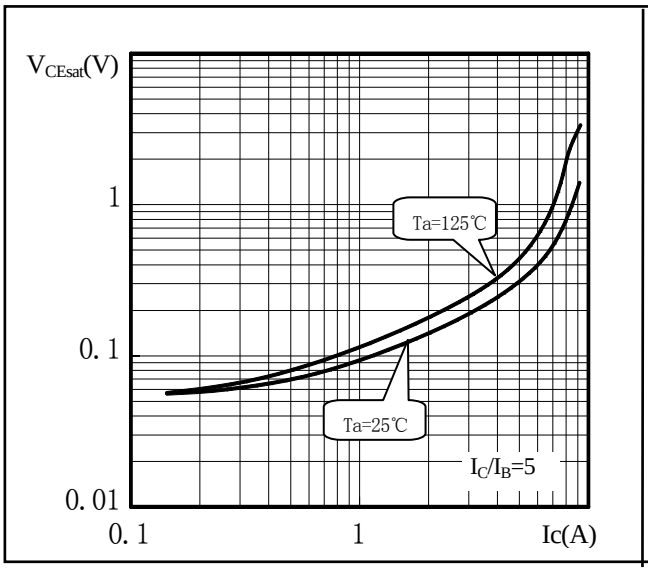
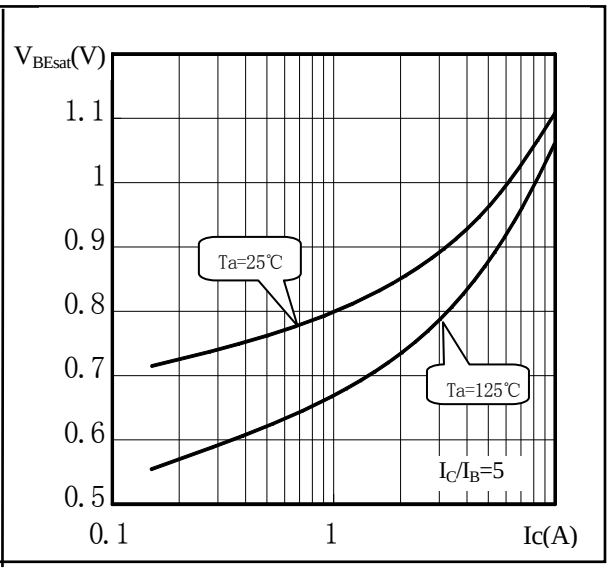
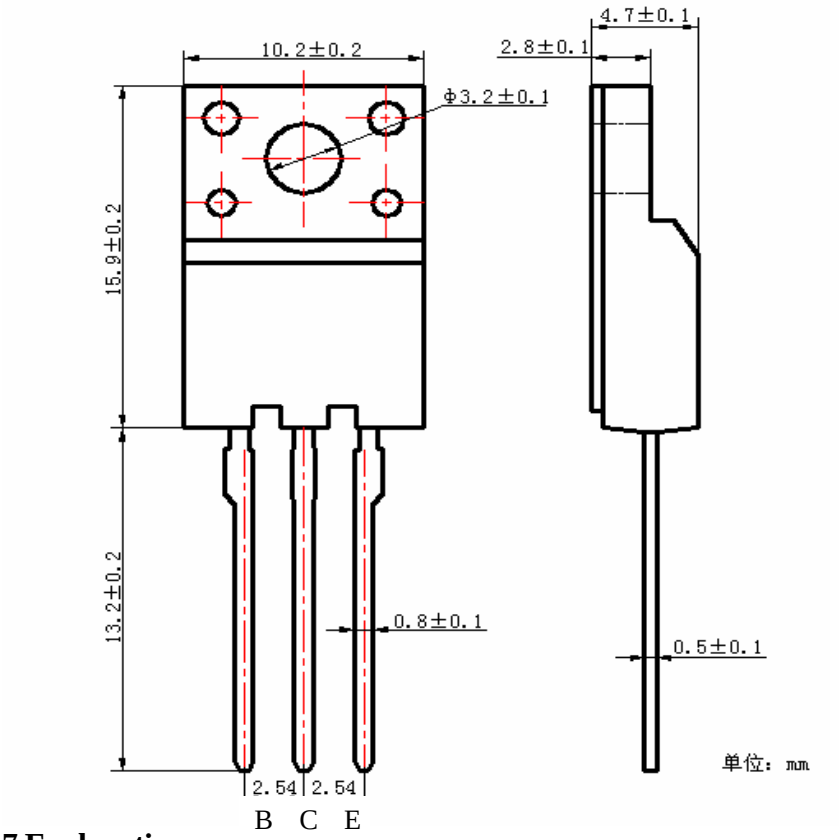


Figure 6 $V_{BE}(sat)$-I_C Characteristics(Typical)



6 External Dimension (TO-220F)



7 Explanation

7-1Packing

1） small packing, 50 pieces per plate
2） middle packing, 20 plates per middle paper box
3） big packing, 5 box per big paper case

7-2 Warnings:

1）All the products made from Huajing Microelectronics should be in accordance with the corresponding electrical characteristics specifications and package sizes described in the publication. Interrelated technological compact must be signed in both sides before making the special products customers demand.

2）Exceeding the Maximum Ratings is forbidden when the device is working. It is suggested that the device works under 80% of the Maximum Ratings. During installation please try to reduce the mechanical stress to prevent the partial distortion and transmogrification of the device case, which may result in application failure, avoid approching to heat component, pay attention to the temperature and time in welding and adding stannum.

3）This publication is made by Huajing Microelectronics and subject to regular change without notice.