

**3DG40005 AS-H****General Description**

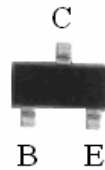
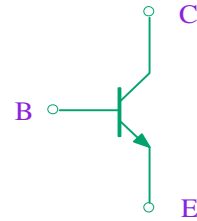
3DG40005 AS-H, the silicon NPN power switch transistor, is manufactured using planar technology, Si heavily doped substrate materials, Deep base region technology for realization of high voltage capability, high switching speeds and reliability.

Main Characteristics

Symbol	Value	Unit
V_{CEO}	400	V
I_C	50	mA
P_{tot} ($T_C=25^\circ\text{C}$)	0.3	W

Characteristics

- High EB blocking voltage ($V_{EBO}>20\text{V}$)
- High Voltage、Large h_{fe}
- Good high-temperature characteristic
- High reliability

Package TO-23**Equivalent circuit****Applications**

- Mobile Phone Chargers

Storage Conditions and Soldering

Valid Time	Storage Conditions	Soldering T_{max}
1Year	$T_a -10^\circ\text{C} \sim 40^\circ\text{C}$ <85%RH	265 $^\circ\text{C}$

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter- Base Voltage	V_{EBO}	20	V
Collector Current (DC)	I_C	50	mA
Collector Peak Current ($t_p<5\text{ms}$)	I_{CM}	0.1	A
Base Current (DC)	I_B	25	A
Base Peak Current ($t_p<5\text{ms}$)	I_{BM}	50	A
Total Power Dissipation	P_{tot}	0.3	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$

**Electrical Characteristics** (Ta= 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Criterion			Unit
			Min.	Typ.	Max.	
Collector-Base Cut-off Current	I_{CBO}	$V_{CB}=500V, I_E=0$			10	μA
Collector-Emitter Cut-off Current	I_{CEO}	$V_{CE}=400V, I_B=0$			0.1	mA
Emitter-Base Cut-off Current	I_{EBO}	$V_{EB}=20V, I_C=0$			10	μA
Collector-Base Voltage	V_{CBO}	$I_C=0.1mA$	500			V
Collector-Emitter Voltage	V_{CEO}	$I_C=1mA$	400			V
Emitter- Base Voltage	V_{EBO}	$I_E=0.1mA$	20			V
DC Current Gain	h_{FE}^*	$V_{CE}=10V, I_C=1mA$	60		180	
Collector-Emitter Saturation Voltage	$V_{CE sat}^*$	$I_C=10mA, I_B=2mA$			1	V
Base- Emitter Saturation Voltage	$V_{BE sat}^*$	$I_C=10mA, I_B=2mA$			1.2	V
Transition Frequency	f_T	$V_{CE}=10V, I_C=1mA$ $f=1MHz$	3			MHz

* Impulse Test Pulse Width $t_p \leq 300\mu s$; Duty Cycle $\delta \leq 2\%$

◆ h_{FE} Classifications 60~120~180

Thermal Resistances

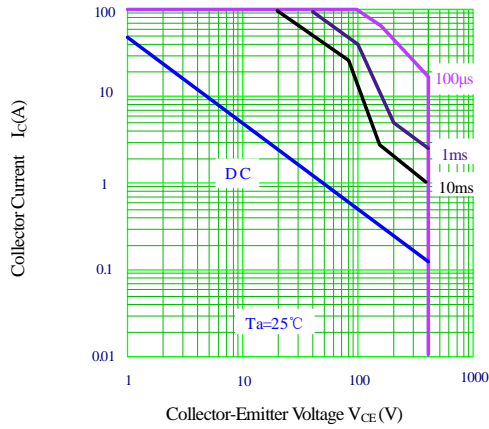
Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$			416.7	$^{\circ}C/W$

About of Hazardous Substance

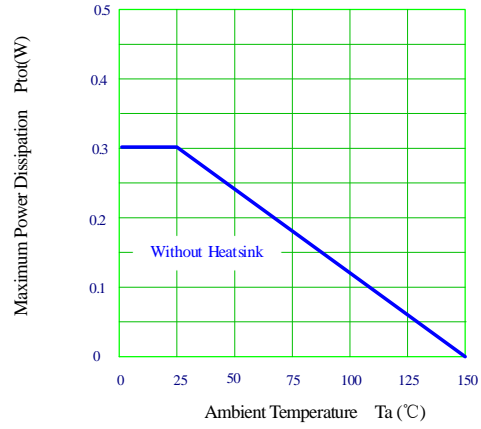
Part's Name (Content)	Hazardous Substance									
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE	HBCDD	DEHP	DBP	BBP
	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.01\%$	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.1\%$	$\leq 0.1\%$
Lead Frame	○	○	○	○	○	○	○	○	○	○
Molding Compound	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
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 EU's RoHS.									

Electrical Characteristics (Curves)

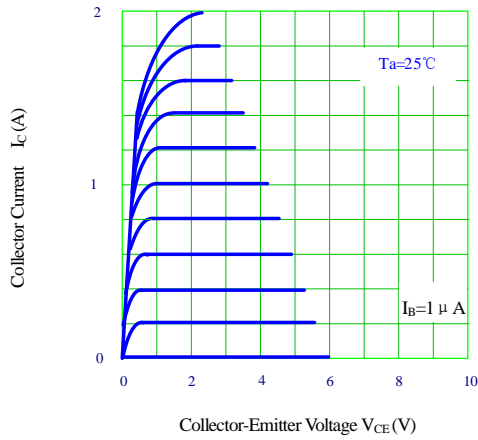
Safe Operating Area (Single Pulse)



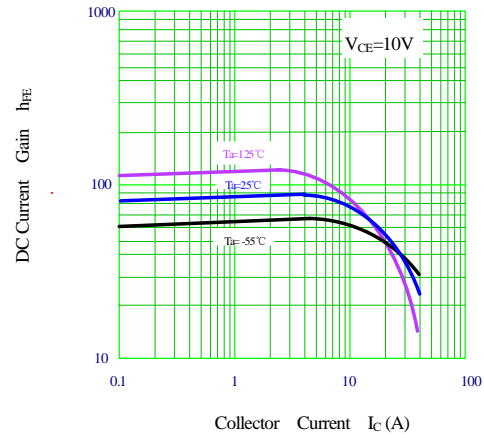
Ptot-Ta Derating



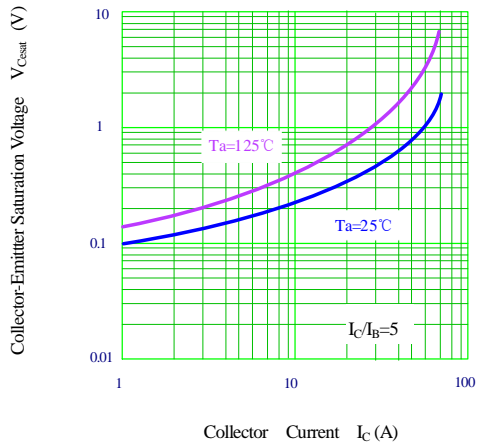
I_C - V_{CE} Characteristics (Typical)



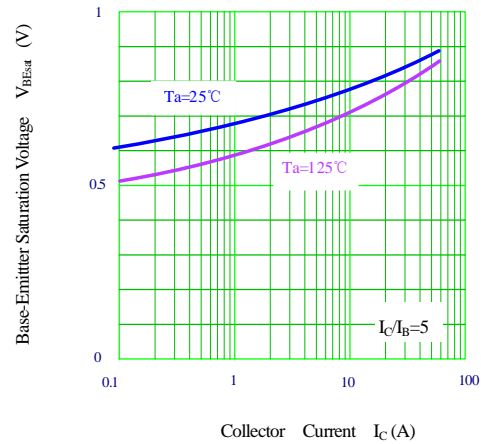
h_{FE} - I_C Temperature Characteristics (Typical)

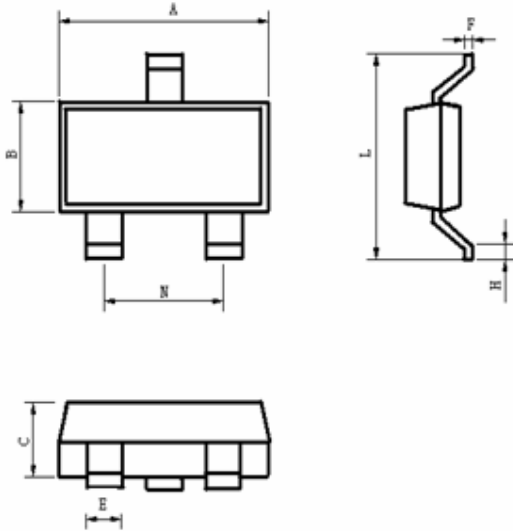


V_{CEsat} - I_C Temperature Characteristics (Typical)



V_{BEsat} - I_C Temperature Characteristics (Typical)



External Dimensions **SOT-23**

Symbol	Criterion (mm)	
	Min.	Max.
A	2.8	3
B	1.2	1.4
C	0.9	1.1
E	0.3	0.5
F	0.05	0.15
H		0.2
L	2.2	2.6
N	1.8	2.0

Packing Explanation

- a) Small packing, 3000 pieces per plate.
- b) Middle packing, 10 plates per middle paper box..
- c) Big packing, 4 boxes per big paper case.

Warnings

a) 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.

b) 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 transmutation of the device case, which may result in application failure, avoid approaching to heat component, pay attention to the temperature and time in welding and adding stannum.

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

Communication

Wuxi China Resources Huajing Microelectronics co., Ltd.

Add: No.14 Liangxi RD. Wuxi, Jiangsu, China

Post: 214061

Tel: +86(510) 8580-7228

Web Code: <http://www.crhj.com.cn>

Fax: +86 (510) 8580 0864

Marketing Dept.: Post: 214061

E-mail: sales@hj.crmicro.com

Tel : +86 (510) 8180 5277 / 8180 5336 Fax: +86 (510) 8580 0360/ 8580 3016

Application and Service: Tel: +86 (510) 8180 5243

Fax: +86 (510) 8180 5110