

DESCRIPTION

With high ability to withstand the shock loading of large current, BCA40 SCR provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, BCA40 provides a rated insulation voltage of 2500 V_{RMS}, complying with UL standards (File ref: E252906).
Package TO-3P (Insulated) is RoHS compliant

产品特征

承受大电流负载；抗电磁干扰能力强
较高的阻断电压；较强的相移能力

主要用途

电力电气工业控制领域、摩托车
可控硅模块、固态继电器、电源充电器
自动化温控设备；开关电源；无功补偿
交流软开关；直流电机控制；电力模块
工业和家庭电加热器的温度控制；
采用 TOP3 绝缘型封装

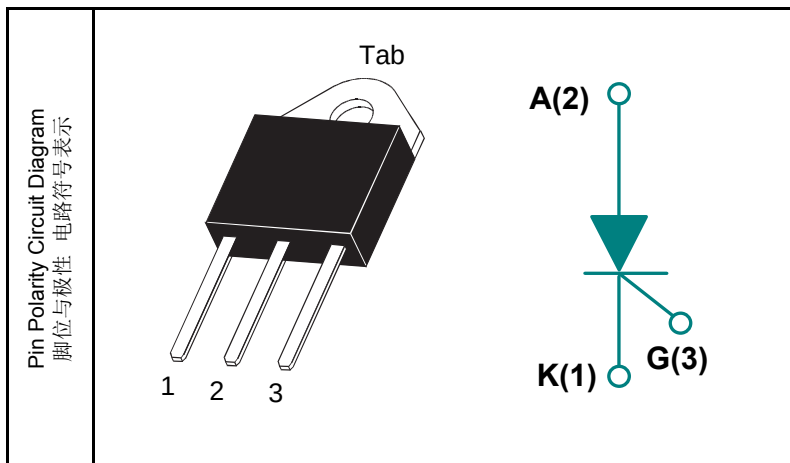
Product Model Reference & Naming

40A		型号列表			I _{GT}
		1200V	1600V	1800V	
TOP3	P3	BCA40-1200P3	BCA40-1600P3	BCA40-1800P3	≤45mA
TO-275	T5	BCA40-1200T5	BCA40-1600T5	BCA40-1800T5	
TO-247J	T7	BCA40-1200T7	BCA40-1600T7	BCA40-1800T7	

<u>H</u>	<u>BC</u>	<u>A</u>	<u>40</u>	-	<u>1200</u>	<u>P3</u>
↓	↓	↓	↓		↓	↓
HAOHAI ELECTRONICS	SCR 单向可控硅	A: Insulated B: Non Insulated	电流 40A		电压 1200=1200V 1600=1600V 1800=1800V	封装 P3: TOP3 T5: TO-275 T7: TO-247

PINNING: Package

Pin 管脚排列	Symbol 对应极性	Description 极性含义
1	K	阴极
2	A	阳极
3	G	控制极
4	Tab	散热片



■ ABSOLUTE MAXIMUM RATINGS

SYMBOL	Signification in Symbol		Test Conditions	Value	Unit
$I_{T(AV)}$	Average on-state current		$T_C \leq 66^\circ\text{C}$	25	A
$I_{T(RMS)}$	RMS On-state Current		$T_C \leq 66^\circ\text{C}$	40	
I_{TSM}	Non Repetitive Surge Peak on-state Current	$t_p=10\text{ms}$	$T_J=25^\circ\text{C}$	500	
		$t_p=8.3\text{ms}$	$T_J=25^\circ\text{C}$	540	
I_{GM}	Peak gate current ($t_p=20\mu\text{s}$)		$T_J=125^\circ\text{C}$	10	
I^2t	I^2t Value for Fusing Consideration		$t_p=10\text{ms}$	1250	A^2s
di/dt	Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$)		$T_J=125^\circ\text{C}$	200	$\text{A}/\mu\text{s}$
V_{DRM}	Repetitive peak off-state Voltages		$T_J=25^\circ\text{C}$	1200	V
V_{RRM}	Repetitive peak Reverse Voltages		$T_J=25^\circ\text{C}$		
V_{PP}	Peak pulse voltage (non-repetitive, off-state, FIG.7)		$T_J=25^\circ\text{C}$	0.7	kV
$P_{G(AV)}$	Average gate power dissipation		$T_J=125^\circ\text{C}$	1	W
P_{GM}	Peak gate power			20	
T_J	Operating Junction Temperature Range			-40 ~ +125	$^\circ\text{C}$
T_{stg}	Storage Junction Temperature Range			-40 ~ +150	

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

SYMBOL	Parameter & Test Conditions	Value			Unit
		Min.	Typ.	Max.	
I_{GT}	$V_D=12\text{V}, R_L=30\Omega$	--	--	45	mA
I_H	$I_T=500\text{ mA}$	--	--	100	
I_L	$I_G=1.2 I_{GT}$	--	--	120	
dV/dt	$V_D=800\text{V}$ Gate open, $T_J=125^\circ\text{C}$	1500	--	--	V/ μs
V_{GT}	$V_D=12\text{V}, R_L=30\Omega$	--	--	1	V
V_{GD}	$V_D=V_{DRM}, T_J=125^\circ\text{C}, R_L=3.3\text{K}\Omega$	0.2	--	--	
t_{on}	$I_G=50\text{mA}, I_A=500\text{mA}, I_R=50\text{mA}, T_J=25^\circ\text{C}$	--	5	--	μs
t_{off}		--	100	--	

■ STATIC CHARACTERISTICS

SYMBOL	Parameter		Value (Max.)	Unit
V_{TM}	$I_{TM}=80\text{A}$ $t_p=380\mu\text{s}$	$T_C=25^\circ\text{C}$	1.7	V
V_{TO}	Threshold Voltage	$T_C=125^\circ\text{C}$	0.69	
R_D	Dynamic Resistance	$T_C=125^\circ\text{C}$	21	m Ω
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_C=25^\circ\text{C}$	10	μA
I_{RRM}		$T_C=125^\circ\text{C}$	5	mA

■ THERMAL RESISTANCES

SYMBOL	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	TOP3 (Insulated)	1	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient (DC)	TOP3 (Insulated)	50	

Electrical characteristics & Typical characteristics

FIG-1: Maximum power dissipation versus RMS on-state current

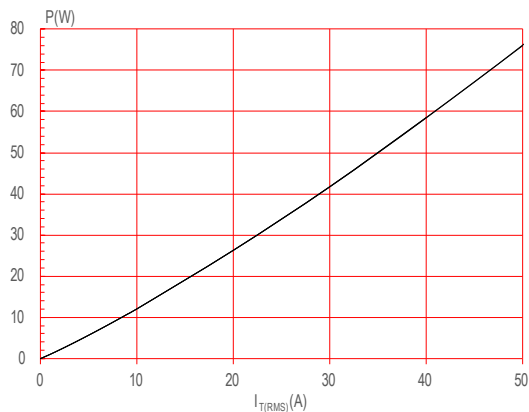


FIG-2: RMS on-state current versus case temperature

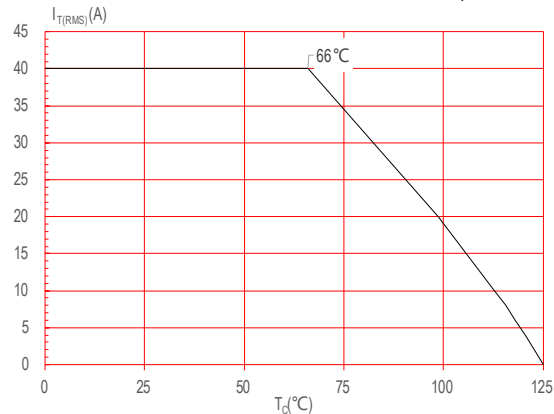


FIG-3: Surge peak on-state current versus number of cycles

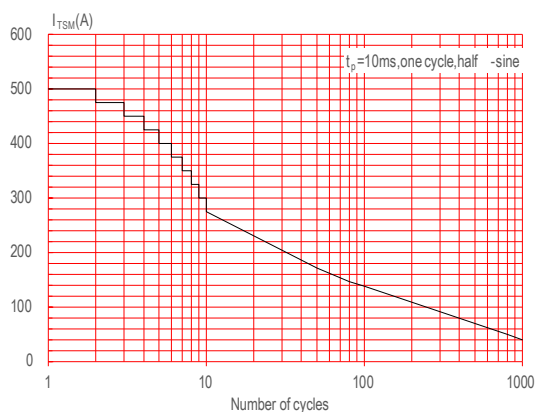


FIG-4: On-state characteristics

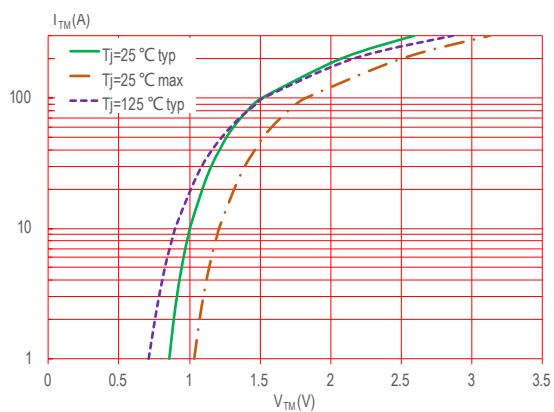


FIG-5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 200A/\mu s$)

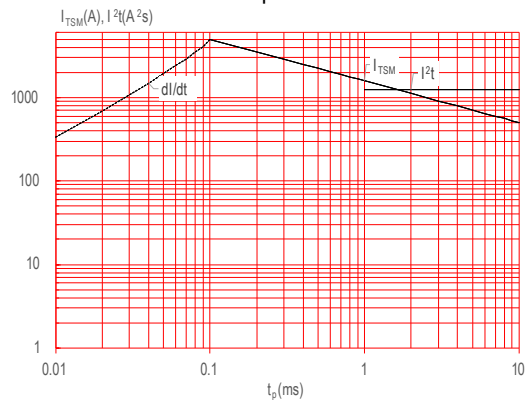


FIG-6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

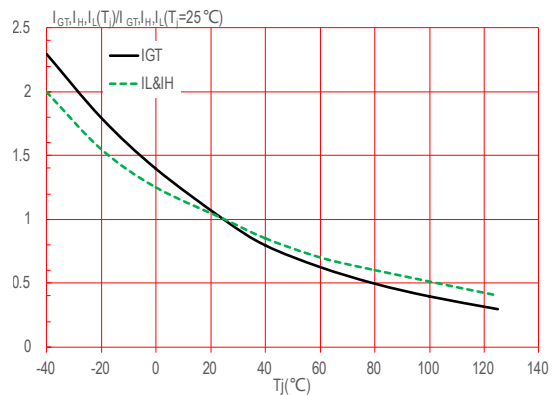
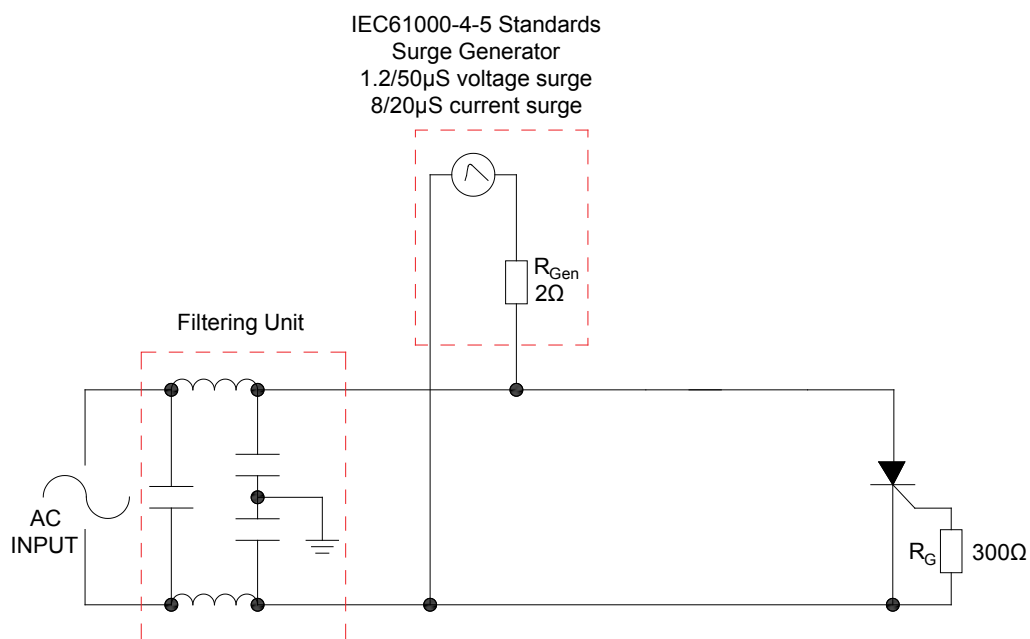
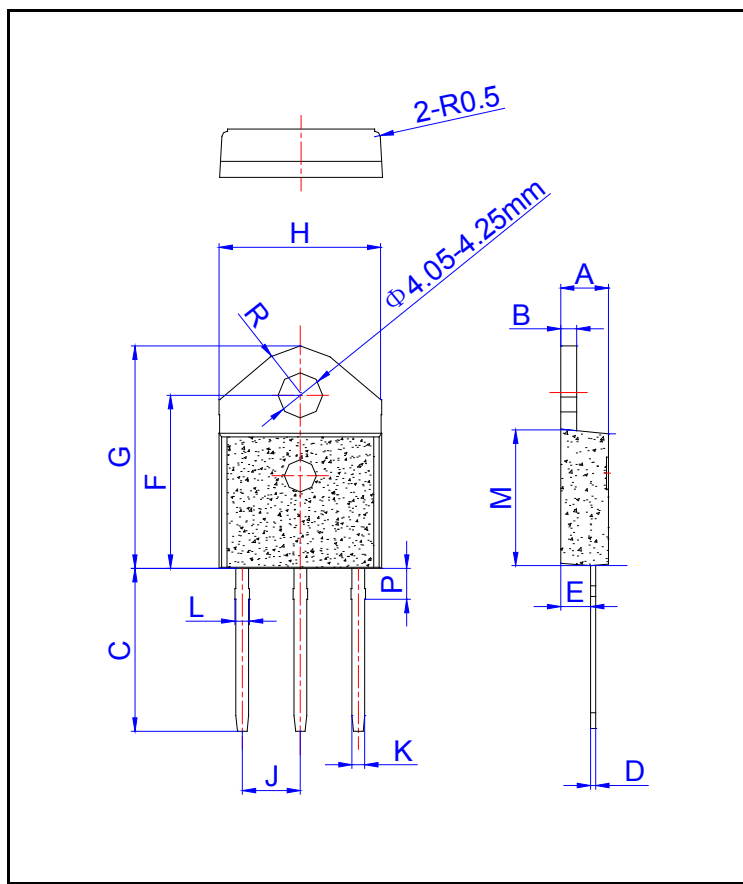


FIG-7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.

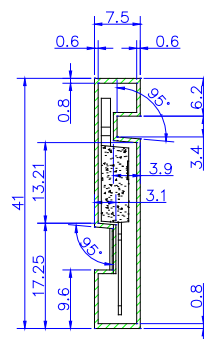
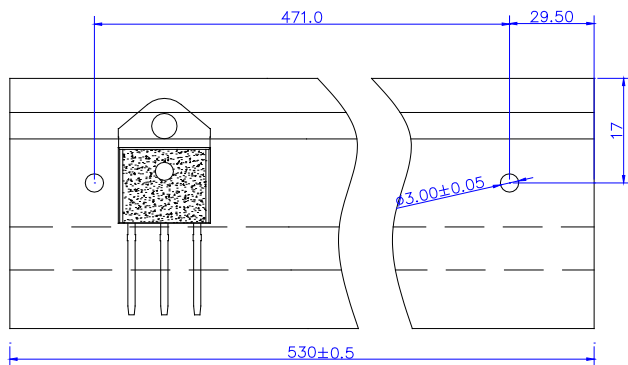


TOP3 PACKAGE MECHANICAL DATA (mm & inch)



TOP3 封装尺寸数据 (毫米与英寸对照)

REF.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
B	1.45	1.55	0.057	0.061
C	14.35	15.6	0.565	0.614
D	0.50	0.70	0.020	0.028
E	2.70	2.90	0.106	0.114
F	15.8	16.5	0.622	0.650
G	20.4	21.1	0.803	0.831
H	15.1	15.5	0.594	0.610
J	5.40	5.65	0.213	0.222
K	1.10	1.40	0.043	0.055
L	1.25	1.45	0.049	0.057
M	12.37	12.77	0.487	0.503
P	2.80	3.00	0.110	0.118
R	4.35 TYP.		0.171 TYP.	



	Marking H: HAOHAI ELECTRONICS XXXXXXXXXX: Part Number KKG: Registered trademark YY: Factory Year WW: Factory natural Week(01~53)	Packaging Specifications Plastic tube 30Pcs/Tub 450cs/BOX 2250Pcs/Cartons
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Manufacturers version information
2010-09-01, KKG™ Product Data-1.0
2013-04-25, KKG™ Product Data-1.1
2016-12-10, KKG™ Product Data-1.2
2020-02-28, KKG™ Product Data-1.3
2023-03-29, KKG™ Product Data-1.4



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