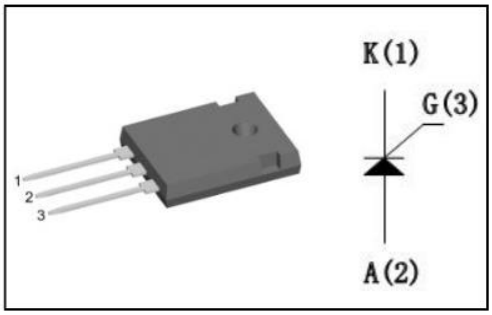
BCB50A

Silicon Control Rectifiers

●Feature and Application



Features:

-Single side grooving technology with independent intellectual property rights, table glass passivation technology;

-Multi-layer metallized electrode;

-High blocking voltage and high temperature stability

Applications:

Vacuum cleaners, power tools and other motor speed controllers; Solid state relays; Heating controllers (temperature regulation); And other phase control circuits.

●Characteristics

Table 1. Absolute maximum ratings (T_{VJ} = 25℃ unless otherwise stated)

Symbol	Parameter and test conditions			value	Unit
$I_{T(AV)}$	On state average current Tc=125℃ T_{VJ}=150℃			50	A
$I_{T(RMS)}$	RMS on-state current (full sine wave) Tc=125℃			79	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_{VJ} initial = 25℃)	F=50HZ	t=10ms	650	A
I^2t	I^2t value for fusing	t_p=10ms f=50HZ	T_{VJ}=45℃	2120	A^2S
（di/dt）cr	Critical rate of rise of on-state current IG = 2 x IGT, tr ≤ 100 ns	T_{VJ}=150℃;f=50Hz		150	A/us
$V_{RRM/DRM}$	nax. repetitive reverse/forward blocking voltage	T_{VJ}=25℃		1200	V
I_{GM}	Peak gate current	t_p=20us		8	A

		T_{VJ}=125℃		
V_{RGM}	Peak reverse gate voltage		5	V
$P_{G(AV)}$	Average gate power dissipation	T_C=150℃	0.5	W
T_{stg} T_{VJ}	Storage junction temperature range Operating junction temperature range		−40to+150 −40to+125	℃

Table 2. Dynamic electrical characteristics (T_{VJ}=25℃, unless otherwise specified)

Symbol	Parameter and test conditions			value	Unit
I_{GT}	V_D=6V	25℃ -40℃	MAX	50 80	mA
V_{GT}		25℃ -40℃	MAX	1.5 1.6	V
V_{GD}	V_D=⅔V_{DRM} T_{VJ} = 150℃		MAX	0.2	V
I_{GD}				3	mA
I_H	V_D = 6V $R_{GK=\infty}$ T_{VJ} = 25℃		MAX	100	mA
I_L	t_p=10us I_G=0,3A; di_G/dt =0,3A/μs; T_{VJ} = 25℃		MAX	125	mA
t_{gd}	V_D=1/2 V_{DRM} T_{VJ}=25℃ I_G=0,3A; di_G/dt =0,3A/μs		MAX	2	us
t_q	V_R=100V I_T=80A V=2/3V_{DRM} T_{VJ}=125℃ di/dt=20A/us dv/dt=20V/us tp=200us		Typ	200	us
（dv/dt）cr	V_D=2/3V_{DRM} $R_{GK=\infty}$ T_{VJ}=150℃		MAX	1000	V/us

Table 3. Static electrical characteristics

Symbol	Parameter and test conditions	value	Unit

V_{TM}	I_{TM}= 100A	T_{VJ}=25℃	MAX	1.60	V
V_{T0}	Threshold on-state voltage	T_{VJ}=150℃	MAX	0.88	V
Rd	Dynamic resistance	T_{VJ}=125℃	MAX	6.4	mΩ
$I_{R/D}$	$V_{R/D}$=1200V	T_{VJ}=25℃	MAX	50	uA
	$V_{R/D}$=1200V	T_{VJ}=125℃		4	mA
$R_{th(j-c)}$	Junction to ambient	BCB		0.6	℃/W

●BCB50A Typical Characteristic Curves:

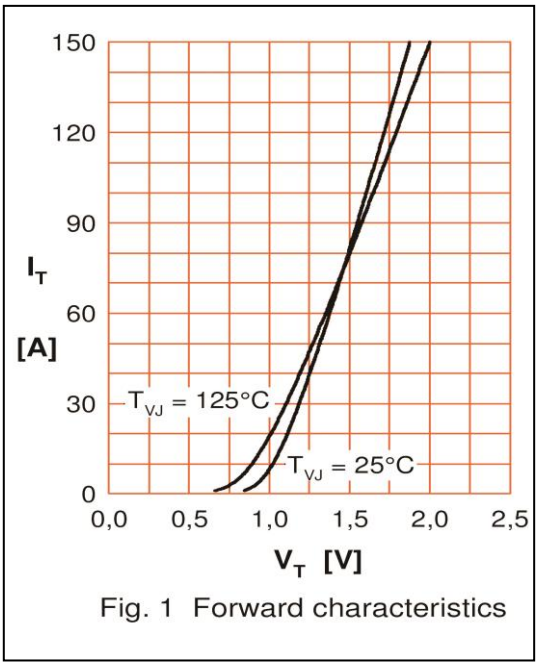


Fig. 1 Forward characteristics

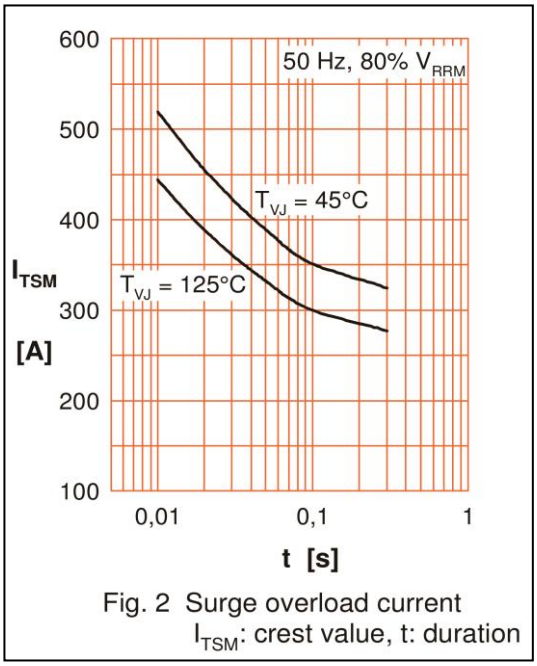


Fig. 2 Surge overload current
I_{TSM}: crest value, t: duration

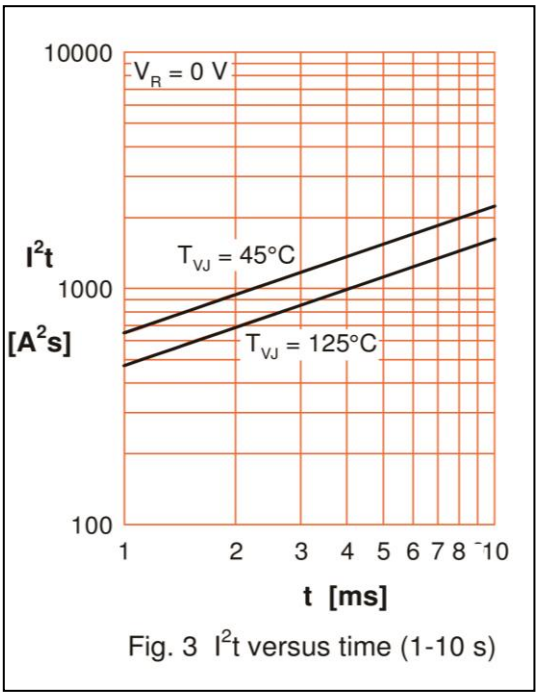


Fig. 3 I^2t versus time (1-10 s)

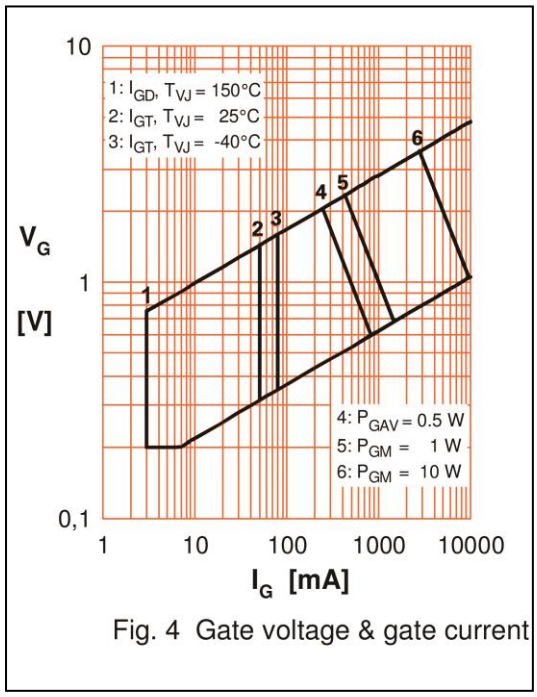


Fig. 4 Gate voltage & gate current

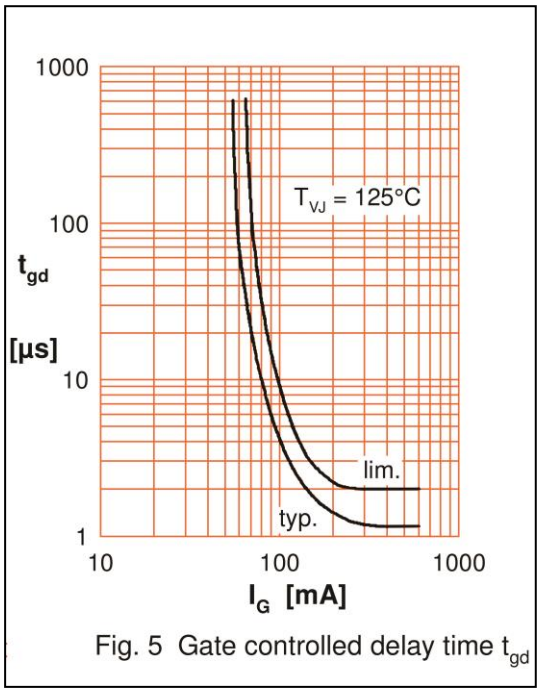


Fig. 5 Gate controlled delay time t_{gd}

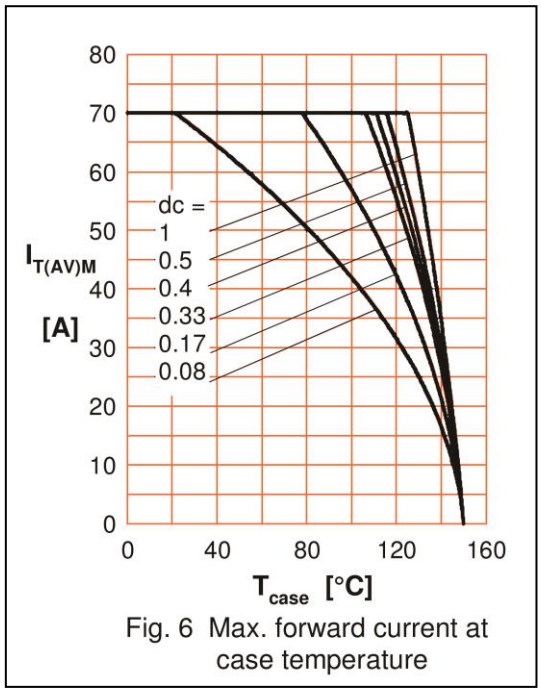


Fig. 6 Max. forward current at case temperature

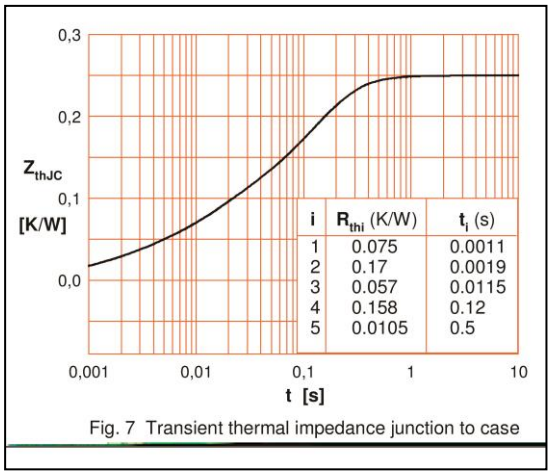


Fig. 7 Transient thermal impedance junction to case

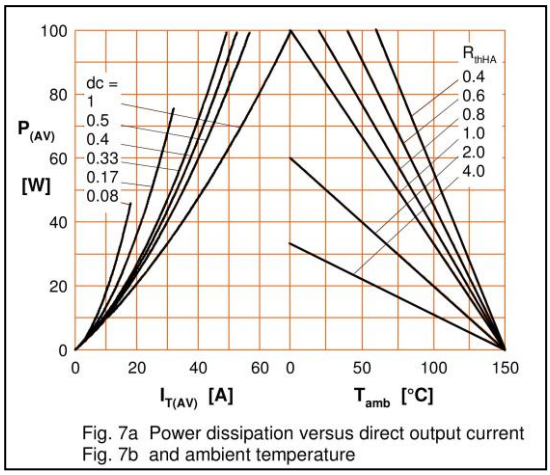
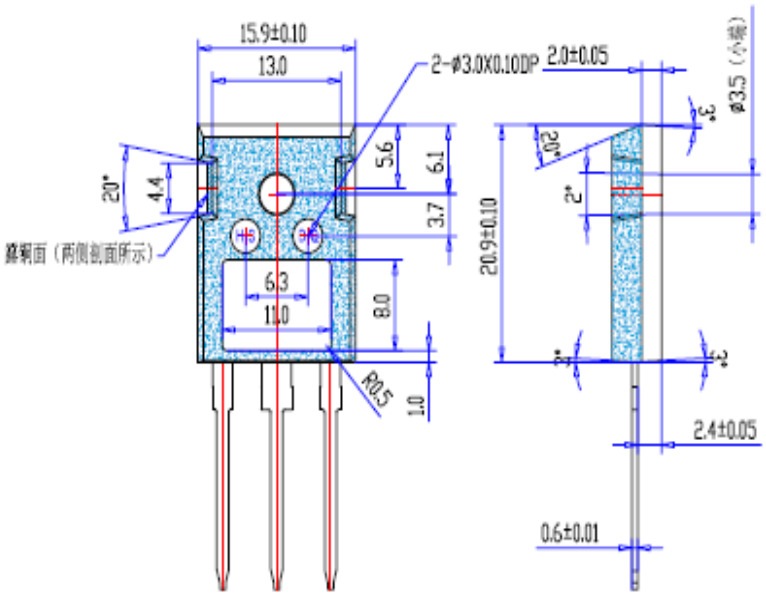


Fig. 7a Power dissipation versus direct output current
Fig. 7b and ambient temperature

●TO-247 Dimensional drawing:

Unit：mm（±0.1）



BCB50A

Silicon Control Rectifiers