Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

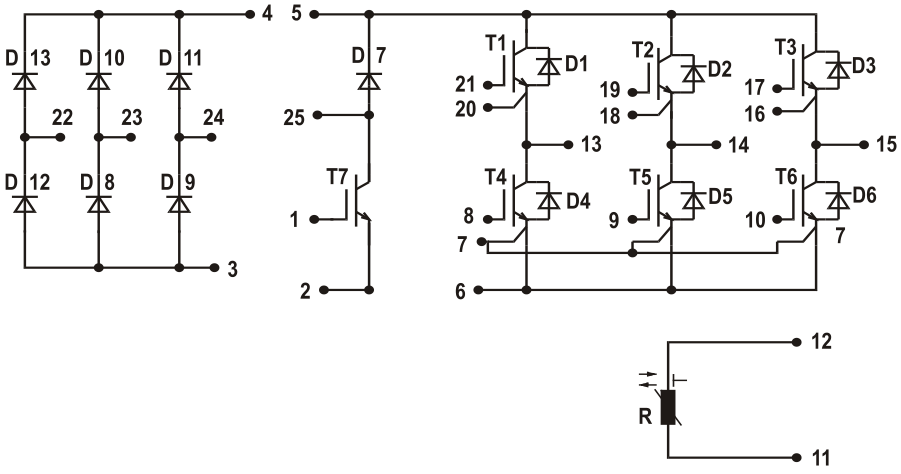
Converter - Brake - Inverter Module (CBI 1)
NPT IGBT

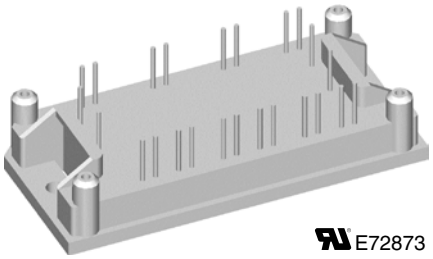
Three Phase Rectifier	Brake Chopper	Three Phase Inverter
V_{RRM} = 1600 V	V_{CES} = 600 V	V_{CES} = 600 V
I_{DAVM25} = 130 A	I_{C25} = 25 A	I_{C25} = 42 A
I_{FSM} = 320 A	$V_{CE(sat)}$ = 2.0 V	$V_{CE(sat)}$ = 2.3 V

Preliminary data

Part name (Marking on product)

MUBW35-06A6K





Pin configuration see outlines.

Features:

- High level of integration - only one power semiconductor module required for the whole drive
- Inverter with NPT IGBTs
- low saturation voltage
- positive temperature coefficient
- fast switching
- short tail current
- Epitaxial free wheeling diodes with hiperfast and soft reverse recovery
- Industry standard package with insu lated copper base plate and soldering pins for PCB mounting
- Temperature sense included

Application:

AC motor drives with

- Input from single or three phase grid
- Three phase synchronous or asynchronous motor
- Electric braking operation

Package:

- UL registered
- Industry standard E1-pack

Ouput Inverter T1 - T6

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{CES}	*collector emitter voltage*	T_{VJ} = 25°C to 150°C				600	V
V_{GES}	*max. DC gate voltage*	continuous				±20	V
V_{GEM}	*max. transient collector gate voltage*	transient				±30	V
I_{C25}	*collector current*		T_C = 25°C			42	A
I_{C80}			T_C = 80°C			29	A
P_{tot}	*total power dissipation*		T_C = 25°C			130	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 35 A; V_{GE} = 15 V	T_{VJ} = 25°C		2.3	2.7	V
			T_{VJ} = 125°C		2.6		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 0.7 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	4.5		6.5	V
I_{CES}	*collector emitter leakage current*	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			0.75	mA
			T_{VJ} = 125°C		1.5		mA
I_{GES}	*gate emitter leakage current*	V_{CE} = 0 V; V_{GE} = ±20 V				200	nA
C_{ies}	*input capacitance*	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			1600		pF
$Q_{G(on)}$	*total gate charge*	V_{CE} = 300 V; V_{GE} = 15 V; I_C = 30 A			95		nC
$t_{d(on)}$	*turn-on delay time*	inductive load	T_{VJ} = 125°C		50		ns
t_r	*current rise time*	V_{CE} = 300 V; I_C = 30 A			50		ns
$t_{d(off)}$	*turn-off delay time*	V_{GE} = ±15 V; R_G = 33 Ω			270		ns
t_f	*current fall time*				40		ns
E_{on}	*turn-on energy per pulse*				1.4		mJ
E_{off}	*turn-off energy per pulse*				1.0		mJ
I_{CM}	*reverse bias safe operating area*	RBSOA; V_{GE} = ±15 V; R_G = 33 Ω			60		A
		L = 100 µH; clamped induct. load	T_{VJ} = 125°C				
		V_{CEmax} = V_{CES} - L_S·di/dt					
t_{SC} (SCSOA)	*short circuit safe operating area*	V_{CE} = 600 V; V_{GE} = ±15 V;	T_{VJ} = 125°C		10		µs
		R_G = 82 Ω; non-repetitive					
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				0.95	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per IGBT)			0.35		K/W

Output Inverter D1 - D6

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{RRM}	*max. repetitve reverse voltage*		T_{VJ} = 150°C			600	V
I_{F25}	*forward current*		T_C = 25°C			69	A
I_{F80}			T_C = 80°C			46	A
V_F	*forward voltage*	I_F = 35 A; V_{GE} = 0 V	T_{VJ} = 25°C			1.7	V
			T_{VJ} = 125°C		1.2		V
I_{RM}	*max. reverse recovery current*	V_R = 100 V			5		A
t_{rr}	*reverse recovery time*	di_F/dt = -100 A/µs	T_{VJ} = 100°C		100		ns
$E_{rec(off)}$	*reverse recovery energy*	I_F = 50 A; V_{GE} = 0 V			tbd		µJ
R_{thJC}	*thermal resistance junction to case*	(per diode)				0.9	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per diode)			0.3		K/W

T_C = 25°C unless otherwise stated

Brake Chopper T7

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{CES}	*collector emitter voltage*		T_{VJ} = 25°C to 150°C			600	V
V_{GES}	*max. DC gate voltage*	continuous				±20	V
V_{GEM}	*max. transient collector gate voltage*	transient				±30	V
I_{C25}	*collector current*		T_C = 25°C			25	A
I_{C80}			T_C = 80°C			17	A
P_{tot}	*total power dissipation*		T_C = 25°C			80	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 15 A; V_{GE} = 15 V	T_{VJ} = 25°C		2.0	2.4	V
			T_{VJ} = 125°C		2.3		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 0.4 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	4.5		6.5	V
I_{CES}	*collector emitter leakage current*	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			0.5	mA
			T_{VJ} = 125°C		0.8		mA
I_{GES}	*gate emitter leakage current*	V_{CE} = 0 V; V_{GE} = ±20 V				100	nA
C_{ies}	*input capacitance*	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			800		pF
$Q_{G(on)}$	*total gate charge*	V_{CE} = 300 V; V_{GE} = 15 V; I_C = 15 A			57		nC
$t_{d(on)}$	*turn-on delay time*	inductive load V_{CE} = 300 V; I_C = 15 A V_{GE} = ±15 V; R_G = 68 Ω	T_{VJ} = 125°C		30		ns
t_r	*current rise time*				50		ns
$t_{d(off)}$	*turn-off delay time*				270		ns
t_f	*current fall time*				40		ns
E_{on}	*turn-on energy per pulse*				0.7		mJ
E_{off}	*turn-off energy per pulse*				0.5		mJ
I_{CM}	*reverse bias safe operating area*	RBSOA; V_{GE} = ±15 V; R_G = 68 Ω L = 100 µH; clamped induct. load V_{CEmax} = V_{CES} - L_S·di/dt	T_{VJ} = 125°C		30		A
t_{SC} (SCSOA)	*short circuit safe operating area*	V_{CE} = 600 V; V_{GE} = ±15 V; R_G = 82 Ω; non-repetitive	T_{VJ} = 125°C		10		µs
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				1.55	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per IGBT)			0.5		K/W

Brake Chopper D7

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{RRM}	*max. repetitive reverse voltage*		T_{VJ} = 150°C			600	V
I_{F25}	*forward current*		T_C = 25°C			21	A
I_{F80}			T_C = 80°C			14	A
V_F	*forward voltage*	I_F = 15 A; V_{GE} = 0 V	T_{VJ} = 25°C			2.3	V
			T_{VJ} = 125°C		1.5		V
I_R	*reverse current*	V_R = V_{RRM}	T_{VJ} = 25°C			0.06	mA
			T_{VJ} = 125°C		0.2		mA
I_{RM}	*max. reverse recovery current*	V_R = 100 V; I_F = 12 A			3.5		A
t_{rr}	*reverse recovery time*	di_F/dt = -100 A/µs	T_{VJ} = 100°C		80		ns
R_{thJC}	*thermal resistance junction to case*	(per diode)				2.5	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per diode)			0.85		K/W

T_C = 25°C unless otherwise stated

Input Rectifier Bridge D8 - D13

Symbol	Definitions	Conditions		Maximum Ratings	
V_{RRM}	*max. repetitive reverse voltage*			1600	V
I_{FAV}	*average forward current*	sine 180°	T_C = 80°C	31	A
I_{DAVM}	*max. average DC output current*	rectangular; d = $^1/_3$; bridge	T_C = 80°C	89	A
I_{FSM}	*max. surge forward current*	t = 10 ms; sine 50 Hz	T_C = 25°C	320	A
P_{tot}	*total power dissipation*		T_C = 25°C	80	W

Symbol	Conditions			Characteristic Values		
				min.	typ.	max.	
V_F	*forward voltage*	I_F = 30 A	T_{VJ} = 25°C		1.0	1.35	V
			T_{VJ} = 125°C		1.1		V
I_R	*reverse current*	$V_R = V_{RRM}$	T_{VJ} = 25°C			0.02	mA
			T_{VJ} = 125°C		0.4		mA
R_{thJC}	*thermal resistance junction to case*	(per diode)	T_{VJ} = 25°C			1.4	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per diode)			0.45		K/W

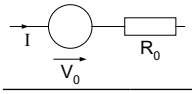
Temperature Sensor NTC

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
R_{25}	*resistance*		T_C = 25°C	4.45	4.7	5.0	kΩ
$B_{25/85}$					3510		K

Module

Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
T_{VJ}	*operating temperature*		-40		125	°C
T_{VJM}	*max. virtual junction temperature*				150	°C
T_{stg}	*storage temperature*		-40		125	°C
V_{ISOL}	*isolation voltage*	$I_{ISOL} \leq$ 1 mA; 50/60 Hz			2500	V~
M_d	*mounting torque*	(M4)	2.0		2.2	Nm
d_S	*creep distance on surface*		12.7			mm
d_A	*strike distance through air*		12.7			mm
Weight				40		g

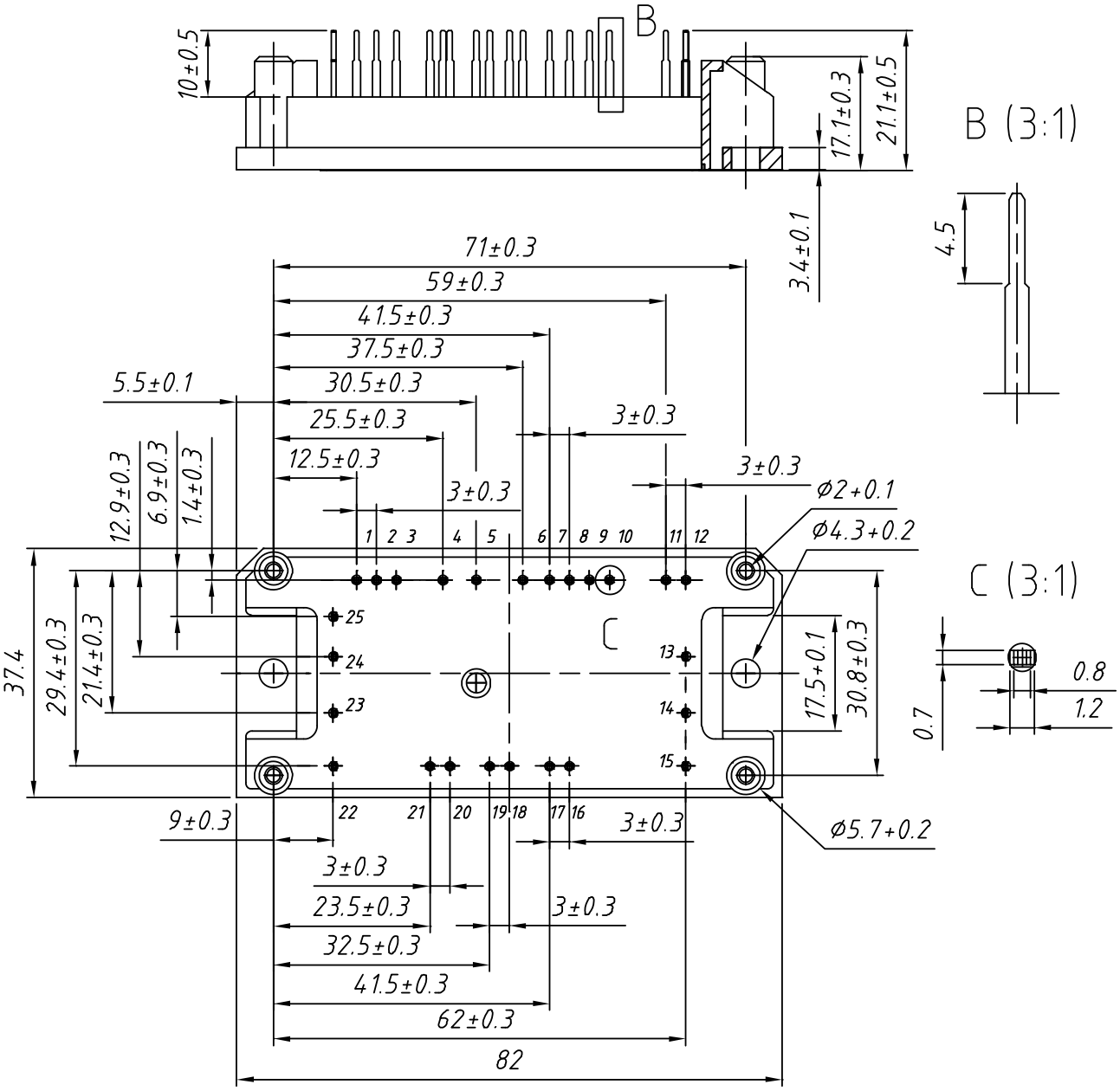
Equivalent Circuits for Simulation



Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_0	*rectifier diode*	D8 - D13	T_{VJ} = 125°C		0.90		V
R_0					9		mΩ
V_0	*IGBT*	T1 - T6	T_{VJ} = 125°C		1.0		V
R_0					4		mΩ
V_0	*free wheeling diode*	D1 - D6	T_{VJ} = 125°C		1.05		V
R_0					7		mΩ
V_0	*IGBT*	T7	T_{VJ} = 125°C		1.0		V
R_0					70		mΩ
V_0	*free wheeling diode*	D7	T_{VJ} = 125°C		1.25		V
R_0					26		mΩ

T_C = 25°C unless otherwise stated

Outline Drawing Dimensions in mm (1 mm = 0.0394“)



Product Marking

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MUBW 35-06A6K	MUBW35-06A6K	Box	10	500 117