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

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IGBT Modules

H-Bridge

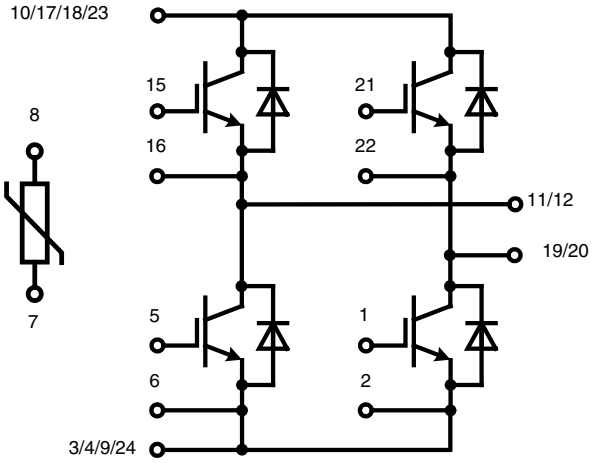
Trench IGBT

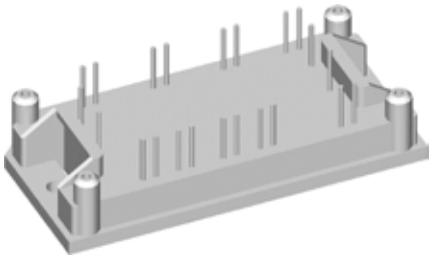
I_{C25} = 89 A
V_{CES} = 600 V
$V_{CE(sat)\ typ.}$ = 1.8 V

Preliminary data

Part name (Marking on product)

MKI 80-06T6K





Features:

- Trench IGBT technology
- Low saturation voltage
- Low switching losses
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Ultra fast free wheeling diodes
- Solderable pins for PCB mounting
- Space saving
- Reduced protection circuits

Application:

- AC motor control
- AC servo and robot drives
- Power supplies

Package:

- Industry standard E1-pack
- Designed for wave soldering
- With copper base plate

IGBTs

Symbol	Definitions	Conditions		min.	Ratings 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			89	A
I_{C80}			T_C = 80°C			67	A
P_{tot}	*total power dissipation*		T_C = 25°C			210	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 75 A; V_{GE} = 15 V	T_{VJ} = 25°C		1.8	2.3	V
			T_{VJ} = 125°C		2.1		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 1.2 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	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		1		mA
I_{GES}	*gate emitter leakage current*	V_{CE} = 0 V; V_{GE} = ±20 V				400	nA
C_{ies}	*input capacitance*	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			4620		pF
$Q_{G(on)}$	*total gate charge*	V_{CE} = 480 V; V_{GE} = 15 V; I_C = 75 A			470		nC
$t_{d(on)}$	*turn-on delay time*	inductive load	T_{VJ} = 125°C		30		ns
t_r	*current rise time*	V_{CE} = 300 V; I_C = 75 A			20		ns
$t_{d(off)}$	*turn-off delay time*	V_{GE} = ±15 V; R_G = 5.1 Ω			250		ns
t_f	*current fall time*				70		ns
E_{on}	*turn-on energy per pulse*				2.5		mJ
E_{off}	*turn-off energy per pulse*				2.8		mJ
I_{CM}	*reverse bias safe operating area*	RBSOA; V_{GE} = ±15 V; R_G = 5.1 Ω; L = 100 µH			150		A
V_{CEK}		clamped inductive load;	T_{VJ} = 125°C		0.9x	V_{CES}	
t_{SC} (SCSOA)	*short circuit safe operating area*	V_{CE} = 480 V; V_{GE} = ±15 V; R_G = 5.1 Ω; non-repetitive	T_{VJ} = 125°C		6		µs
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				0.6	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per IGBT)			0.2		K/W

Diodes

Symbol	Definitions	Conditions		Maximum Ratings	
V_{RRM}	*max. repetitive reverse voltage*			600	V
I_{F25}	*forward current*		T_C = 25°C	105	A
I_{F80}			T_C = 80°C	67	A

Symbol	Conditions			Characteristic Values min.	typ.	max.	
V_F	*forward voltage*	I_F = 75 A	T_{VJ} = 25°C		1.8	2.2	V
			T_{VJ} = 125°C		1.6		V
I_{RM}	*max. reverse recovery current*	V_R = 300 V; I_F = 75 A			36		A
t_{rr}	*reverse recovery time*	di_F/dt = -600 A/µs	T_{VJ} = 100°C		100		ns
R_{thJC}	*thermal resistance junction to case*	(per diode)	T_{VJ} = 25°C			0.65	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per diode)			0.25		K/W

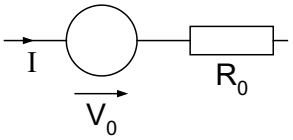
Temperature Sensor NTC

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

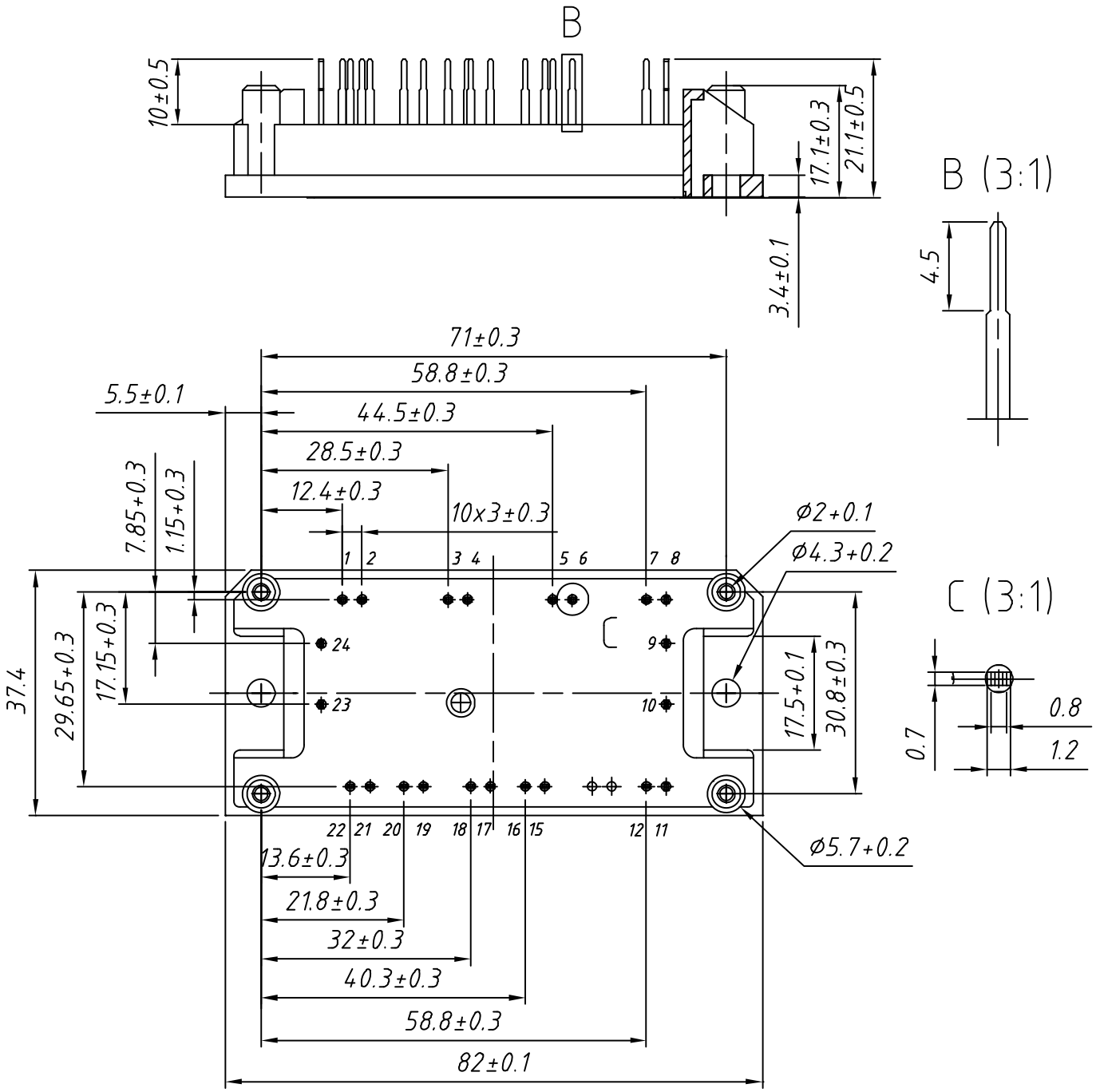
Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
T_{VJ}	*operating temperature*		-40		125	°C
T_{VJM}	*max. virtual junction temperature*				175	°C
T_{stg}	*storage temperature*		-40		125	°C
V_{ISOL}	*isolation voltage*	$I_{ISOL} \leq$ 1 mA; 50/60 Hz			2500	V~
M_d	*mounting torque*	(M4)	2.0		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	*IGBT*	T_{VJ} = 125°C		0.9		V
R_0				14.3		mΩ
V_0	*free wheeling diode*	T_{VJ} = 125°C		1.25		V
R_0				3		mΩ

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



Product Marking

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MKI 80-06T6K	MKI80-06T6K	Box	10	504061

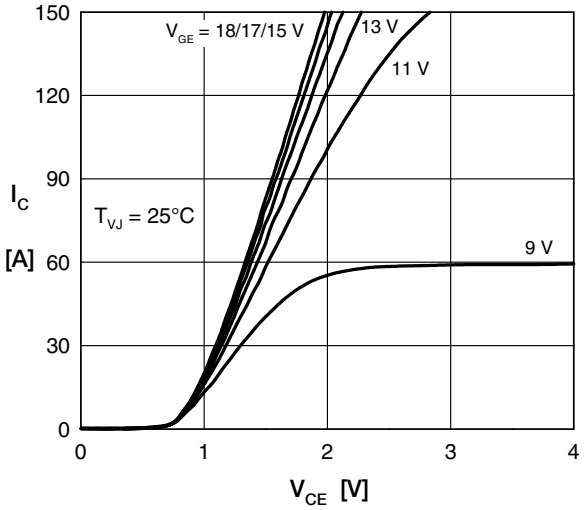


Fig. 1 Typical output characteristics

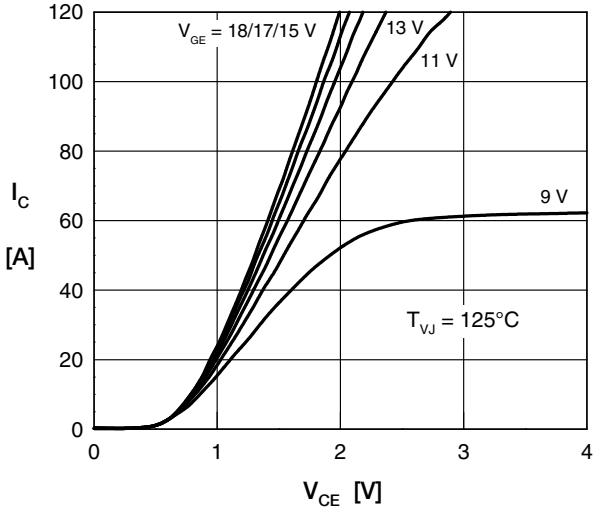


Fig. 2 Typical output characteristics

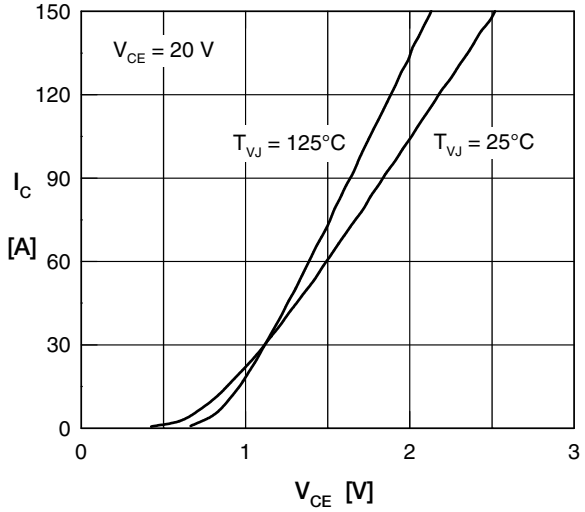


Fig. 3 Typical output characteristics

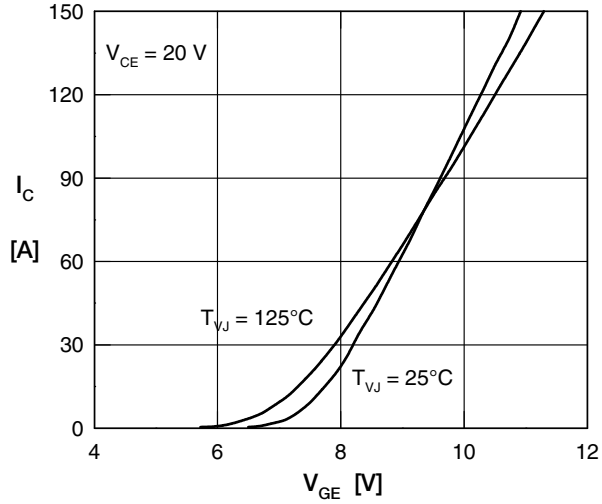


Fig. 4 Typical transfer characteristics

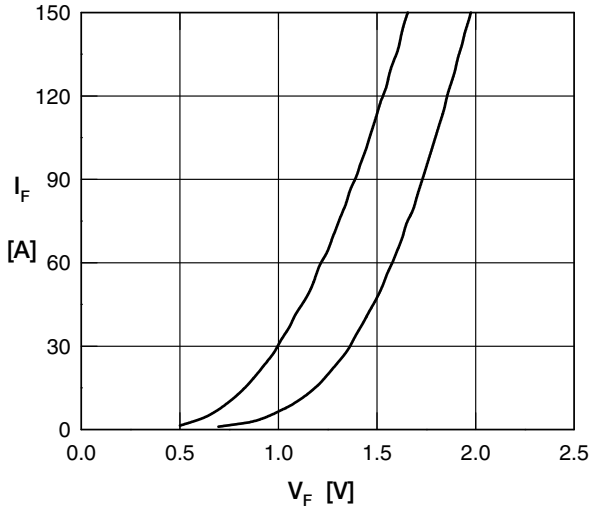


Fig. 5 Typical forward characteristics FWD

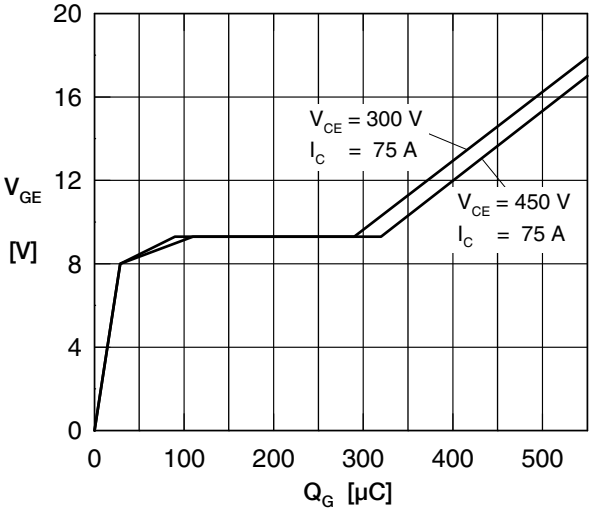


Fig. 6 Typical turn-on gate charge