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 Module

Sixpack

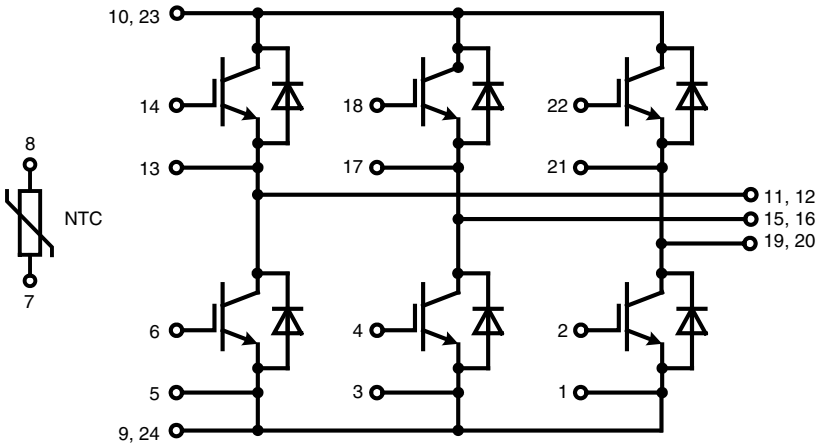
Short Circuit SOA Capability
Square RBSOA

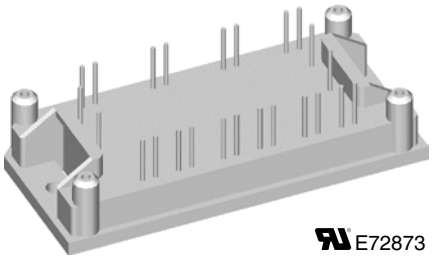
I_{C25} = 58 A
V_{CES} = 1200 V
$V_{CE(sat)\ typ.}$ = 1.9 V

Preliminary data

Part name (Marking on product)

MWI 60-12T6K





Pin configuration see outlines.

Features:

- Trench IGBTs
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
  - short tail current for optimized performance also in resonant circuits
- HiPerFRED™ diode:
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- Industry Standard Package
  - solderable pins for PCB mounting
  - isolated copper base plate

Application:

- AC drives
- UPS
- Welding

Package:

- UL registered
- Industry standard E1-pack

IGBTs

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{CES}	*collector emitter voltage*	T_{VJ} = 25°C to 150°C				1200	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			58	A
I_{C80}			T_C = 80°C			41	A
P_{tot}	*total power dissipation*		T_C = 25°C			200	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 35 A; V_{GE} = 15 V	T_{VJ} = 25°C		1.9	2.3	V
			T_{VJ} = 125°C		2.2		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 1.5 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				400	nA
C_{ies}	*input capacitance*	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			2530		pF
$Q_{G(on)}$	*total gate charge*	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 35 A			330		nC
$t_{d(on)}$	*turn-on delay time*	inductive load V_{CE} = 600 V; I_C = 35 A V_{GE} = ±15 V; R_G = 27 Ω	T_{VJ} = 125°C		90		ns
t_r	*current rise time*				50		ns
$t_{d(off)}$	*turn-off delay time*				520		ns
t_f	*current fall time*				90		ns
E_{on}	*turn-on energy per pulse*				3.5		mJ
E_{off}	*turn-off energy per pulse*				4.8		mJ
I_{CM}	*reverse bias safe operating area*	RBSOA; V_{GE} = ±15 V; R_G = 27 Ω L = 100 µH; clamped induct. load V_{CEmax} = V_{CES} - L_S·di/dt	T_{VJ} = 125°C		70		A
t_{SC} (SCSOA)	*short circuit safe operating area*	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 27 Ω; non-repetitive	T_{VJ} = 125°C		10		µs
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				0.62	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per IGBT)			0.25		K/W

Diodes

Symbol	Definitions	Conditions		Maximum Ratings	
V_{RRM}	*max. repetitive reverse voltage*			1600	V
I_{F25}	*forward current*		T_C = 25°C	49	A
I_{F80}			T_C = 80°C	32	A

Symbol	Conditions			Characteristic Values min.	typ.	max.	
V_F	*forward voltage*	I_F = 35 A	T_{VJ} = 25°C		2.6	2.9	V
			T_{VJ} = 125°C		1.8		V
I_{RM}	*max. reverse recovery current*	V_R = 600 V; I_F = 35 A			35		A
t_{rr}	*reverse recovery time*	di_F/dt = -600 A/µs	T_{VJ} = 100°C		150		ns
R_{thJC}	*thermal resistance junction to case*	(per diode)	T_{VJ} = 25°C			0.9	K/W
R_{thCH}	*thermal resistance case to heatsink*	(per diode)			0.3		K/W

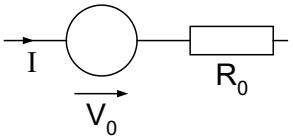
Temperature Sensor NTC

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

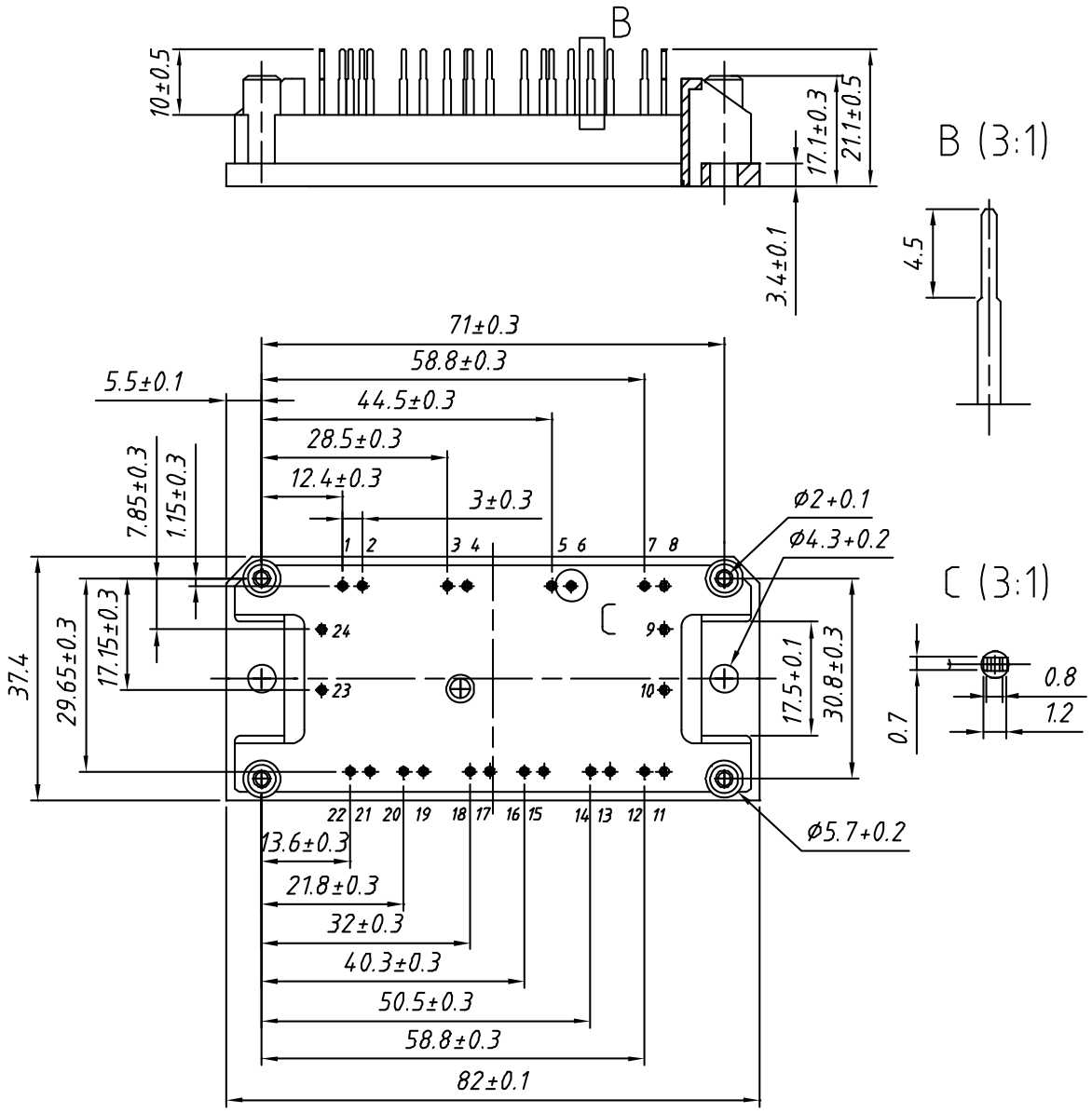
Equivalent Circuits for Simulation



Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
V_0	*IGBT*	T_{VJ} = 125°C		1.0		V
R_0				31		mΩ
V_0	*free wheeling diode*	T_{VJ} = 125°C		1.5		V
R_0				14		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	MWI 60-12T6K	MWI60-12T6K	Box	10	500 152