



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

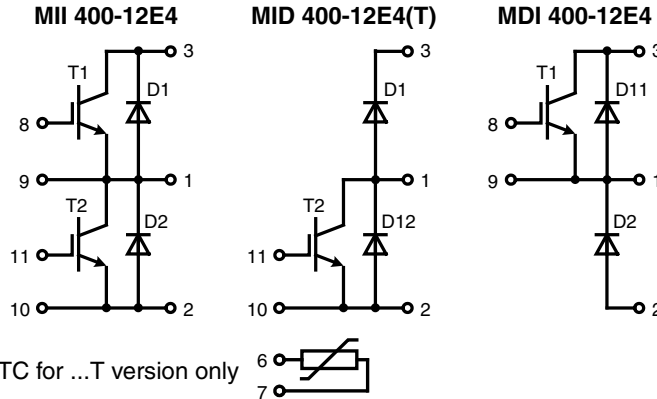
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



IGBT Module

phaseleg and chopper topologies
with optional temperature sensor

Preliminary Data

 $I_{C25} = 420 \text{ A}$
 $V_{CES} = 1200 \text{ V}$
 $V_{CE(sat) \text{ typ.}} = 2.2 \text{ V}$


IGBTs T1 - T2		Maximum Ratings	
Symbol	Conditions		
V_{CES}	$T_{VJ} = 25^\circ\text{C to } 125^\circ\text{C}$	1200	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^\circ\text{C}$	420	A
I_{C80}	$T_C = 80^\circ\text{C}$	300	A
I_{CM}	$V_{GE} = \pm 15 \text{ V}; R_G = 4.7 \ \Omega; T_{VJ} = 125^\circ\text{C}$	450	A
V_{CEK}	RBSOA Clamped inductive load; $L = 100 \ \mu\text{H}$	V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = 900 \text{ V}; V_{GE} = \pm 15 \text{ V}; R_G = 4.7 \ \Omega$ $T_{VJ} = 125^\circ\text{C}; \text{non-repetitive}$	10	μs
P_{tot}	$T_C = 25^\circ\text{C}$	1700	W

Symbol		Conditions		Characteristic Values			
				$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$			
				min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 300 \text{ A}; V_{GE} = 15 \text{ V};$	$T_{VJ} = 25^\circ\text{C}$			2.2	2.8	V
		$T_{VJ} = 125^\circ\text{C}$			2.6		V
$V_{GE(th)}$	$I_C = 10 \text{ mA}; V_{GE} = V_{CE}$			4.5		6.5	V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V};$	$T_{VJ} = 25^\circ\text{C}$			0.8	3.3	mA
		$T_{VJ} = 125^\circ\text{C}$			3.5		mA
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$					600	nA
$t_{d(on)}$	Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 300 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 4.7 \ \Omega$				170		ns
t_r					60		ns
$t_{d(off)}$					680		ns
t_f					50		ns
E_{on}					44		mJ
E_{off}				30		mJ	
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$				17		nF
Q_{Gon}	$V_{CE} = 600 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 300 \text{ A}$				1.74		μC
R_{thJC}	(per IGBT)					0.08	K/W
R_{thJH}	with heatsink compound				0.15		K/W

Features

- NPT³ IGBT
 - low saturation voltage
 - positive temperature coefficient
 - fast switching
 - short tail current for optimized performance in resonant circuits
- HiPerFRED™ diodes
 - fast and soft reverse recovery
 - low operating forward voltage
 - low leakage current
- NTC sensor for measurement of case temperature
- Package
 - low inductive current path
 - screw connection to high current main terminals
 - use of non interchangeable connectors for auxiliary terminals possible
 - Kelvin emitter terminal for easy drive
 - isolated ceramic base plate

Applications

- drives
 - AC
 - DC
- power supplies
 - rectifiers with power factor correction and recuperation capability
 - UPS

Free wheeling diodes D1 - D2

Symbol	Conditions	Maximum Ratings			
I_{F25}	$T_C = 25^\circ\text{C}$	450	A		
I_{F80}	$T_C = 80^\circ\text{C}$	290	A		
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	$I_F = 300\text{ A}; V_{GE} = 0\text{ V};$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		2.3 1.7	2.7	V V
I_{RM} t_{rr}	$I_F = 225\text{ A}; di_F/dt = -2000\text{ A}/\mu\text{s};$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V};$ $T_{VJ} = 125^\circ\text{C}$		200 220		A ns
R_{thJC} R_{thJH}	(per IGBT) with heatsink compound		0.3	0.15	K/W K/W

Chopper anti parallel diodes D11 - D12

Symbol	Conditions	Maximum Ratings			
I_{F25}	$T_C = 25^\circ\text{C}$	150	A		
I_{F80}	$T_C = 80^\circ\text{C}$	95	A		
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	$I_F = 100\text{ A}; V_{GE} = 0\text{ V};$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		2.3 1.7	2.7	V V
I_{RM} t_{rr}	$I_F = 75\text{ A}; di_F/dt = -750\text{ A}/\mu\text{s};$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V};$ $T_{VJ} = 125^\circ\text{C}$		80 220		A ns
R_{thJC} R_{thJH}	(per IGBT) with heatsink compound		0.9	0.45	K/W K/W

Temperature Sensor NTC (...T version only)

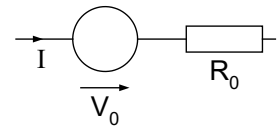
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
R_{25} $B_{25/100}$	$T = 25^\circ\text{C}$ $\left\{ R(T) = R_{25} \cdot e^{B_{25/100} \left(\frac{1}{T} - \frac{1}{298\text{K}} \right)} \right\}$		2200 3560		k Ω K

Module

Symbol	Conditions	Maximum Ratings			
T_{VJ} T_{stg}	operating	-40...+150		$^\circ\text{C}$	
		-40...+125		$^\circ\text{C}$	
V_{ISO}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	4000		V~	
M_d	Mounting torque (module, M6) (terminal, M6)	2.25 - 2.75 4.5 - 5.5		Nm Nm	
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
d_s d_A	Creepage distance on surface Strike distance in air	2			mm mm
Weight			250		g

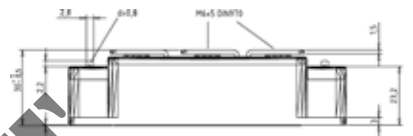
Equivalent Circuits for Simulation

Conduction

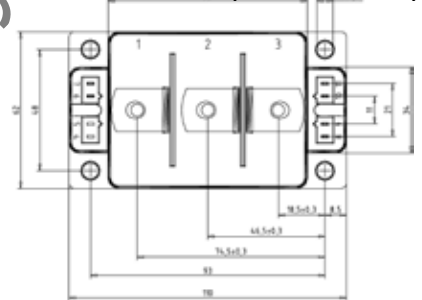


IGBT (typ. at $V_{GE} = 15\text{ V}; T_J = 125^\circ\text{C}$)
 $V_0 = 1.0\text{ V}; R_0 = 5.3\text{ m}\Omega$

Free Wheeling Diode D1-D2 (typ. at $T_J = 125^\circ\text{C}$)
 $V_0 = 1.3\text{ V}; R_0 = 1.3\text{ m}\Omega$



Dimensions in mm (1 mm = 0.0394")



Optional accessories for modules

keyed twin plugs
(UL758, style 1385, CSA class 5851,
guide 460-1-1)

- Type ZY180L with wire length 350mm
– for pins 11 (yellow wire) and 10 (red wire)
- Type ZY180R with wire length 350mm
– for pins 8 (yellow wire) and 9 (red wire)