



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 (NPT) Module

$$V_{CES} = 1200V$$

$$I_{C25} = 90A$$

$$V_{CE(sat)} = 2.2V$$


Buck Chopper + free wheeling Diode

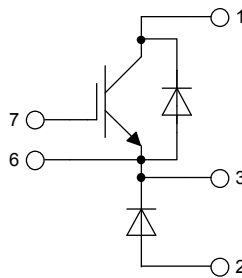
Part number

MDI75-12A3



Backside: isolated

 E72873



Features / Advantages:

- NPT IGBT technology
- low saturation voltage
- low switching losses
- switching frequency up to 30 kHz
- square RBSOA, no latch up
- high short circuit capability
- positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- ultra fast free wheeling diodes

Applications:

- AC motor drives
- Solar inverter
- Medical equipment
- Uninterruptible power supply
- Air-conditioning systems
- Welding equipment
- Switched-mode and resonant-mode power supplies
- Inductive heating, cookers
- Pumps, Fans

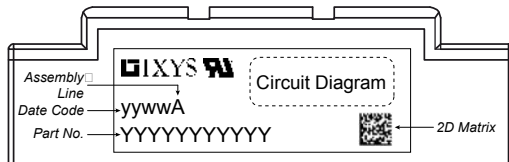
Package: Y4

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Free Wheeling Diode FWD				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage				1200	V	
V_{RRM}	max. repetitive reverse blocking voltage				1200	V	
I_R	reverse current, drain current	$V_R = 1200\text{ V}$			650	μA	
		$V_R = 1200\text{ V}$			2	mA	
V_F	forward voltage drop	$I_F = 50\text{ A}$			2.50	V	
		$I_F = 100\text{ A}$			3.00	V	
		$I_F = 50\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			1.90	V
		$I_F = 100\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			2.30	V
I_{FAV}	average forward current	$T_C = 80^\circ\text{C}$			60	A	
		DC current	$d = 1$				
V_{FO}	threshold voltage	} for power loss calculation only			1.30	V	
r_F	slope resistance				12	m Ω	
R_{thJC}	thermal resistance junction to case				0.66	K/W	
R_{thCH}	thermal resistance case to heatsink			0.66		K/W	
P_{tot}	total power dissipation		$T_C = 25^\circ\text{C}$		190	W	
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$			400	A	
C_J	junction capacitance	$V_R = 600\text{ V}$ $f = 1\text{ MHz}$			30	pF	

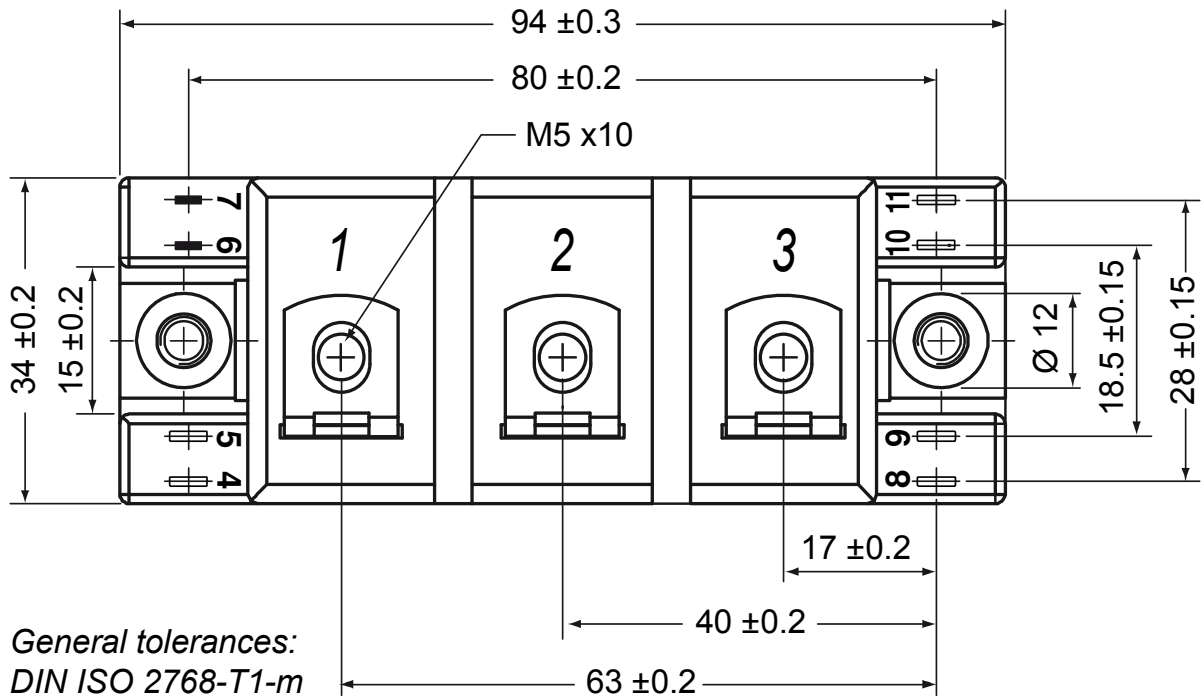
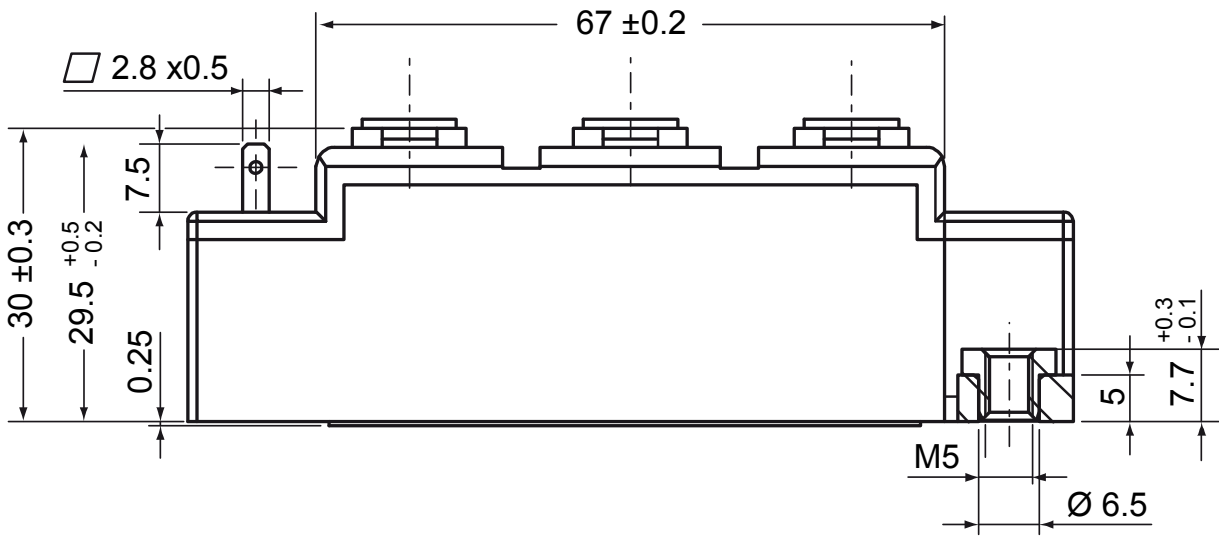
Buck IGBT				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{CES}	collector emitter voltage				1200	V	
V_{GES}	max. DC gate voltage				±20	V	
V_{GEM}	max. transient gate emitter voltage				±30	V	
I_{C25}	collector current				90	A	
I_{C80}					60	A	
P_{tot}	total power dissipation				370	W	
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 50A; V_{GE} = 15V$			2.2	V	
					2.7	V	
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 2mA; V_{GE} = V_{CE}$	4.5	5.5	6.5	V	
I_{CES}	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0V$			4	mA	
					6	mA	
I_{GES}	gate emitter leakage current	$V_{GE} = \pm 20V$			200	nA	
$Q_{G(on)}$	total gate charge	$V_{CE} = 600V; V_{GE} = 15V; I_C = 50A$		240		nC	
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600V; I_C = 50A$ $V_{GE} = \pm 15V; R_G = 22\Omega$		100		ns	
t_r	current rise time			70		ns	
$t_{d(off)}$	turn-off delay time			500		ns	
t_f	current fall time			70		ns	
E_{on}	turn-on energy per pulse			7.6		mJ	
E_{off}	turn-off energy per pulse			5.6		mJ	
RBSOA	reverse bias safe operating area	$V_{GE} = \pm 15V; R_G = 22\Omega$					
I_{CM}		$V_{CEmax} = 1200V$			100	A	
SCSOA	short circuit safe operating area	$V_{CEmax} = 1200V$					
t_{SC}	short circuit duration	$V_{CE} = 1200V; V_{GE} = \pm 15V$			10	µs	
I_{SC}	short circuit current	$R_G = 22\Omega; \text{non-repetitive}$		180		A	
R_{thJC}	thermal resistance junction to case				0.33	K/W	
R_{thCH}	thermal resistance case to heatsink				0.33	K/W	
Buck Diode BD							
V_{RRM}	max. repetitive reverse voltage				1200	V	
I_{F25}	forward current				100	A	
I_{F80}					60	A	
V_F	forward voltage	$I_F = 50A$			2.50	V	
					1.80	V	
I_R	reverse current	$V_R = V_{RRM}$			0.65	mA	
					1	mA	
Q_{rr}	reverse recovery charge	$V_R = 600V$ $-di_F/dt = 400A/\mu s$ $I_F = 50A; V_{GE} = 0V$		3.5		µC	
I_{RM}	max. reverse recovery current			40		A	
t_{rr}	reverse recovery time			200		ns	
E_{rec}	reverse recovery energy			1		mJ	
R_{thJC}	thermal resistance junction to case				0.66	K/W	
R_{thCH}	thermal resistance case to heatsink				0.66	K/W	

Package Y4				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			300	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
T_{stg}	storage temperature		-40		125	°C
Weight					108	g
M_D	mounting torque		2.25		2.75	Nm
M_T	terminal torque		4.5		5.5	Nm
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	14.0	10.0		mm
$d_{Spb/Apb}$		terminal to backside	16.0	16.0		mm
V_{ISOL}	isolation voltage	t = 1 second			3600	V
		t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		3000	V

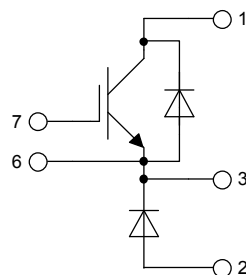


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MDI75-12A3	MDI75-12A3	Box	6	474207

Outlines Y4



General tolerances:
DIN ISO 2768-T1-m



Buck IGBT

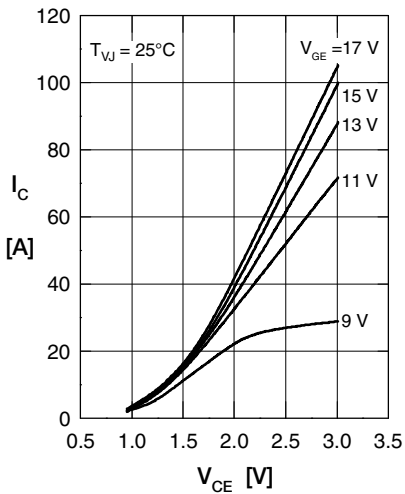


Fig. 1 Typ. output characteristics

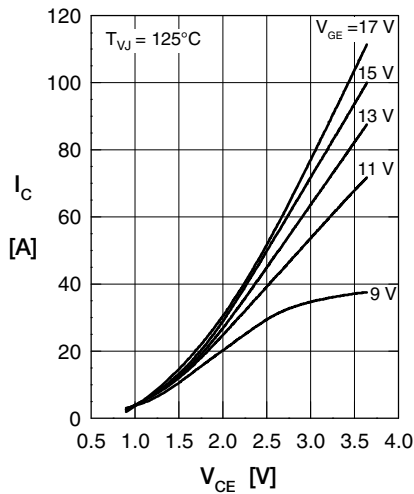


Fig. 2 Typ. output characteristics

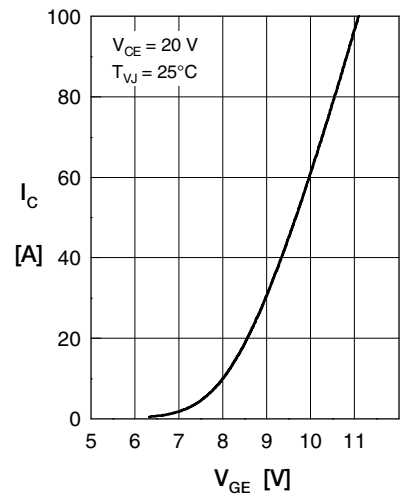


Fig. 3 Typ. transfer characteristics

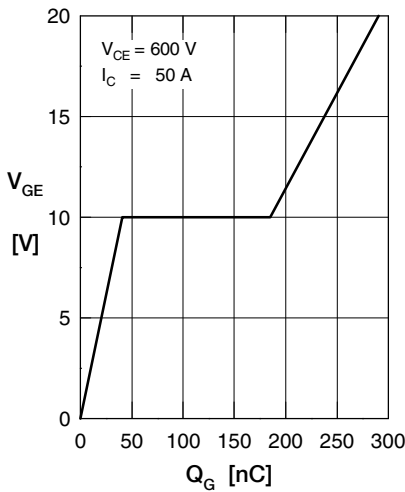


Fig. 4 Typ. turn-on gate charge

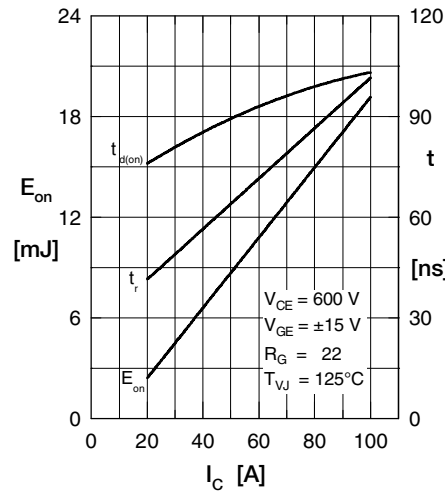


Fig. 5 Typ. turn on energy & switching times versus collector current

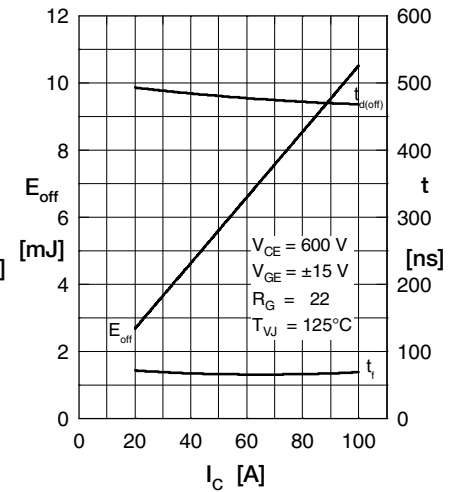


Fig. 6 Typ. turn off energy & switching times versus collector current

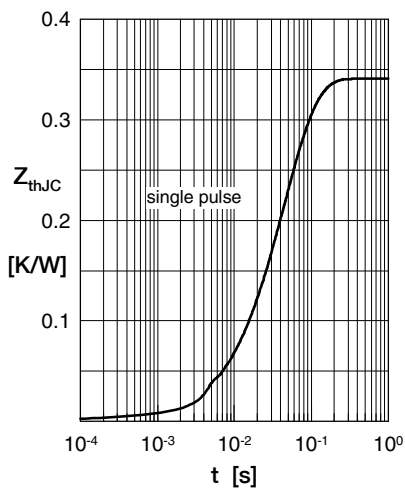


Fig. 12 Typical transient thermal impedance

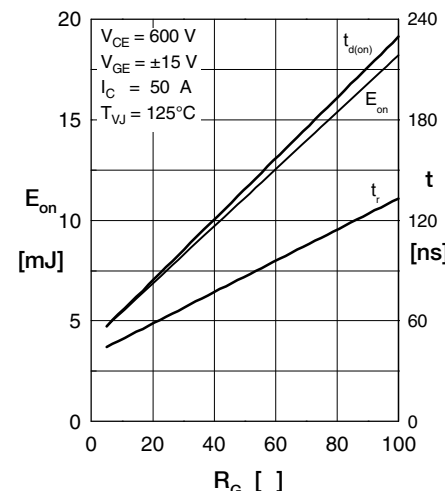


Fig. 9 Typ. turn on energy & switching times versus gate resistor

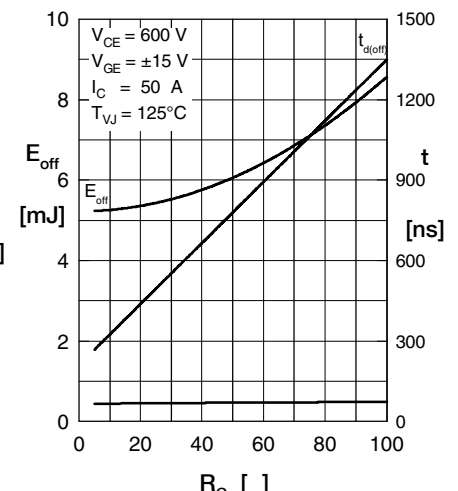


Fig. 9 Typ. turn off energy & switching times versus gate resistor

Buck Diode BD

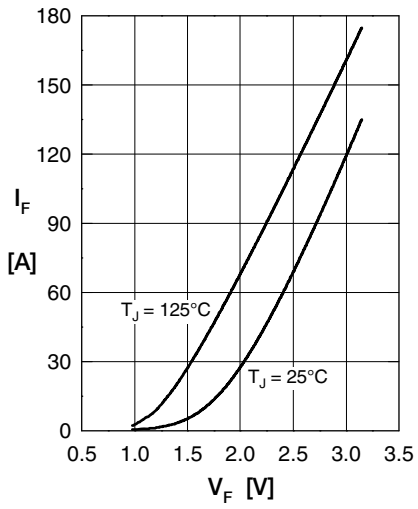


Fig. 1 Typ. Forward current vs. V_F

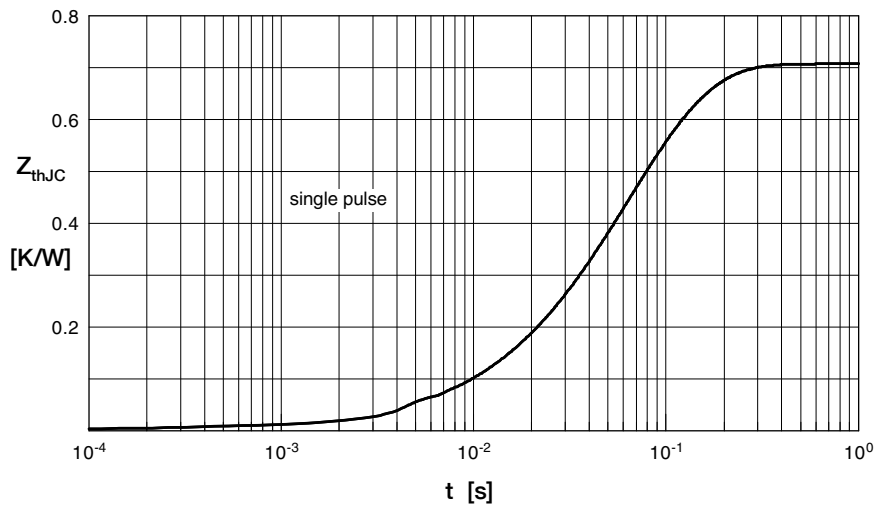


Fig. 2 Typ. transient thermal impedance junction to case