

SPECIFICATION

Device Name : IGBT MODULE

Type Name : 2MBI75U4A-120

Spec. No. : MS5F 6060

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3. Absolute Maximum Ratings (at Tc= 25°C unless otherwise specified)

Items		Symbols	Conditions	Maximum Ratings	Units
Collector-Emitter voltage		V _{CES}		1200	V
Gate-Emitter voltage		V _{GES}		±20	V
Collector current	I _c	Continuous	T _c =25°C	100	A
			T _c =80°C	75	
	I _{cp}	1ms	T _c =25°C	200	
			T _c =80°C	150	
	-I _c			75	
-I _c pulse	1ms		150		
Collector Power Dissipation		P _c	1 device	400	W
Junction temperature		T _j		+150	°C
Storage temperature		T _{stg}		-40 to +125	
Isolation voltage	between terminal and copper base (*1)	Viso	AC : 1min.	2500	VAC
Screw Torque	Mounting (*2) Terminals (*2)	-		3.5	N m

(*1) All terminals should be connected together when isolation test will be done.

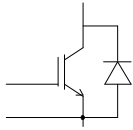
(*2) Recommendable Value : 2.5 to 3.5 Nm (M5)

4. Electrical characteristics (at Tj= 25°C unless otherwise specified)

Items	Symbols	Conditions	Characteristics			Units	
			min.	typ.	max.		
Zero gate voltage collector current	ICES	V _{CE} =1200V V _{GE} =0V	-	-	1.0	mA	
Gate-Emitter leakage current	IGES	V _{CE} =0V V _{GE} =±20V	-	-	200	nA	
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} =20V I _c =75mA	4.5	6.5	8.5	V	
Collector-Emitter saturation voltage	V _{CE(sat)} (terminal)	I _c =75A V _{GE} =15V	T _j =25°C	-	2.05	2.20	V
			T _j =125°C	-	2.25	-	
	V _{CE(sat)} (chip)		T _j =25°C	-	1.90	2.05	
			T _j =125°C	-	2.10	-	
Input capacitance	C _{ies}	V _{CE} =10V, V _{GE} =0V, f=1MHz	-	8	-	nF	
Turn-on time	t _{on}	V _{cc} =600V	-	0.32	1.20	us	
	t _r	I _c =75A	-	0.10	0.60		
	t _{r(i)}	V _{GE} =±15V	-	0.03	-		
Turn-off time	t _{off}	R _G =9.1	-	0.41	1.00	us	
	t _f		-	0.07	0.30		
Forward on voltage	V _F (terminal)	I _F =75A V _{GE} =0V	T _j =25°C	-	1.80	1.95	V
			T _j =125°C	-	1.90	-	
	V _F (chip)		T _j =25°C	-	1.65	1.80	
			T _j =125°C	-	1.75	-	
Reverse recovery time	t _{rr}	I _F =75A	-	-	0.35	us	
Lead resistance, terminal-chip (*3)	R lead		-	1.39	-	m	

(*3) Biggest internal terminal resistance among arm.

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11. Reliability test results

Reliability Test Items

Test categories	Test items	Test methods and conditions	Reference norms EIAJ ED-4701 (Aug
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Test categories	Test items	Reference Standards	Number of sample
Endurance test	1 High temperature Reverse Bias		5
	2 High temperature Bias (for gate)	Method 101	5
	3 Temperature Humidity Bias	Method 102 50°C	5
	4 Intermittent Operating Life (Power cycling) (for IGBT)	ON time OFF time Test duration	

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		method		
		Condition code A		
1	High temperature Reverse Bias	Test Method 101	5	*
2	High temperature Bias (for gate)	Test Method 101	5	0
3	Temperature Humidity Bias	Test Method 102	5	*
		Condition code C		
4	Intermitted Operating Life (Power cycling) (for IGBT)	Test Method 106	5	0

* under confirmation

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Collector current vs. Collector-Emitter voltage (typ.)
 $T_j=25^\circ\text{C}$ / chip

Collector current vs. Collector-Emitter voltage (typ.)
 $T_j=125^\circ\text{C}$ / chip

Collector current vs. Collector-Emitter voltage (typ.)
 $V_{GE}=15\text{V}$ / chip

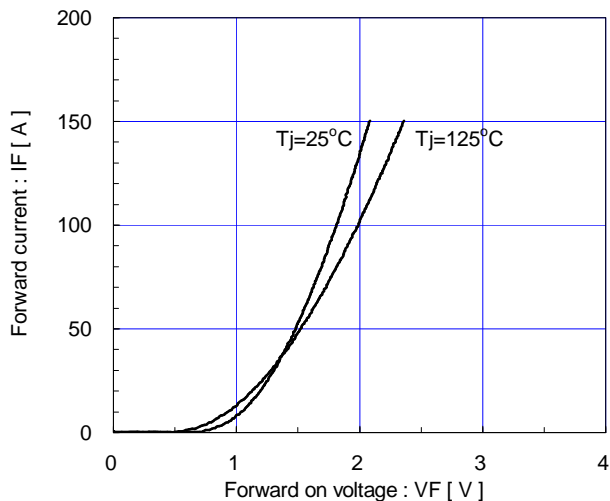
Collector-Emitter voltage vs. Gate-Emitter

Capacitance vs. Collector-Emitter voltage (typ.)
 $V_{GE}=0\text{V}$, $f=1\text{MHz}$, $T_j=25^\circ\text{C}$

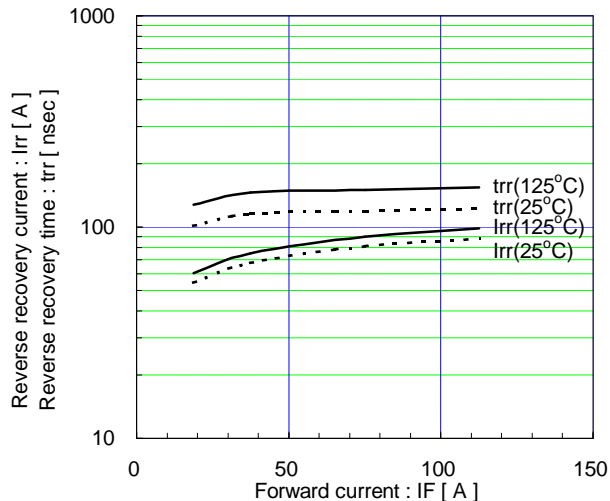
Dynamic Gate charge (typ.)
 $V_{cc}=600\text{V}$, $I_c=75\text{A}$, $T_j=25^\circ\text{C}$

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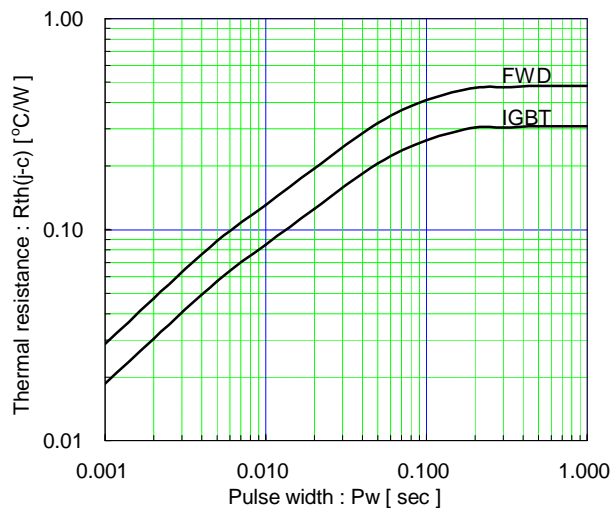
Forward current vs. Forward on voltage (typ.)
chip



Reverse recovery characteristics (typ.)
Vcc=600V, VGE=±15V, RG=9.1



Transient thermal resistance (max.)



Warnings

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- Fuji Electric Device Technology is constantly making every endeavor to improve the product quality and reliability. However, semiconductor products may rarely happen to fail or malfunction. To prevent acci
