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SPECIFICATION

Device Name :

Type Name :

Spe

	DATE	NAME	APPROVED	
DRAWN	- -			Fuji Electric Device Technology Co., Ltd.
CHECKED	- -			
CHECKED	- -			
				DWG.NO.

Revised Records

Date	Classification	Ind.	Content	Applied date	Drawn	Checked	Checked	Approved
	Enactment			Issued date				

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Junction temperature
 Storage temperature
 Isolation voltage @Fb%v
 °C

Zero gate voltage
 collecti8,4D—v

Collector-Emitter
 saturation voltage

Input capacitance

Turn-on time

Turn-off time

1.75 1.90

Forward on voltage

Reverse gate voltage

us

Lead resistance,
 terminal-chip (*4)

R lead

- 0.53 -

(*4) Biggest internal terminal resistance

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5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance(1device)	Rth(j-c)	IGBT FWD	-	-	0.16	°C/W
Contact Thermal resistance (1 device) (*5)	Rth(c-f)	with Thermal Compound	-	0.025	-	

(*5) This is the value which is defined mounting on the additional cooling fin with thermal compound.

6. Indication on module

Logo of production

150A 1200V

Lot.No.

Place of manufacturing (code)

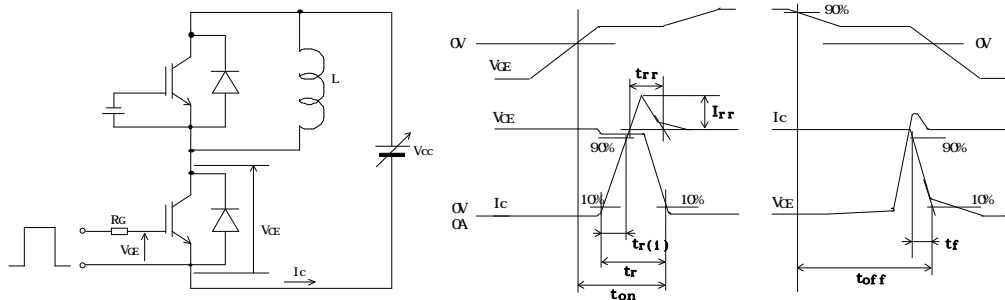
7. Applicable category

This specification is applied to IGBT-Module named 2MBI150U4H-120.

8. Storage and transportation notes

- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
- Avoid exposure to corrosive gases and dust.
- Avoid excessive external force on the module.
- Store modules with unprocessed terminals.
- Do not drop or otherwise shock the modules when transporting.

9. Definitions of switching time



Display on the packing box

- Logo of production
- Type name
- Lot No
- Productsquantity in a pp d

11. Reliability test results

Reliability Test Items

Test categories	Test items	Test methods and conditions	Reference norms EIAJ ED-4701 (Aug.-2001 edition)	Number of sample	Acceptance number
1	Terminal Strength (Pull test)	Pull force : 40N	Test Method 401 Method	5	(0 : 1)
		Test time : 10±1 sec.			
2	Mounting Strength	Screw torque : 2.5 ~ 3.5 N m (M5) 3.5 ~ 4.5 N m (M6)	Test Method 402 method	5	(0 : 1)
		Test time : 10±1 sec.			
3	Vibration	Range of frequency : 10 ~ 500Hz	Test Method 403 Reference 1 Condition code B	5	(0 : 1)
		Sweeping time : 15 min.			
		Acceleration : 100m/s ²			
		Sweeping direction : Each X,Y,Z axis			
4	Shock	Test time : 6 hr. (2hr./direction)	Test Method 404 Condition code B	5	(0 : 1)
		Maximum acceleration : 5000m/s ²			
		Pulse width : 1.0msec.			
		Direction : Each X,Y,Z axis			
1	High Temperature Storage	Storage temp. : 125±5	Test Method 201	5	(0 : 1)
		Test duration : 1000hr.			
2	Low Temperature Storage	Storage temp. : -40±5	Test Method 202	5	(0 : 1)
		Test duration : 1000hr.			
3	Temperature Humidity	Storage temp. : 85±2	Test Method 103 Test code C	5	(0 : 1)
		Relative humidity : 85±5%			
4	Storage	Test duration : 1000hr.			
		Test temp. : 120± 2			

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Reliability Test Items

Test categories	Test items	Test methods and conditions	Reference norms EIAJ ED-4701 (Aug.-2001 edition)	Number of sample	Acceptance number
Endurance	1 High temperature Reverse Bias	Test temp. : $T_a = 125 \pm 5$ ($T_j = 150$) Bias Voltage : $V_C = 0.8 \times V_{CES}$ Bias Method : Applied DC voltage to C-E $V_{GE} = 0V$ Test duration : 1000hr.	Test Method 101	5	(0 : 1)
	2 High temperature Bias (for gate)	Test temp. : $T_a = 125 \pm 5$ ($T_j = 150$) Bias Voltage : $V_C = V_{GE} = +20V$ or $-20V$ Bias Method : Applied DC voltage to G-E $V_{CE} = 0V$ Test duration : 1000hr.	Test Method 101	5	(0 : 1)
	3 Temperature Humidity Bias	Test temp. : 85 ± 2 °C Relative humidity : $85 \pm 5\%$ Bias Voltage : $V_C = 0.8 \times V_{CES}$ Bias Method : Applied DC voltage to C-E $V_{GE} = 0V$ Test duration : 1000hr.	Test Method 102 Condition code C	5	(0 : 1)
	4 Intermittent Operating Life (Power cycle) (for IGBT)	ON time : 2 sec. OFF time : 18 sec. Test temp. : $\Delta T_j = 100 \pm 5$ deg $T_j = 150$, $T_a = 25 \pm 5$ Number of cycles : 15000 cycles	Test Method 106	5	(0 : 1)

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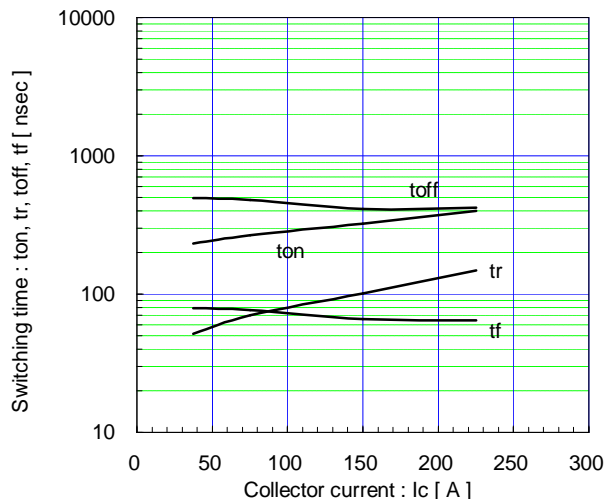
Reliability Test Results

Test categories	Test items	Reference norms	Number of test sample	Number of failure sample
1	Terminal Strength	EIAJ ED-4701 (Aug.-2001 edition)	Testt	

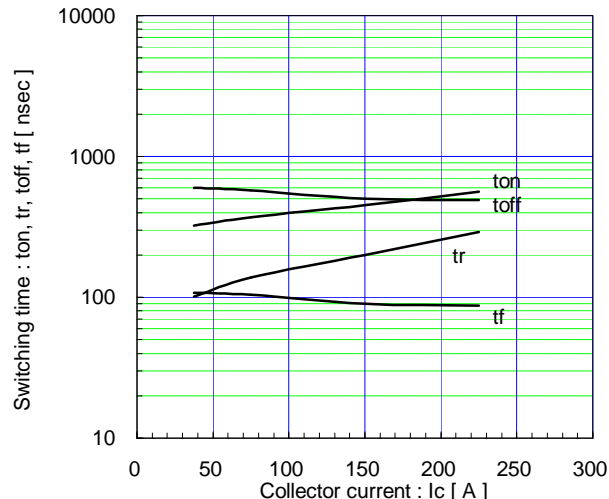
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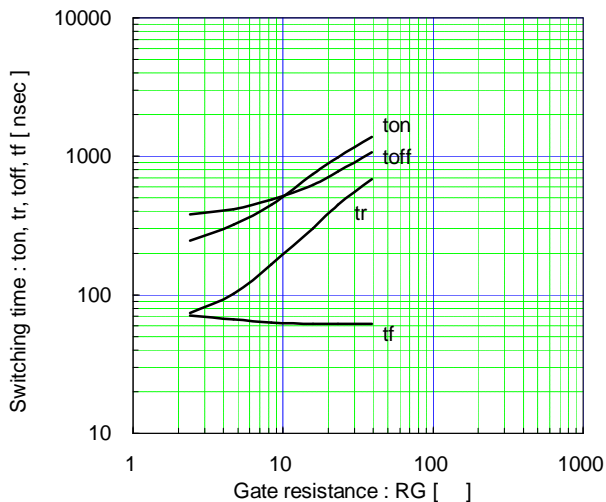
Switching time vs. Collector current (typ.)
 $V_{CC}=600V, V_{GE}=\pm 15V, R_G=4.7, T_j=25^\circ C$



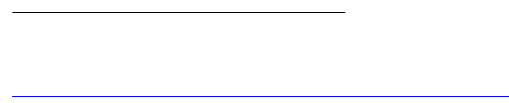
Switching time vs. Collector current (typ.)
 $V_{CC}=600V, V_{GE}=\pm 15V, R_G=4.7, T_j=125^\circ C$



Switching time vs. Gate resistance (typ.)
 $V_{CC}=600V, I_c=150A, V_{GE}=\pm 15V, T_j=25^\circ C$



Switching loss vs. Collector current (typ.)
 $V_{CC}=600V, V_{GE}=\pm 15V, R_G=4.7$



Switching loss vs. Gate resistance (typ.)
 $V_{CC}=600V, I_c=150A, V_{GE}=\pm 15V, T_j=125^\circ C$

Reverse bias safe operating area (max.)
 $+V_{GE}=15V, -V_{GE} \le 15V, R_G \ge 4.7, T_j \le 125^\circ C$

Forward curren

Transient thermal resistance (max.)

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Warnings

- This product shall be used within its absolute maximum rating (voltage, current, and temperature). This product may be broken in case of using beyond the ratings.
- Connect adequate fuse or protector of circuit between three-phase line and this product to prevent the equipment from causing secondary destruction, such as fire, its spreading, or explosion.
- Use this product after realizing enough working on environment and considering of product's reliability life. This product may be broken before target life of the system in case of using beyond the product's reliability life.
- If the product had been used in the environment with acid, organic matter, and corrosive gas (hydrogen sulfide, sulfurous acid gas), the product's performance and appearance can not be ensured easily.
- Use this product within the power cycle curve (Technical Rep.No. : MT5F12959). Power cycle capability is classified to delta-Tj mode which is stated as above and delta-Tc mode. Delta-Tc mode is due to rise and down of case temperature (Tc), and depends on cooling design of equipment which use this product. In application which has such frequent rise and down of temperature, the power cycle capability is limited.

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- Never add any liquid to the product. (Type B)

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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 accidents causing injury or death, damage to property like by fire, and other social damage resulted from a failure or malfunction of the Fuji Electric Device Technology semiconductor products, take some measures to keep safety such as redundant design, spread-fire-preventive design, and malfunction-protective design.

- The application examples described in this specification only explain typical ones that used the Fuji Electric Device Technology products. This specification never ensure to enforce the industrial property and other rights, nor license the enforcement rights.

- The product