

# MBM600E17E

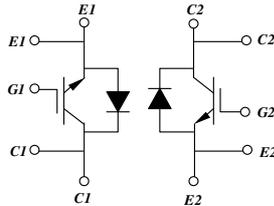
TARGET SPEC.

Silicon N-channel IGBT 1700V E version

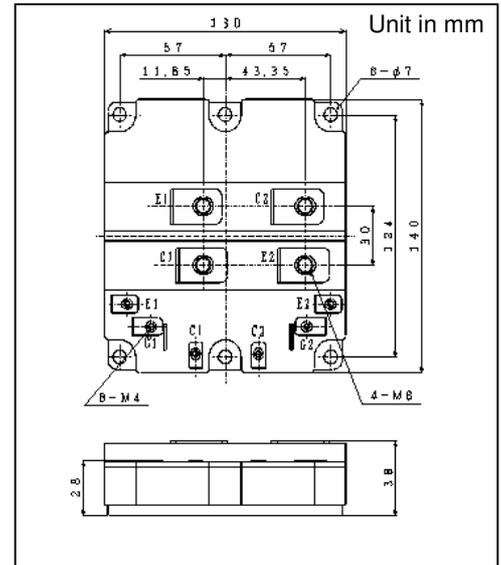
## FEATURES

- \* Soft switching behavior & low conduction loss:  
Soft low-injection punch-through with trench gate IGBT.
- \* Low driving power: Low input capacitance advanced trench gate.
- \* Low noise recovery: Ultra soft fast recovery diode.
- \* High thermal fatigue durability  
:( $\Delta T_c=70K$ ,  $N>30,000$ cycles).
- \* AISiC base-plate/AlN substrate.

## CIRCUIT DIAGRAM



## OUTLINE DRAWING



Weight: 900(g)

## ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C)

Item	Symbol	Unit	MBM600E17E
Collector Emitter Voltage	V <sub>CEs</sub>	V	1,700
Gate Emitter Voltage	V <sub>GES</sub>	V	±20
Collector Current	DC	I <sub>C</sub>	600
	1ms	I <sub>Cp</sub>	1,200
Forward Current	DC	I <sub>F</sub>	600
	1ms	I <sub>FM</sub>	1,200
Junction Temperature	T <sub>j</sub>	°C	-40 ~ +125
Storage Temperature	T <sub>stg</sub>	°C	-40 ~ +125
Isolation Voltage	V <sub>ISO</sub>	V <sub>RMS</sub>	4,000(AC 1 minute)
Screw Torque	Terminals (M4/M8)	-	2/15 (1)
	Mounting (M6)	-	6 (2)

Notes: (1) Recommended Value 1.8±0.2/15<sup>+0.3</sup>-3 N·m (2) Recommended Value 5.5±0.5N·m

## ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector Emitter Cut-Off Current	I <sub>CES</sub>	mA	-	-	5.0	V <sub>CE</sub> =1,700V, V <sub>GE</sub> =0V, T <sub>j</sub> =25°C
			-	5	17	V <sub>CE</sub> =1,700V, V <sub>GE</sub> =0V, T <sub>j</sub> =25°C
Gate Emitter Leakage Current	I <sub>GES</sub>	nA	-	-	±500	V <sub>GE</sub> =±20V, V <sub>CE</sub> =0V, T <sub>j</sub> =25°C
Collector Emitter Saturation Voltage	V <sub>CE(sat)</sub>	V	-	2.2	2.7	I <sub>C</sub> =600A, V <sub>GE</sub> =15V, T <sub>j</sub> =125°C
Gate Emitter Threshold Voltage	V <sub>GE(TO)</sub>	V	5.0	6.5	8.0	V <sub>CE</sub> =10V, I <sub>C</sub> =60mA, T <sub>j</sub> =25°C
Input Capacitance	C <sub>ies</sub>	nF	-	50	-	V <sub>CE</sub> =10V, V <sub>GE</sub> =0V, f=100kHz, T <sub>j</sub> =25°C
Internal Gate Resistance	R <sub>g(int)</sub>	Ω	-	TBD	-	
Switching Times	Rise Time	t <sub>r</sub>	-	TBD	TBD	V <sub>CC</sub> =900V, I <sub>C</sub> =600A, L=100nH, C <sub>GE</sub> =68nF(TBD) (3) R <sub>g</sub> =1.5Ω(TBD) (3) V <sub>GE</sub> =±15V, T <sub>j</sub> =125°C
	Turn On Time	t <sub>on</sub>	-	TBD	TBD	
	Fall Time	t <sub>f</sub>	-	TBD	TBD	
	Turn Off Time	t <sub>off</sub>	-	TBD	TBD	
Peak Forward Voltage Drop	V <sub>FM</sub>	V	-	1.9	2.5	I <sub>F</sub> =600A, V <sub>GE</sub> =0V, T <sub>j</sub> =125°C
Reverse Recovery Time	t <sub>rr</sub>	μs	-	TBD	TBD	V <sub>CC</sub> =900V, I <sub>C</sub> =600A, L=100nH, C <sub>GE</sub> =68nF(TBD) (3)
Turn On Loss	E <sub>on(10%)</sub>	J/P	-	TBD	TBD	R <sub>g</sub> =1.5Ω(TBD) (3)
Turn Off Loss	E <sub>off(10%)</sub>	J/P	-	TBD	TBD	V <sub>GE</sub> =±15V, T <sub>j</sub> =125°C
Reverse Recovery Loss	E <sub>rr(10%)</sub>	J/P	-	TBD	TBD	
Thermal Resistance	IGBT	R <sub>th(j-c)</sub>			0.038	Junction to case
	FWD	R <sub>th(j-c)</sub>			0.060	
Contact Thermal Resistance	R <sub>th(c-f)</sub>	K/W	-	0.016	-	Case to fin (per 1 arm)

Notes: (3) R<sub>g</sub> value is the test condition's value for decision of the switching times, not recommended value. Please, determine the suitable R<sub>g</sub> value after the measurement of switching waveforms (overshoot voltage, etc.)with appliance mounted.

- \* Please contact our representatives at order.
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