MITSUBISHI ELECTRIC

<DIODE Modules>

RM600DY-34S

HIGH POWER SWITCHING USE
INSULATED TYPE

dual pack

Forward current I_{DC} .... **600** A

Repetitive peak reverse voltage V_{RRM} .... **1700** V

Maximum junction temperature T_{vjmax} .... **175** °C

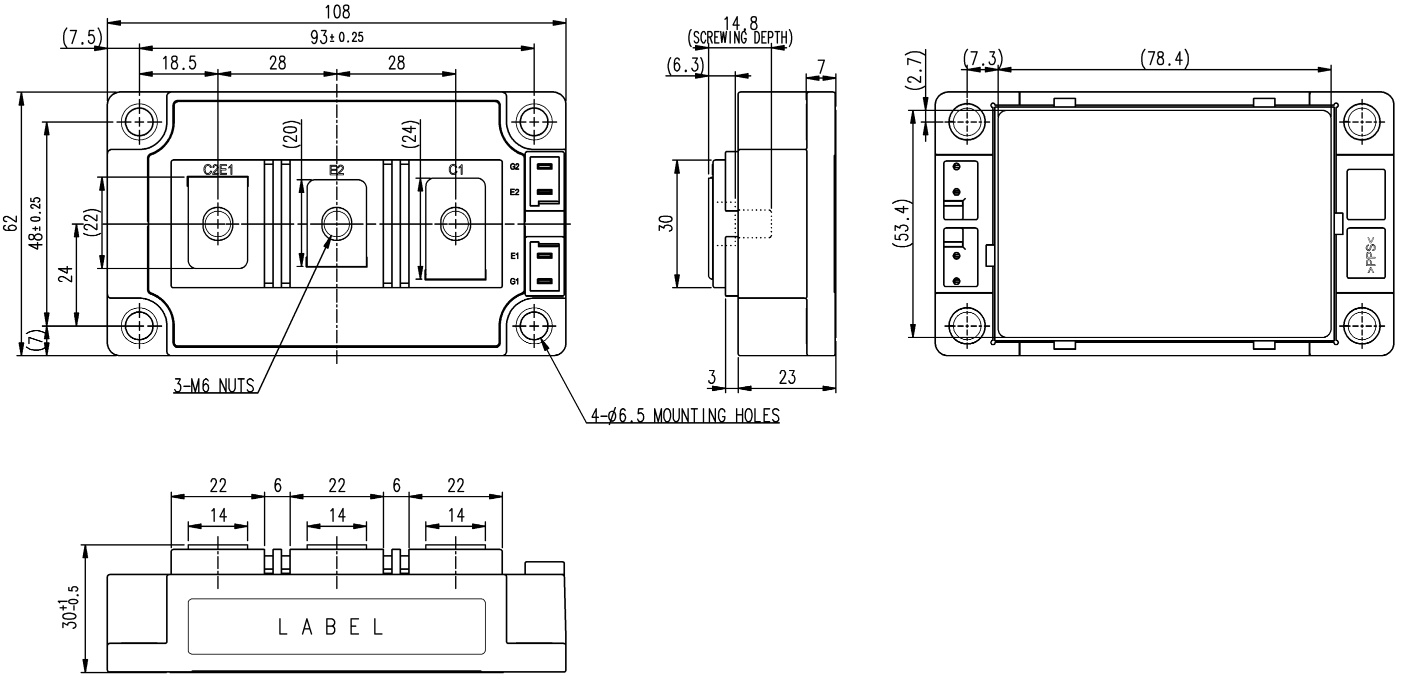
- ●Flat base Type
- ●Copper base plate
- ●RoHS Directive compliant
- ●UL Recognized under UL1557, File No. E323585

APPLICATION

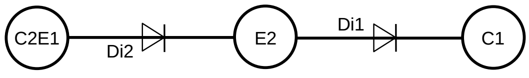
AC Motor Control, Motion/Servo Control, Power supply, Photovoltaic power, Wind power, etc.

OUTLINE DRAWING & INTERNAL CONNECTION

Dimension in mm



INTERNAL CONNECTION



Terminal code

C2E1 : A2
E2 : A1K2
C1 : K1

Tolerance otherwise specified

Division of Dimension		Tolerance
0.5	to 3	±0.2
over 3	to 6	±0.3
over 6	to 30	±0.5
over 30	to 120	±0.8
over 120	to 400	±1.2
over 400	to 1000	±2.0
over 1000	to 2000	±3.0
over 2000	to 4000	±4.0

MAXIMUM RATINGS (T_{vj}=25 °C, unless otherwise specified)

Symbol	Item	Conditions	Rating	Unit
V_{RRM}	Repetitive peak reverse voltage	-	1700	V
V_{RSM}	Non-repetitive peak reverse voltage	-	1700	V
$V_{R(DC)}$	Reverse DC blocking voltage	-	1360	V
I_{DC}	Forward current	DC (Note1)	600	A
I_{FSM}	Surge non-repetitive forward current	1 cycle of half wave at 60 Hz, peak value, T_{vj}=25 °C start, V_{RM}=0 V	3000	A
I^2t	Current square time for fusing	t_w=8.3 ms, T_{vj}=25 °C start, Value for one cycle of surge current	3.5×10^4	A^2s
V_{isol}	Isolation voltage	Terminals to base plate, RMS, f=60 Hz, AC 1 min	4000	V
T_{vjmax}	Maximum junction temperature	Instantaneous event (overload)	175	°C
T_{Cmax}	Maximum case temperature	(Note2)	125	
T_{vjop}	Operating junction temperature	Continuous operation (under switching)	-40 ~ +150	°C
T_{stg}	Storage temperature	-	-40 ~ +125	

ELECTRICAL CHARACTERISTICS (T_{vj}=25 °C, unless otherwise specified)

Symbol	Item	Conditions		Limits			Unit
				Min.	Typ.	Max.	
I_{RRM}	Reverse current	V_R=V_{RRM}, T_{vj}=150 °C		-	-	50	mA
V_F (Terminal)	Forward voltage	I_F=600 A, t_w≦1 ms, Refer to the figure of test circuit	T_{vj}=25 °C	-	2.25	2.75	V
			T_{vj}=125 °C	-	2.35	-	
			T_{vj}=150 °C	-	2.30	-	
V_F (Chip)		I_F=600 A, t_w≦1 ms		-	2.00	2.50	V
t_{rr}	Reverse recovery time	V_{CC}=1000 V, I_F=600 A, -diF/dt=3000 A/μs, Inductive load		-	-	500	ns
Q_{rr}	Reverse recovery charge			-	120	-	μC
E_{rr}	Reverse recovery energy per pulse			-	82	-	mJ

THERMAL RESISTANCE CHARACTERISTICS

Symbol	Item	Conditions	Limits			Unit
			Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal resistance	Junction to case (Note2)	-	-	26	K/kW
$R_{th(c-s)}$	Contact thermal resistance	Case to heat sink, Thermal grease applied (Note2, 4)	-	13.3	-	K/kW

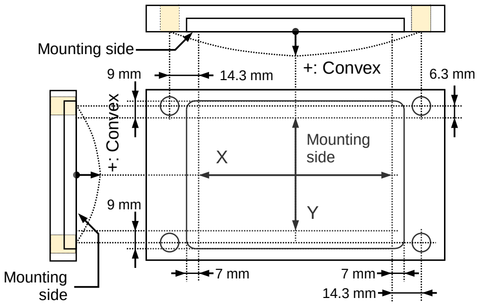
MECHANICAL CHARACTERISTICS

Symbol	Item	Conditions		Limits			Unit
				Min.	Typ.	Max.	
M_t	Mounting torque	Main terminals	M 6 screw	3.5	4.0	4.5	N·m
M_s	Mounting torque	Mounting to heat sink	M 6 screw	3.5	4.0	4.5	N·m
d_s	Creepage distance	Terminal to terminal		-	-	-	mm
		Terminal to base plate		-	-	-	
d_a	Clearance	Terminal to terminal		-	-	-	mm
		Terminal to base plate		-	-	-	
e_c	Flatness of base plate	On the centerline X, Y (Note5)		0	-	+200	μm
m	mass	-		-	260	-	g

*: This product is compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive 2011/65/EU.

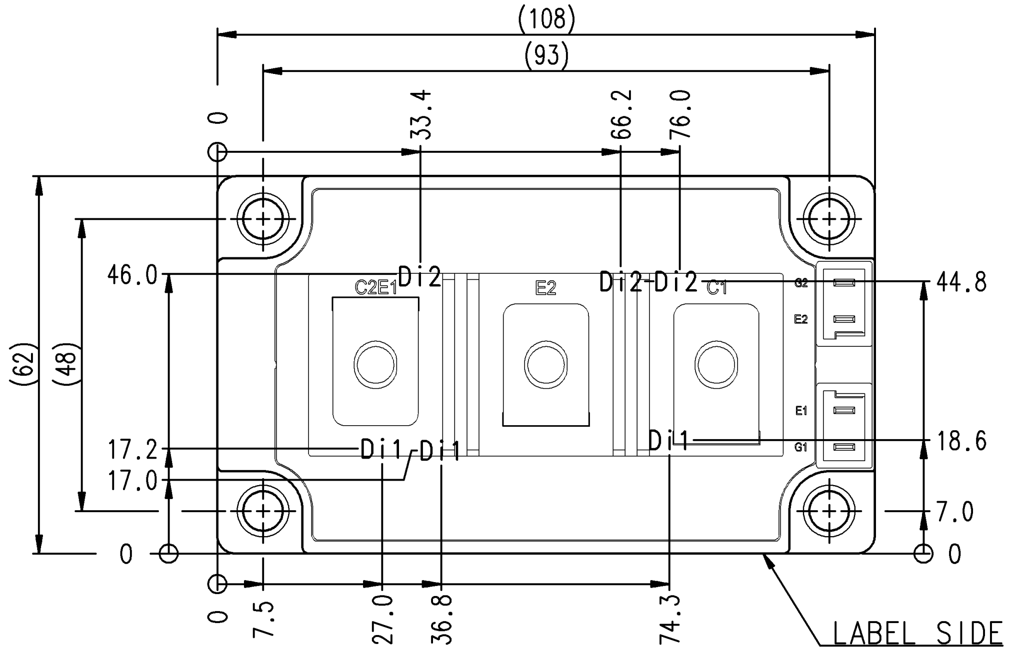
Note1. Junction temperature (T_{vj}) should not exceed T_{vjmax} rating.

2. Case temperature (T_C) and heat sink temperature (T_S) are defined on the each surface (mounting side) of base plate and heat sink just under the chips. Refer to the figure of chip location.
3. Pulse width and repetition rate should be such as to cause negligible temperature rise. Refer to the figure of test circuit.
4. Typical value is measured by using thermally conductive grease of λ=3.0 W/(m·K)/$D_{(C-S)}$=50 μm.
5. The base plate (mounting side) flatness measurement points (X, Y) are shown in the following figure.

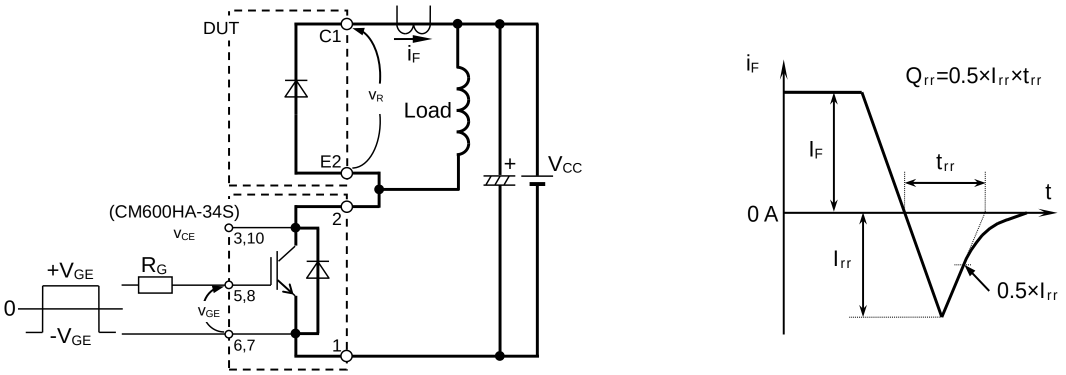


CHIP LOCATION (Top view)

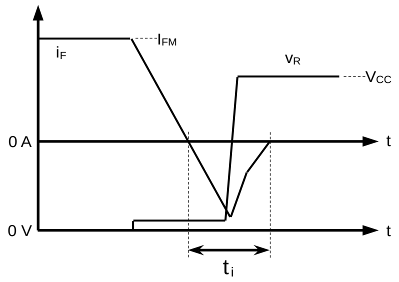
Dimension in mm, tolerance: ±1 mm



TEST CIRCUIT AND WAVEFORMS

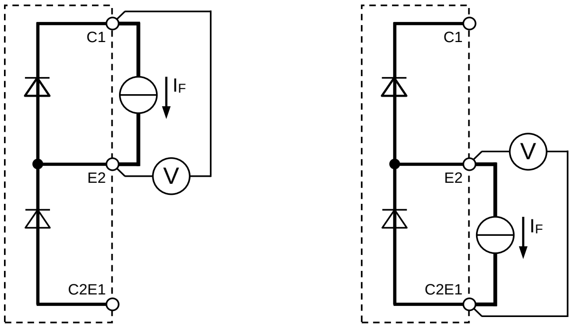


t_{rr}, Q_{rr} characteristics test circuit and waveforms



Reverse recovery energy test waveforms (Integral time instruction drawing)

TEST CIRCUIT



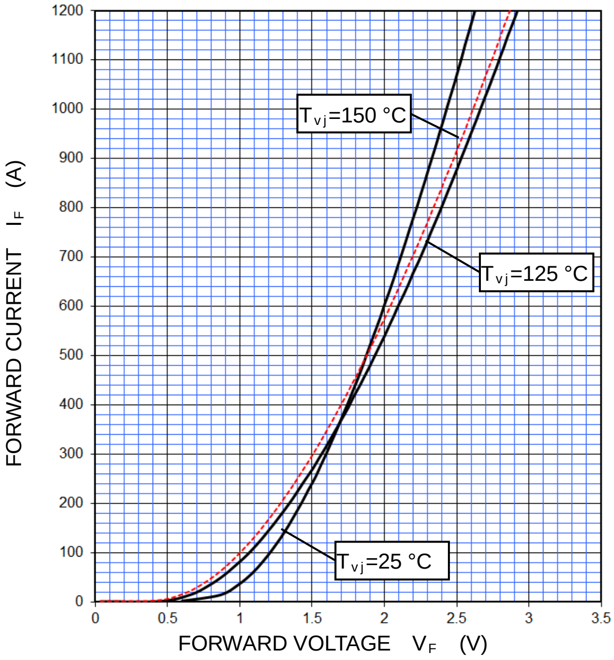
Di1 Di2

V_F characteristics test circuit

PERFORMANCE CURVES

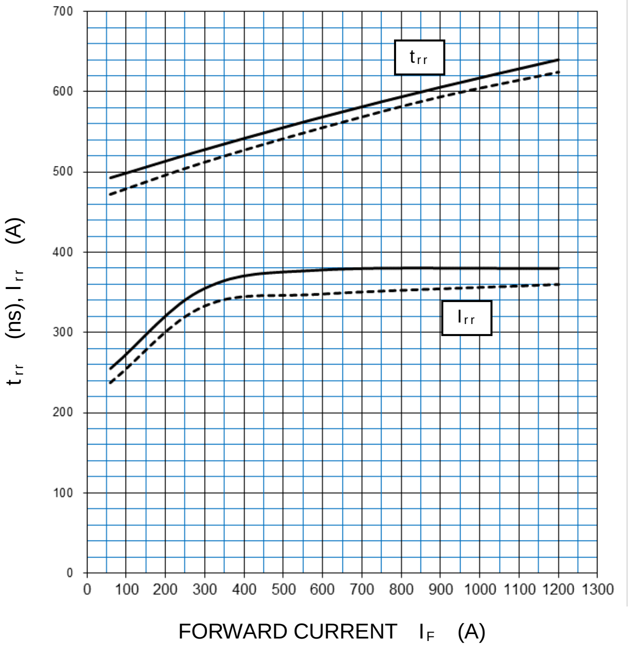
FORWARD CHARACTERISTICS (TYPICAL)

(Chip)



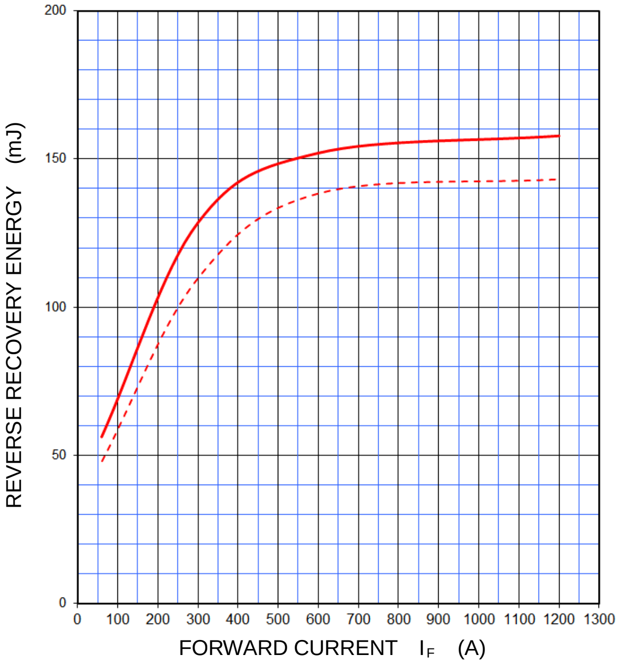
REVERSE RECOVERY CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, V_{GE}=±15 V, R_G=0 Ω,
INDUCTIVE LOAD by using CM600HA-34S
———: T_{vj}=150 °C, - - - - -: T_{vj}=125 °C



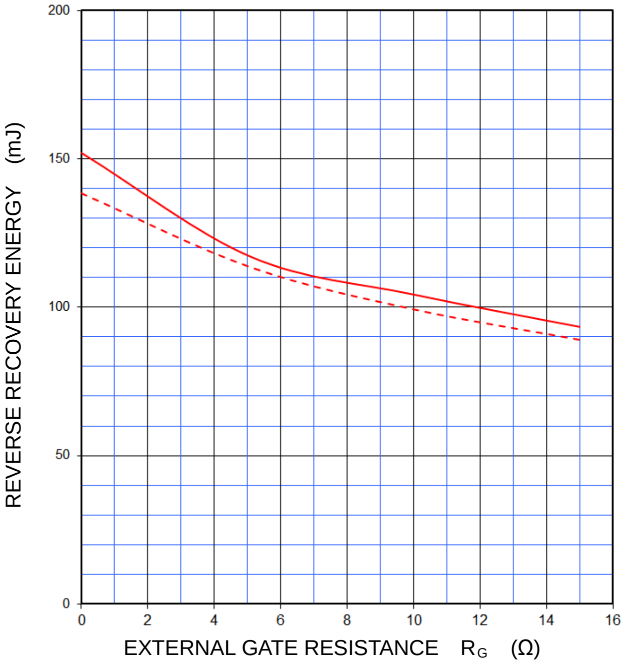
HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

V_{CC}=1000 V, V_{GE}=±15 V, R_G=0 Ω,
INDUCTIVE LOAD by using CM600HA-34S, PER PULSE
———: T_{vj}=150 °C, - - - - -: T_{vj}=125 °C



HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

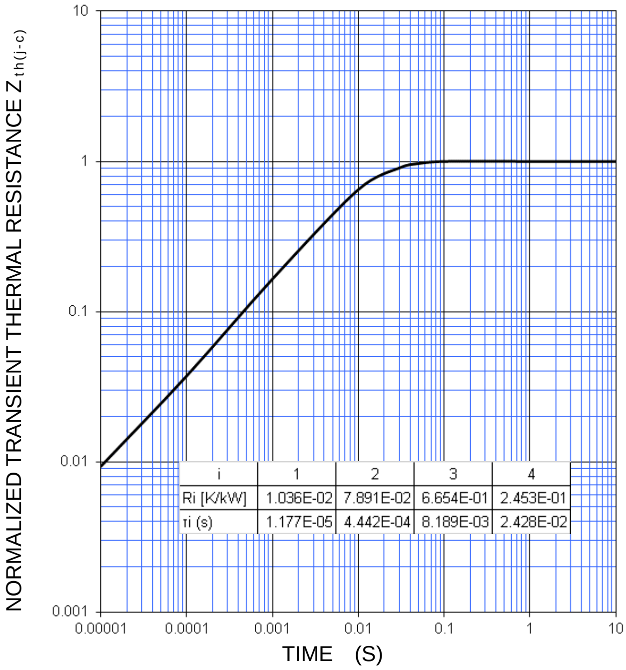
V_{CC}=1000 V, V_{GE}=±15 V, I_F=600 A,
INDUCTIVE LOAD by using CM600HA-34S, PER PULSE
———: T_{vj}=150 °C, - - - - -: T_{vj}=125 °C



PERFORMANCE CURVES

TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (MAXIMUM)

Single pulse, T_C=25 °C
$R_{th(j-c)}$=26 K/kW



i	1	2	3	4
Ri [K/kW]	1.036E-02	7.891E-02	6.654E-01	2.453E-01
τi (s)	1.177E-05	4.442E-04	8.189E-03	2.428E-02

Note: The characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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