

MITSUBISHI TRANSISTOR MODULES

QM600HD-M

HIGH POWER SWITCHING USE
NON-INSULATED TYPE

QM600HD-M



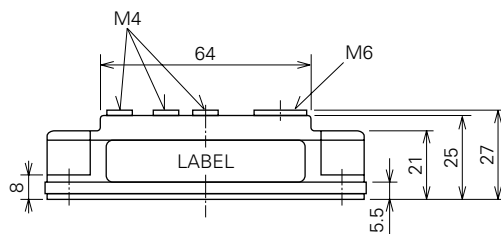
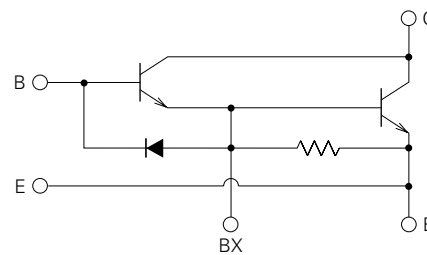
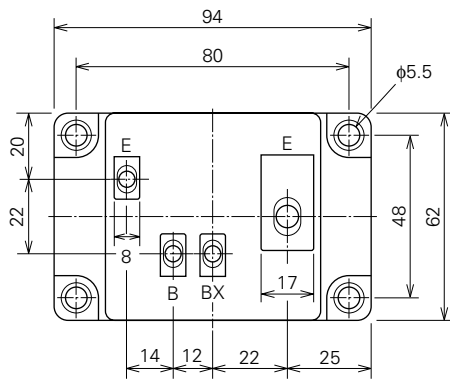
- **I_C** Collector current **600A**
- **V_{CEX}** Collector-emitter voltage **350V**
- **h_{FE}** DC current gain **500**
- **Non-Insulated Type**

APPLICATION

Robotics, Forklifts, Welders

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



Feb.1999

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ABSOLUTE MAXIMUM RATINGS (Tj=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V _{CEX (SUS)}	Collector-emitter voltage	I _c =1A, V _{EB} =2V	350	V
V _{CEX}	Collector-emitter voltage	V _{EB} =2V	350	V
V _{CBO}	Collector-base voltage	Emitter open	400	V
V _{EBO}	Emitter-base voltage	Collector open	10	V
I _c	Collector current	DC	600	A
-I _c	Collector reverse current	DC (forward diode current)	—	A
P _c	Collector dissipation	T _c =25°C	2080	W
I _B	Base current	DC	15	A
-I _{CSM}	Surge collector reverse current (forward diode current)	Peak value of one cycle of 60Hz (half wave)	—	A
T _J	Junction temperature		-40~+150	°C
T _{stg}	Storage temperature		-40~+125	°C
V _{iso}	Isolation voltage	Charged part to case, AC for 1 minute	—	V
—	Mounting torque	Main terminal screw M6	1.96~2.94	N·m
			20~30	kg·cm
		Mounting screw M5	1.47~1.96	N·m
			15~20	kg·cm
		B(E) terminal screw M4	0.98~1.47	N·m
			10~15	kg·cm
BX terminal screw M4	0.98~1.47	N·m		
	10~15	kg·cm		
—	Weight	Typical value	420	g

ELECTRICAL CHARACTERISTICS (Tj=25°C, unless otherwise noted)

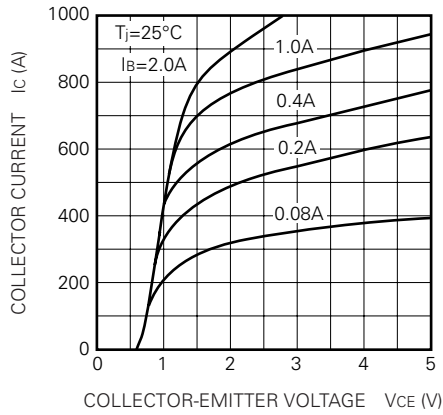
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I _{CEX}	Collector cutoff current	V _{CE} =350V, V _{EB} =2V	—	—	2.0	mA
I _{CBO}	Collector cutoff current	V _{CB} =400V, Emitter open	—	—	2.0	mA
I _{EBO}	Emitter cutoff current	V _{EB} =10V	—	—	800	mA
V _{CE (sat)}	Collector-emitter saturation voltage	I _c =600A, I _B =1.2A	—	—	2.0	V
V _{BE (sat)}	Base-emitter saturation voltage		—	—	2.5	V
-V _{CEO}	Collector-emitter reverse voltage	-I _c =600A (diode forward voltage)	—	—	—	V
h _{FE}	DC current gain	I _c =600A, V _{CE} =2V	500	—	—	—
t _{on}	Switching time	V _{CC} =200V, I _c =600A, I _{B1} =2A, -I _{B2} =4A	—	—	3.0	μs
t _s			—	—	15	μs
t _f			—	—	3.0	μs
R _{th (j-c) Q}	Thermal resistance (junction to case)	Transistor part	—	—	0.06	°C/W
R _{th (j-c) R}		Diode part	—	—	—	°C/W
R _{th (c-f)}	Contact thermal resistance (case to fin)	Conductive grease applied	—	—	0.05	°C/W

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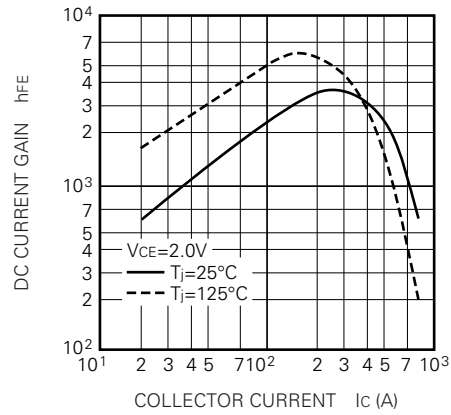
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PERFORMANCE CURVES

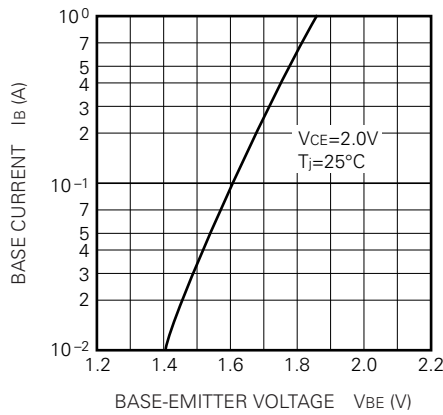
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



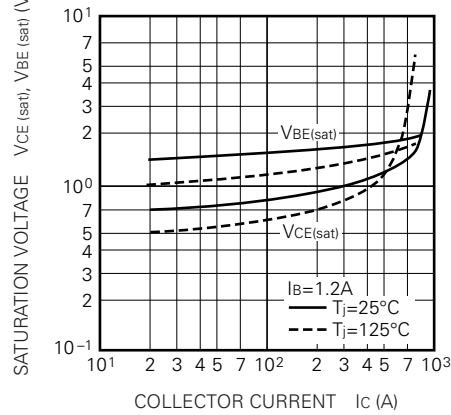
DC CURRENT GAIN VS. COLLECTOR CURRENT (TYPICAL)



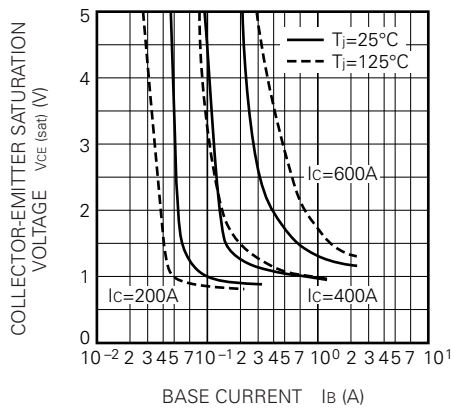
COMMON EMITTER INPUT CHARACTERISTIC (TYPICAL)



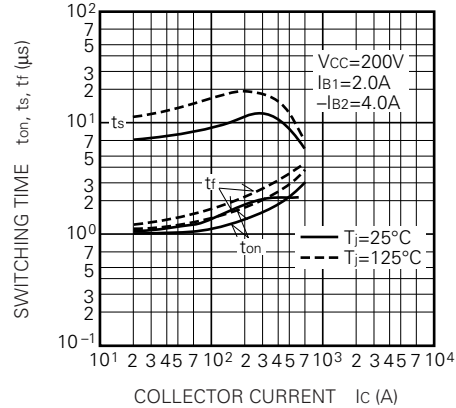
SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



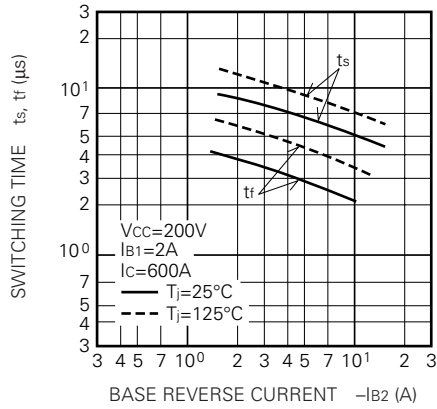
SWITCHING TIME VS. COLLECTOR CURRENT (TYPICAL)



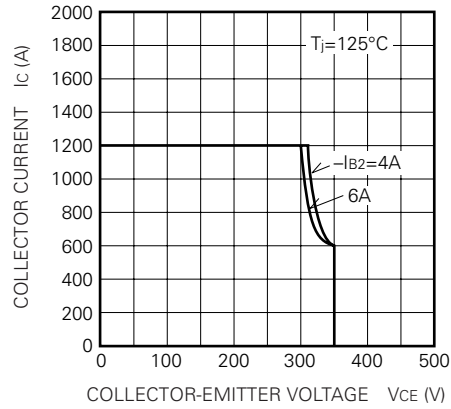
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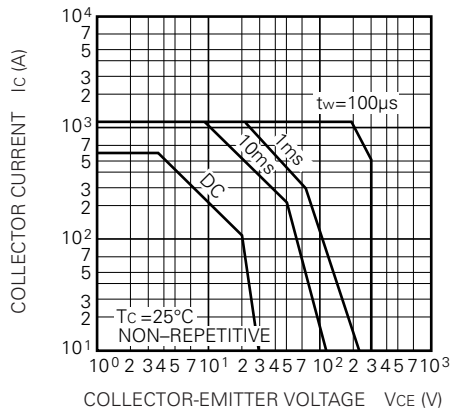
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



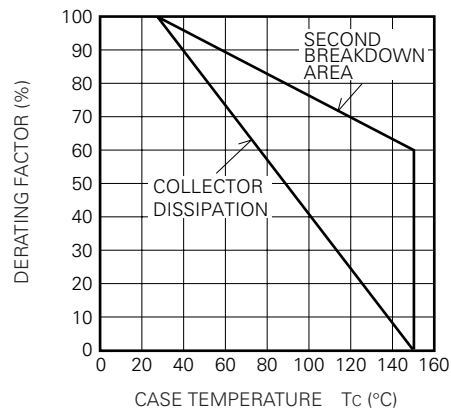
REVERSE BIAS SAFE OPERATING AREA



FORWARD BIAS SAFE OPERATING AREA



DERATING FACTOR OF F. B. S. O. A.



TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC (TRANSISTOR)

