MITSUBISHI TRANSISTOR MODULES

QM50DY-H

MEDIUM POWER SWITCHING USE
INSULATED TYPE

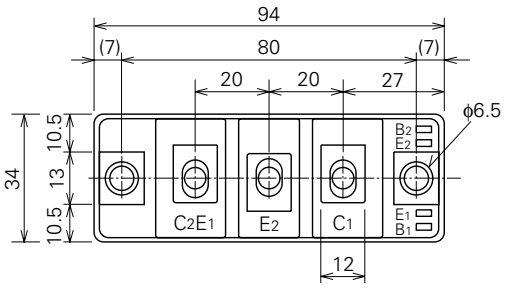
QM50DY-H

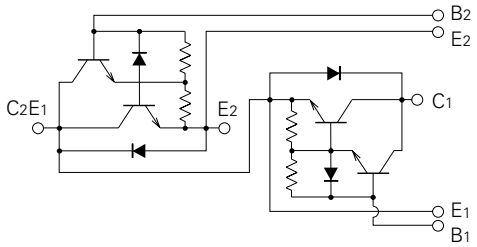
- **I_C** Collector current **50A**
- **V_{CEX}** Collector-emitter voltage **600V**
- **h_{FE}** DC current gain **75**
- **Insulated Type**
- **UL Recognized**
  Yellow Card No. E80276 (N)
  File No. E80271

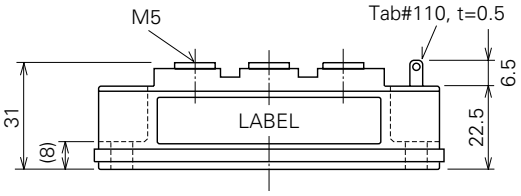
APPLICATION

AC motor controllers, UPS, DC motor controllers, NC equipment, Welders

OUTLINE DRAWING & CIRCUIT DIAGRAM Dimensions in mm







MITSUBISHI ELECTRIC

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	600	V
V_{CEX}	Collector-emitter voltage	V_{EB}=2V	600	V
V_{CBO}	Collector-base voltage	Emitter open	600	V
V_{EBO}	Emitter-base voltage	Collector open	7	V
I_C	Collector current	DC	50	A
$-I_C$	Collector reverse current	DC (forward diode current)	50	A
P_C	Collector dissipation	T_C=25°C	310	W
I_B	Base current	DC	3	A
$-I_{CSM}$	Surge collector reverse current (forward diode current)	Peak value of one cycle of 60Hz (half wave)	500	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	2500	V
—	Mounting torque	Main terminal screw M5	1.47~1.96	N·m
			15~20	kg·cm
		Mounting screw M6	1.96~2.94	N·m
			20~30	kg·cm
—	Weight	Typical value	210	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}=600V, V_{EB}=2V	—	—	1.0	mA
I_{CBO}	Collector cutoff current	V_{CB}=600V, Emitter open	—	—	1.0	mA
I_{EBO}	Emitter cutoff current	V_{EB}=7V	—	—	200	mA
$V_{CE (sat)}$	Collector-emitter saturation voltage	I_C=50A, I_B=0.65A	—	—	2.0	V
$V_{BE (sat)}$	Base-emitter saturation voltage		—	—	2.5	V
$-V_{CEO}$	Collector-emitter reverse voltage	$-I_C$=50A (diode forward voltage)	—	—	1.75	V
h_{FE}	DC current gain	I_C=50A, V_{CE}=2V/5V	75/100	—	—	—
t_{on}	Switching time	V_{CC}=300V, I_C=50A, I_{B1}=$-I_{B2}$=1A	—	—	1.5	μs
t_s			—	—	12	μs
t_f			—	—	3.0	μs
$R_{th (j-c) Q}$	Thermal resistance (junction to case)	Transistor part (per 1/2 module)	—	—	0.4	°C/W
$R_{th (j-c) R}$		Diode part (per 1/2 module)	—	—	1.3	°C/W
$R_{th (c-f)}$	Contact thermal resistance (case to fin)	Conductive grease applied (per 1/2 module)	—	—	0.15	°C/W