

# QM75DY-2HB

HIGH POWER SWITCHING USE  
INSULATED TYPE

QM75DY-2HB



- **IC** Collector current ..... **75A**
- **VCEX** Collector-emitter voltage ..... **1000V**
- **hFE** DC current gain ..... **750**
- **Insulated Type**
- **UL Recognized**

Yellow Card No. E80276 (N)

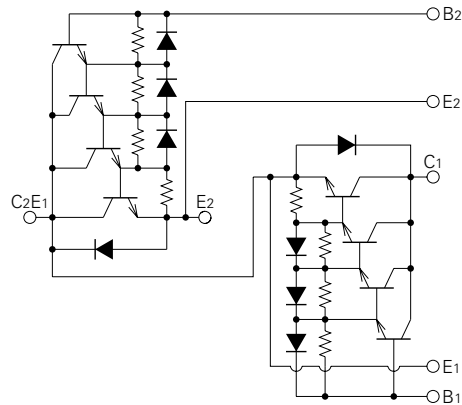
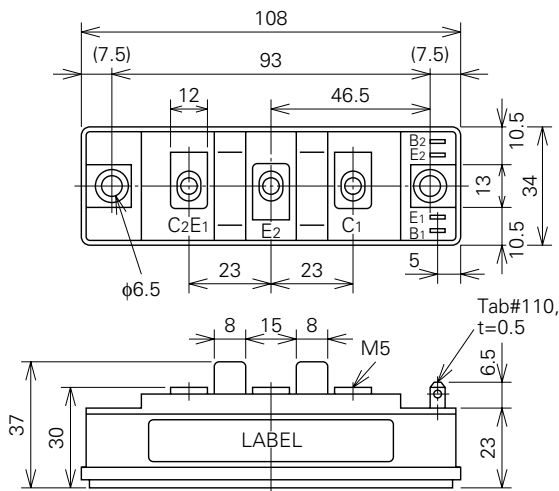
File No. E80271

## APPLICATION

Inverters, Servo drives, UPS, DC motor controllers, NC equipment, Welders

## OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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

| Symbol     | Parameter   | Conditions                                  | Ratings   | Unit  |
|------------|---|---|-----------|-------|
| VCEX (SUS) | Collector-emitter voltage                               | IC=1A, VEB=2V                               | 1000      | V     |
| VCEX       | Collector-emitter voltage                               | VEB=2V                                      | 1000      | V     |
| VCBO       | Collector-base voltage                                  | Emitter open                                | 1000      | V     |
| VEBO       | Emitter-base voltage                                    | Collector open                              | 7         | V     |
| IC         | Collector current                                       | DC  | 75        | A     |
| -IC        | Collector reverse current                               | DC (forward diode current)                  | 75        | A     |
| PC         | Collector dissipation                                   | Tc=25°C                                     | 500       | W     |
| IB         | Base current  | DC  | 4         | A     |
| -ICSM      | Surge collector reverse current (forward diode current) | Peak value of one cycle of 60Hz (half wave) | 750       | A     |
| Tj         | Junction temperature                                    |   | -40~+150  | °C    |
| Tstg       | Storage temperature                                     |   | -40~+125  | °C    |
| Viso       | 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                               | 250       | g     |

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

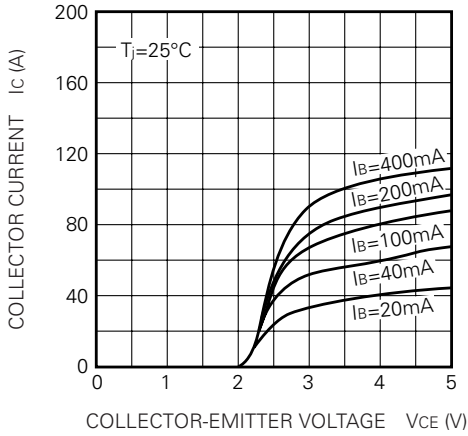
| Symbol      | Parameter                                | Test conditions                            | Limits |      |      | Unit |
|-------------|--|--|--------|------|------|------|
|             |  |  | Min.   | Typ. | Max. |      |
| ICEX        | Collector cutoff current                 | VCE=1000V, VEB=2V                          | —      | —    | 2.0  | mA   |
| ICBO        | Collector cutoff current                 | VCB=1000V, Emitter open                    | —      | —    | 2.0  | mA   |
| IEBO        | Emitter cutoff current                   | VEB=7V                                     | —      | —    | 50   | mA   |
| VCE (sat)   | Collector-emitter saturation voltage     | IC=75A, IB=100mA                           | —      | —    | 4.0  | V    |
| VBE (sat)   | Base-emitter saturation voltage          |  | —      | —    | 4.0  | V    |
| -VCEO       | Collector-emitter reverse voltage        | -IC=75A (diode forward voltage)            | —      | —    | 1.8  | V    |
| hFE         | DC current gain                          | IC=75A, VCE=4V                             | 750    | —    | —    | —    |
| ton         | Switching time                           | VCC=600V, IC=75A, IB1=150mA, IB2=-1.5A     | —      | —    | 2.5  | μs   |
| ts          |  |  | —      | —    | 15   | μs   |
| tf          |  |  | —      | —    | 3.0  | μs   |
| Rth (j-c) Q | Thermal resistance (junction to case)    | Transistor part (per 1/2 module)           | —      | —    | 0.25 | °C/W |
| Rth (j-c) R |  | Diode part (per 1/2 module)                | —      | —    | 1.2  | °C/W |
| Rth (c-f)   | Contact thermal resistance (case to fin) | Conductive grease applied (per 1/2 module) | —      | —    | 0.13 | °C/W |

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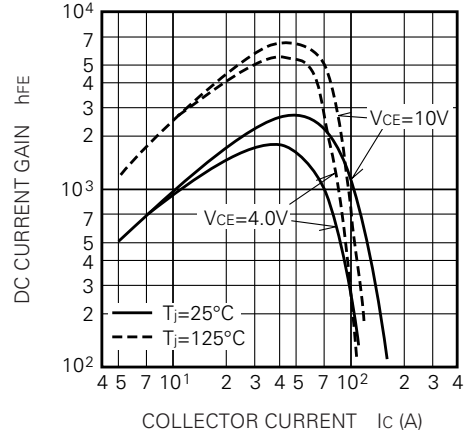
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INSULATED TYPE

## PERFORMANCE CURVES

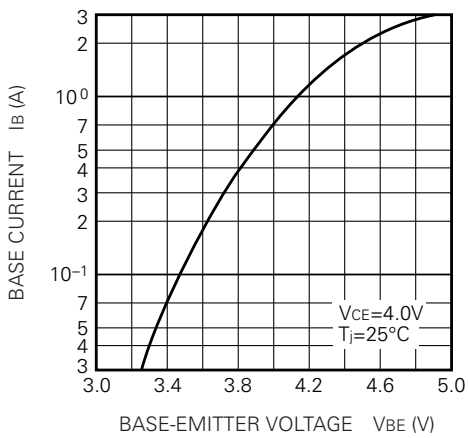
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



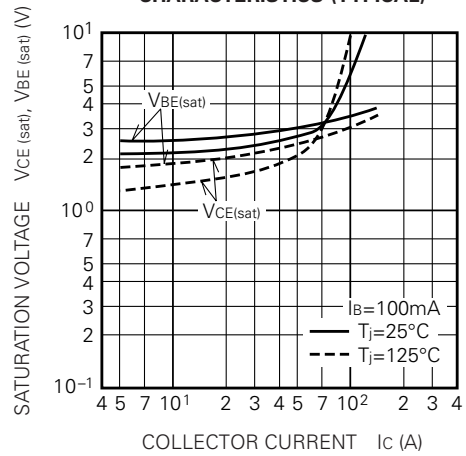
**DC CURRENT GAIN VS. COLLECTOR CURRENT (TYPICAL)**



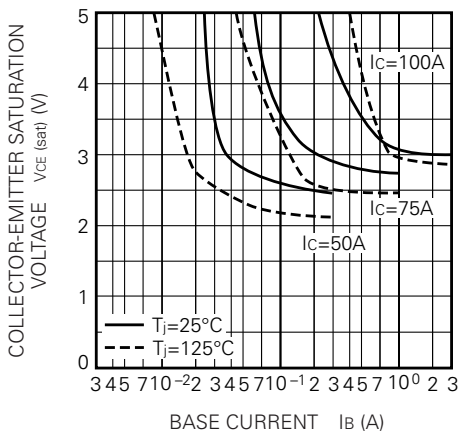
**COMMON EMITTER INPUT CHARACTERISTIC (TYPICAL)**



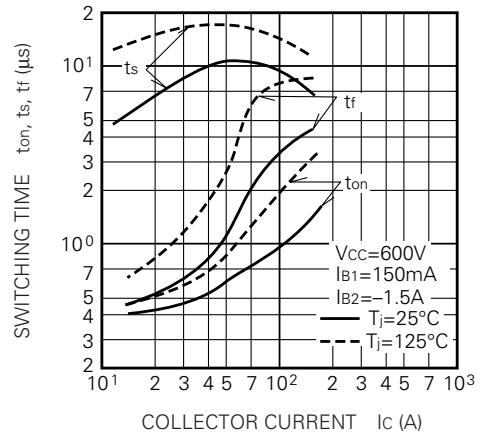
**SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)**



**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



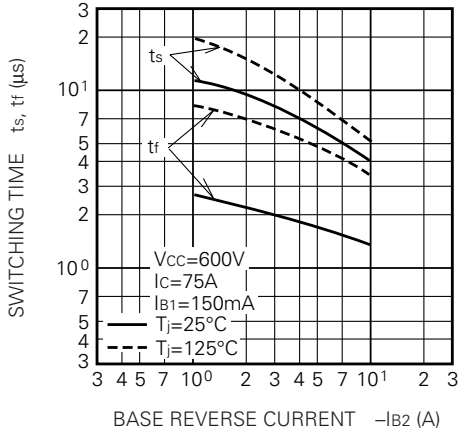
**SWITCHING TIME VS. COLLECTOR CURRENT (TYPICAL)**



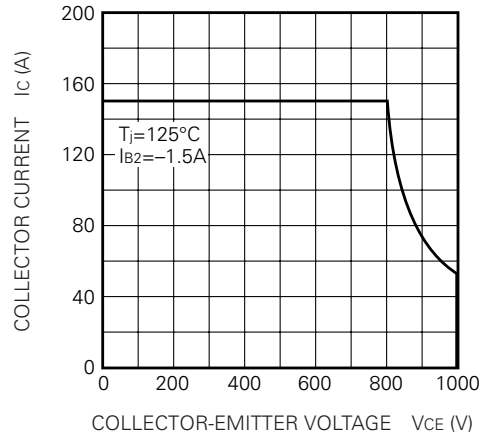
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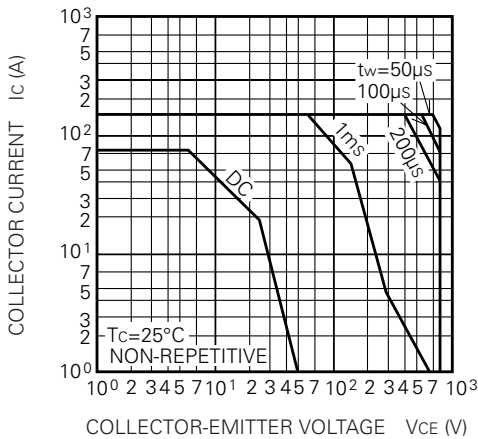
**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



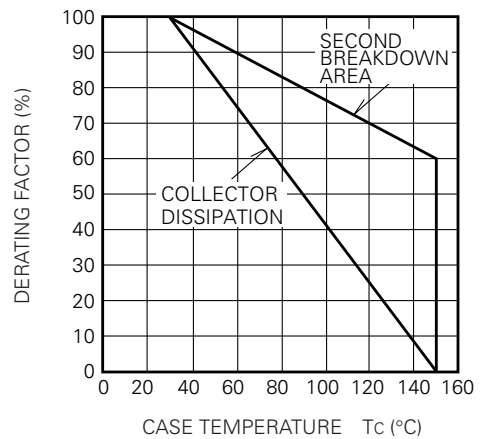
**REVERSE BIAS SAFE OPERATING AREA**



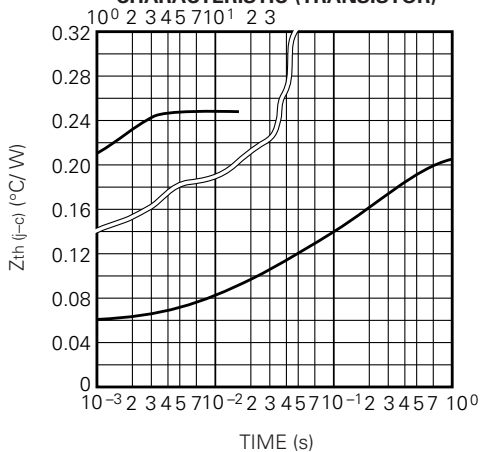
**FORWARD BIAS SAFE OPERATING AREA**



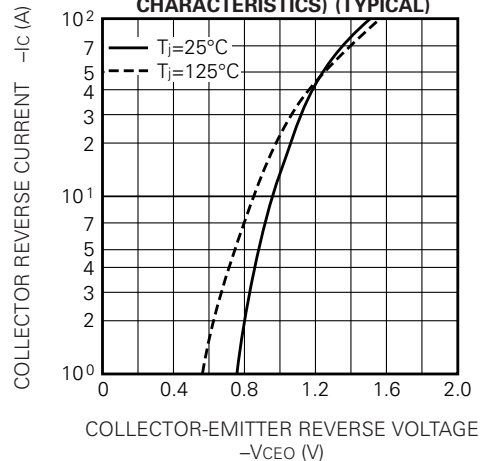
**DERATING FACTOR OF F. B. S. O. A.**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC (TRANSISTOR)**



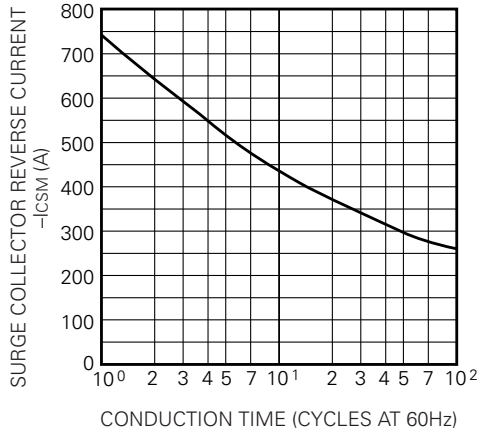
**REVERSE COLLECTOR CURRENT VS. COLLECTOR-EMITTER REVERSE VOLTAGE (DIODE FORWARD CHARACTERISTICS) (TYPICAL)**



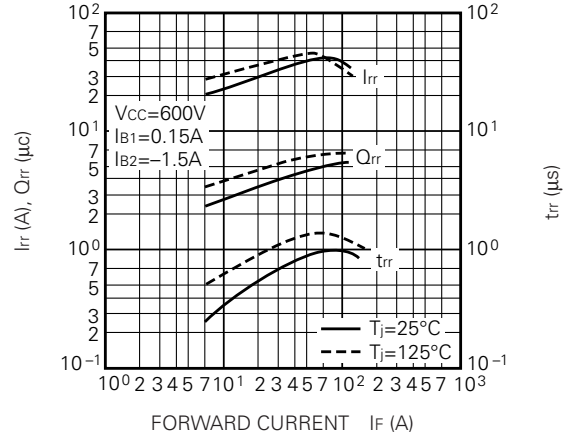
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HIGH POWER SWITCHING USE  
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**RATED SURGE COLLECTOR REVERSE CURRENT  
(DIODE FORWARD SURGE CURRENT)**



**REVERSE RECOVERY CHARACTERISTICS  
OF FREE-WHEEL DIODE (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE  
CHARACTERISTIC (DIODE)**

