CM150DY-24A

- IC: 150A
- VCES: 1200V
- Insulated Type
- 2-elements in a pack

APPLICATION
AC drive inverters & Servo controls, etc

OUTLINE DRAWING & CIRCUIT DIAGRAM
Dimensions in mm
### ELECTRICAL CHARACTERISTICS (Tj = 25°C)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Test conditions</th>
<th>Limits Min.</th>
<th>Limits Typ.</th>
<th>Limits Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICES</td>
<td>Collector cutoff current</td>
<td>VCE = VCES, VGE = 0V</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>mA</td>
</tr>
<tr>
<td>VGE(th)</td>
<td>Gate-emitter threshold voltage</td>
<td>IC = 15mA, VCE = 10V</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>V</td>
</tr>
<tr>
<td>IGE</td>
<td>Gate leakage current</td>
<td>VGE = VGES, VCE = 0V</td>
<td>—</td>
<td>—</td>
<td>0.5</td>
<td>μA</td>
</tr>
<tr>
<td>VCES(sat)</td>
<td>Collector-emitter saturation voltage</td>
<td>Tj = 25°C, IC = 150A, VGE = 15V</td>
<td>—</td>
<td>2.1</td>
<td>3.0</td>
<td>V</td>
</tr>
<tr>
<td>Tj</td>
<td>Junction temperature</td>
<td>—</td>
<td>—</td>
<td>23</td>
<td>nF</td>
<td></td>
</tr>
<tr>
<td>Tstg</td>
<td>Storage temperature</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>nF</td>
<td></td>
</tr>
<tr>
<td>Viso</td>
<td>Isolation voltage</td>
<td>—</td>
<td>—</td>
<td>4.5</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Torque strength</td>
<td>Main terminal to base plate, AC 1 min.</td>
<td>—</td>
<td>—</td>
<td>4.5</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>—</td>
<td>—</td>
<td>310</td>
<td>g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1: Tc, Tf measured point is just under the chips.
*2: Typical value is measured by using Shin-etsu Silicone “G-746”.

Note 1. IC, ICE, tr & Qr represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).
2. Pulse width and repetition rate should be such that the device junction temp. (Tj) does not exceed Tjmax rating.
3. Junction temperature (Tj) should not increase beyond 150°C.
MITSUBISHI IGBT MODULES
CM150DY-24A
HIGH POWER SWITCHING USE

PERFORMANCE CURVES

OUTPUT CHARACTERISTICS (TYPICAL)

COLLECTOR CURRENT Ic (A)

COLLECTOR-EMITTER VOLTAGE Vce (V)

COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)

GATE-EMITTER VOLTAGE Vge (V)

FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)

EMITTER-COLLECTOR VOLTAGE Vec (V)

CAPACITANCE-Vce CHARACTERISTICS (TYPICAL)

CAPACITANCE Cies, Coes, Crees (nF)

COLLECTOR-EMITTER VOLTAGE Vce (V)

HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

SWITCHING TIME (ns)

COLLECTOR CURRENT Ic (A)

Conditions:
Vcc = 600V
Vge = ±15V
Rg = 2.1Ω
Tj = 125°C
Inductive load
REVERSE RECOVERY CHARACTERISTICS
OF FREE-WHEEL DIODE
(TYPICAL)

EMITTER CURRENT \( I_E \) (A)

REVERSE RECOVERY TIME \( t_{rr} \) (ns)

REVERSE RECOVERY CURRENT \( I_{rr} \) (A)

Conditions:
- \( V_{CC} = 600V \)
- \( V_{GE} = \pm 15V \)
- \( R_G = 2.1 \Omega \)
- \( T_j = 25^\circ C \)
- Inductive load

TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS
(IGBT part & FWDi part)

NORMALIZED TRANSIENT THERMAL IMPEDANCE \( Z_{th} (j-c') \) (ratio)

TIME (s)

SWITCHING LOSS vs.
COLLECTOR CURRENT
(TYPICAL)

SWITCHING LOSS \( E_{sw} \) (mJ/pulse)

COLLECTOR CURRENT \( I_C \) (A)

Conditions:
- \( V_{CC} = 600V \)
- \( V_{GE} = \pm 15V \)
- \( R_G = 2.1 \Omega \)
- \( T_j = 25^\circ C \)
- Inductive load
- C snubber at bus

SWITCHING LOSS vs.
GATE RESISTANCE
(TYPICAL)

SWITCHING LOSS \( E_{sw} \) (mJ/pulse)

GATE RESISTANCE \( R_G \) (\( \Omega \))

Conditions:
- \( V_{CC} = 600V \)
- \( V_{GE} = \pm 15V \)
- \( I_C = 150A \)
- \( T_j = 125^\circ C \)
- Inductive load
- C snubber at bus
MITSUBISHI IGBT MODULES
CM150DY-24A
HIGH POWER SWITCHING USE

GATE CHARGE CHARACTERISTICS (TYPICAL)

GATE-EMITTER VOLTAGE \( V_{GE} \) (V)

GATE CHARGE \( Q_{G} \) (nC)

\( V_{CC} = 600V \)
\( V_{CC} = 400V \)
\( IC = 150A \)