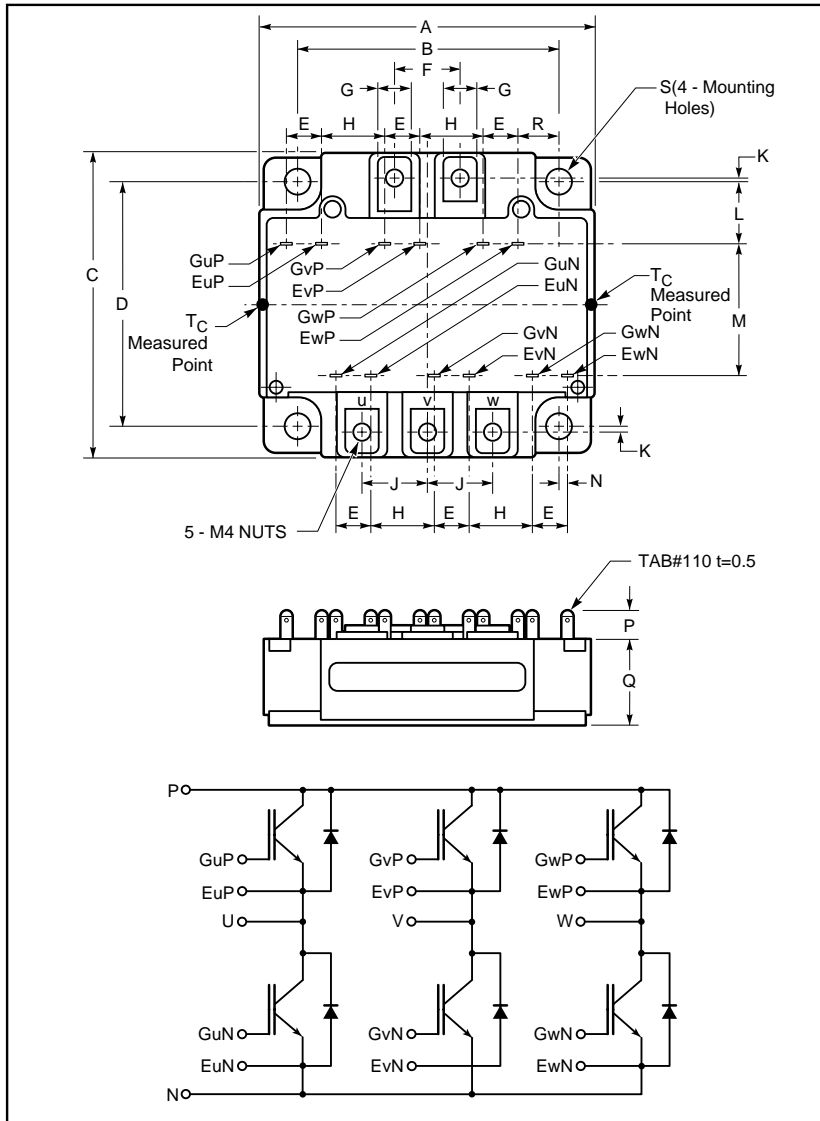


# CM75TU-12H

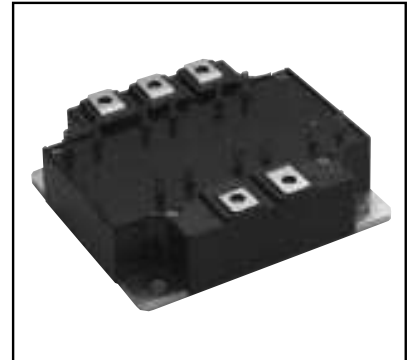
HIGH POWER SWITCHING USE  
INSULATED TYPE



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.02	102.0
B	3.15±0.01	80.0±0.25
C	3.58	91.0
D	2.91±0.01	74.0±0.25
E	0.43	11.0
F	0.79	20.0
G	0.39	10.0
H	0.75	19.1
J	0.79	20.0

Dimensions	Inches	Millimeters
K	0.05	1.25
L	0.74	18.7
M	1.55	39.3
N	0.12	3.05
P	0.32	8.1
Q	1.02	26.0
R	0.47	11.85
S	0.22 Dia.	5.5 Dia.



**Description:**

Mitsubishi IGBT Modules are designed for use in switching applications. Each module consists of six IGBTs in a three phase bridge configuration, with each transistor having a reverse-connected super-fast recovery free-wheel diode. All components and interconnects are isolated from the heat sinking baseplate, offering simplified system assembly and thermal management.

**Features:**

- Low Drive Power
- Low  $V_{CE(sat)}$
- Discrete Super-Fast Recovery Free-Wheel Diode
- High Frequency Operation
- Isolated Baseplate for Easy Heat Sinking

**Applications:**

- AC Motor Control
- Motion/Servo Control
- UPS
- Welding Power Supplies

**Ordering Information:**

Example: Select the complete module number you desire from the table - i.e. CM75TU-12H is a 600V ( $V_{CES}$ ), 75 Ampere Six-IGBT Module.

Type	Current Rating Amperes	$V_{CES}$ Volts (x 50)
CM	75	12

# CM75TU-12H

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## Absolute Maximum Ratings, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	CM75TU-12H	Units
Junction Temperature	$T_j$	-40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{\text{stg}}$	-40 to 125	$^\circ\text{C}$
Collector-Emitter Voltage (G-E SHORT)	$V_{\text{CES}}$	600	Volts
Gate-Emitter Voltage (C-E SHORT)	$V_{\text{GES}}$	$\pm 20$	Volts
Collector Current ( $T_c = 25\text{ }^\circ\text{C}$ )	$I_C$	75	Amperes
Peak Collector Current ( $T_j \leq 150\text{ }^\circ\text{C}$ )	$I_{\text{CM}}$	150*	Amperes
Emitter Current**	$I_E$	75	Amperes
Peak Emitter Current**	$I_{\text{EM}}$	150*	Amperes
Maximum Collector Dissipation ( $T_j < 150\text{ }^\circ\text{C}$ )	$P_c$	310	Watts
Mounting Torque, M4 Main Terminal	-	1.3 ~ 1.7	N · m
Mounting Torque, M5 Mounting	-	2.5 ~ 3.5	N · m
Weight	-	570	Grams
Isolation Voltage (Main Terminal to Baseplate, AC 1 min.)	$V_{\text{iso}}$	2500	Vrms

\* Pulse width and repetition rate should be such that the device junction temperature ( $T_j$ ) does not exceed  $T_{j(\text{max})}$  rating.

\*\*Represents characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).

## Static Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector-Cutoff Current	$I_{\text{CES}}$	$V_{\text{CE}} = V_{\text{CES}}, V_{\text{GE}} = 0\text{V}$	-	-	1	mA
Gate Leakage Voltage	$I_{\text{GES}}$	$V_{\text{GE}} = V_{\text{GES}}, V_{\text{CE}} = 0\text{V}$	-	-	0.5	$\mu\text{A}$
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 7.5\text{mA}, V_{\text{CE}} = 10\text{V}$	4.5	6	7.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 75\text{A}, V_{\text{GE}} = 15\text{V}, T_j = 25\text{ }^\circ\text{C}$	-	2.4	3.0	Volts
		$I_C = 75\text{A}, V_{\text{GE}} = 15\text{V}, T_j = 125\text{ }^\circ\text{C}$	-	2.6	-	Volts
Total Gate Charge	$Q_G$	$V_{\text{CC}} = 300\text{V}, I_C = 75\text{A}, V_{\text{GE}} = 15\text{V}$	-	150	-	nC
Emitter-Collector Voltage*	$V_{\text{EC}}$	$I_E = 75\text{A}, V_{\text{GE}} = 0\text{V}$	-	-	2.6	Volts

\* Pulse width and repetition rate should be such that the device junction temperature ( $T_j$ ) does not exceed  $T_{j(\text{max})}$  rating.

## Dynamic Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

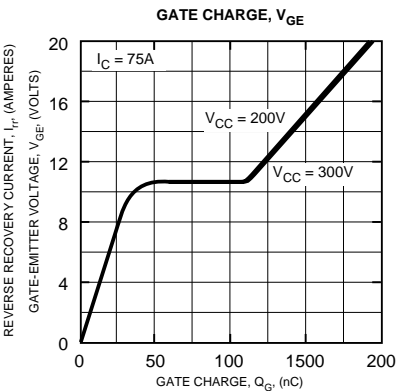
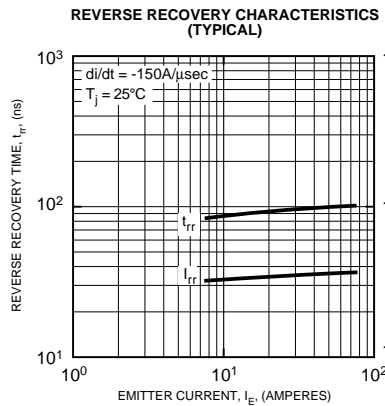
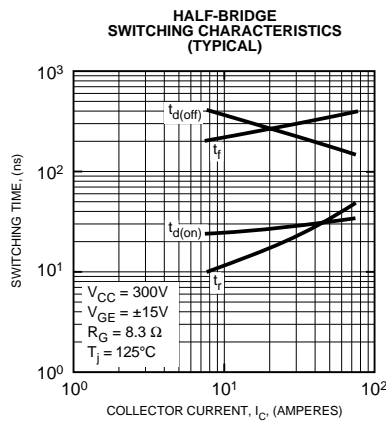
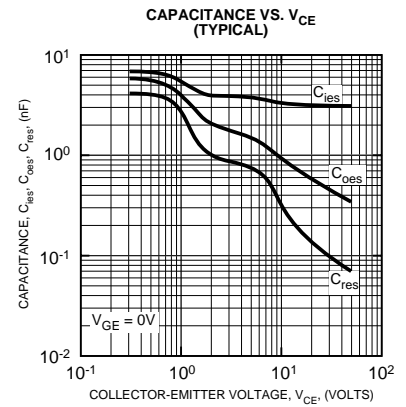
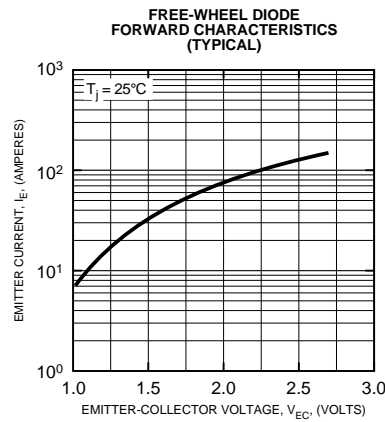
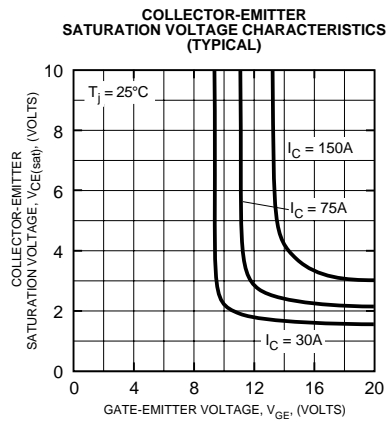
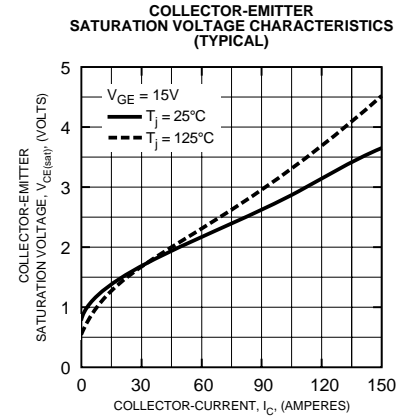
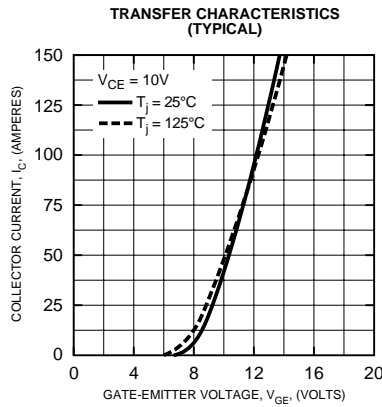
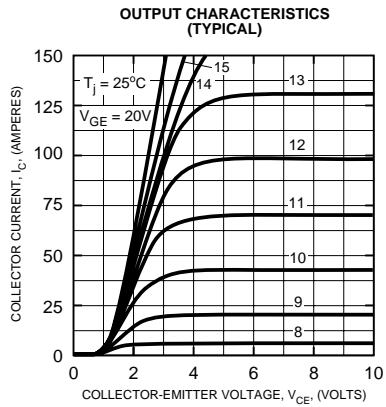
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units	
Input Capacitance	$C_{\text{ies}}$		-	-	6.6	nF	
Output Capacitance	$C_{\text{oes}}$	$V_{\text{CE}} = 10\text{V}, V_{\text{GE}} = 0\text{V}$	-	-	3.6	nF	
Reverse Transfer Capacitance	$C_{\text{res}}$		-	-	1	nF	
Resistive	Turn-on Delay Time	$t_{\text{d(on)}}$	$V_{\text{CC}} = 300\text{V}, I_C = 75\text{A},$	-	-	100	ns
				$V_{\text{GE1}} = V_{\text{GE2}} = 15\text{V},$	-	-	250
Load	Rise Time	$t_r$	$R_G = 8.3\Omega, \text{Resistive}$	-	-	200	ns
				-	-	300	ns
Switch	Turn-off Delay Time	$t_{\text{d(off)}}$	Load Switching Operation	-	-	160	$\mu\text{C}$
				-	-	160	$\mu\text{C}$
Diode Reverse Recovery Time	$t_{\text{rr}}$	$I_E = 75\text{A}, di_E/dt = -150\text{A}/\mu\text{s}$	-	-	0.18	-	
Diode Reverse Recovery Charge	$Q_{\text{rr}}$	$I_E = 75\text{A}, di_E/dt = -150\text{A}/\mu\text{s}$	-	0.18	-	$\mu\text{C}$	

## Thermal and Mechanical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\text{th(j-c)Q}}$	Per IGBT 1/6 Module	-	-	0.4	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\text{th(j-c)D}}$	Per Free-Wheel Diode 1/6 Module	-	-	0.9	$^\circ\text{C}/\text{W}$
Contact Thermal Resistance	$R_{\text{th(c-f)}}$	Per Module, Thermal Grease Applied	-	0.018	-	$^\circ\text{C}/\text{W}$

# CM75TU-12H

HIGH POWER SWITCHING USE  
INSULATED TYPE



# CM75TU-12H

HIGH POWER SWITCHING USE  
INSULATED TYPE

