



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



MITSUBISHI IGBT MODULES  
**CM75E3U-12H**  
 HIGH POWER SWITCHING USE  
 INSULATED TYPE

**CM75E3U-12H**



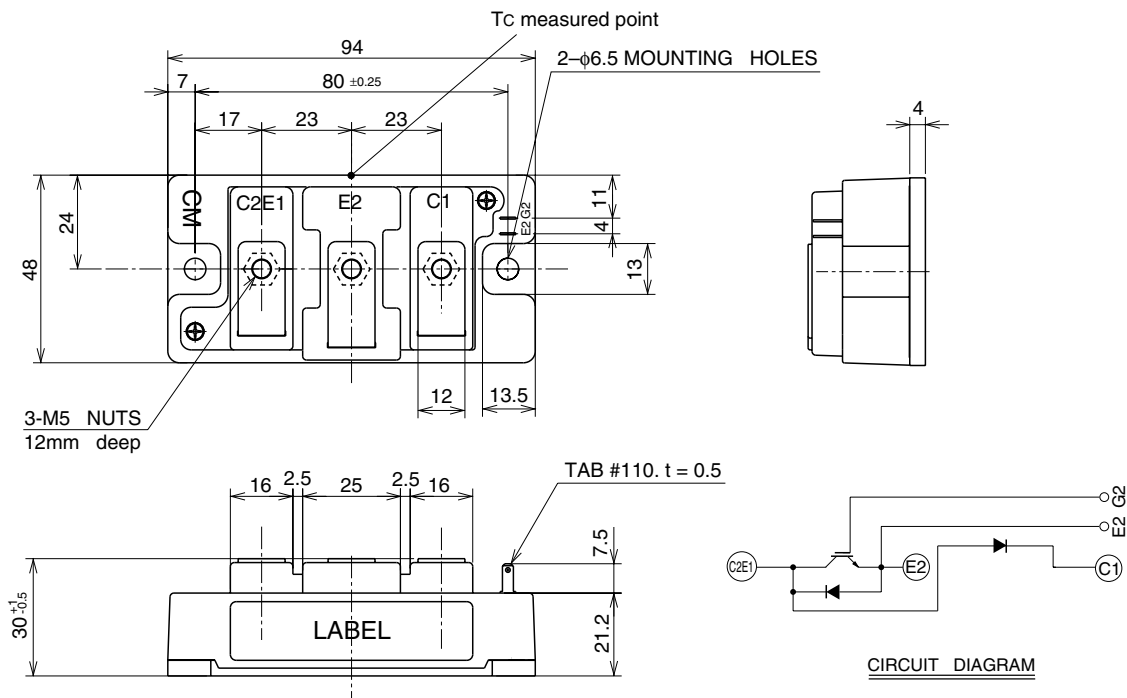
- Ic ..... 75A
- VCES ..... 600V
- Insulated Type
- 1-element in a pack

**APPLICATION**

Brake

**OUTLINE DRAWING & CIRCUIT DIAGRAM**

Dimensions in mm



**CM75E3U-12H**

**HIGH POWER SWITCHING USE  
INSULATED TYPE**

**MAXIMUM RATINGS (T<sub>j</sub> = 25°C, unless otherwise specified)**

Symbol	Item	Conditions	Ratings	Unit
V <sub>CE</sub> S	Collector-emitter voltage	V <sub>GE</sub> = 0V	600	V
V <sub>GE</sub> S	Gate-emitter voltage	V <sub>CE</sub> = 0V	±20	V
I <sub>C</sub>	Collector current	T <sub>C</sub> = 25°C	75	A
I <sub>CM</sub>		Pulse (Note 1)	150	A
I <sub>E</sub> (Note 2)	Emitter current	T <sub>C</sub> = 25°C	75	A
I <sub>EM</sub> (Note 2)		Pulse (Note 1)	150	A
P <sub>C</sub> (Note 3)	Maximum collector dissipation	T <sub>C</sub> = 25°C	310	W
T <sub>j</sub>	Junction temperature	—	-40 ~ +150	°C
T <sub>stg</sub>	Storage temperature	—	-40 ~ +125	°C
V <sub>iso</sub>	Isolation voltage	Charged part to base plate, f = 60Hz, AC 1 minute	2500	V <sub>rms</sub>
—	Mounting torque	Main terminals M5 screw	2.5 ~ 3.5	N·m
		Mounting M6 screw	3.5 ~ 4.5	N·m
—	Weight	Typical value	310	g

**ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, unless otherwise specified)**

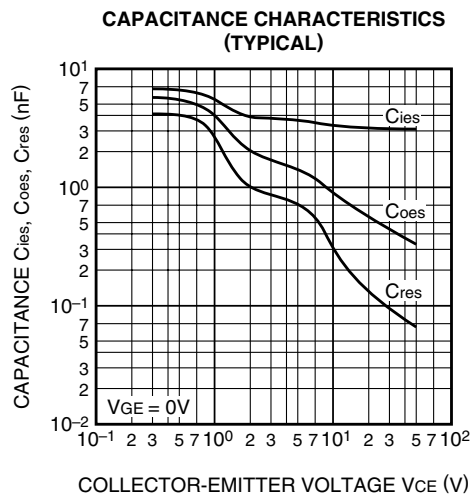
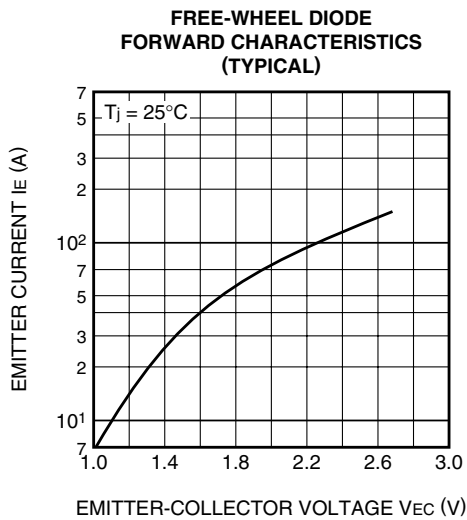
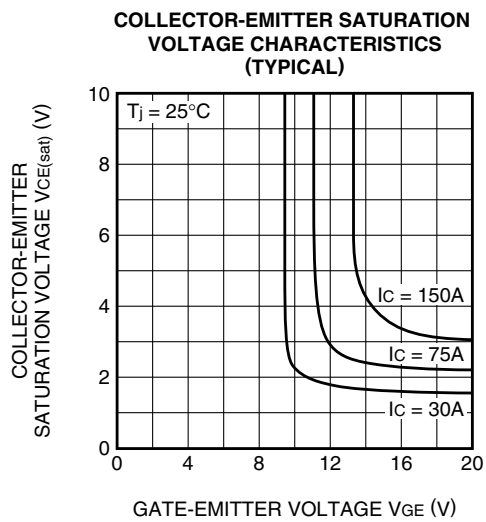
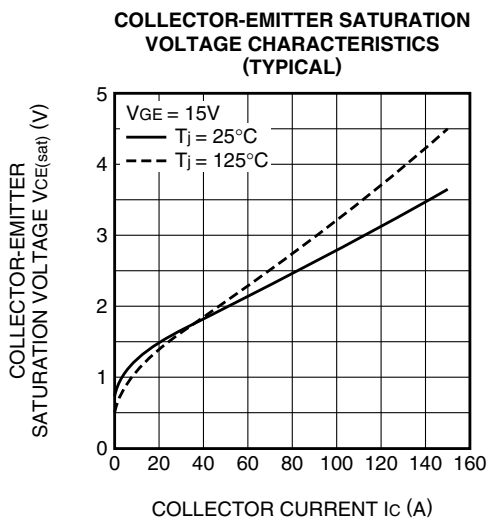
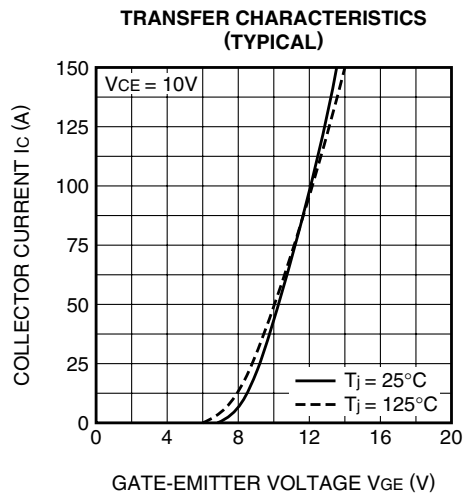
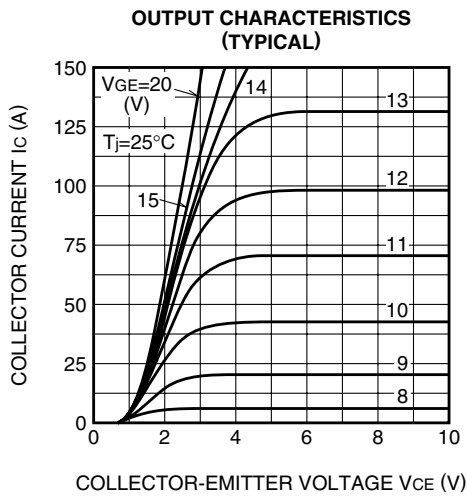
Symbol	Item	Test Conditions	Limits			Unit
			Min	Typ	Max	
I <sub>CES</sub>	Collector cutoff current	V <sub>CE</sub> = V <sub>CE</sub> S, V <sub>GE</sub> = 0V	—	—	1	mA
V <sub>GE(th)</sub>	Gate-emitter threshold voltage	I <sub>C</sub> = 7.5mA, V <sub>CE</sub> = 10V	4.5	6	7.5	V
I <sub>GES</sub>	Gate-leakage current	±V <sub>GE</sub> = V <sub>GES</sub> , V <sub>CE</sub> = 0V	—	—	0.5	µA
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>C</sub> = 75A, V <sub>GE</sub> = 15V (Note 4)	—	2.4	3.0	V
		T <sub>j</sub> = 125°C	—	2.6	—	
C <sub>ies</sub>	Input capacitance	V <sub>CE</sub> = 10V V <sub>GE</sub> = 0V	—	—	6.6	nF
C <sub>oes</sub>	Output capacitance		—	—	3.6	nF
C <sub>res</sub>	Reverse transfer capacitance		—	—	1	nF
Q <sub>G</sub>	Total gate charge	V <sub>CC</sub> = 300V, I <sub>C</sub> = 75A, V <sub>GE</sub> = 15V	—	150	—	nC
t <sub>d(on)</sub>	Turn-on delay time	V <sub>CC</sub> = 300V, I <sub>C</sub> = 75A	—	—	100	ns
t <sub>r</sub>	Turn-on rise time	V <sub>GE</sub> = ±15V	—	—	250	ns
t <sub>d(off)</sub>	Turn-off delay time	R <sub>G</sub> = 8.3Ω	—	—	200	ns
t <sub>f</sub>	Turn-off fall time	Resistive load	—	—	300	ns
V <sub>EC</sub> (Note 2)	Emitter-collector voltage	I <sub>E</sub> = 75A, V <sub>GE</sub> = 0V	—	—	2.6	V
t <sub>rr</sub> (Note 2)	Reverse recovery time	I <sub>E</sub> = 75A	—	—	160	ns
Q <sub>rr</sub> (Note 2)	Reverse recovery charge	die / dt = -150A / µs	—	0.18	—	µC
R <sub>th(j-c)Q</sub>	Thermal resistance (Note 5)	Junction to case, IGBT part	—	—	0.4	K/W
R <sub>th(j-c)R</sub>		Junction to case, FWDi part	—	—	0.9	K/W
V <sub>FM</sub>	Forward voltage	I <sub>F</sub> = 75A, Clamp diode part	—	—	2.6	V
t <sub>rr</sub>	Reverse recovery time	I <sub>F</sub> = 75A	—	—	160	ns
Q <sub>rr</sub>	Reverse recovery charge	die / dt = -150A / µs, Clamp diode part	—	0.18	—	µC
R <sub>th(j-c)</sub>	Thermal resistance (Note 5)	Junction to case, Clamp diode part	—	—	0.9	K/W
R <sub>th(c-f)</sub>	Contact thermal resistance	Case to heat sink, conductive grease applied (Per 1/2 module) (Note 6)	—	0.07	—	K/W

- Note 1. Pulse width and repetition rate should be such that the device junction temperature (T<sub>j</sub>) does not exceed T<sub>jmax</sub> rating.  
 2. I<sub>E</sub>, V<sub>EC</sub>, t<sub>rr</sub>, Q<sub>rr</sub> & die/dt represent characteristics of the anti-parallel, emitter-collector free-wheel diode.  
 3. Junction temperature (T<sub>j</sub>) should not increase beyond 150°C.  
 4. Pulse width and repetition rate should be such as to cause negligible temperature rise.  
 5. Case temperature (T<sub>C</sub>) measured point is shown in page OUTLINE DRAWING.  
 6. Typical value is measured by using thermally conductive grease of λ = 0.9[W/(m · K)].

# CM75E3U-12H

HIGH POWER SWITCHING USE  
INSULATED TYPE

## PERFORMANCE CURVES

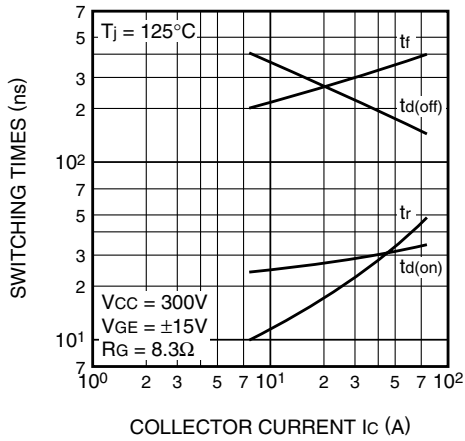




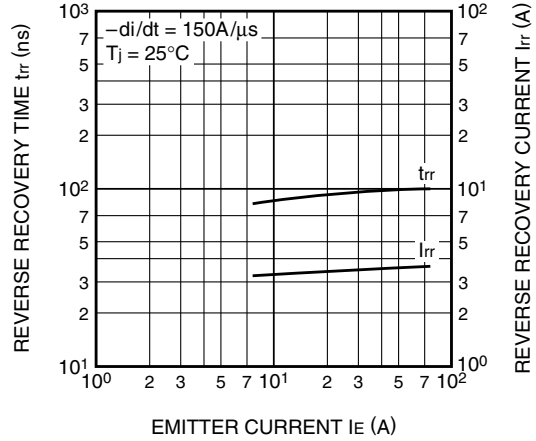
CM75E3U-12H

HIGH POWER SWITCHING USE  
INSULATED TYPE

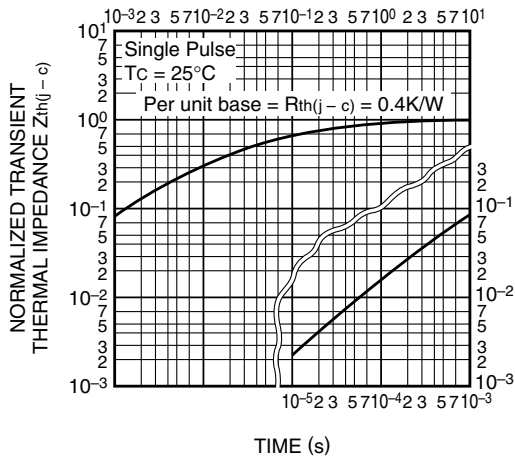
HALF-BRIDGE  
SWITCHING TIME CHARACTERISTICS  
(TYPICAL)



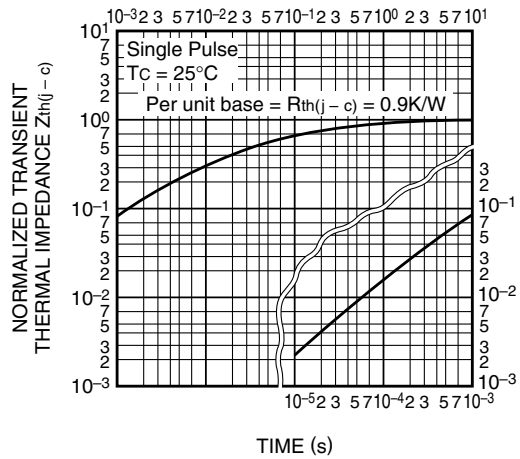
REVERSE RECOVERY CHARACTERISTICS  
OF FREE-WHEEL DIODE  
(TYPICAL)



TRANSIENT THERMAL  
IMPEDANCE CHARACTERISTICS  
(IGBT part)



TRANSIENT THERMAL  
IMPEDANCE CHARACTERISTICS  
(FWDi part)



GATE CHARGE CHARACTERISTICS  
(TYPICAL)

