FUJI ELECTRIC

2MBI 75P-140

2-Pack IGBT
1400V
75A

IGBT MODULE (P-Series)

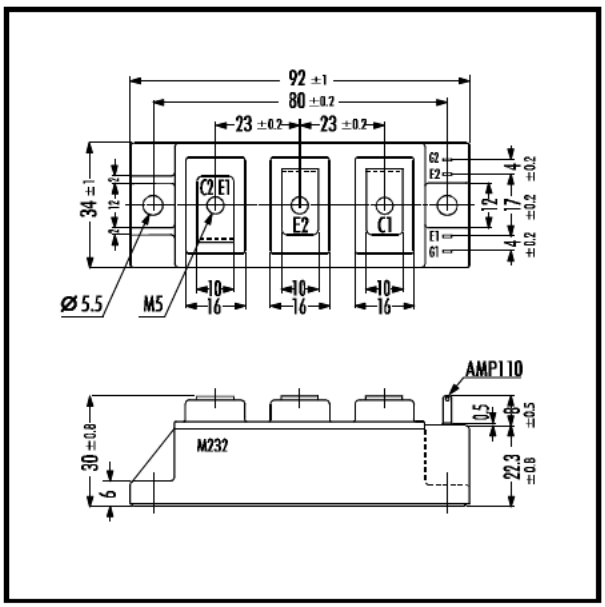
■ Features

- *Square SC SOA at 10 x I_C*
- *Simplified Parallel Connection*
- *Narrow Distribution of Characteristics*
- *High Short Circuit Withstand-Capability*

■ Applications

- *High Power Switching*
- *A.C. Motor Controls*
- *D.C. Motor Controls*
- *Uninterruptible Power Supply*

■ Outline Drawing



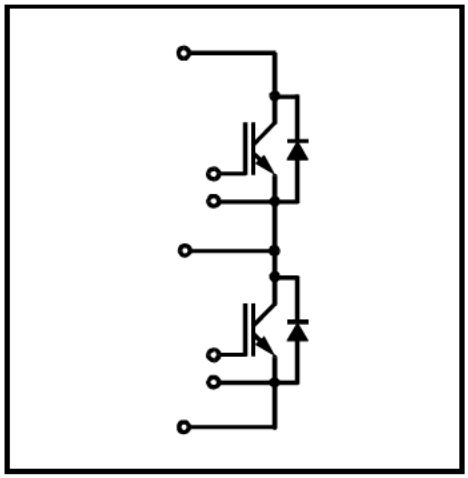
■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings (T_c=25°C)

Items		Symbols	Ratings	Units
Collector-Emitter Voltage		V_{CES}	1400	V
Gate -Emitter Voltage		V_{GES}	± 20	V
Collector Current	Continuous T_C=25°C	I_C	75	A
	Continuous T_C=80°C		50	
	1ms T_C=25°C	$I_{C\ PULSE}$	150	
	1ms T_C=80°C		100	
		$-I_C$	50	
	1ms	$-I_{C\ PULSE}$	100	
Max. Power Dissipation		P_C	400	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 ~ +125	°C
Isolation Voltage	A.C. 1min.	V_{is}	2500	V
Screw Torque		Mounting *1	3.5	Nm
		Terminals *2	3.5	

Note: *1:Recommendable Value: 2.5 ~ 3.5 Nm (M5)

■ Equivalent Circuit



• Electrical Characteristics (at T_j=25°C)

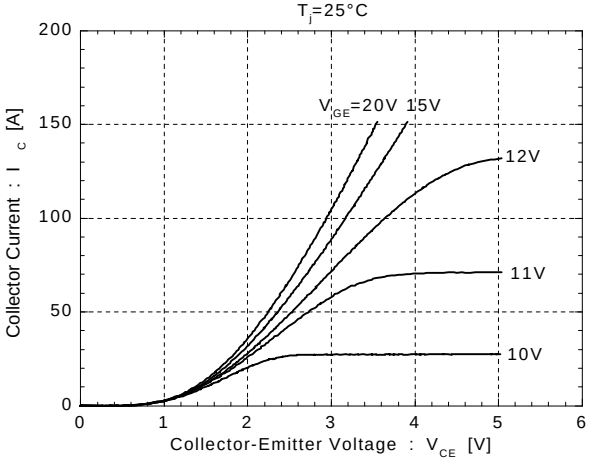
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	V_{GE}=0V V_{CE}=1400V			1.0	mA
Gate-Emitter Leackage Current	I_{GES}	V_{CE}=0V V_{GE}=± 20V			200	µA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	V_{GE}=20V I_C=50mA	6.0	8.0	9.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	T_j= 25°C V_{GE}=15V I_C=50A		2.7	3.0	V
		T_j=125°C V_{GE}=15V I_C=50A		3.3		
Input capacitance	C_{ies}	V_{GE}=0V		5000		pF
Output capacitance	C_{oes}	V_{CE}=10V		750		
Reverse Transfer capacitance	C_{res}	f=1MHz		330		
Turn-on Time	t_{ON}	V_{CC}=600V			1.2	µs
	t_r	I_C=50A			0.6	
Turn-off Time	t_{OFF}	V_{GE}=± 15V			1.0	
	t_f	R_G=2,4Ω			0.3	
Diode Forward On-Voltage	V_F	I_F=50A V_{GE}=0V		2.4	3.3	V
Reverse Recovery Time	t_{rr}	I_F=50A			350	ns

• Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			0.31	°C/W
	$R_{th(j-c)}$	Diode			0.66	
	$R_{th(c-f)}$	With Thermal Compound		0.05		

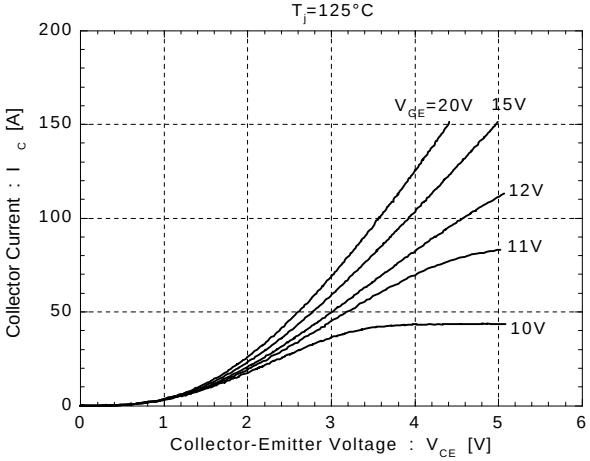
Collector Current vs. Collector-Emitter Voltage

T_j=25°C



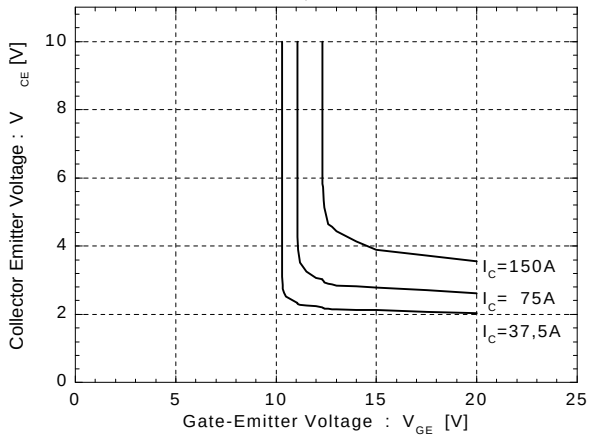
Collector Current vs. Collector-Emitter Voltage

T_j=125°C



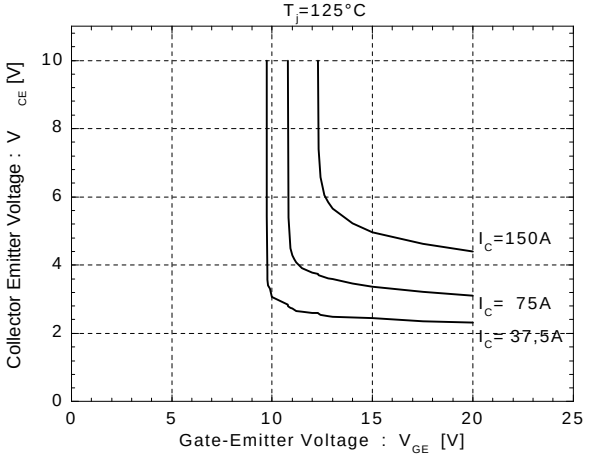
Collector-Emitter vs. Gate-Emitter Voltage

T_j=25°C



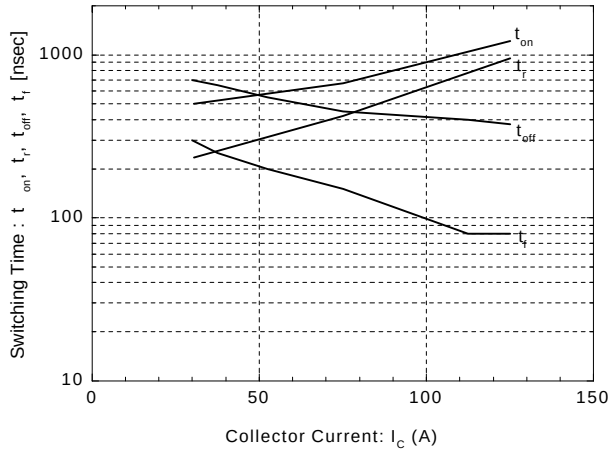
Collector-Emitter vs. Gate-Emitter Voltage

T_j=125°C



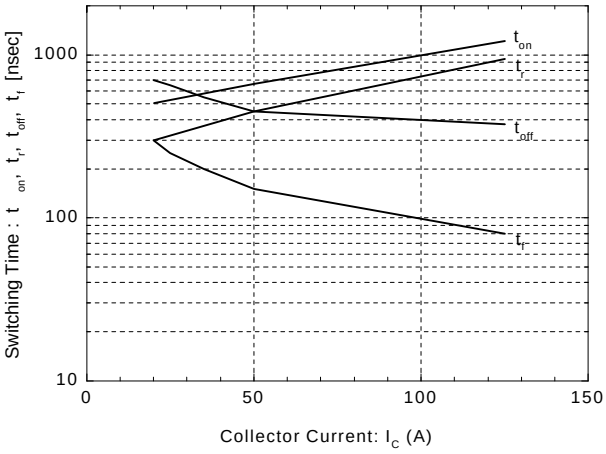
Switching Time vs. Collector Current

V_{CC}=600V, R_G=16Ω, V_{GE}=±15V, T_j=25°C



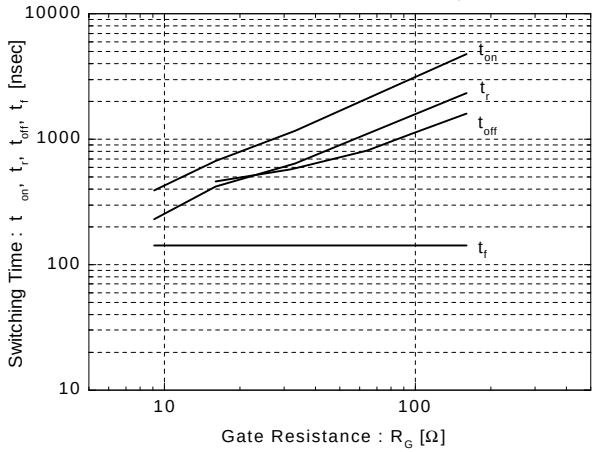
Switching Time vs. Collector Current

V_{CC}=600V, R_G=16Ω, V_{GE}=±15V, T_j=125°C



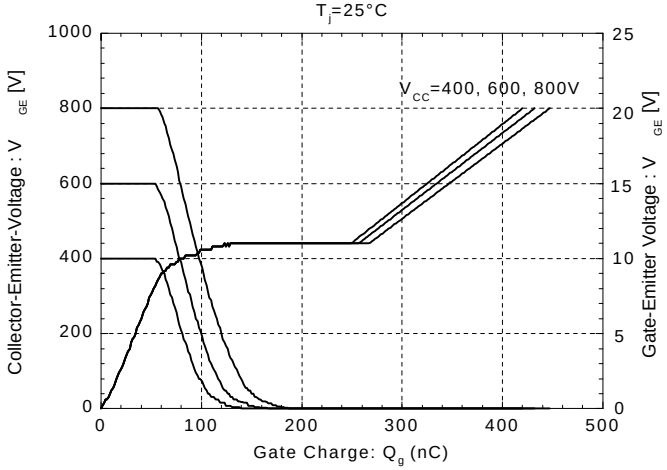
Switching Time vs. R_G

V_{CC}=600V, I_C=75A, V_{GE}=±15V, T_j=25°C



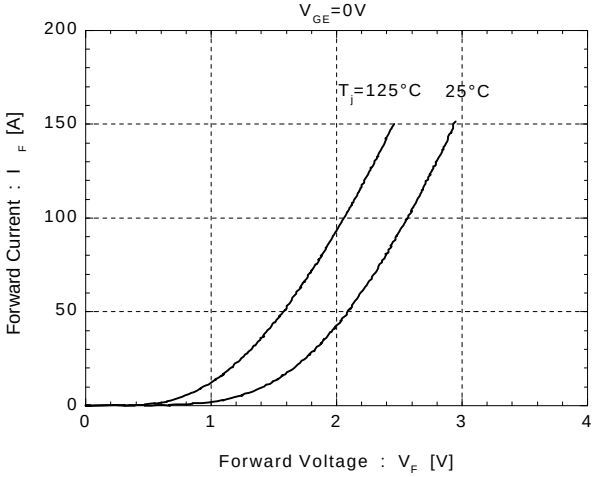
Collector Current vs. Collector-Emitter Voltage

T_j=25°C



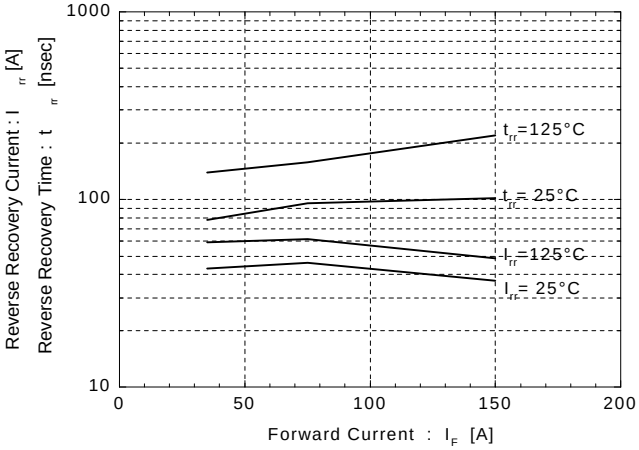
Forward Voltage vs. Forward Current

V_{GE}=0V

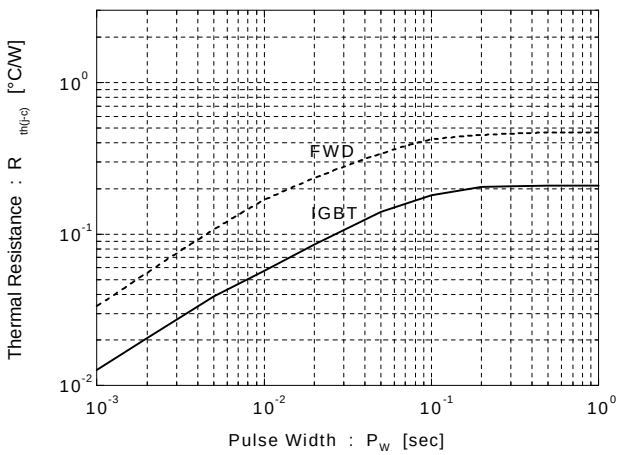


Reverse Recovery Characteristics

t_{rr}, I_{rr} vs. I_F

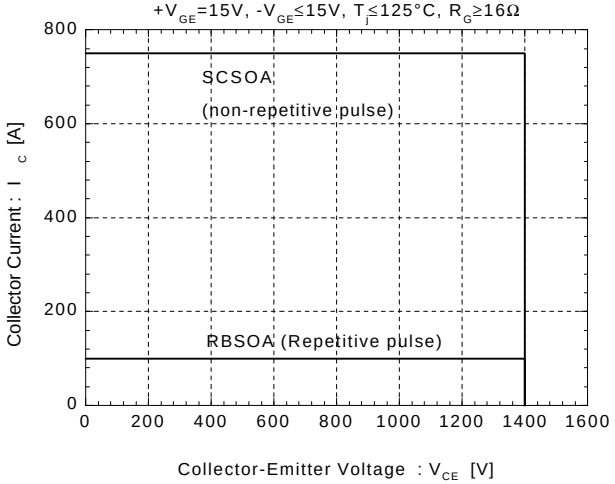


Transient Thermal Resistance



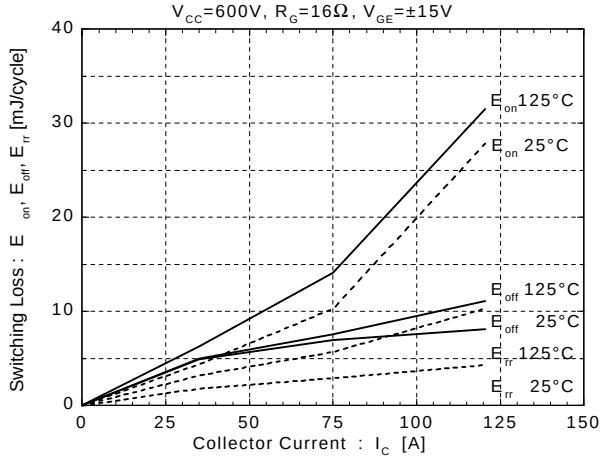
Reverse Biased Safe Operating Area

+V_{GE}=15V, -V_{GE}≤15V, T_j≤125°C, R_G≥16Ω



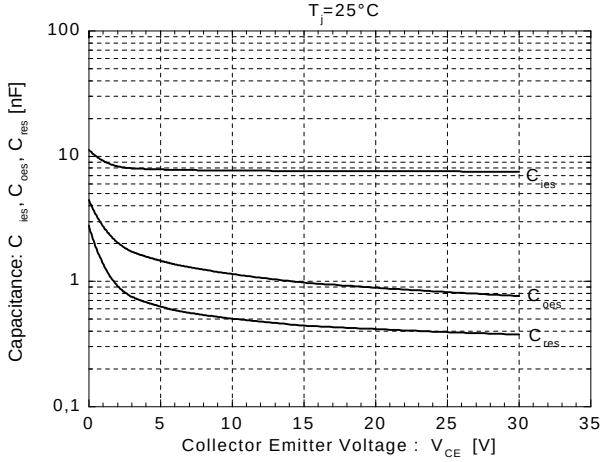
Switching Loss vs. Collector Current

V_{CC}=600V, R_G=16Ω, V_{GE}=±15V



Capacitance vs. Collector-Emitter Voltage

T_j=25°C



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