FUJI ELECTRIC

2MBI 600NT-060

2-Pack IGBT
600 V
600 A

IGBT MODULE (N series)

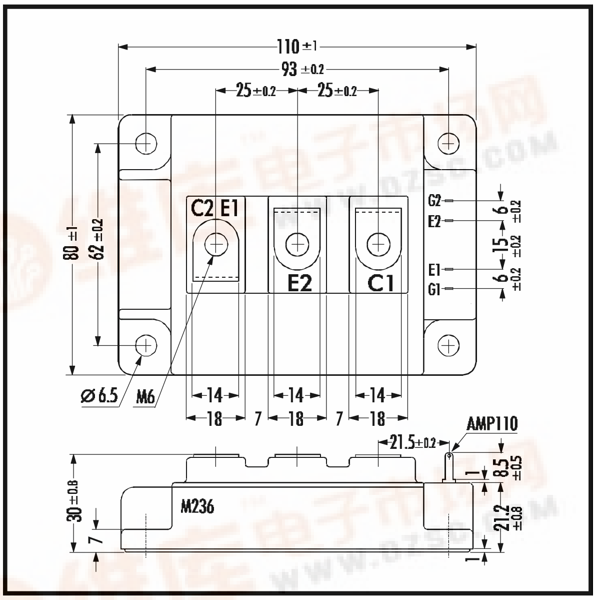
Features

- *Square RBSOA*
- *Low Saturation Voltage*
- *Less Total Power Dissipation*
- *Improved FWD Characteristic*
- *Minimized Internal Stray Inductance*
- *Overcurrent Limiting Function (~3 Times Rated Current)*

Applications

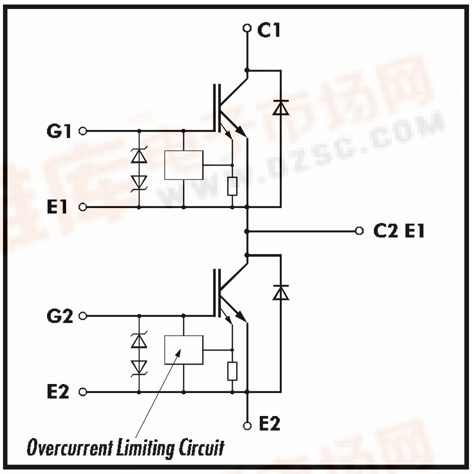
- *High Power Switching*
- *A.C. Motor Controls*
- *D.C. Motor Controls*
- *Uninterruptible Power Supply*

Outline Drawing



Maximum Ratings and Characteristics

Equivalent Circuit



• Absolute Maximum Ratings (T_c=25°C)

Items		Symbols	Ratings	Units
Collector-Emitter Voltage		V_{CES}	600	V
Gate -Emitter Voltage		V_{GES}	± 20	V
Collector Current	Continuous	I_C	600	A
	1ms	$I_{C\ PULSE}$	1200	
	Continuous	$-I_C$	600	
	1ms	$-I_{C\ PULSE}$	1200	
Max. Power Dissipation		P_C	2100	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	4.5	

Note: *1:Recommendable Value; 2.5 ~ 3.5 Nm (M5) or (M6)
*2:Recommendable Value; 3.5 ~ 4.5 Nm (M6)

• Electrical Characteristics (at T_j=25°C)

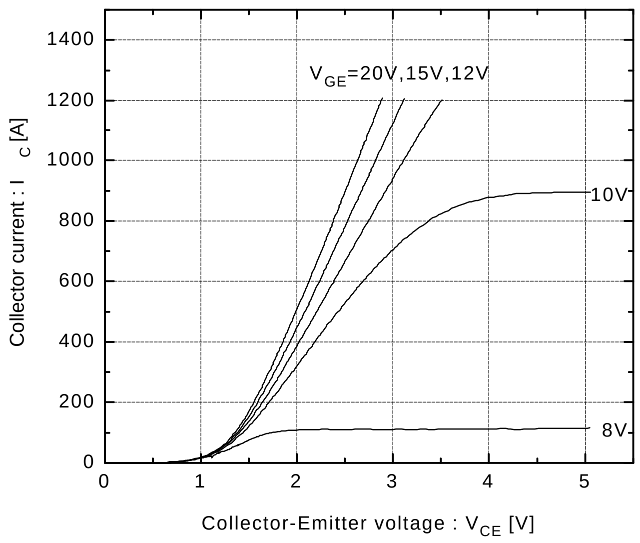
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	V_{GE}=0V V_{CE}=600V			4.0	mA
Gate-Emitter Leackage Current	I_{GES}	V_{CE}=0V V_{GE}=± 20V			60	µA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	V_{GE}=20V I_C=600mA	4.5		7.5	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V_{GE}=15V I_C=600A			2.9	V
Input capacitance	C_{ies}	V_{GE}=0V		39600		pF
Output capacitance	C_{oes}	V_{CE}=10V		8800		
Reverse Transfer capacitance	C_{res}	f=1MHz		2670		
Turn-on Time	t_{ON}	V_{CC}=300V		0.6	1.2	µs
	t_r	I_C=600A		0.2	0.6	
Turn-off Time	t_{OFF}	V_{GE}=± 15V		0.6	1.0	
	t_f	R_G=2.7Ω		0.2	0.35	
Diode Forward On-Voltage	V_F	I_F=600A V_{GE}=0V			3.1	V
Reverse Recovery Time	t_{rr}	I_F=600A			300	ns

• Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			0.06	°C/W
	$R_{th(j-c)}$	Diode			0.15	
	$R_{th(c-f)}$	With Thermal Compound		0.0167		

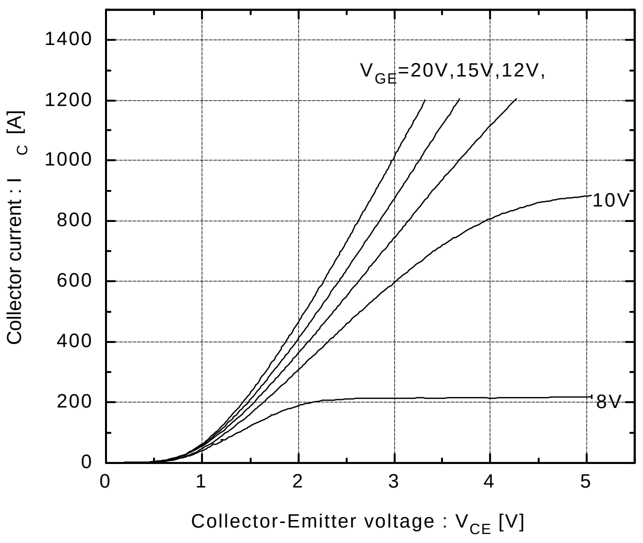
Collector current vs. Collector-Emitter voltage

T_j=25°C



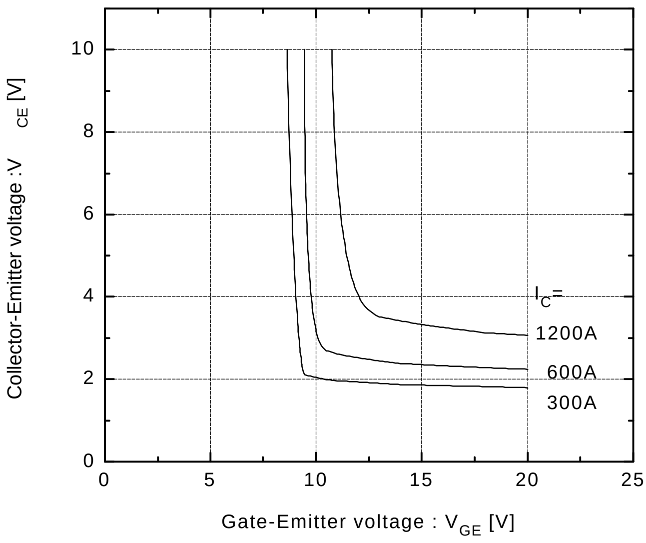
Collector current vs. Collector-Emitter voltage

T_j=125°C



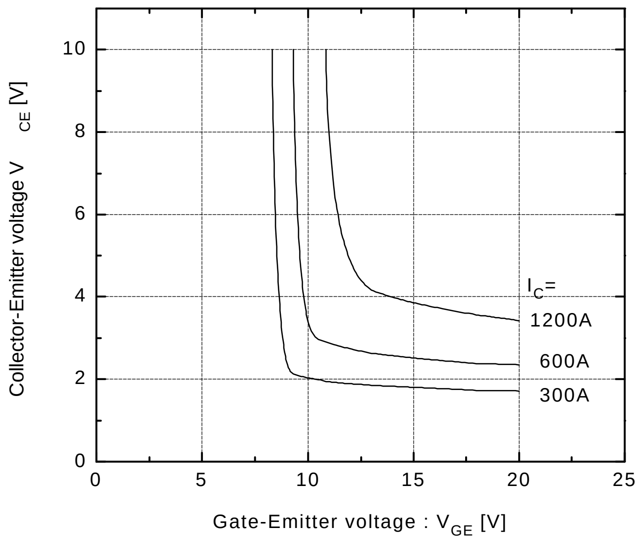
Collector-Emitter vs. Gate-Emitter voltage

T_j=25°C



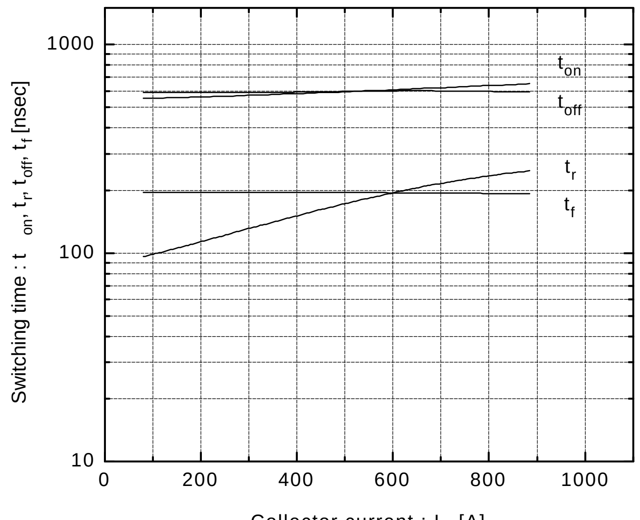
Collector-Emitter vs. Gate-Emitter voltage

T_j=125°C



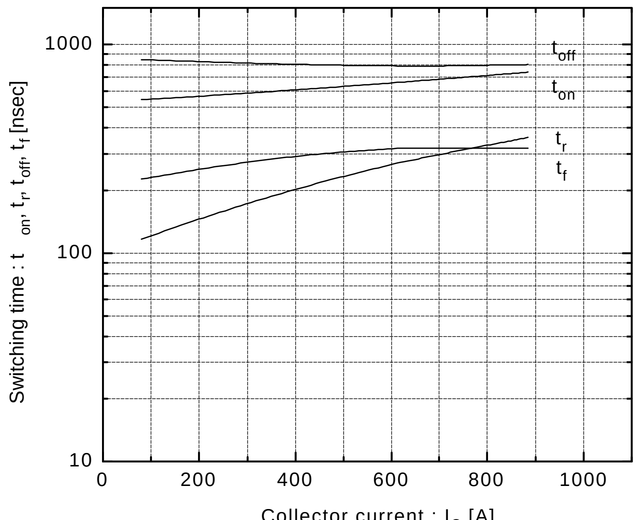
Switching time vs. Collector current

V_{CC}=300V, R_G=2.7Ω, V_{GE}±15V, T_j=25°C



Switching time vs. Collector current

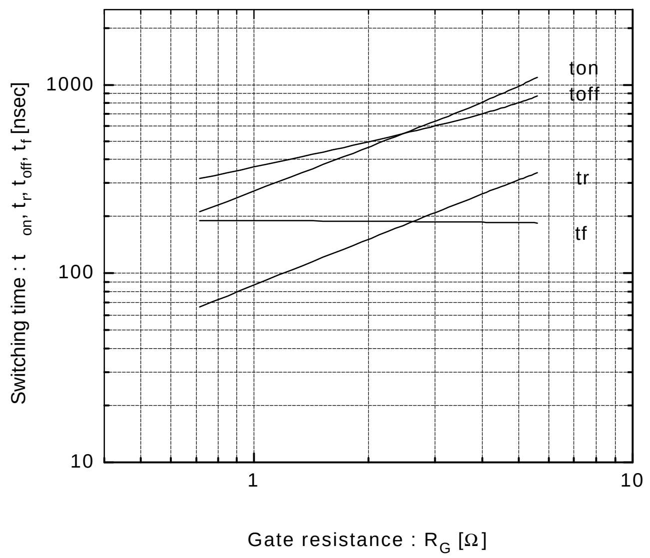
V_{CC}=300V, R_G=2.7Ω, V_{GE}=±15V, T_j=125°C



Gate-Emitter Voltage : V_{GE} [V]

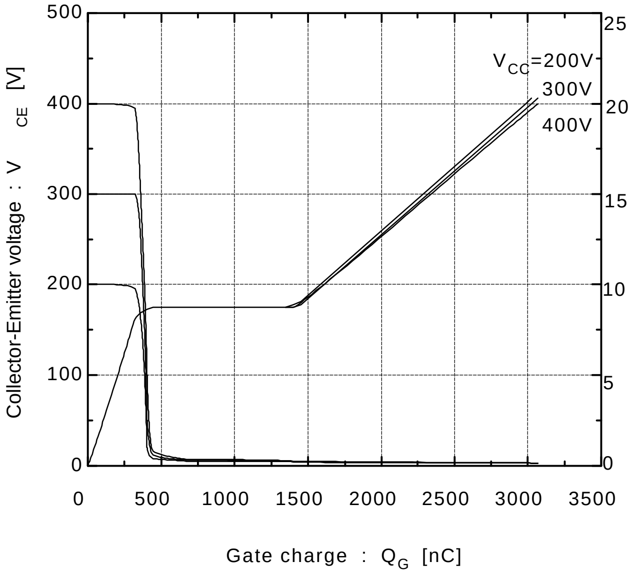
Switching time vs. R_G

V_{CC}=300V, I_C=600A, V_{GE}=±15V, T_j=25°C



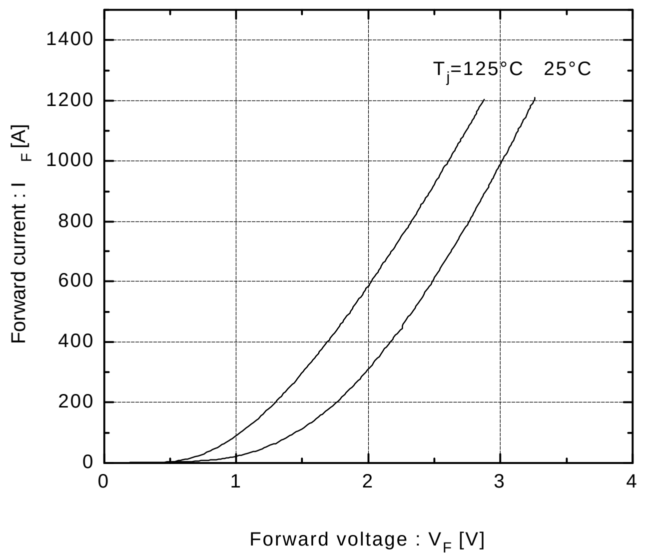
Dynamic input characteristics

T_j=25°C



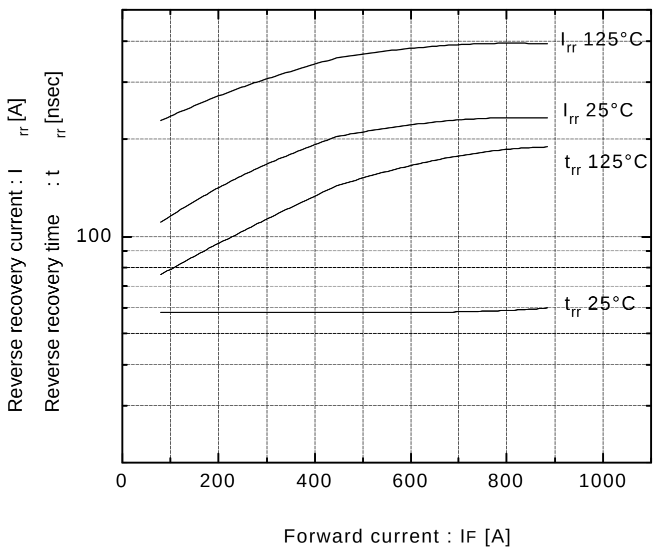
Forward current vs. Forward voltage

V_{GE}=OV

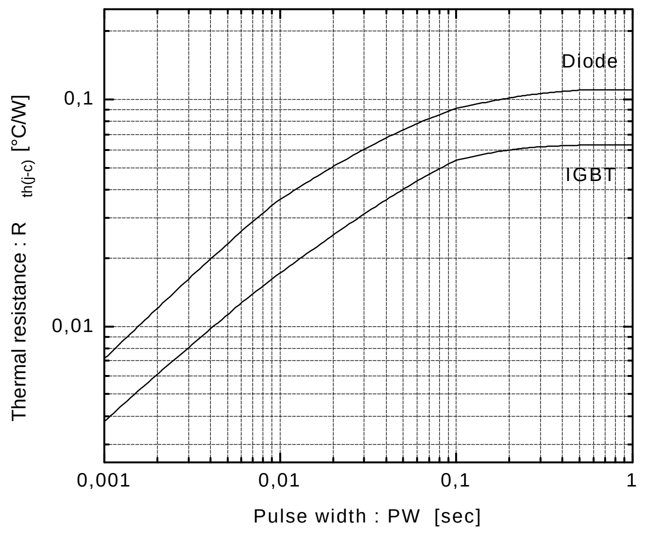


Reverse recovery characteristics

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

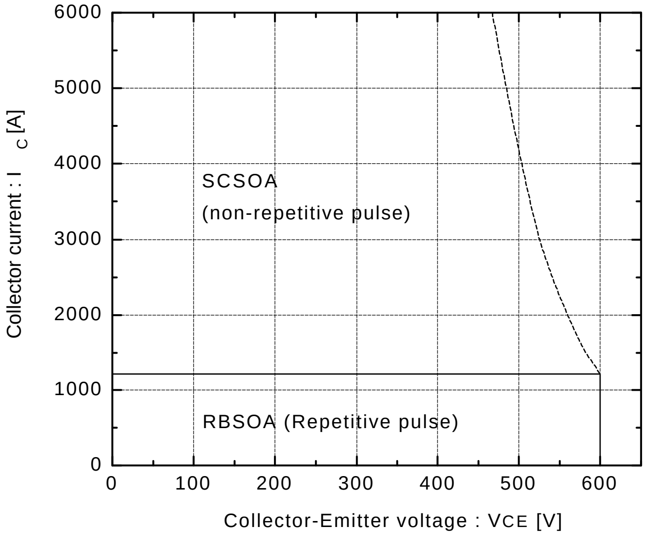


Transient thermal resistance



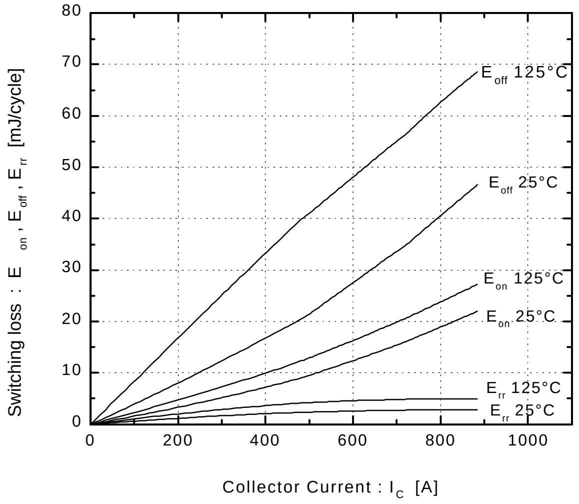
Reversed biased safe operating area

+V_{GE}=15V, -V_{GE}≤15V, T_j≤125°C, R_G≥2.7Ω



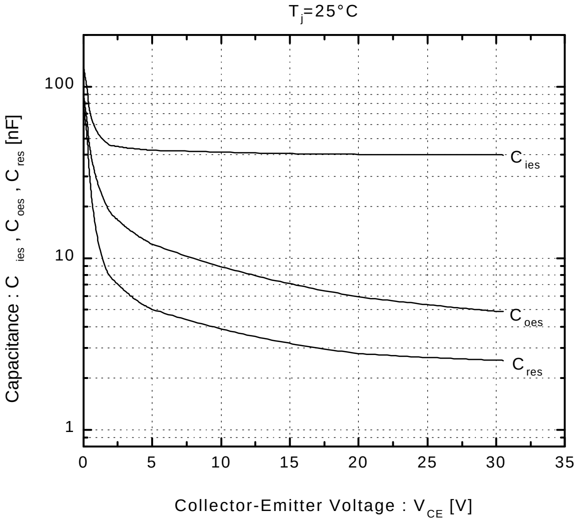
Switching loss vs. Collector current

V_{CC}=300V, R_G=2.7Ω , V_{GE}=±15V



Capacitance vs. Collector-Emitter voltage

T_j=25°C



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