

Fuji Discrete Package IGBT

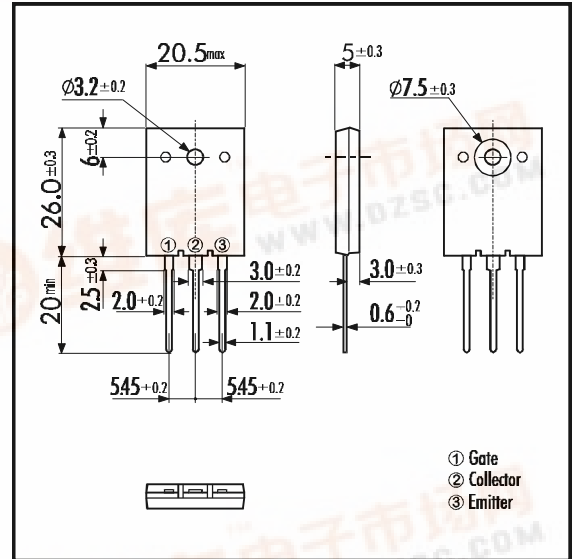
■ Features

- Square RBSOA
- Low Saturation Voltage
- Less Total Power Dissipation
- Minimized Internal Stray Inductance

■ Applications

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

■ Outline Drawing

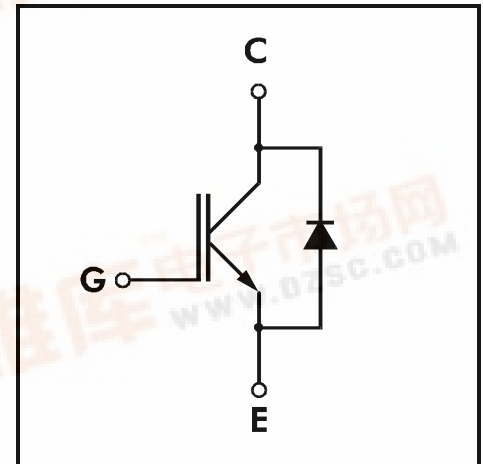


■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings (T_c=25°C)

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V _{CEs}	1200	V
Gate -Emitter Voltage	V _{GES}	± 20	V
Collector Current	DC T _c = 25°C	I _{C 25}	26
	DC T _c =100°C	I _{C 100}	15
	1ms T _c = 25°C	I _{C PULSE}	78
IGBT Max. Power Dissipation	P _C	245	W
FWD Max. Power Dissipation	P _C	120	W
Operating Temperature	T _j	+150	°C
Storage Temperature	T _{stg}	-40 ~ +150	°C
Mounting Screw Torque		70	Nm

■ Equivalent Circuit



• Electrical Characteristics (at T_F=25°C)

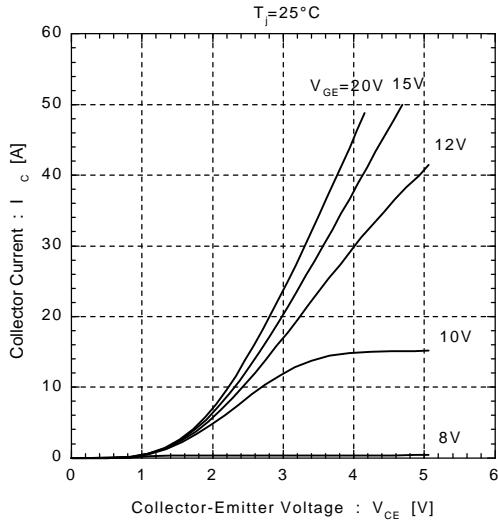
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units		
Zero Gate Voltage Collector Current	I _{CEs}	V _{GE} =0V V _{CE} =1200V			1.0	mA		
Gate-Emitter Leakage Current	I _{GES}	V _{CE} =0V V _{GE} =± 20V			20	μA		
Gate-Emitter Threshold Voltage	V _{GE(th)}	V _{GE} =20V I _C =15mA	5.5		8.5	V		
Collector-Emitter Saturation Voltage	V _{CE(sat)}	V _{GE} =15V I _C =15A			3.5	V		
Input capacitance	C _{ies}	V _{GE} =0V		1700		pF		
Output capacitance	C _{oes}	V _{CE} =10V		300				
Reverse Transfer capacitance	C _{res}	f=1MHz		120				
Switching Time	Turn-on Time	t _{ON}	V _{CC} =600V			1.2	μs	
		t _r	I _C =15A			0.6		
	Turn-off Time	t _{OFF}	V _{GE} =±15V			1.5		
		t _f	R _G =120Ω			0.5		
	Turn-on Time	t _{ON}	V _{CC} =600V		0.16			μs
		t _r	I _C =15A		0.11			
t _{OFF}		V _{GE} =+15V		0.30				
t _f		R _G =12Ω			0.5			
Diode Forward On-Voltage	V _F	I _F =15A V _{GE} =0V			3.0	V		
Reverse Recovery Time	t _{rr}	I _F =15A, V _{GE} =-10V, di/dt=100A/μs			350	ns		

Thermal Characteristics

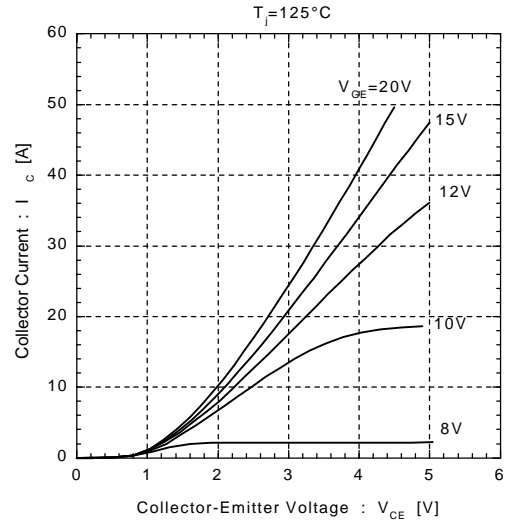
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(j-c)}	IGBT			0.51	°C/W
	R _{th(j-e)}	Diode			1.04	°C/W



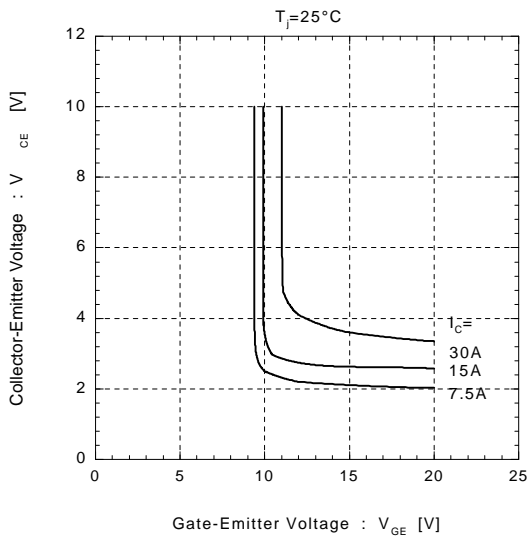
Collector Current vs. Collector-Emitter Voltage



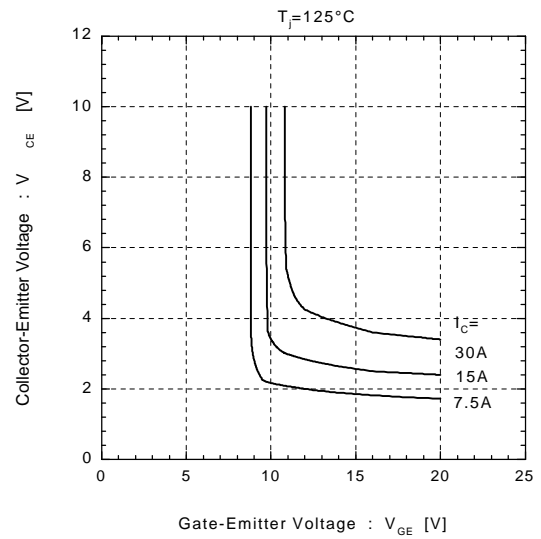
Collector Current vs. Collector-Emitter Voltage



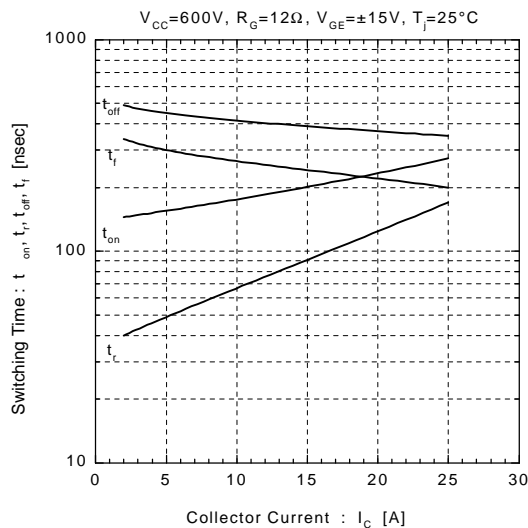
Collector-Emitter Voltage vs. Gate-Emitter Voltage



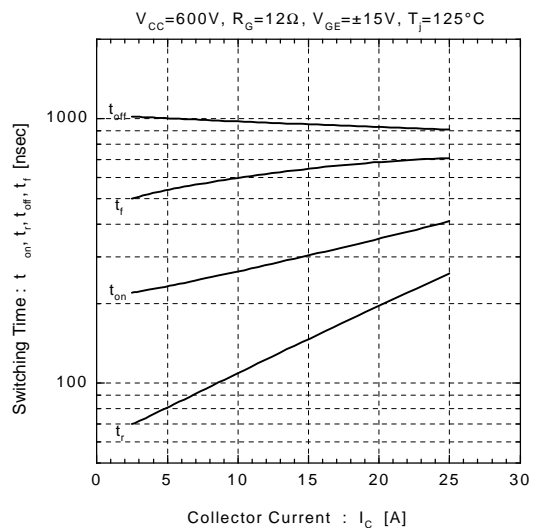
Collector-Emitter Voltage vs. Gate-Emitter Voltage

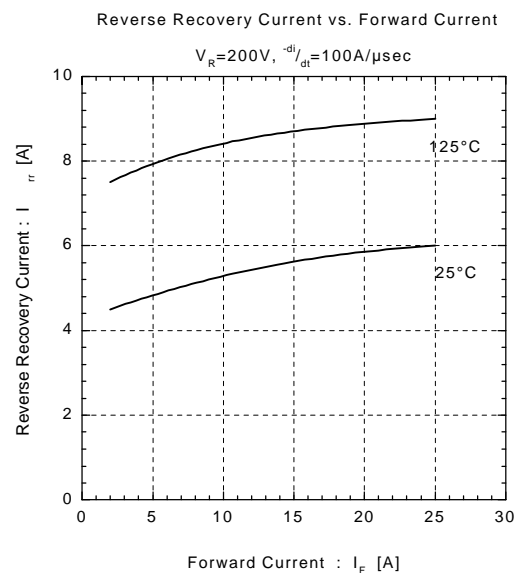
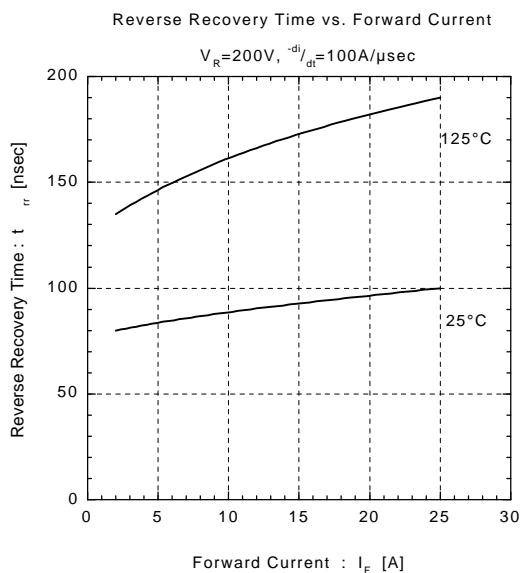
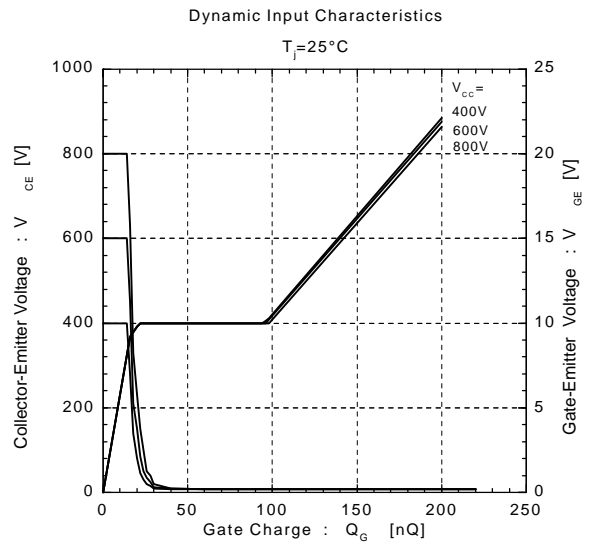
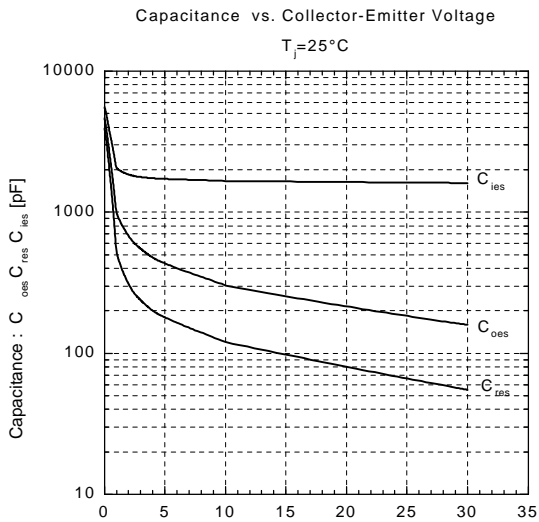
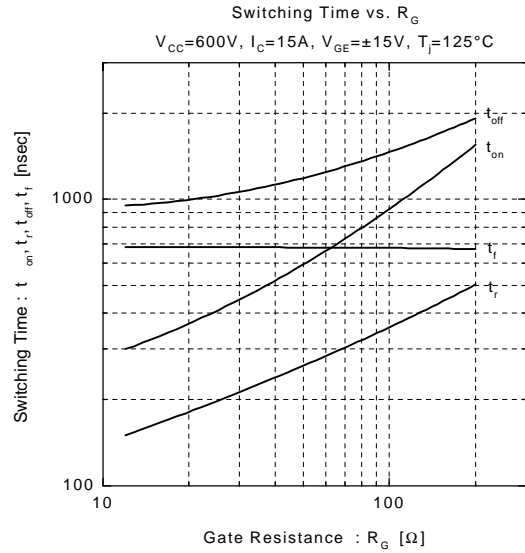
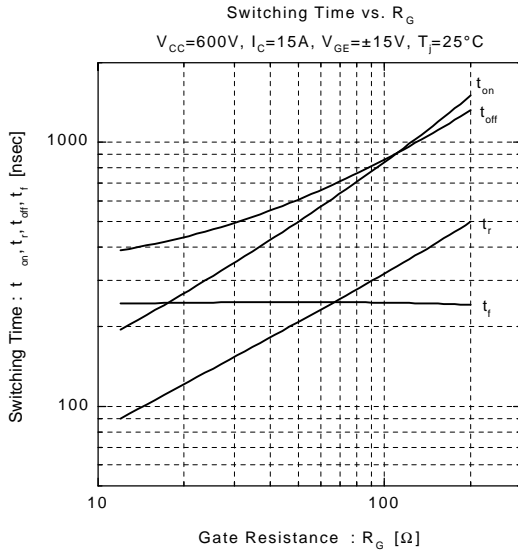


Switching Time vs. Collector Current

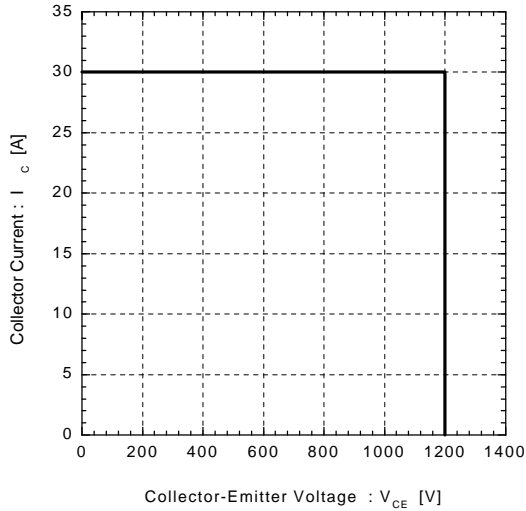


Switching Time vs. Collector Current

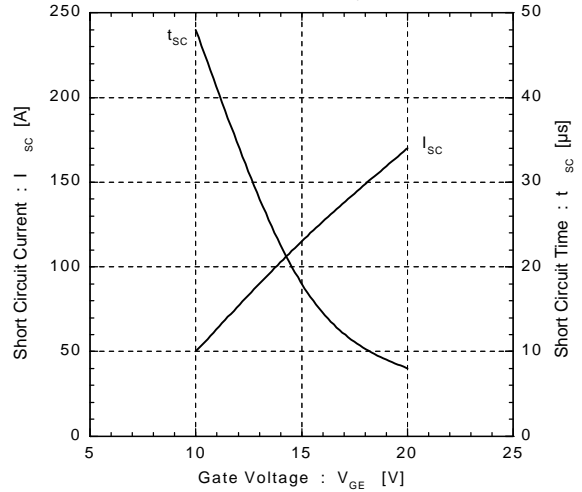




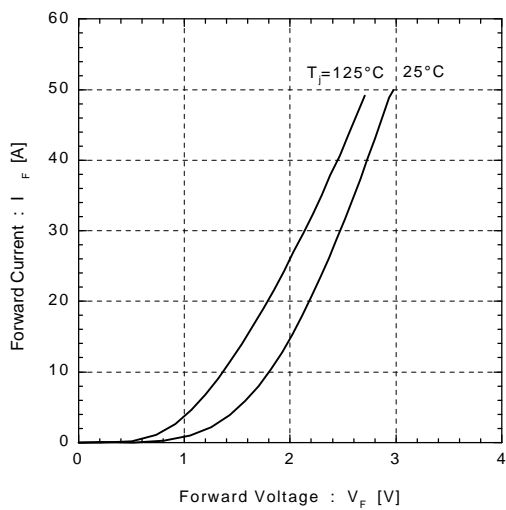
Reverse Biased Safe Operating Area
+V_{GE}=15V, -V_{GE}≤15V, T_J≤125°C, R_G≥12Ω



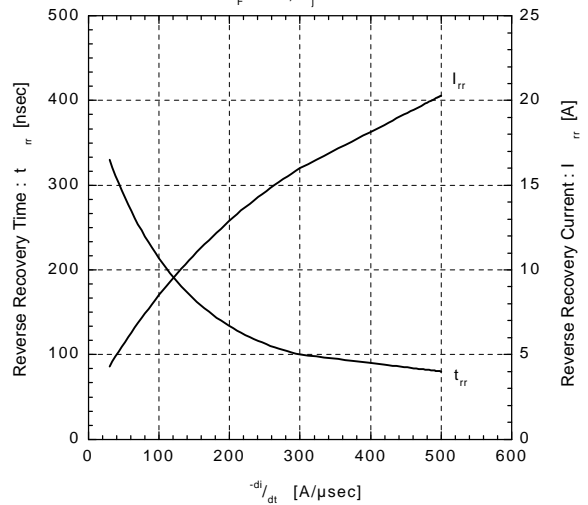
Typical Short Circuit Capability
V_{CC}=800V, R_G=12Ω, T_J=125°C



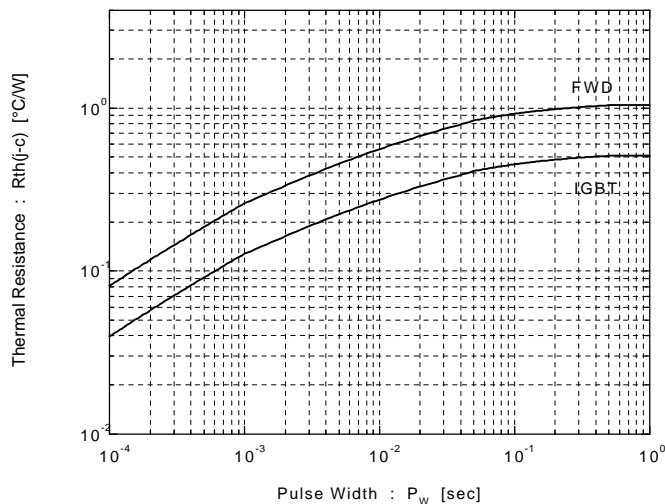
Forward Voltage vs. Forward Current



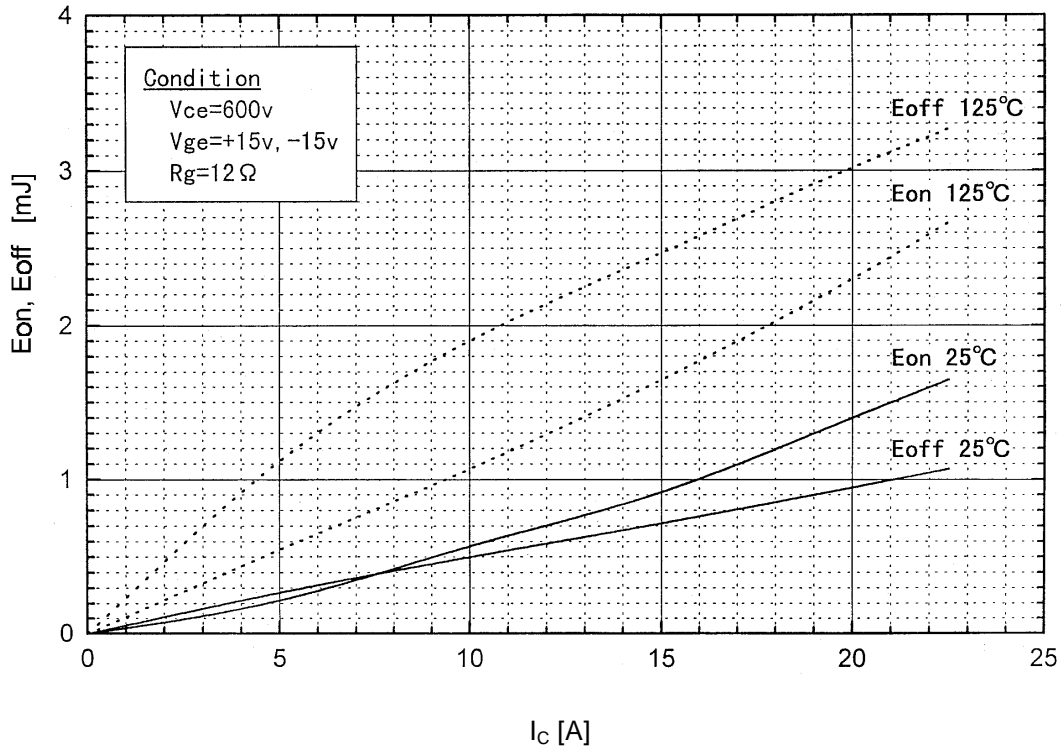
Reverse Recovery Characteristics vs. -di/dt
I_F=15A, T_J=125°C



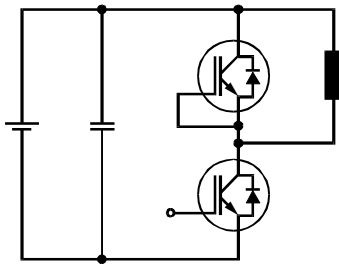
Transient Thermal Resistance



Switching losses (E_{on} , E_{off} vs. I_c)



Test Circuit



Switching waveforms

