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Electrical Characteristics at =25 unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Collector-emitter breakdown voltage	$V_{(BR)CES}$	650			V	V_{GE}=0 V, I_C=0.5 mA
Collector-emitter saturation voltage	$V_{CE(sat)}$		1.55	1.85	V	V_{GE}=15 V, I_C=75 A T_{vj}=25°C
			1.75		V	V_{GE}=15 V, I_C=75 A, T_{vj} =125°C
			1.85			V_{GE}=15 V, I_C=75 A, T_{vj} =175°C
Gate-emitter threshold voltage	$V_{GE(th)}$	4.0	5.0	6.0	V	V_{CE}=V_{GE}, I_D=0.5 mA
Diode forward voltage	V_F		1.3	1.5	V	V_{GE}=0 V, I_F=75 A T_{vj} =25°C
			1.2			V_{GE}=0 V, I_F=75 A, T_{vj} =125°C
			1.1			V_{GE}=0 V, I_F=75 A, T_{vj} =175°C
Gate-emitter leakage current	I_{GES}			100	nA	V_{CE}=0 V, V_{GE}=20 V
Zero gate voltage collector current	I_{CES}			10		V_{CE}=650 V, V_{GE}=0 V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{ies}		8420		pF	V_{GE}=0 V, V_{CE}=25 V, 100 kHz
Output capacitance	C_{oes}		317		pF	
Reverse transfer capacitance	C_{res}		54		pF	
Turn-on delay time	$t_{d(on)}$		182		ns	V_{GE}=15 V, V_{CC}=400 V, R_G=10 I_C=75 A
Rise time	t_r		198		ns	
Turn-off delay time	$t_{d(off)}$		338		ns	
Fall time	t_f		85.6		ns	
Turn-on energy	E_{on}		2.01		mJ	
Turn-off energy	E_{off}		1.01		mJ	
Turn-on delay time	$t_{d(on)}$		159		ns	V_{GE}=15 V, V_{CC}=400 V, R_G=10 I_C=30 A
Rise time	t_r		90		ns	
Turn-off delay time	$t_{d(off)}$		383		ns	
Fall time	t_f		57		ns	
Turn-on energy	E_{on}		0.78		mJ	
Turn-off energy	E_{off}		0.57		mJ	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		182		nC	V_{GE}=15 V, V_{CC}=520 V, I_C=75 A
Gate-emitter charge	Q_{ge}		73		nC	
Gate-collector charge	Q_{gc}		49		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode reverse recovery time	t_{rr}		122		ns	V_R=400 V, I_F=50 A, di_F/dt=30 T_{vj} = 25°C
Diode reverse recovery charge	Q_{rr}		1.4		C	
Diode peak reverse recovery current	I_{rrm}		20		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of R is measured with the device mounted on 1 in square FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.

Electrical Characteristics Diagrams

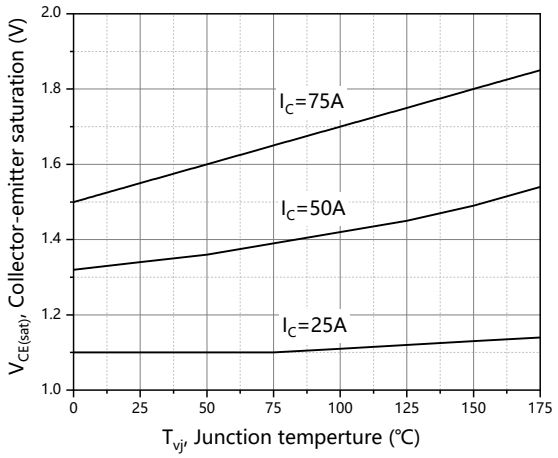

Figure 7. Typical collector-emitter voltage

Figure 8. Forward characteristic of diode

Figure 9. IGBT transient thermal impedance

Figure 10. Diode transient thermal impedance

Ordering Information

Package Type