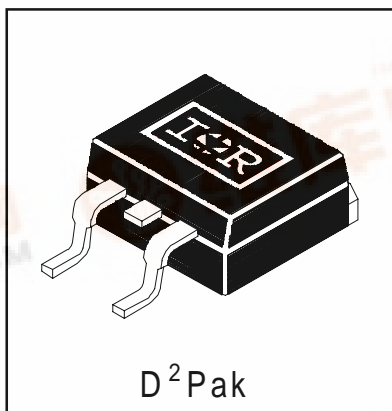
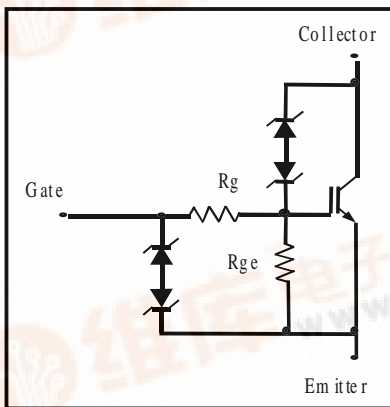


INSULATED GATE BIPOLAR TRANSISTOR

14A, Voltage Clamped
 400V IGBT



		MIN	TYP	MAX	UNITS	CONDITIONS
V _{CL}	COLLECTOR - EMITTER CLAMPING VOLTAGE	370	400	430	V	RG = 1 kOhm , I _c = 7A
V _{ECAV}	EMITTER - COLLECTOR AVALANCHE VOLTAGE	24	30		V	I _c = -10mA, 25 C
V _{GE(TH)}	GATE - EMITTER THRESHOLD VOLTAGE	0.75	1.8	2.2	V	I _c = 1 mA
I _{C25}	CONTINUOUS COLLECTOR CURRENT			18	A	V _{GE} = 5V, 25 C
I _{C100}	CONTINUOUS COLLECTOR CURRENT			14	A	V _{GE} = 5V, 100 C
V _{GE}	GATE - EMITTER VOLTAGE	-10		10	V	
T _J	OPERATING JUNCTION TEMPERATURE RANGE	-40		175	C	
V _{ESD}	ELECTROSTATIC VOTAGE FROM EACH PIN TO EACH OF THE OTHER PINS	-6		6	kV	C = 100pF, R = 1.5 kOhms
I _{SCIS25C}	SELF CLAMPED INDUCTIVE SWITCHING CURRENT	24			A	0.7mH INDUCTANCE, 25 C
		14			A	2.2mH INDUCTANCE, 25 C
		10			A	4.7mH INDUCTANCE, 25 C
I _{SCIS100C}	SELF CLAMPED INDUCTIVE SWITCHING CURRENT	13			A	1.5mH INDUCTANCE, 150 C
		7.5			A	4.7mH INDUCTANCE, 150 C
		5.5			A	8.7mH INDUCTANCE, 150 C
t _{sc}	SHORT CIRCUIT WITHSTAND TIME	750			us	T _c = 150 C
R1	GATE SERIES RESISTANCE		75		Ohms	
R2	GATE EMITTER RESISTANCE		20		k Ohms	
V _{CE(ON)}	COLLECTOR - EMITTER SATURATION VOLTAGE		1.55		V	I _c = 7A, V _{GE} = 5V, 25C
			1.8		V	I _c = 10A, V _{GE} = 5V, 25C
R _{sjC}	THERMAL RESISTANCE, JUNCTION TO CASE			1.5	°K / WATT	
R _{sjA}	THERMAL RESISTANCE, JUNCTION TO AMBIENT (PCB MOUNTED, STEADY STATE)			40	°K / WATT	

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)CES}	Collector-to-Emitter Breakdown Voltage ^③	—	—	—	V	V _{GE} = V, I _C = μA
DV _{(BR)CES} /DT _J	Temperature Coeff. of Breakdown Voltage	—	—	—	V/°C	V _{GE} = V, I _C = mA
V _{CE(on)}	Collector-to-Emitter Saturation Voltage	—	1.55	—	V	I _C = 7A V _{GE} = 5V I _C = 10A See Fig. 2, 5 I _C = A, T _J = °C
		—	1.8	—		
		—	—	—		
V _{GE(th)}	Gate Threshold Voltage	—	—	—		V _{CE} = V _{GE} , I _C = μA
DV _{GE(th)} /DT _J	Temperature Coeff. of Threshold Voltage	—	—	—	mV/°C	V _{CE} = V _{GE} , I _C = μA
g _{fe}	Forward Transconductance ^④	—	—	—	S	V _{CE} = V, I _C = A
I _{CES}	Zero Gate Voltage Collector Current	—	—	—	μA	V _{GE} = V, V _{CE} = V
		—	—	—		V _{GE} = V, V _{CE} = V, T _J = °C
V _{FM}	Diode Forward Voltage Drop	—	—	—	V	I _C = A See Fig. 13
		—	—	—		I _C = A, T _J = °C
I _{GES}	Gate-to-Emitter Leakage Current	—	—	—	nA	V _{GE} = V

Switching Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
Q _g	Total Gate Charge (turn-on)	—	—	—	nC	I _C = A V _{CC} = V See Fig.8 V _{GE} = V
Q _{ge}	Gate - Emitter Charge (turn-on)	—	—	—		
Q _{gc}	Gate - Collector Charge (turn-on)	—	—	—		
t _{d(on)}	Turn-On Delay Time	—	—	—	ns	T _J = °C I _C = A, V _{CC} = V V _{GE} = V, R _G = Ω
t _r	Rise Time	—	—	—		
t _{d(off)}	Turn-Off Delay Time	—	—	—		
t _f	Fall Time	—	—	—		
E _{on}	Turn-On Switching Loss	—	—	—	mJ	Energy losses include "tail" See Fig. 9,10,14
E _{off}	Turn-Off Switching Loss	—	—	—		
E _{ts}	Total Switching Loss	—	—	—		
t _{sc}	Short Circuit Withstand Time	—	—	750	μs	V _{CC} = V, T _J = °C V _{GE} = V, R _G = Ω, V _{CPK} < V
t _{d(on)}	Turn-On Delay Time	—	—	—	ns	T _J = °C, I _C = A, V _{CC} = V V _{GE} = V, R _G = Ω Energy losses include "tail" See Fig. 11,14
t _r	Rise Time	—	—	—		
t _{d(off)}	Turn-Off Delay Time	—	—	—		
t _f	Fall Time	—	—	—		
E _{ts}	Total Switching Loss	—	—	—	mJ	
L _E	Internal Emitter Inductance	—	—	—	nH	Measured 5mm from package
C _{ies}	Input Capacitance	—	—	—	pF	V _{GE} = V V _{CC} = V See Fig. 7 f = MHz
C _{oes}	Output Capacitance	—	—	—		
C _{res}	Reverse Transfer Capacitance	—	—	—		
t _{rr}	Diode Reverse Recovery Time	—	—	—	ns	T _J = °C See Fig. 14 T _J = °C 14 I _F = A
		—	—	—		
I _{rr}	Diode Peak Reverse Recovery Current	—	—	—	A	T _J = °C See Fig. 15 T _J = °C 15 V _R = V
		—	—	—		
Q _{rr}	Diode Reverse Recovery Charge	—	—	—	nC	T _J = °C See Fig. 16 T _J = °C 16 di/dt = A/μs
		—	—	—		
di _(rec) /dt	Diode Peak Rate of Fall of Recovery During t _{rr}	—	—	—	A/μs	T _J = °C See Fig. 17 T _J = °C 17
		—	—	—		