Preliminary

SGL160N60UFD

CO-PAK IGBT

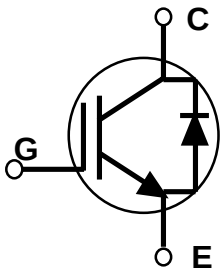
FEATURES

* High Speed Switching
* Low Saturation Voltage
  : V_{CE}(sat) = 2.0 V (@ Ic=80A)
* High Input Impedance
*CO-PAK, IGBT with FRD
  : Trr = 50nS (typ.)

TO-264

APPLICATIONS

* AC & DC Motor controls
* General Purpose Inverters
* Robotics , Servo Controls
* Power Supply



ABSOLUTE MAXIMUM RATINGS

Symbol	Characteristics	Rating	Units
V_{CES}	Collector-Emitter Voltage	600	V
V_{GES}	Gate-Emitter Voltage	±20	V
I_C	Collector Current @ Tc = 25°C	160	A
	Collector Current @ Tc = 100°C	80	A
$I_{CM\ (1)}$	Pulsed Collector Current	220	A
I_F	Diode Continuous Forward Current @ Tc = 100°C	25	A
I_{FM}	Diode Maximum Forward Current	280	A
P_D	Maximum Power Dissipation @Tc = 25°C	200	W
	Maximum Power Dissipation @Tc = 100°C	80	W
Tj	Operating Junction Temperature	-55 ~ 150	°C
Tstg	Storage Temperature Range	-55 ~ 150	°C
T_L	Maximum Lead Temp. For Soldering Purposes, 1/8” from case for 5 seconds	300	°C

Notes:(1) Repetitive rating : Pulse width limited by max. junction temperature

FAIRCHILD SEMICONDUCTOR TM

ELECTRICAL CHARACTERISTICS (IGBT PART)

(T_C=25°C,Unless Otherwise Specified)

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
BV_{CES}	C - E Breakdown Voltage	V_{GE} = 0V , I_C = 250uA	600	-	-	V
$\Delta V_{CES}/\Delta T_J$	Temperature Coeff. of Breakdown Voltage	V_{GE} = 0V , I_C = 1mA	-	0.6	-	V/°C
$V_{GE(th)}$	G - E threshold voltage	I_C = 80mA , V_{CE} = V_{GE}	4.5	5.5	7.5	V
I_{CES}	Collector cutoff Current	V_{CE} = V_{CES} , V_{GE} = 0V	-	-	250	uA
I_{GES}	G - E leakage Current	V_{GE} = V_{GES} , V_{CE} = 0V	-	-	100	nA
V_{CE}(sat)	Collector to Emitter saturation voltage	Ic=80A, V_{GE} = 15V	-	2.0	-	V
		Ic=160A, V_{GE} = 15V	-	2.6	-	V
Cies	Input capacitance	V_{GE} = 0V , f = 1MHz	-	5440	-	pF
Coes	Output capacitance	V_{CE} = 30V	-	715	-	pF
Cres	Reverse transfer capacitance		-	184	-	pF
td(on)	Turn on delay time	V_{CC} = 300V , I_C = 80A	-	24	-	ns
tr	Turn on rise time	V_{GE} = 15V	-	54	-	ns
td(off)	Turn off delay time	R_G = 3.9Ω	-	95	-	ns
tf	Turn off fall time	Inductive Load	-	100	-	ns
Eon	Turn on Switching Loss		-	0.12	-	mJ
Eoff	Turn off Switching Loss		-	0.19	-	mJ
Ets	Total Switching Loss		-	0.8	-	mJ
Qg	Total Gate Charge	Vcc = 300V	-	344	517	nC
Qge	Gate-Emitter Charge	V_{GE} = 15V	-	76	116	nC
Qgc	Gate-Collector Charge	Ic = 80A	-	86	130	nC

ELECTRICAL CHARACTERISTICS (DIODE PART)

(T_C=25°C,Unless Otherwise Specified)

Symbol	Characteristics	Test Conditions		Min	Typ	Max	Units
V_{FM}	Diode Forward Voltage	I_F=25A	Tc =25°C	-	1.4	1.7	V
			Tc =100°C	-	1.3	-	
Trr	Diode Reverse Recovery Time	I_F=25A, V_R=200V -di/dt=200A/uS	Tc =25°C	-	50	75	nS
			Tc =100°C	-	105	-	
Irr	Diode Peak Reverse Recovery Current		Tc =25°C	-	4.5	10	A
			Tc =100°C	-	8.5	-	
Qrr	Diode Reverse Recovery Charge		Tc =25°C	-	112	375	nC
			Tc =100°C	-	420	-	

THERMAL RESISTANCE

Symbol	Characteristics	Min	Typ	Max	Units
$R_{\theta}JC$	Junction-to-Case (IGBT)	-	-	0.625	°C/W
$R_{\theta}JC$	Junction-to-Case (DIODE)	-	-	0.83	°C/W
$R_{\theta}JA$	Junction-to-Ambient	-	-	25	°C/W
$R_{\theta}CS$	Case-to-Sink	-	0.2	-	°C/W

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