

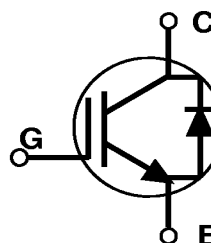
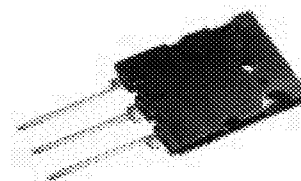
SGL160N60UFD**FEATURES**

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

APPLICATIONS

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

TO-264

**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 @ $T_c = 25^\circ\text{C}$	160	A
	Collector Current @ $T_c = 100^\circ\text{C}$	80	A
$I_{CM(1)}$	Pulsed Collector Current	220	A
I_F	Diode Continuous Forward Current @ $T_c = 100^\circ\text{C}$	25	A
I_{FM}	Diode Maximum Forward Current	280	A
P_D	Maximum Power Dissipation @ $T_c = 25^\circ\text{C}$	200	W
	Maximum Power Dissipation @ $T_c = 100^\circ\text{C}$	80	W
T_j	Operating Junction Temperature	$-55 \sim 150$	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	$-55 \sim 150$	$^\circ\text{C}$
T_L	Maximum Lead Temp. For Soldering	300	$^\circ\text{C}$
	Purposes, 1/8" from case for 5 seconds		

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



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	
$\frac{\Delta V_{CES}}{\Delta T_J}$	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	I _C =80A, V _{GE} = 15V	-	2.0	-	V	
		I _C =160A, V _{GE} = 15V	-	2.6	-	V	
Cies	Input capacitance	V _{GE} = 0V , f = 1MHz V _{CE} = 30V	-	5440	-	pF	
Co _{es}	Output capacitance		-	715	-	pF	
Cr _{es}	Reverse transfer capacitance		-	184	-	pF	
td(on)	Turn on delay time	V _{CC} = 300V , I _C = 80A V _{GE} = 15V R _G = 3.9Ω Inductive Load	-	24	-	ns	
tr	Turn on rise time		-	54	-	ns	
td(off)	Turn off delay time		-	95	-	ns	
tf	Turn off fall time		-	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		V _{CC} = 300V	-	344	517	nC
Qge	Gate-Emitter Charge		V _{GE} = 15V	-	76	116	nC
Qgc	Gate-Collector Charge		I _C = 80A	-	86	130	nC

SGL160N60UFD**CO-PAK IGBT****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	T _c =25°C	-	1.4	1.7	V
			T _c =100°C	-	1.3	-	
T _{rr}	Diode Reverse Recovery Time		T _c =25°C	-	50	75	nS
			T _c =100°C	-	105	-	
I _{rr}	Diode Peak Reverse Recovery Current	I _F =25A, V _R =200V -di/dt=200A/μS	T _c =25°C	-	4.5	10	A
			T _c =100°C	-	8.5	-	
Q _{rr}	Diode Reverse Recovery Charge		T _c =25°C	-	112	375	nC
			T _c =100°C	-	420	-	

THERMAL RESISTANCE

Symbol	Characteristics	Min	Typ	Max	Units
R _{θJC}	Junction-to-Case (IGBT)	-	-	0.625	°C/W
R _{θJC}	Junction-to-Case (DIODE)	-	-	0.83	°C/W
R _{θJA}	Junction-to-Ambient	-	-	25	°C/W
R _{θCS}	Case-to-Sink	-	0.2	-	°C/W