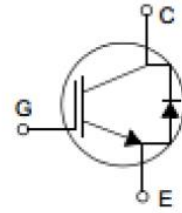
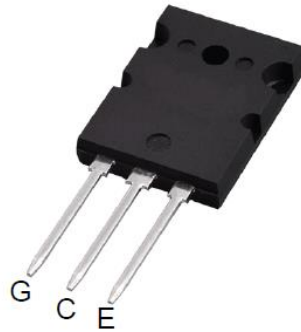


Features

- ◆ 1200V 50A, $V_{CE(sat)}(typ.) = 2.6 V @ 50A$
- ◆ 10 μ s Short Circuit Capability
- ◆ Square RBSOA
- ◆ Positive VCE (on) Temperature Coefficient

Benefits

- ◆ High Efficiency for Motor Control
- ◆ Rugged Performance
- ◆ Excellent Current Sharing in Parallel Operation



Mechanical Data

- ◆ Case: TO-264 (plastic package). Lead free; RoHS compliant
- ◆ Molding Compound Flammability Rating: UL 94 V-0
- ◆ Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Applications

◆ E-CMOS's IGBTs offer lower losses and higher energy for application such as motor drive, UPS, inverter and other soft switching applications.

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Continuous Collector Current ($T_C=25^\circ C$)	100	A
	Continuous Collector Current ($T_C=100^\circ C$)	50	A
I_{CM}	Pulsed Collector Current (Note 1)	200	A
I_F	Diode Continuous Forward Current ($T_C=100^\circ C$)	50	A
I_{FM}	Diode Maximum Forward Current (Note 1)	200	A
t_{sc}	Short Circuit Withstand Time	10	μ s
I_{sc}	Short Circuit Current	300	A
P_D	Maximum Power Dissipation ($T_C=25^\circ C$)	657	W
	Maximum Power Dissipation ($T_C=100^\circ C$)	263	W
T_J	Operating Junction Temperature Range	-55 to +150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ C$

Ordering information

Order code	Package	Packaging option	Base quantity	Packaging specification
CXG50S120JU	TO-264	Tube/BOX	20pcs / Tube	

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{th\ j-c}$	Thermal Resistance, Junction to case for IGBT	0.19	$^{\circ}C/W$
$R_{th\ j-c}$	Thermal Resistance, Junction to case for Diode	0.74	$^{\circ}C/W$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	40	$^{\circ}C/W$

Electrical Characteristics ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$B_{V_{CES}}$	Collector-Emitter Breakdown Voltage	$V_{GE}=0V, I_C=250\mu A$	1200	-	-	V
I_{CES}	Collector-Emitter Leakage Current	$V_{CE}=1200V, V_{GE}=0V$	-	-	250	μA
I_{GES}	Gate Leakage Current, Forward	$V_{GE}=30V, V_{CE}=0V$	-	-	100	nA
	Gate Leakage Current, Reverse	$V_{GE}=-30V, V_{CE}=0V$	-	-	-100	nA
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=250\mu A$	4.5	-	5.7	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=50A$	-	2.6	3.2	V
Q_g	Total Gate Charge	$V_{CC}=960V$ $V_{GE}=15V$ $I_C=50A$	-	400	-	nC
Q_{ge}	Gate-Emitter Charge		-	31	-	nC
Q_{gc}	Gate-Collector Charge		-	230	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=15V$ $I_C=50A$ $R_G=10\Omega$ Inductive Load $T_C=25^{\circ}C$	-	41	-	ns
t_r	Turn-on Rise Time		-	107	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	429	-	ns
t_f	Turn-off Fall Time		-	32	-	ns
E_{on}	Turn-on Switching Loss		-	5.75	-	mJ
E_{off}	Turn-off Switching Loss		-	1.85	-	mJ
E_{ts}	Total Switching Loss		-	7.60	-	mJ
C_{ies}	Input Capacitance	$V_{CE}=25V$ $V_{GE}=0V$ $f=1MHz$	-	2870	-	pF
C_{oes}	Output Capacitance		-	370	-	pF
C_{res}	Reverse Transfer Capacitance		-	230	-	pF
R_{Gint}	Integrated gate resistor	$f=1M; V_{pp}=1V$		2.9		Ω

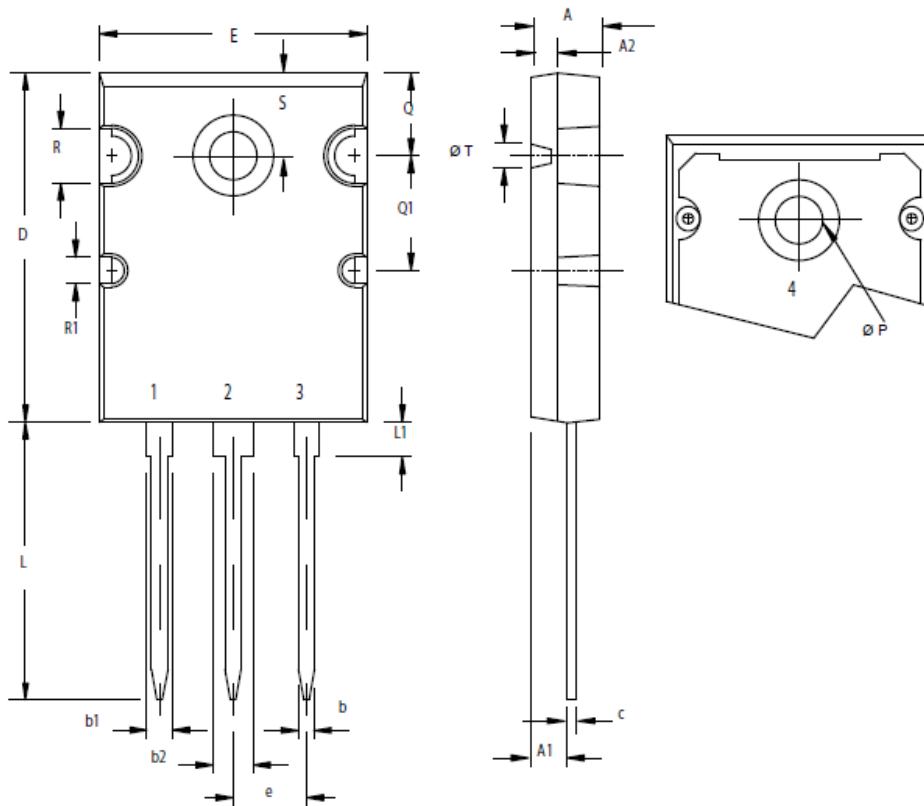
Electrical Characteristics of Diode ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	$I_F=50A$	-	1.9		V
t_{rr}	Diode Reverse Recovery Time	$V_{CE}=600V$ $I_F=50A$ $dIF/dt=500A/\mu s$	-	39		ns
I_{rr}	Diode peak Reverse Recovery Current		-	23.5		A
Q_{rr}	Diode Reverse Recovery Charge		-	1916		nC

Notes :

1. Repetitive Rating: Pulse width limited by maximum junction temperature

Package Dimensions



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.82	5.13	0.190	0.202
A1	2.54	2.89	0.100	0.114
A2	2.00	2.10	0.079	0.083
b	1.12	1.42	0.044	0.056
b2	2.90	3.09	0.114	0.122
c	0.53	0.83	0.021	0.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	0.780	0.786
e	5.45 BSC		0.215 BSC	
J	0.00	0.25	0.000	0.010
K	0.00	0.25	0.000	0.010
L	20.32	20.83	0.800	0.820
L1	2.29	2.59	0.090	0.102
P	3.17	2.66	0.125	0.144
Q	6.07	6.27	0.239	0.247
Q1	8.38	8.69	0.330	0.342
R	3.81	4.32	0.150	0.170
R1	1.78	2.29	0.070	0.090
S	6.04	6.30	0.238	0.248
T	1.57	1.83	0.062	0.072