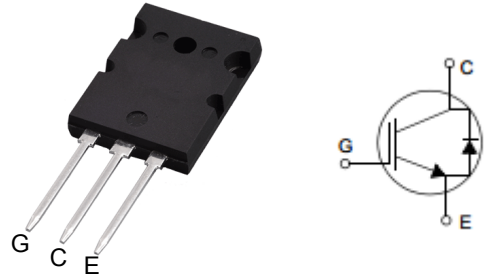


IGBT in TO-264

Features

- 1200V 40A, $V_{CE(sat)(typ.)} = 2.0 V@40A$
- Higher system efficiency
- Soft current turn-off waveforms



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

Benefits

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

Applications

CREATEK'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 ($T_C=25\text{ }^\circ\text{C}$)	80	A
	Continuous Collector Current ($T_C=100\text{ }^\circ\text{C}$)	40	A
I_{CM}	Pulsed Collector Current (Note 1)	360	A
I_F	Diode Continuous Forward Current ($T_C=100\text{ }^\circ\text{C}$)	40	A
I_{FM}	Diode Maximum Forward Current (Note 1)	400	A
t_{sc}	Short Circuit Withstand Time	10	us
P_D	Maximum Power Dissipation ($T_C=25\text{ }^\circ\text{C}$)	500	W
	Maximum Power Dissipation ($T_C=100\text{ }^\circ\text{C}$)	200	W
T_J	Operating Junction Temperature Range	-55 to +150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{th\ j-c}$	Thermal Resistance, Junction to case for IGBT	0.25	°C/W
$R_{th\ j-c}$	Thermal Resistance, Junction to case for Diode	0.7	°C/W
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	25	°C/W

Electrical Characteristics (TC=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{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	5.0	5.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE} = 15V, I_C = 40A$	-	2.0	2.3	V
Q_g	Total Gate Charge	$V_{CC} = 960V$ $V_{GE} = 15V$ $I_C = 40A$	-	195		nC
Q_{ge}	Gate-Emitter Charge		-	90		nC
Q_{gc}	Gate-Collector Charge		-	105		nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC} = 600V$ $V_{GE} = 15V$ $I_C = 40A$ $R_G = 28\Omega$ Inductive Load $T_C = 25^\circ C$	-	40	-	ns
t_r	Turn-on Rise Time		-	58	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	480	-	ns
t_f	Turn-off Fall Time		-	240	-	ns
E_{on}	Turn-on Switching Loss		-	2.3	-	mJ
E_{off}	Turn-off Switching Loss		-	3.6	-	mJ
E_{ts}	Total Switching Loss		-	5.9	-	mJ
C_{ies}	Input Capacitance	$V_{CE} = 25V$ $V_{GE} = 0V$ $f = 1MHz$	-	3000	-	pF
C_{oes}	Output Capacitance		-	405	-	pF
C_{res}	Reverse Transfer Capacitance		-	230	-	pF
R_{Gint}	Integrated gate resistor	$f = 1M; V_{pp} = 1V$		2.5		Ω

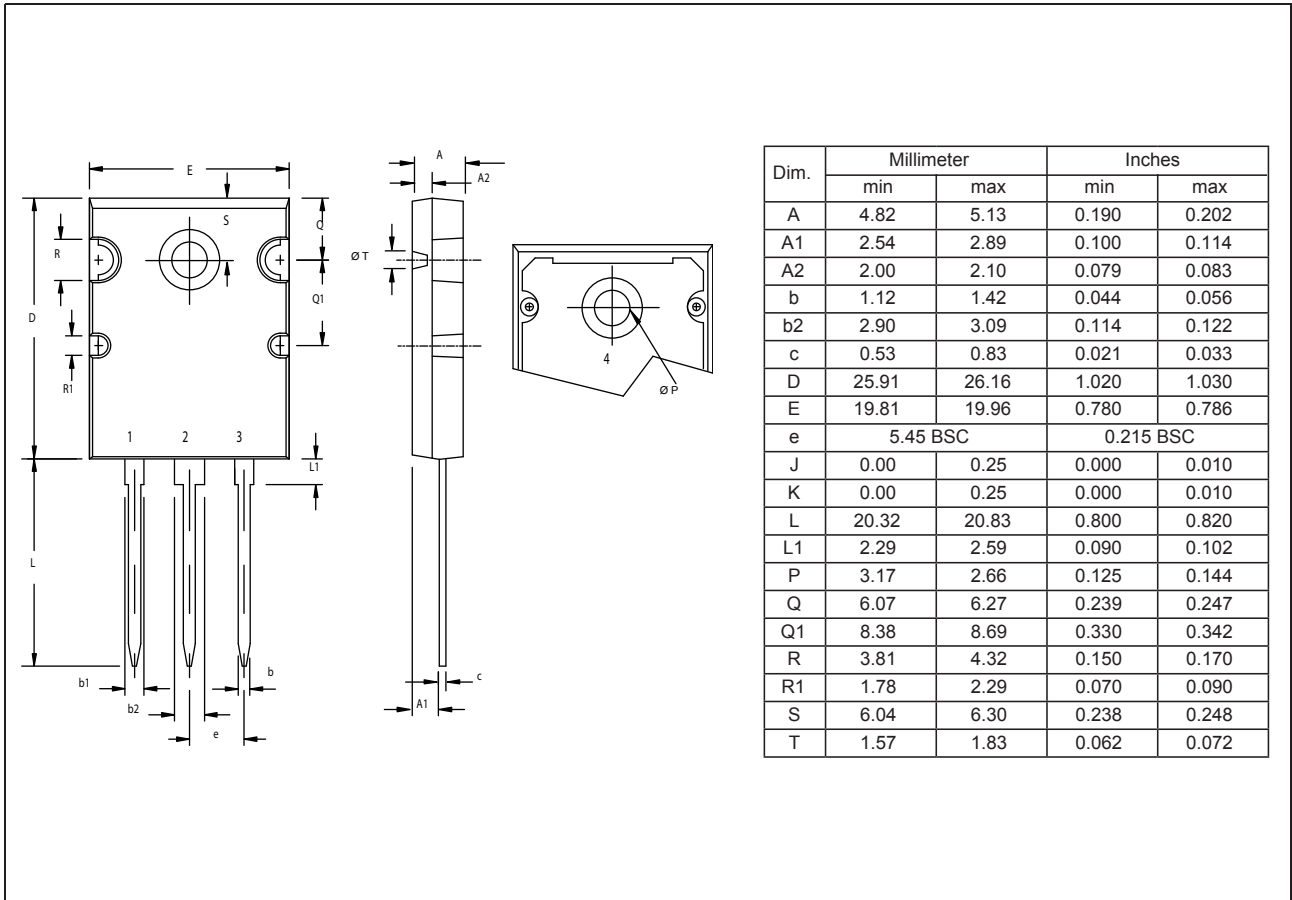
Electrical Characteristics of Diode (TC=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	$I_F = 40A$	-	2.8	3.2	V
t_{rr}	Diode Reverse Recovery Time	$V_{CE} = 600V$ $I_F = 40A$ $dI_F/dt = 500A/\mu s$	-	80		ns
I_{rr}	Diode peak Reverse Recovery Current		-	18.5	-	A
Q_{rr}	Diode Reverse Recovery Charge		-	690	-	nC

Notes:

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

Package Dimensions



Ordering information

Order code	Package	Packaging option	Base quantity	Packaging specification
CXG40N120JK	TO-264	Tube/BOX	20pcs / Tube	

Revision history

Date	Revision	Changes
23-May-2012	1.0	Initial release

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