

## Non Punch Through (NPT) IGBT

### Description

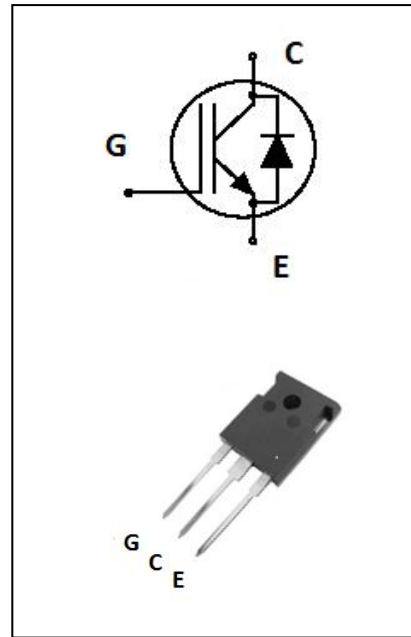
The ZG15N120 is use advanced non punch through(NPT) technology ,the 1200V NPT IGBT offers superior conduction and switching performances.

### General Features

- 1200V Breakdown Voltage
- Low saturation voltage: $V_{CE(sat),typ}=2.25V$   
@ $I_C=15A$  and  $T_C=25^{\circ}C$
- NPT Technology,Positive temperature coefficient

### Application

- Solar Converters
- Welding Converters
- UPS



### Electrical Characteristics @ $T_c=25^{\circ}C$ (unless otherwise specified)

#### a) Limited Parameters:

Symbol	Parameter	Value	Units
$V_{CES}$	Collector-Emitter Voltage	1200	V
$V_{GES}$	Gate-Emitter Voltage	+/-20	V
$I_C$	Collector Current	30	A
	Collector Current @ $T_c=100^{\circ}C$	15	A
$I_{CM}$	Pulsed Collector Current	45	A
$I_F$	Diode Continuous Forward Current @ $T_c=100^{\circ}C$	15	A
$I_{FM}$	Diode Maximum Forward Current	45	A
$P_D$	Total Dissipation at $T_a=25^{\circ}C$	320	W
	Total Dissipation at @ $T_c=100^{\circ}C$	250	
$T_j$	Operating Junction and Storage Temperature Range	-55 to +150	$^{\circ}C$
$T_L$	Max Temperature For Soldering	300	$^{\circ}C$



## b) Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{CES}$	Collector-Emitter Voltage	$V_{GE}=0V, I_{CE}=250\mu A$	1200			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=15A$		2.25	2.7	V
$V_{GE(th)}$	Gated Threshold Voltage	$V_{CE}=V_{GE}, I_C=1mA$	4.5	5.3	5.8	V
$I_{CES}$	Collector-Emitter Leakage Current	$V_{GE}=0V, V_{CE}=1200V$			25	$\mu A$
$I_{GES(F)}$	Gate to Emitter Forward Leakage	$V_{GE}=+20V,$			250	nA
$I_{GES(R)}$	Gate to Emitter Reverse Leakage	$V_{GE}=-20V,$			-250	nA
$C_{ies}$	Input Capacitance	$V_{GE}=0V,$ $V_{CE}=30V,$ $f=1.0MHz$		700		pF
$C_{oes}$	Output Capacitance			110		pF
$C_{res}$	Reverse Transfer Capacitance			50		pF
$Q_g$	Total Gate Charge	$V_{CE}=400V$		84		nC
$Q_{ge}$	Gate to Emitter Charge	$I_C=15A$		14		nC
$Q_{gc}$	Gate to Collector Charge	$V_{GE}=15V$		45		nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{CE}=600V, I_C=15A$ $V_{GE}=15V, R_G=82\Omega$		181		nS
$t_r$	Rise Time			58		nS
$t_{d(off)}$	Turn-off Delay Time			255		nS
$t_f$	Fall Time			347		nS

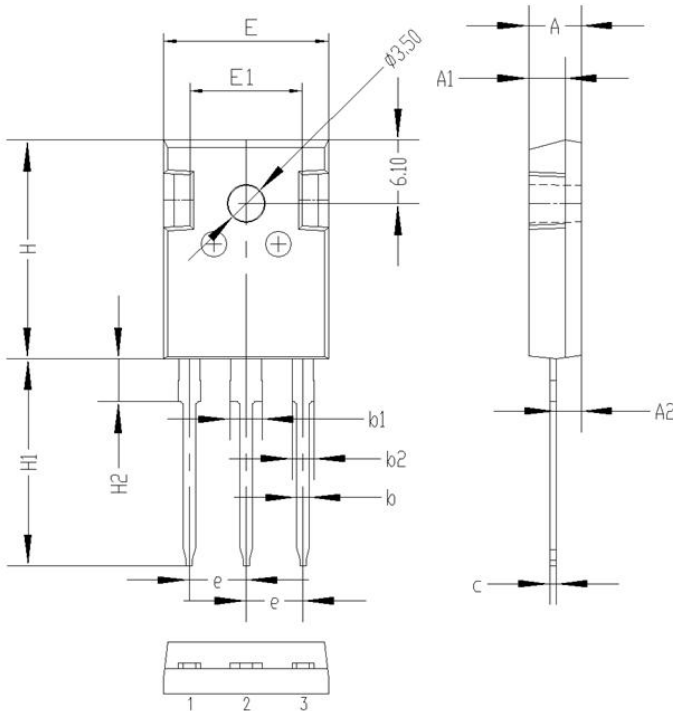
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$I_F$	Diode Continuous Forward Current	$TC=100^\circ C$	15			A
$I_{FM}$	Diode Maximum Forward Current	$TC=100^\circ C$	45			A
$V_F$	Diode Forward Voltage	$I_F=15A$		1.90	2.5	V
$t_{rr}$	Diode reverse recovery time	$I_F=1A, V_R=30V,$ $di/dt=200A/\mu s$		55		ns

Symbol	Parameter	Typ	MAX	Units
$R_{\theta JC}$	Thermal Resistance, Junction to case for IGBT	--	0.6	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	--	40	$^\circ C/W$



Package Information

TO-247 PACKAGE



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.80	5.20
A1	3.30	3.70
A2	2.10	2.50
b	1.00	1.40
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.6	16.0
E1	10.6	11.00
H	20.8	21.2
H1	19.4	20.4
H2	3.90	4.30
G	5.90	6.30
$\Phi P$	3.30	3.70

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