

Non Punch Through (NPT) IGBT

Description

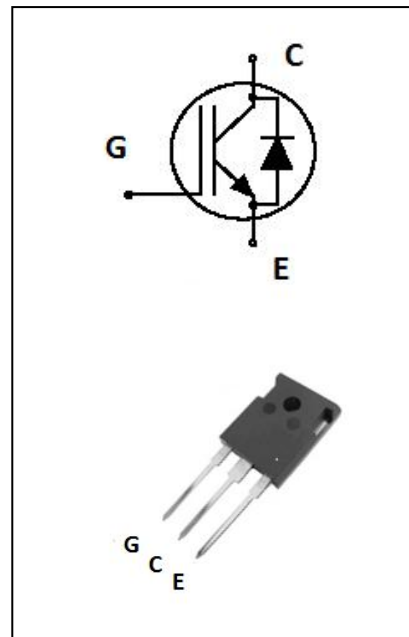
The THG15N120PKN is use advanced non punch through(NPT) technology ,the 1200V NPT IGBT offers superior conduction and switching performances.

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	μA
$I_{GES(F)}$	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

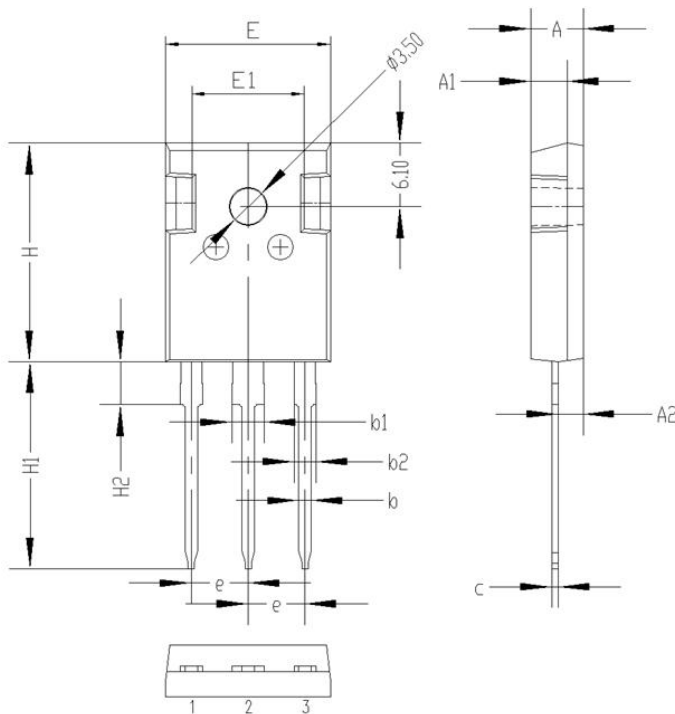
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{CE}=600V, I_C=15A$ $V_{GE}=15V, R_G=82\Omega$		181		nS
t_r	Rise Time			58		nS
$t_{d(off)}$	Turn-off Delay Time			255		nS
t_f	Fall Time			347		nS

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
ΦP	3.30	3.70

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