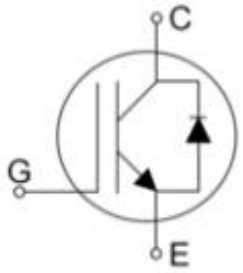
LEGP15N120AH_E

IGBT Discrete

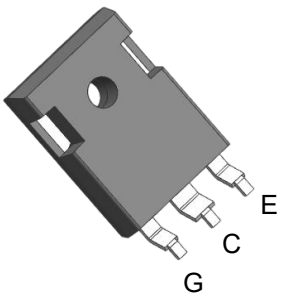
Features:

- 1200V/15A Trench Field Stop IGBT
- High breakdown voltage up to 1200V for improved reliability
- Trench-Stop Technology offering :
  - Low $V_{CE(sat)}$
  - Very tight parameter distribution
  - Short circuit withstand time – 10μs
  - High ruggedness, temperature stable
  - Easy parallel switching capability due to positive temperature coefficient in $V_{CE(sat)}$
- Enhanced avalanche capability



Applications:

- UPS
- Universal frequency conversion



Type	V_{CE}	I_C	$V_{CE(sat)}$ @I_C=15A	Marking	Package
LEGP15N120AH_E	1200V	15A	1.8 V	GP15N120AH_E	TO-247-3L

Maximum Rated Values

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage		1200	V
I_C	Continuous Collector Current	T_C=25℃	30	A
		T_C=100℃	15	A
I_F	Diode Forward current	T_C=25℃	30	A
		T_C=100℃	15	A
V_{GE}	Gate-Emitter Voltage		±20	V
V_{GE}	Transient Gate-Emitter Voltage		±30	V
I_{Cplus}	Pulsed collector current		60	A
I_{Fplus}	Diode Pulsed Current		60	A
T_{sc}	Short Circuit Withstand Time	Short Circuit Withstand Time	10	us
P_{tot}	Total Power Dissipation	T_C=25℃	214	W
T_{vj}	Operating Junction Temperature	Operating Junction Temperature	-40...+175	℃
T_{stg}	Storage Temperature	Storage Temperature	-55...+150	℃
	Soldering temperature	wave soldering 1.6mm (0.063in.) from case for 10s	260	℃
M	Mounting torque	M3 screw Maximum of mounting processes: 3	0.6	Nm

Thermal Resistance

Symbol	Parameter	Ratings	Unit
$R_{\theta(j-c)}$	IGBT thermal resistance, junction - case	0.7	K/W
$R_{\theta(j-c)}$	Diode thermal resistance, junction - case	1.2	K/W
$R_{\theta(j-a)}$	Thermal resistance, junction - ambient	40	K/W

Characteristics Values of the IGBT

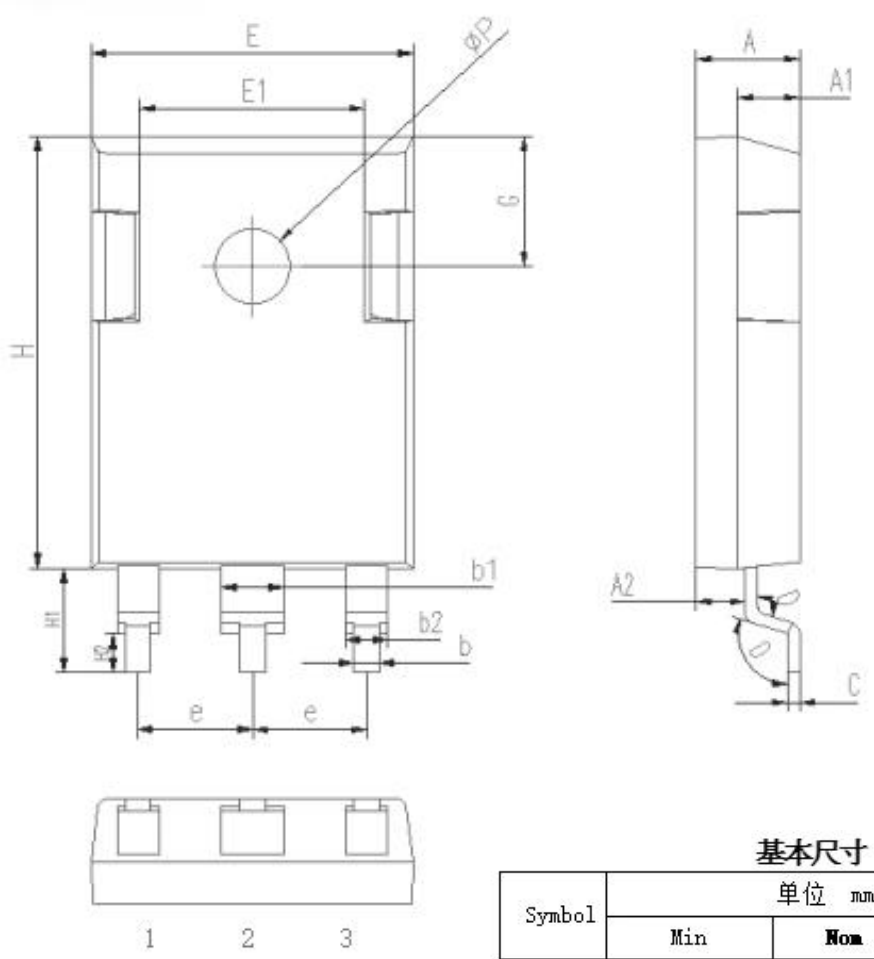
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	Collector-Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 0.25mA	1200			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=15 A, V_{GE}=15 V, T_{vj}=25 ℃		1.8	2.2	V
		I_C=15 A, V_{GE}=15 V, T_{vj}=150 ℃		2.2		V
		I_C=15 A, V_{GE}=15 V, T_{vj}=175 ℃		2.3		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=1.0 mA,V_{CE}=V_{GE}	5.0	5.8	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=1200V, V_{GE}=0 V, T_{vj}=25 ℃			0.1	mA
		V_{CE}=1200V, V_{GE}=0 V, T_{vj}=175 ℃			4.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=20 V, T_{vj}=25 ℃			250	nA
g_{FS}	Transconductance	V_{CE}=20V,I_C=15A		10		S
C_{ies}	Input Capacitance	f = 1MHz, T_{vj}= 25℃, V_{CE}= 25 V, V_{GE}= 0 V		1185		pF
C_{oes}	Output Capacitance			81		pF
C_{res}	Reverse Transfer Capacitance			35		pF
Q_G	Gate charge	V_{CC}=600V,I_C=15A, V_{GE}=15V		94		nC
$t_{d(on)}$	Turn-on Delay Time	I_C=15 A,V_{CE}=600 V, V_{GE}=±15 V, R_G=10Ω, T_{vj}=25 ℃		56		ns
t_r	Rise Time, Inductive Load			65		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			226		ns
t_f	Fall Time, Inductive Load			156		ns
E_{on}	Turn-on Energy Loss per Pulse			1.17		mJ
E_{off}	Turn-off Energy Loss			0.95		mJ
$t_{d(on)}$	Turn-on Delay Time	I_C=15 A,V_{CE}=600 V, V_{GE}=±15 V, R_G=10Ω, T_{vj}=125℃		48		ns
t_r	Rise Time, Inductive Load			63		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			312		ns
t_f	Fall Time, Inductive Load			266		ns
E_{on}	Turn-on Energy Loss per Pulse			1.28		mJ
E_{off}	Turn-off Energy Loss			1.55		mJ
I_{SC}	Short circuit collector current	V_{GE}=15V, V_{CC}≤600V, t_{SC}≤10μs,T_{vj}=175℃		60		A

Characteristics Values of the Diode

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=15 A,T_{vj}=25 ℃		2.0		V
		I_F=15 A,T_{vj}=150 ℃		1.6		V
		I_F=15 A,T_{vj}=175 ℃		1.5		V
t_{rr}	Reverse Recovery time	I_F=15 A,V_R=600 V -di/dt=170A/us T_{vj}=25 ℃		153		ns
Q_r	Recovered Charge			0.44		uC
I_{rrm}	Diode peak reverse recovery current			6.2		A
t_{rr}	Reverse Recovery time	I_F=15 A,V_R=600V -di/dt=170A/us T_{vj}=175 ℃		400		ns
Q_r	Recovered Charge			2.3		uC
I_{rrm}	Diode peak reverse recovery current			14		A

Package Dimensions

TO-247



基本尺寸

Symbol	单位 mm		
	Min	Nom	Max
A	4.8	5.00	5.20
A1	3.3	3.5	3.7
A2	2.20	2.40	2.60
b	1.00	1.2	1.40
b1	2.90	3.10	3.30
b2	1.90	2.10	2.30
c	0.50	0.60	0.70
D	107.5°	108°	108.5°
e	5.25	5.45	5.65
E	15.2	15.7	16.2
E1	10.2	10.7	11.2
H	20.8	21	21.2
H1	4.8	5	5.2
H2	1.7	1.9	2.1
G	5.60	5.80	600
ΦP	3.30	3.50	3.70

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