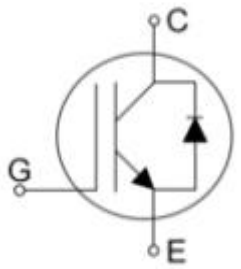
LEGP25N120AH

IGBT Discrete

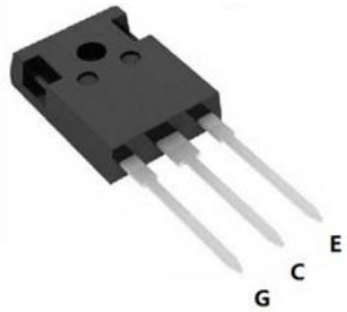
Features:

- 1200V/25A 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
- Frequency converter



Type	V_{CE}	I_C	$V_{CE(sat)}$ @I_C=25A	Marking	Package
LEGP25N120AH	1200V	25A	1.9 V	GP25N120AH	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℃	50	A
		T_C=100℃	25	A
I_F	Diode Forward current	T_C=25℃	50	A
		T_C=100℃	25	A
V_{GE}	Gate-Emitter Voltage		±20	V
V_{GE}	Transient Gate-Emitter Voltage		±30	V
I_{Cplus}	Pulsed collector current		100	A
IF_{plus}	Diode Pulsed Current		100	A
T_{sc}	Short Circuit Withstand Time	Short Circuit Withstand Time	10	us
P_{tot}	Total Power Dissipation	T_C=25℃	348	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	0.43	K/W
$R_{\theta(j-c)}$	Diode thermal resistance, junction - case	0.80	K/W
$R_{\theta(j-a)}$	Thermal resistance, junction - ambient	40	K/W

Characteristics Values of the IGBT

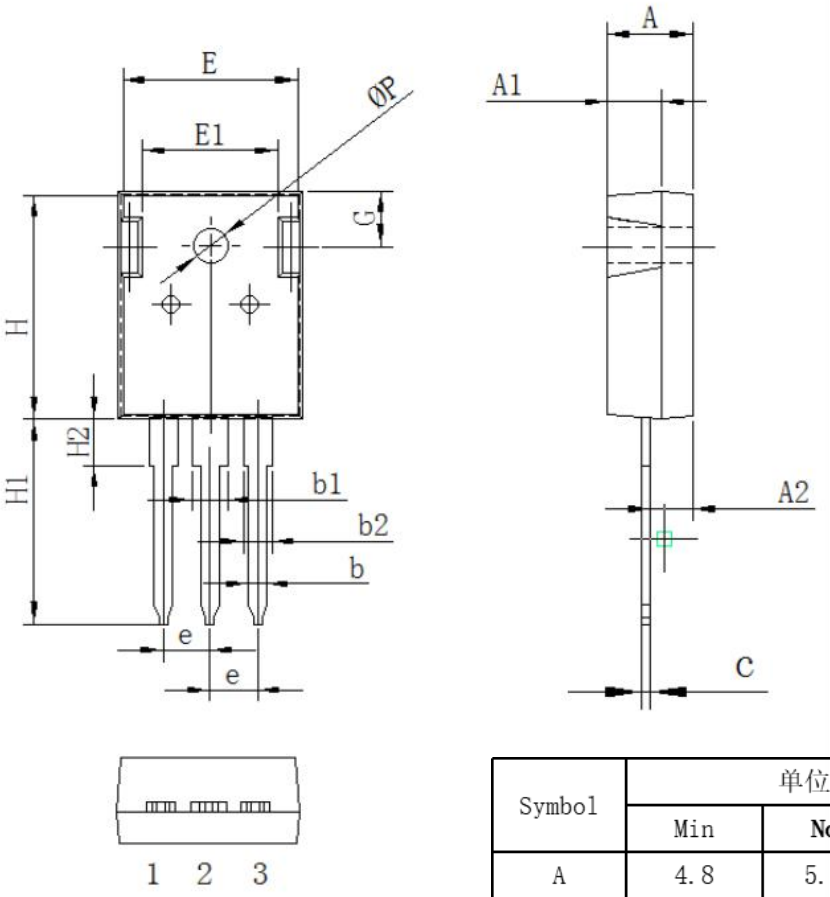
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	Collector-Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 250μA	1200			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=25 A, V_{GE}=15 V, T_{vj}=25 ℃		1.9	2.4	V
		I_C=25 A, V_{GE}=15 V, T_{vj}=150 ℃		2.5		V
		I_C=25 A, V_{GE}=15 V, T_{vj}=175 ℃		2.6		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=1.0 mA,V_{CE}=V_{GE}	5.5	6.0	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}=15 V, T_{vj}=25 ℃			200	nA
g_{FS}	Transconductance	V_{CE}=20V,I_C=25A		15		S
C_{ies}	Input Capacitance	f = 1MHz, T_{vj}= 25℃, V_{CE}= 25 V, V_{GE}= 0 V		1767		pF
C_{oes}	Output Capacitance			116		pF
C_{res}	Reverse Transfer Capacitance			62		pF
Q_G	Gate charge	V_{CC}=960V,I_C=25A, V_{GE}=15V		171		nC
$t_{d(on)}$	Turn-on Delay Time	I_C=25 A,V_{CE}=600 V, V_{GE}=±15 V, R_G=16Ω, T_{vj}=25 ℃		32		ns
t_r	Rise Time, Inductive Load			52		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			266		ns
t_f	Fall Time, Inductive Load			246		ns
E_{on}	Turn-on Energy Loss per Pulse			1.6		mJ
E_{off}	Turn-off Energy Loss			1.9		mJ
$t_{d(on)}$	Turn-on Delay Time	I_C=25 A,V_{CE}=600 V, V_{GE}=±15 V, R_G=16Ω, T_{vj}=175℃		30		ns
t_r	Rise Time, Inductive Load			50		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			322		ns
t_f	Fall Time, Inductive Load			378		ns
E_{on}	Turn-on Energy Loss per Pulse			1.7		mJ
E_{off}	Turn-off Energy Loss			2.5		mJ
I_{SC}	Short circuit collector current	V_{GE}=15V, V_{CC}≤600V, t_{SC}≤10μs,Tj=175℃		90		A

Characteristics Values of the Diode

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=25 A,T_{vj}=25 ℃		2.2		V
		I_F=25 A,T_{vj}=150 ℃		1.7		V
		I_F=25 A,T_{vj}=175 ℃		1.6		V
t_{rr}	Reverse Recovery time	I_F=25 A,V_R=600 V -di/dt=400A/us T_{vj}=25 ℃		256		ns
Q_r	Recovered Charge			1.35		uC
I_{rrm}	Diode peak reverse recovery current			12.4		A
t_{rr}	Reverse Recovery time	I_F=25 A,V_R=600V -di/dt=400A/us T_{vj}=175 ℃		350		ns
Q_r	Recovered Charge			4.28		uC
I_{rrm}	Diode peak reverse recovery current			26.2		A

Package Dimensions

TO-247



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
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	19.5	20.0	20.5
H2	4.00	4.20	4.40
G	5.60	5.80	600
ΦP	3.30	3.50	3.70

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