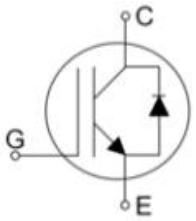
LEGP75N70AHDF

IGBT Discrete

Features:

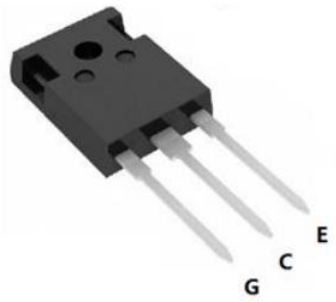
- 700V/75A Trench Field Stop IGBT
- High breakdown voltage up to 700V for improved reliability
- Trench-Stop Technology offering :
  - Low $V_{CE(sat)}$
  - Very tight parameter distribution
  - Short circuit withstand time – 10μs
  - High ruggedness, temperature stable
  - Easy parallel switching capability due to positive temperature coefficient in $V_{CE(sat)}$
- Enhanced avalanche capability

V_{CE}	700	V
I_C	75	A
$V_{CE(sat)}$ @I_C=75A	1.9	V



Applications:

- UPS
- PCS
- Inverter



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Maximum Rated Values

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage		700	V
I_C	Continuous Collector Current	T_C=25℃	150	A
		T_C=100℃	75	A
I_F	Diode Forward current	T_C=25℃	150	A
		T_C=100℃	75	A
V_{GE}	Gate-Emitter Voltage		±20	V
V_{GE}	Transient Gate-Emitter Voltage		±30	V
I_{CRM}	Peak Collector Current	I_{CRM}=2I_C	300	A
IF_{plus}	Diode Pulsed Current	Diode Pulsed Current	300	A
T_{sc}	Short Circuit Withstand Time	Short Circuit Withstand Time	10	us
P_{tot}	Total Power Dissipation	T_C=25℃,T_{vjmax}=150℃	139	W
T_{vj}	Operating Junction Temperature	Operating Junction Temperature	-40...+150	℃
T_{stg}	Storage Temperature	Storage Temperature	-55...+150	℃
	Soldering temperature	wave soldering 1.6mm (0.063in.) from case for 10s	260	℃

Thermal Resistance

Symbol	Parameter	Ratings	Unit
$R_{\theta(j-c)}$	IGBT thermal resistance, junction - case	1.03	K/W
$R_{\theta(j-c)}$	Diode thermal resistance, junction - case	1.64	K/W
$R_{\theta(j-a)}$	Thermal resistance, junction - ambient	65	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	700			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=75 A, V_{GE}=15 V, T_{vj}=25 ℃		1.9		V
		I_C=75 A, V_{GE}=15 V, T_{vj}=150 ℃		2.6		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=0.25 mA,V_{CE}=V_{GE}	5.5	6.0	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	V_{CE}=700V, V_{GE}=0 V, T_{vj}=25 ℃			1.0	mA
I_{GES}	Gate-Emitter Leakage Current	V_{CE}=0 V, V_{GE}=15 V, T_{vj}=25 ℃			150	nA
C_{ies}	Input Capacitance	f = 1MHz, T_{vj}= 25℃, V_{CE}= 25 V, V_{GE}= 0 V		7.44		pF
C_{res}	Reverse Transfer Capacitance			0.13		pF
$t_{d(on)}$	Turn-on Delay Time	I_C=75 A,V_{CE}=300 V, V_{GE}=±15 V, R_G=10Ω, T_{vj}=25 ℃		58		ns
t_r	Rise Time, Inductive Load			143		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			116		ns
t_f	Fall Time, Inductive Load			100		ns
E_{on}	Turn-on Energy Loss per Pulse			3.19		mJ
E_{off}	Turn-off Energy Loss			1.53		mJ
$t_{d(on)}$	Turn-on Delay Time	I_C=75 A,V_{CE}=300 V, V_{GE}=±15 V, R_G=10Ω, T_{vj}=150℃		60		ns
t_r	Rise Time, Inductive Load			142		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			126		ns
t_f	Fall Time, Inductive Load			119		ns
E_{on}	Turn-on Energy Loss per Pulse			4.45		mJ
E_{off}	Turn-off Energy Loss			1.95		mJ

Characteristics Values of the Diode

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F=75 A,T_{vj}=25 ℃		1.4		V
		I_F=75 A,T_{vj}=150 ℃		1.20		V
t_{rr}	Reverse Recovery time	I_F=75 A,V_R=300 V -di/dt=450A/us T_{vj}=25 ℃ V_{GE}=-15 V		117		ns
Q_r	Recovered Charge			0.75		uC
E_{rec}	Reverse Recovery Energy			0.11		mJ
t_{rr}	Reverse Recovery time	I_F=75 A,V_R=300V -di/dt=450A/us T_{vj}=150 ℃ V_{GE}=-15 V		223		ns
Q_r	Recovered Charge			2.37		uC
E_{rec}	Reverse Recovery Energy			0.29		mJ

Package Dimensions

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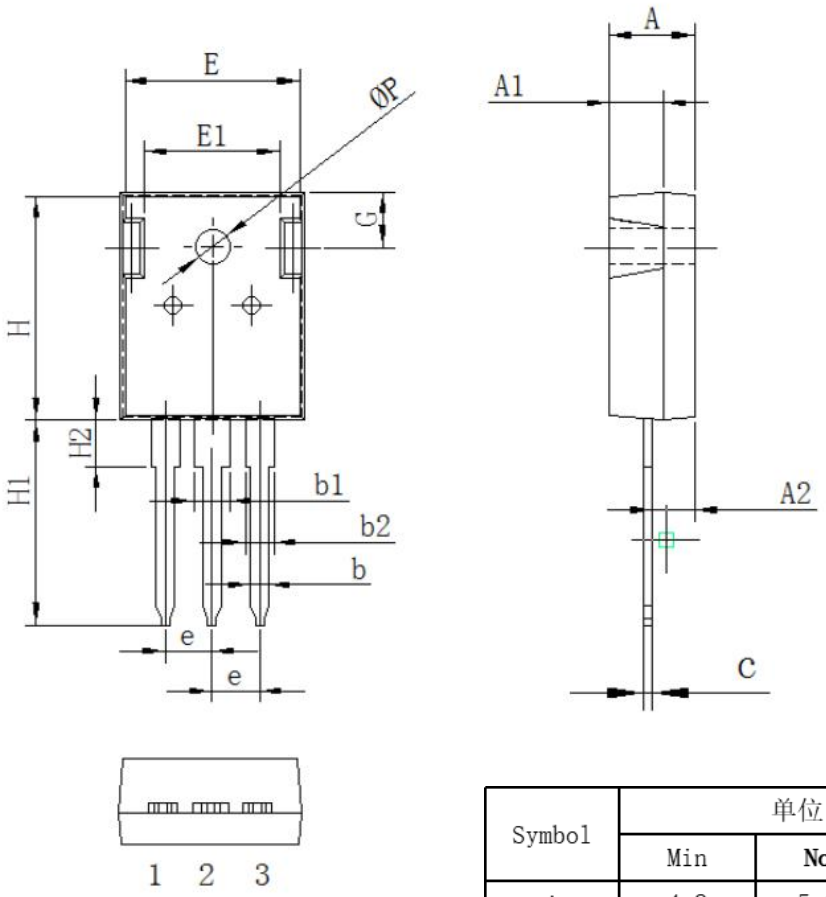

Symbol	单位 mm		
	Min	**Nom**	Max
A	4.8	5.00	5.20
A1	3.3	3.5	3.7
A2	2.20	2.40	2.60
b	1.00	1.2	1.40
b1	2.90	3.10	3.30
b2	1.90	2.10	2.30
c	0.50	0.60	0.70
e	5.25	5.45	5.65
E	15.2	15.7	16.2
E1	10.2	10.7	11.2
H	20.8	21	21.2
H1	19.5	20.0	20.5
H2	4.00	4.20	4.40
G	5.60	5.80	600
ΦP	3.30	3.50	3.70

DISCLAIMER

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABITILY, FUNCTION OR DESIGN OR OTHERWISE