

LEGP200N70FHF

IGBT Discrete

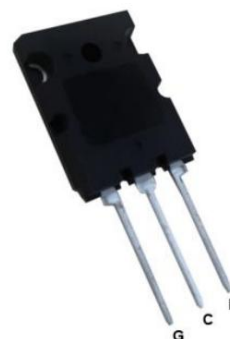
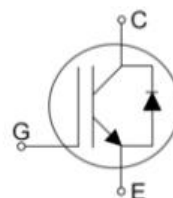
Features:

- 700V/200A 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 – 10 μ s
 - 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	200	A
$V_{CE(sat)}$ @ $I_C=200A$	1.6	V

Applications:

- 3-Level-Applications
- Solar Applications
- UPS Systems



TO-264

Maximum Rated Values

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage		700	V
I_C	Continuous Collector Current	$T_C=25^{\circ}\text{C}$	400	A
		$T_C=100^{\circ}\text{C}$	200	A
I_F	Diode Forward current	$T_C=25^{\circ}\text{C}$	400	A
		$T_C=100^{\circ}\text{C}$	200	A
V_{GE}	Gate-Emitter Voltage		± 20	V
V_{GE}	Transient Gate-Emitter Voltage		± 30	V
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	400	A
I_{Fplus}	Diode Pulsed Current	Diode Pulsed Current	400	A
T_{sc}	Short Circuit Withstand Time	Short Circuit Withstand Time	10	us
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}\text{C}, T_{vjmax}=150^{\circ}\text{C}$	650	W
T_{vj}	Operating Junction Temperature	Operating Junction Temperature	-40...+150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	Storage Temperature	-55...+150	$^{\circ}\text{C}$
	Soldering temperature	wave soldering 1.6mm (0.063in.) from case for 10s	260	$^{\circ}\text{C}$

Thermal Resistance

Symbol	Parameter	Ratings	Unit
$R_{\theta(j-c)}$	IGBT thermal resistance, junction - case	0.23	K/W
$R_{\theta(j-c)}$	Diode thermal resistance, junction - case	0.36	K/W

Characteristics Values of the IGBT

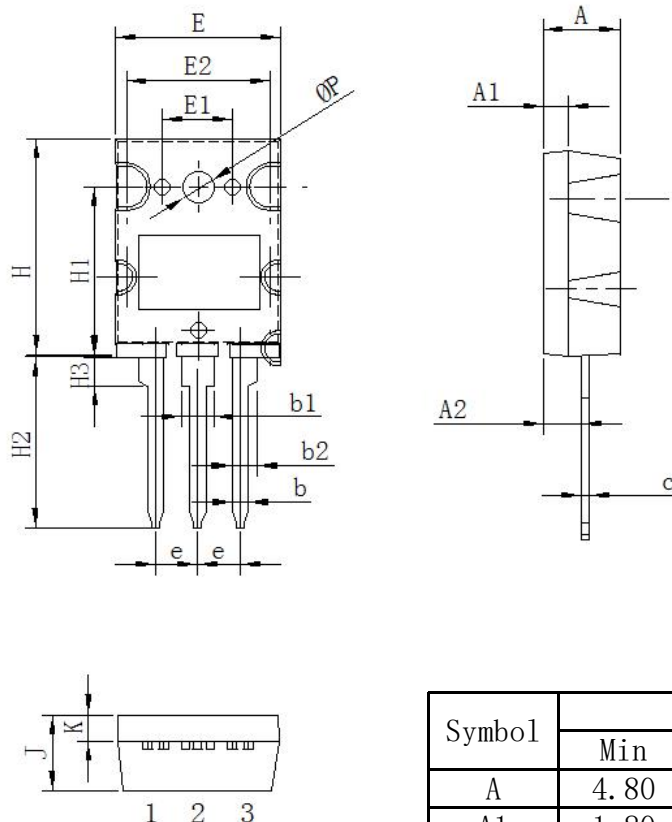
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	Collector-Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 250\mu A$	700			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=200 A, V_{GE}=15 V, T_{vj}=25^\circ C$		1.6	2.0	V
		$I_C=200 A, V_{GE}=15 V, T_{vj}=150^\circ C$		1.8		V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=5.0 mA, V_{GE}=0V$	5.2	6	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=700V, V_{GE}=0 V, T_{vj}=25^\circ C$			1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0 V, V_{GE}=15 V, T_{vj}=25^\circ C$			200	nA
C_{ies}	Input Capacitance	$f = 1MHz, T_{vj} = 25^\circ C,$ $V_{CE} = 25 V, V_{GE} = 0 V$			3.11	nF
C_{res}	Reverse Transfer Capacitance				103	pF
$t_{d(on)}$	Turn-on Delay Time	$I_C=200 A, V_{CE}=300 V$ $V_{GE}=\pm 15 V$ $R_G=1\Omega$ $T_{vj}=25^\circ C$		52.3		ns
t_r	Rise Time, Inductive Load			41.0		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			223		ns
t_f	Fall Time, Inductive Load			51		ns
E_{on}	Turn-on Energy Loss per Pulse			1		mJ
E_{off}	Turn-off Energy Loss			7		mJ
$t_{d(on)}$	Turn-on Delay Time	$I_C=200 A, V_{CE}=300 V$ $V_{GE}=\pm 15 V$ $R_G=1\Omega$ $T_{vj}=150^\circ C$		52.6		ns
t_r	Rise Time, Inductive Load			43.2		ns
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			251		ns
t_f	Fall Time, Inductive Load			121		ns
E_{on}	Turn-on Energy Loss per Pulse			1.5		mJ
E_{off}	Turn-off Energy Loss			9.3		mJ
I_{SC}	Short Circuit Collector Current	$V_{GE} \leq 15 V, V_{CC} = 360 V$ $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$ $t_p \leq 10 \mu s, T_{vj} = 150^\circ C$		1500		A

Characteristics Values of the Diode

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=200\text{ A}, V_{CE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$		1.7		V
		$I_F=200\text{ A}, V_{CE}=0\text{ V}, T_{vj}=150\text{ }^{\circ}\text{C}$		1.6		V
t_{rr}	Reverse Recovery time	$I_F=200\text{ A}, V_R=300\text{ V}$ $-di/dt=2800\text{ A/us}$ $T_{vj}=25\text{ }^{\circ}\text{C}$		170		ns
Q_r	Recovered Charge			14		uC
E_{rec}	Reverse Recovery Energy			1.5		mJ
t_{rr}	Reverse Recovery time	$I_F=200\text{ A}, V_R=300\text{ V}$ $-di/dt=2800\text{ A/us}$ $T_{vj}=150\text{ }^{\circ}\text{C}$		230		ns
Q_r	Recovered Charge			19.5		uC
E_{rec}	Reverse Recovery Energy			4.3		mJ

Package Dimensions

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Symbol	单位 mm		
	Min	Nom	Max
A	4.80	5.00	5.20
A1	1.80	2.00	2.20
A2	3.20	3.40	3.60
b	0.80	1.00	1.20
b1	2.90	3.10	3.30
b2	2.40	2.60	2.80
c	0.50	0.60	0.70
e	5.25	5.45	5.65
E	19.8	20.0	20.2
E1	17.6	17.8	18.0
E2	8.60	8.80	9.00
H	25.8	26.0	26.2
H1	19.8	20.0	20.2
H2	19.8	20.3	20.8
H3	2.00	2.50	3.00
G	6.00	6.20	6.40
ΦP	3.00	3.20	3.40
J	4.80	5.00	5.20
K	1.30	1.50	1.70

DISCLAIMER

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