

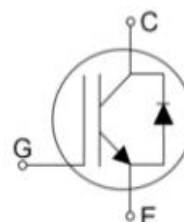
LEGP100N120FHDF

IGBT Discrete

Features:

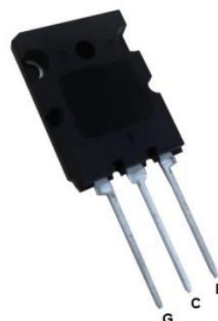
- 1200V/100A Trench Field Stop IGBT
- High breakdown voltage up to 1200V for improved reliability
- Trench-Stop Technology offering :
 - Low $V_{CE(sat)}$
 - Very tight parameter distribution
 - Short circuit withstand time – 10 μ s
 - High ruggedness, temperature stable
 - Easy parallel switching capability due to positive temperature coefficient in $V_{CE(sat)}$
- Enhanced avalanche capability

V_{CE}	1200	V
I_C	100	A
$V_{CE(sat)}$ @ $I_C=100A$	1.7	V



Applications:

- Motor control and drives
- inverter



TO-264-3L

Maximum Rated Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CE}	Collector-emitter voltage		1200	V
I_C	Continuous Collector Current	$T_C = 25^\circ\text{C}$	160	A
		$T_C = 100^\circ\text{C}$	100	A
I_F	Diode Forward current	$T_C = 25^\circ\text{C}$	160	A
		$T_C = 100^\circ\text{C}$	100	A
V_{GE}	Continuous Gate-emitter voltage		± 20	V
V_{GE}	Transient Gate-emitter voltage		± 30	V
I_{CM}	Pulsed Collector Current	$V_{GE} = 15\text{V}$, tp limited by T_{Jmax}	400	A
I_{Fplus}	Diode Pulsed Current	tp limited by T_{Jmax}	400	A
T_{sc}	Short Circuit Withstand Time	$V_{GE} = 15\text{V}$, $V_{CE} \leq 600\text{V}$	10	μs
P_{tot}	Total Power Dissipation	$T_J = 25^\circ\text{C}$	921	W
T_J	Operating Junction Temperature		$-40 \dots +150$	$^\circ\text{C}$
T_{stg}	Storage Temperature		$-55 \dots +150$	$^\circ\text{C}$
-	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	0.35	K/W
$R_{\theta(j-c)}$	Diode thermal resistance, junction - case	0.45	K/W
$R_{\theta(j-a)}$	Thermal resistance, junction - ambient	40	K/W

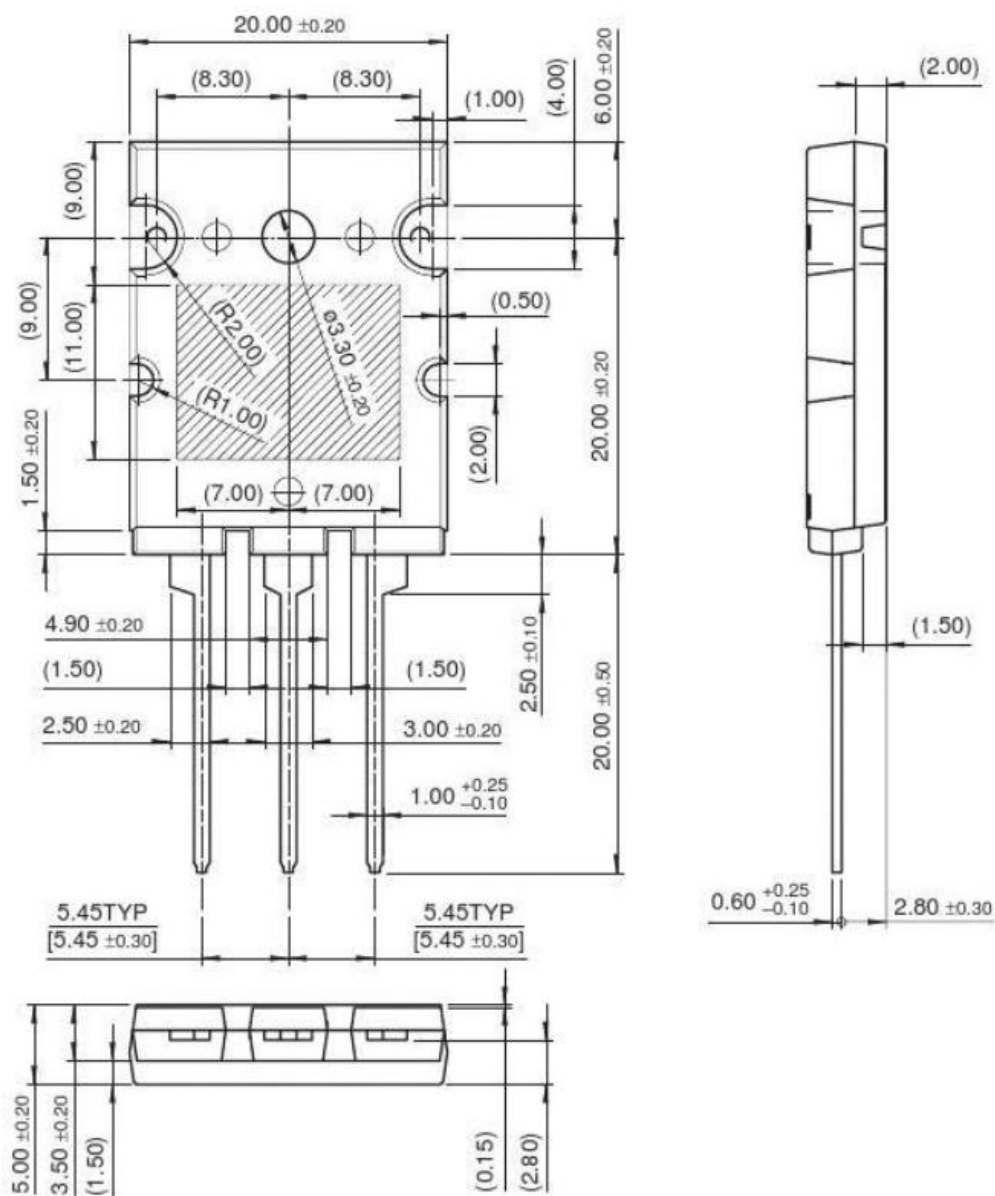
Characteristics Values of the IGBT ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	Collector-Emitter Breakdown Voltage	$V_{GE} = 0\text{V}, I_C = 250\mu\text{A}$		1200	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100\text{A}, V_{GE}=15\text{V}, T_j=25^\circ\text{C}$	-	1.7	2.25	V
		$I_C=100\text{A}, V_{GE}=15\text{V}, T_j=150^\circ\text{C}$	-	2.3	2.7	V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C = 5.0\text{mA}, V_{CE}=V_{GE}$	5.2	6.0	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_j=25^\circ\text{C}$	-	-	20	μA
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0\text{V}, V_{GE}=\pm 20\text{V}$			200	nA
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}, V_{CE} = 25\text{V},$ $f = 1\text{MHz}$	-	6.68		nF
C_{res}	Reverse Transfer Capacitance		-	220		pF
$t_{d(on)}$	Turn-on Delay Time	$I_C=100\text{A}, V_{CC}=600\text{V}$ $V_{GE}=\pm 15\text{V}$ $R_g=15\Omega$ $T_j=25^\circ\text{C}$	-	106		ns
t_r	Rise Time		-	40		ns
$t_{d(off)}$	Turn-off Delay Time		-	330		ns
t_f	Fall Time		-	240		ns
E_{on}	Turn-on Energy Loss		-	2.6		mJ
E_{off}	Turn-off Energy Loss		-	8.3		mJ
$t_{d(on)}$	Turn-on Delay Time	$I_C=100\text{A}, V_{CC}=600\text{V}$ $V_{GE}=\pm 15\text{V}$ $R_g=15\Omega$ $T_j=150^\circ\text{C}$	-	120		ns
t_r	Rise Time		-	43		ns
$t_{d(off)}$	Turn-off Delay Time		-	421		ns
t_f	Fall Time		-	327		ns
E_{on}	Turn-on Energy Loss		-	5.1		mJ
E_{off}	Turn-off Energy Loss		-	14.9		mJ
$I_{C(sc)}$	Short Circuit Collector Current	$V_{GE}=15\text{V}, t_{SC}\leq 10\mu\text{s}, V_{CC}=600\text{V},$ $T_{j, start}=150^\circ\text{C}$	-	520	-	A

Characteristics Values of the Diode ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 100\text{ A}$	-	2.0	-	V
I_{rr}	Reverse Recovery Current	$T_C = 100^\circ\text{C}$		100		A
t_{rr}	Reverse Recovery time	$I_F = 100\text{ A}, V_R = 600\text{ V}$ $di/dt = 1600\text{ A}/\mu\text{s}$ $T_j = 25^\circ\text{C}$	-	320	-	ns
Q_{rr}	Recovered Charge		-	7.5	-	μC
E_{rec}	Reverse Recovery Charge		-	3.5	-	mJ
t_{rr}	Reverse Recovery time	$I_F = 100\text{ A}, V_R = 600\text{ V}$ $di/dt = 1600\text{ A}/\mu\text{s}$ $T_j = 150^\circ\text{C}$	-	460	-	ns
Q_{rr}	Recovered Charge		-	19.9	-	μC
E_{rec}	Reverse Recovery Charge		-	9.4	-	mJ

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TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE