

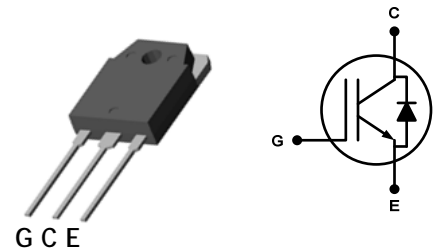
1200V, 15A High Speed Field Stop IGBT

Features

- Low gate charge
- Field Stop Technology
- Low saturation voltage:
 $V_{CE(sat)} = 1.8V$ (@ $I_C = 15A, T_C = 25^\circ C$)
- RoHS compliant product

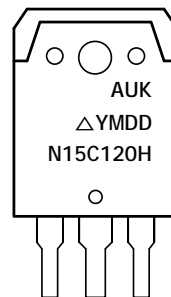
Applications

- General purpose inverters
- Induction heating (IH)
- UPS


TO-247

Ordering Information

Part Number	Marking	Package
SGTN15C120HW	N15C120H	TO-247



Column 1: Manufacturer
 Column 2: Production Information
 e.g.) ΔYMDD
 -. Δ: Factory Management Code
 -. YMDD: Date Code (Year, Month, Daily)
 Column 3: Device Code

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Rating	Unit	
Collector-emitter voltage	V_{CES}	1200	V	
Continuous collector current ⁽¹⁾	I_C	$T_C=25^\circ C$	30	A
		$T_C=100^\circ C$	15	A
Pulsed collector current ⁽²⁾	I_{CM}	45	A	
Gate-emitter voltage	V_{GES}	± 20	V	
Turn-off safe area	-	45	A	
Power dissipation	P_D	150	W	
Operating and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ C$	
Maximum lead temperature for soldering purpose	T_L	300	$^\circ C$	

¹⁾ Collector current limited by maximum junction temperature

²⁾ Pulse width limited by maximum junction temperature and turn-off within RBSOA.

Electrical Characteristics (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off-Characteristics						
Collector-emitter breakdown voltage	BV _{CES}	I _C =500μA, V _{GS} =0	1200	-	-	V
Breakdown voltage temperature coefficient	$\frac{\Delta BV_{CES}}{\Delta T_J}$	I _C =1mA, reference to 25°C	-	0.6	-	V/°C
Zero gate voltage collector current	I _{CES}	V _{CE} =1200V, V _{GS} =0V, T _C =25°C	-	-	0.2	mA
		V _{CE} =1200V, T _C =100°C	-	-	2	mA
		V _{CE} =1200V, T _C =150°C	-	-	2.5	mA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On-Characteristics						
Gate threshold voltage	V _{GE(th)}	V _{CE} =V _{GE} , I _C =600μA	4.5	-	6.5	V
Collector-emitter saturation voltage	V _{CE(sat)}	V _{GE} =15V, I _C =15A	-	1.8	2.4	V
		V _{GE} =15V, I _C =50A, T _C =150°C	-	2.1	-	V
Short collector current ⁽³⁾	I _{C(SC)}	V _{GE} =15V, V _{CE} =600V, t _{sc} < 10μs, T _C =150°C	-	160	-	A
Dynamic-Characteristics						
Input capacitance	C _{ies}	V _{CE} =25V, V _{GE} =0V, f=1MHz	-	1500	2000	pF
Output capacitance	C _{oes}		-	100	160	
Reverse transfer capacitance	C _{res}		-	70	110	
Turn-on delay time ^{(4),(5)}	t _{d(on)}	V _{CE} =600V, I _C =15A, R _G =56Ω, Inductive Load	-	30	-	ns
Rise time ^{(4),(5)}	t _r		-	100	-	
Turn-off delay time ^{(4),(5)}	t _{d(off)}		-	100	-	
Fall time ^{(4),(5)}	t _f		-	150	-	
Turn-on energy ^{(4),(5)}	E _{on}		-	1.5	-	mJ
Turn-off energy ^{(4),(5)}	E _{off}		-	0.9	-	
Total switching energy ^{(4),(5)}	E _{total}		-	2.4	-	
Total gate charge ^{(4),(5)}	Q _g	V _{CE} =600V, V _{GE} =15V, I _C =15A	-	100	-	nC

³⁾ Allowed number of short circuit: <1000; time between short circuit: >1s.

⁴⁾ Pulse test: Pulse width≤300μs, Duty cycle≤2%

⁵⁾ Essentially independent of operating temperature typical characteristics

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Anti-Parallel Diode Characteristics and Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Forward on voltage	V_F	$V_{GE}=0V, I_F=15A$	-	-	2.9	V
Reverse recovery time ^{(4),(5)}	t_{rr}	$I_F=10A, V_{GE}=0V, V_R=800V$ $di_F/dt=750A/\mu s$	-	150	-	ns
Reverse recovery charge ^{(4),(5)}	Q_{rr}		-	1.2	-	μC

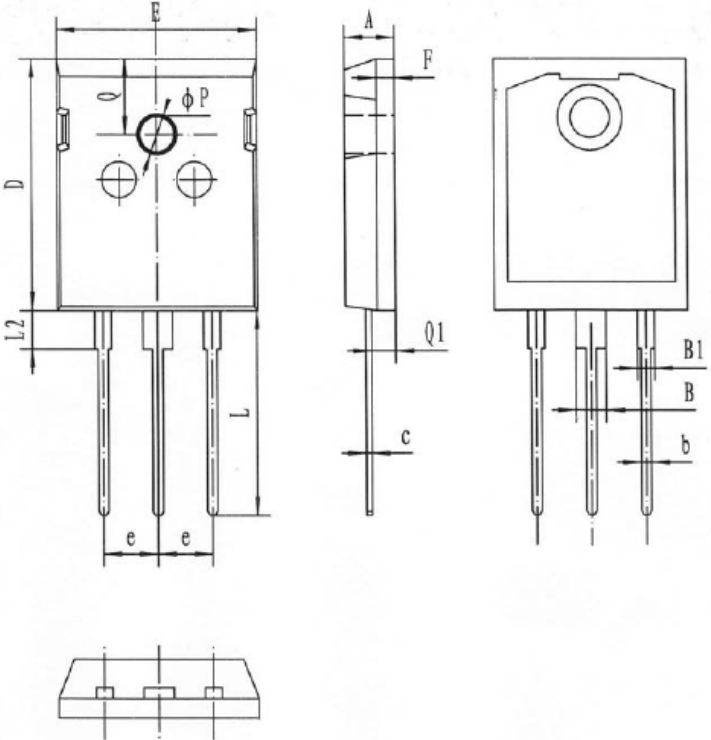
Thermal Characteristics

Characteristic	Symbol	Rating	Unit
Thermal resistance, junction to case	$R_{th(j-c)}$	Max. 0.6	$^\circ\text{C}/\text{W}$
Thermal resistance, junction to ambient	$R_{th(j-a)}$	Max. 40	

Package Outline Dimensions

TO-247

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.85	3.11
B1	1.95	2.05
b	1.15	1.25
c	0.60TYP	
D	20.77	21.07
E	15.77	16.03
e	5.32	5.58
F	1.92	2.08
L	20.05	20.31
L2	4.22	4.32
Q	6.00	6.20
Q1	2.33	2.43
P	3.65	3.75

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