

NXH80T120L2Q0S1G

T-Type NPC Power Module

1200 V, 55 A IGBT, 600 V, 50 A IGBT

The NXH80T120L2Q0S1G is a power module containing a T-type neutral point clamped (NPC) three level inverter consisting of two 55 A/1200 V half-bridge IGBTs with 40 A/1200 V half-bridge diodes and two 50 A/600 V NP IGBTs with two 50 A/600 V NP diodes. The module also contains an on-board thermistor.

Features

- T-type NPC Module with 55 A/1200 V and 50 A/600 V IGBTs
- HB IGBT Specifications: $V_{CE(SAT)} = 2.5 \text{ V}$, $E_{SW} = 1000 \mu\text{J}$
- NP IGBT Specifications: $V_{CE(SAT)} = 1.5 \text{ V}$, $E_{SW} = 880 \mu\text{J}$
- Solder Pins
- Thermistor

Typical Applications

- Solar Inverter
- Uninterruptible Power Supplies

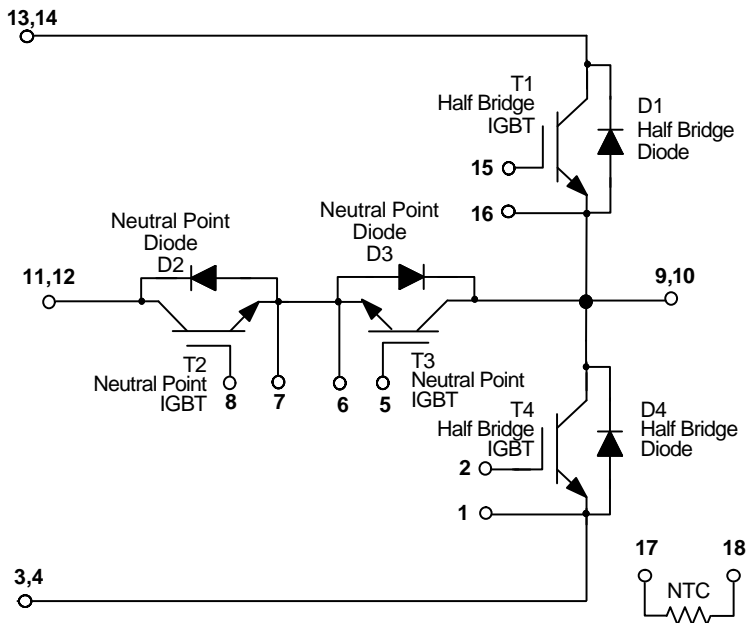
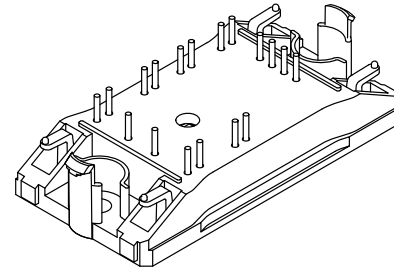


Figure 1. NXH80T120L2Q0S1G Schematic Diagram



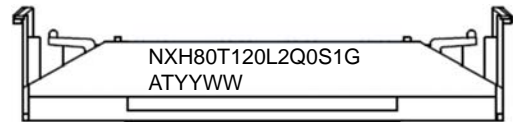
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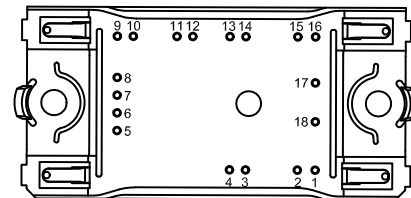
Q0PACK
CASE 180AH

MARKING DIAGRAM



NXH80T120L2Q0S1G = Device Code
YYWW = Year and Work Week Code
A = Assembly Site Code
T = Test Site Code
G = Pb-Free Package

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information in the dimensions section on page 11 of this data sheet.

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Table 1. ABSOLUTE MAXIMUM RATINGS (Note 1) $T_J = 25^\circ\text{C}$ unless otherwise noted

Rating	Symbol	Value	Unit
HALF BRIDGE IGBT			
Collector–Emitter Voltage	V_{CES}	1200	V
Gate–Emitter Voltage	V_{GE}	± 20	V
Continuous Collector Current @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	I_C	57	A
Pulsed Collector Current ($T_J = 175^\circ\text{C}$)	I_{Cpulse}	171	A
Maximum Power Dissipation @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	P_{tot}	125	W
Short Circuit Withstand Time @ $V_{GE} = 15\text{ V}$, $V_{CE} = 600\text{ V}$, $T_J \leq 150^\circ\text{C}$	T_{sc}	5	μs
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	150	$^\circ\text{C}$
NEUTRAL POINT IGBT			
Collector–Emitter Voltage	V_{CES}	600	V
Gate–Emitter Voltage	V_{GE}	± 20	V
Continuous Collector Current @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	I_C	52	A
Pulsed Collector Current ($T_J = 175^\circ\text{C}$)	I_{Cpulse}	156	A
Maximum Power Dissipation @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	P_{tot}	95	W
Short Circuit Withstand Time @ $V_{GE} = 15\text{ V}$, $V_{CE} = 400\text{ V}$, $T_J \leq 150^\circ\text{C}$	T_{sc}	5	μs
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	150	$^\circ\text{C}$
HALF BRIDGE DIODE			
Peak Repetitive Reverse Voltage	V_{RRM}	1200	V
Continuous Forward Current @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	I_F	25	A
Repetitive Peak Forward Current ($T_J = 175^\circ\text{C}$, t_p limited by T_{Jmax})	I_{FRM}	70	A
Maximum Power Dissipation @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	P_{tot}	54	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	150	$^\circ\text{C}$
NEUTRAL POINT DIODE			
Peak Repetitive Reverse Voltage	V_{RRM}	600	V
Continuous Forward Current @ $T_h = 80^\circ\text{C}$. ($T_J = 175^\circ\text{C}$)	I_F	31	A
Repetitive Peak Forward Current ($T_J = 175^\circ\text{C}$, t_p limited by T_{Jmax})	I_{FRM}	85	A
Maximum Power Dissipation @ $T_h = 80^\circ\text{C}$ ($T_J = 175^\circ\text{C}$)	P_{tot}	53	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	150	$^\circ\text{C}$
THERMAL PROPERTIES			
Storage Temperature range	T_{stg}	-40 to 125	$^\circ\text{C}$
INSULATION PROPERTIES			
Isolation test voltage, $t = 1\text{ sec}$, 60 Hz	V_{is}	3000	V_{RMS}
Creepage distance		12.7	mm

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for Safe Operating parameters.

Table 2. RECOMMENDED OPERATING RANGES

Rating	Symbol	Min	Max	Unit
Module Operating Junction Temperature	T_J	-40	($T_{Jmax}-25$)	$^\circ\text{C}$

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.