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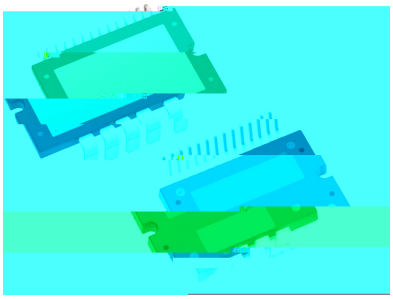


19LD, APM, PDD STD
CASE MODCD

Features

- Three−Phase Inverter Bridge for Variable Speed Motor Drive
- RC Snubber for Low EMI
- Current Sensing and Temperature Sensing
- Electrically Isolated DBC Substrate for Low Thermal Resistance
- Compact Design for Low Total Module Resistance
- Module Serialization for Full Traceability
- AEC Qualified − AQG324
- PPAP Capable
- This Device is Pb−free, RoHS and UL94−V0 Compliant

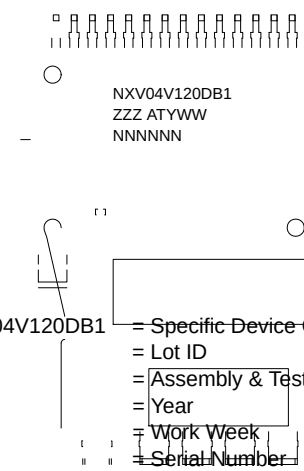
Applications

- 12 V Motor Control
- Electric and Electro−Hydraulic Power Steering
- Electric Water Pump, Oil Pump and Fan

Benefits

- Enable Design of Small, Efficient and Reliable System for Reduced Vehicle Fuel Consumption and CO_2 Emission
- Simplified Vehicle Assembly
- Enable Low Thermal Resistance to Junction−to−Heat Sink by Direct Mounting via Thermal Interface Material between Module Case and Heat Sink

MARKING DIAGRAM



NXV04V120DB1	= Specific Device Code
ZZZ	= Lot ID
AT	= Assembly & Test Location
Y	= Year
WW	= Work Week
NNN	= Serial Number

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

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Schematic Diagram

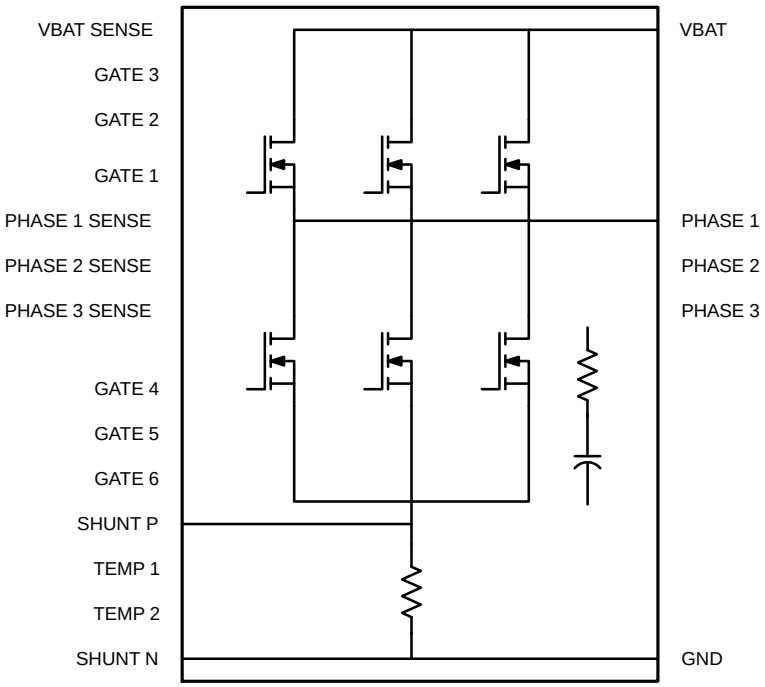

Figure 2. Schematic

THERMAL CHARACTERISTICS

Symbol

ELECTRICAL CHARACTERISTICS

(T_J = 25°C unless otherwise noted, Reference typical characteristics of FDBL9406 F085, TOLL)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz		7735		pF
C_{oss}	Output Capacitance			2160		pF
C_{rss}	Reverse Transfer Capacitance			129		pF
R_g	Gate Resistance	f = 1 MHz		2.5		Ω
$Q_{g(ToT)}$	Total Gate Charge	V_{GS} = 0 to 10 V; V_{DD} = 32 V, I_D = 80 A		90	112	nC
$Q_{g(th)}$	Threshold Gate Charge	V_{GS} = 0 to 2 V; V_{DD} = 32 V, I_D = 80 A		13.5	18	nC
Q_{gs}	Gate to Source Gate Charge	V_{DD} = 32 V, I_D = 80 A		43		nC
Q_{gd}	Gate to Drain “Miller” Charge	V_{DD} = 32 V, I_D = 80 A		10		nC
SWITCHING CHARACTERISTICS						
t_{on}	Turn On Time	V_{DD} = 20 V, I_D = 80 A, V_{GS} = 10 V, R_{GEN} = 6 Ω				

TYPICAL CHARACTERISTICS

(Graphs are generated using the die assembled in discrete package for reference purposes only. Datasheet of FDBL9406_F085 is available in the web)

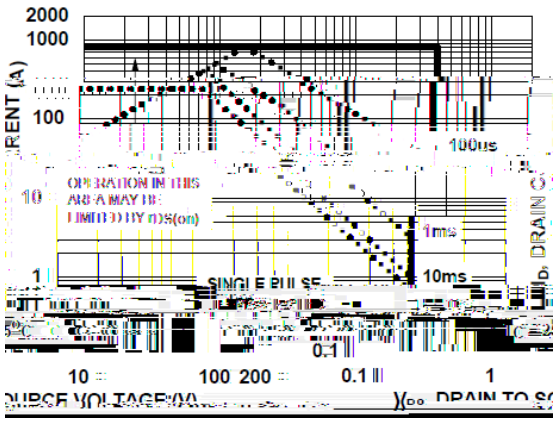

Figure 3. Forward Bias Safe Operating Area

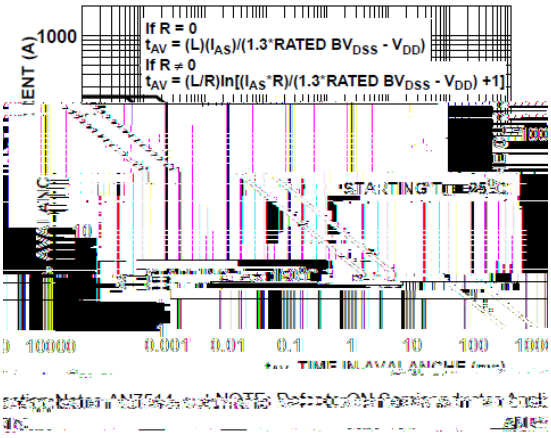

Figure 4. Unclamped Inductive Switching Capability

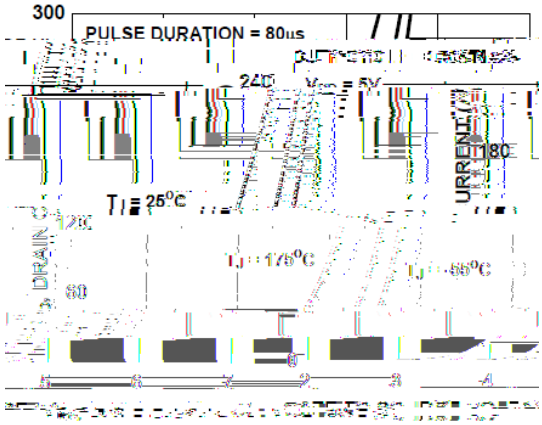

Figure 5. Transfer Characteristics

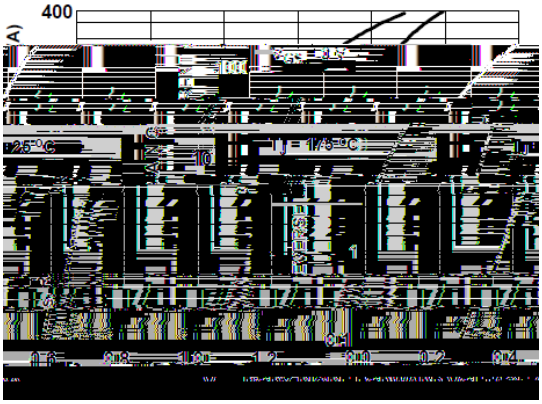

Figure 6. Forward Diode Characteristics

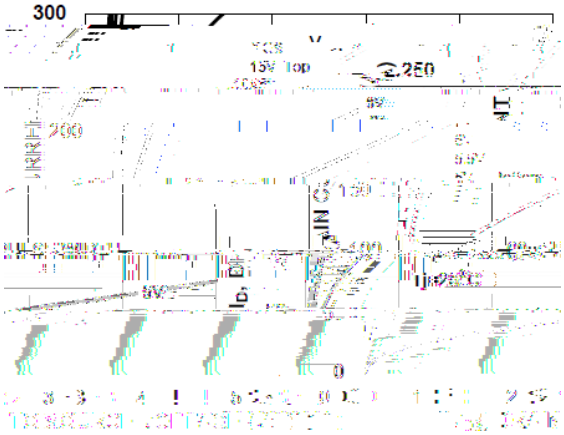

Figure 7. Saturation Characteristics

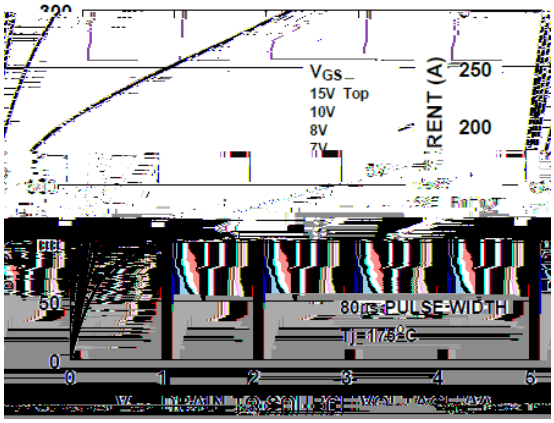

Figure 8. Saturation Characteristics

TYPICAL CHARACTERISTICS (continued)

(Graphs are generated using the die assembled in discrete package for reference purposes only. Datasheet of FDBL9406 F085 is available in the web)

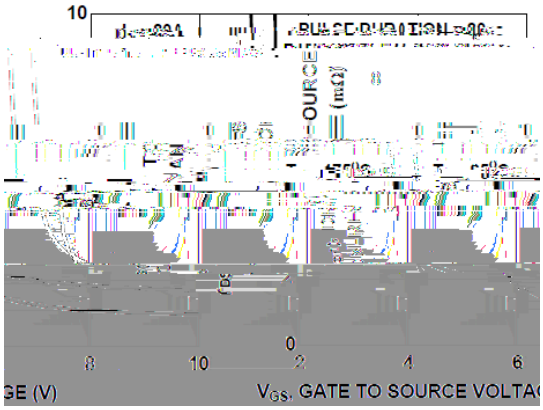

Figure 9. $R_{DS(on)}$ vs. Gate Voltage

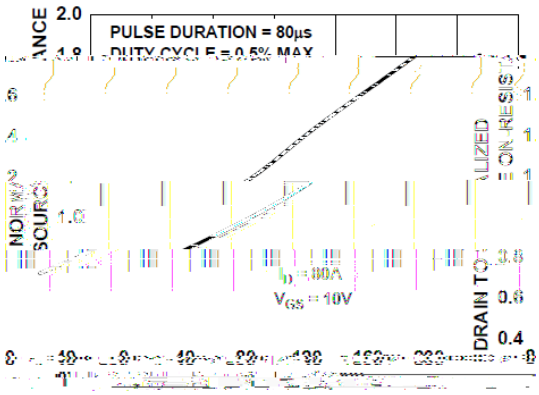

Figure 10. Normalized $R_{DS(on)}$ vs. Junction Temperature

Figure 11. Normalized Gate Threshold Voltage vs. Temperature

Figure 12. Normalized Drain−to−Source Breakdown Voltage vs. Junction Temperature

Figure 13. Capacitance vs. Drain−to−Source Voltage

Figure 14. Gate Charge vs. Gate−to−Source Voltage

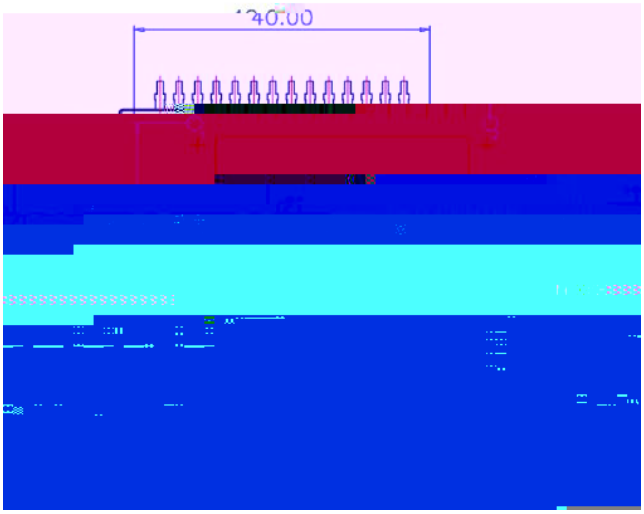

Figure 15. Flatness Measurement Position

MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Test Conditions	Min.	Typ.	Max.	Units
Device Flatness	Refer to the package dimensions	0		150	um
Mounting Torque	Mounting screw: M3, recommended 0.7 N•m	0.4		0.8	N•m
Weight			20		g

19LD, APM, PDD STD (APM19−CBC)

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