

Automotive 750 V, 660 A Single Side Direct Cooling 6-Pack Power Module

VE-Trac™ Direct Module NVH660S75L4SPFC

Product Description

The NVH660S75L4SPFC is a power module from the VE-Trac™ Direct family of highly integrated power modules with industry standard footprints for Hybrid (HEV) and Electric Vehicle (EV) traction inverter application.

The module integrates six Field Stop 4 (FS4) 750 V Narrow Mesa IGBTs in a 6-pack configuration, which excels in providing high current density, while offering robust short circuit protection and increased blocking voltage. Additionally, FS4 750 V Narrow Mesa IGBTs show low power losses during lighter loads, which helps to improve overall system efficiency in automotive applications.

For assembly ease and reliability, a new generation of press-fit pins

Pin Description

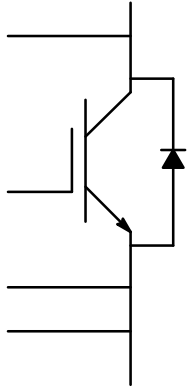


Figure 1. Pin Description

VE-Trac™ Direct Module NVH660S75L4SPFC

MODULE CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameter	Rating	Unit
T			

VE-Trac™ Direct Module NVH660S75L4SPFC

CHARACTERISTICS OF IGBT ($T_{vj} = 25$

VE-Trac™ Direct Module NVH660S75L4SPFC

CHARACTERISTICS OF INVERSE DIODE (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameters	Conditions	Min	Typ	Max	Unit	
V _F	Diode Forward Voltage (Terminal)	I _F = 450 A	T _{vj} = 25°C	–	1.51	1.76	V
	Diode Forward Voltage (Chip)	I _F = 450 A	T _{vj} = 25°C	–	1.45	1.70	
			T _{vj} = 150°C	–	1.33	–	
		I _F = 660 A	T _{vj} = 25°C	–	1.58	–	
			T _{vj} = 150°C	–	1.52	–	
			T _{vj} = 175°C	–	1.50	–	
E _{rr}	Reverse Recovery Energy	I _F = 450 A, V _F = 400 V, V _{GE} = +15/-8 V, R _{g.on} = 4 Ω	di/dt = 3.5 A/nS, T _{vj} = 25°C	–	2	–	mJ
			di/dt = 3.0 A/nS, T _{vj} = 150°C	–	7	–	
			di/dt = 2.9 A/nS, T _{vj} = 175°C	–	9	–	
Q _{rr}	Recovered Charge	I _F = 450 A, V _F = 400 V, V _{GE} = -8 V, R _{g.on} = 4 Ω	di/dt = 3.5 A/nS, T _{vj} = 25°C	–	7	–	μC
			di/dt = 3.0 A/nS, T _{vj} = 150°C	–	26	–	
			di/dt = 2.9 A/nS, T _{vj} = 175°C	–	33	–	
I _{rr}	Peak Reverse Recovery Current	I _F = 450 A, V _F = 400 V, V _{GE} = -8 V, R _{g.on} = 4 Ω	di/dt = 3.5 A/nS, T _{vj} = 25°C	–	120	–	A
			di/dt = 3.0 A/nS, T _{vj} = 150°C	–	227	–	
			di/dt = 2.9 A/nS, T _{vj} = 175°C	–	264	–	

NTC SENSOR CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameters	Conditions	Min	Typ	Max	Unit
R ₂₅ (Note 3)	Rated Resistance	T _C = 25°C	–	5147	–	Ω
ΔR/R	Deviation of R105	T _C = 105°C, R ₁₀₅ = 472 Ω	5	–	5	%
P ₂₅	Power Dissipation	T _C = 25°C	–	–	32	mW
B _{25/55}	B-Value	R = R ₂₅ exp [B _{25/55} (1/T-1/298)]	–	3340	–	K
B _{25/85}	B-Value	R = R ₂₅ exp [B _{25/85} (1/T-1/298)]	–	3360	–	K
B _{25/105}	B-Value	R = R ₂₅ exp [B _{25/105} (1/T-1/298)]	–	3364	–	K

2. Measured value at terminals.

THERMAL CHARACTERISTICS

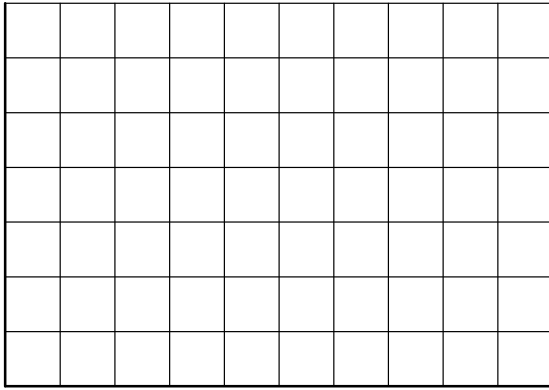
Symbol	Parameter	Min	Typ	Max	Unit
IGBT.R _{th,J-C}	Rth, Junction to Case	–	0.074	0.085	°C/W
IGBT.R _{th,J-F}	Rth, Junction to Fluid, 10 L/min, 65°C, 50/50 EGW, Ref. Cooling Jacket	–	0.15		°C/W
Diode.R _{th,J-C}	Rth, Junction to Case	–	0.13	0.15	°C/W
Diode.R _{th,J-F}	Rth, Junction to Fluid, 10 L/min, 65°C, 50/50 EGW, Ref. Cooling Jacket	–	0.23		°C/W

ORDERING INFORMATION

Part Number	Package	Shipping
NVH660S75L4SPFC	SSDC33, 154.50x92.0 (SPFC) (Pb-Free)	4 Units / Tray

VE-Trac™ Direct Module NVH660S75L4SPFC

TYPICAL CHARACTERISTICS



V_{CE} (V)

Figure 2. IGBT Output Characteristic

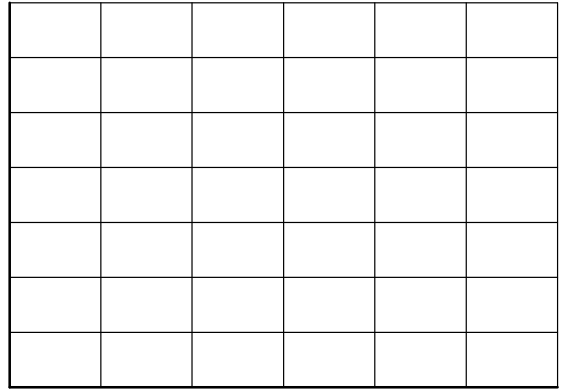
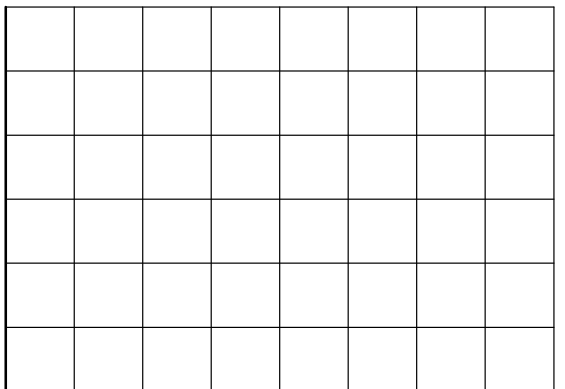
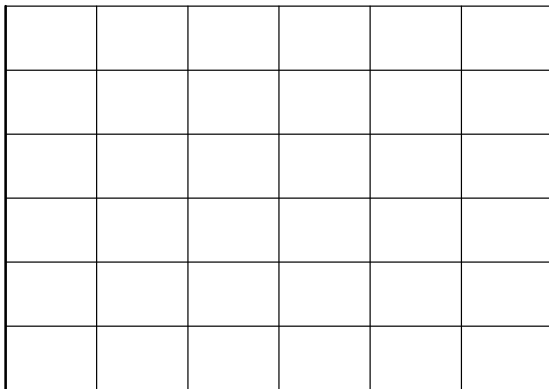
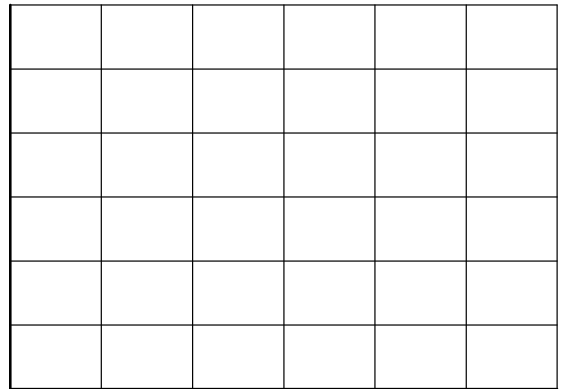
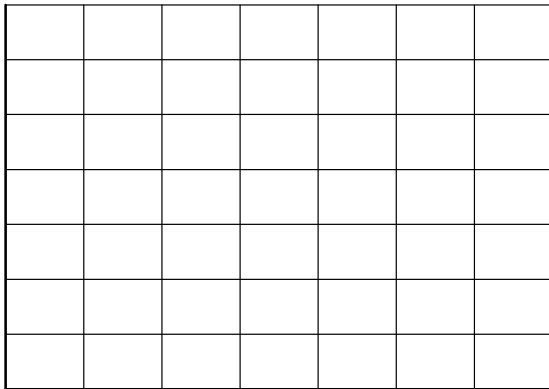
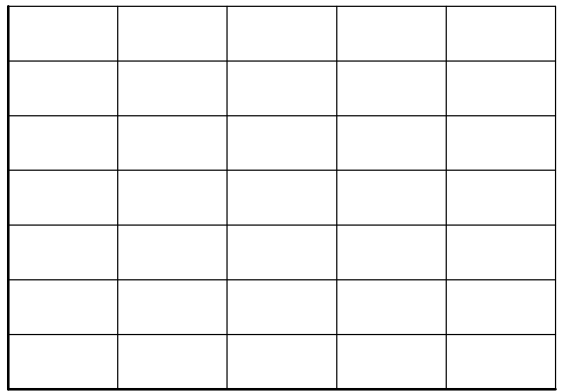
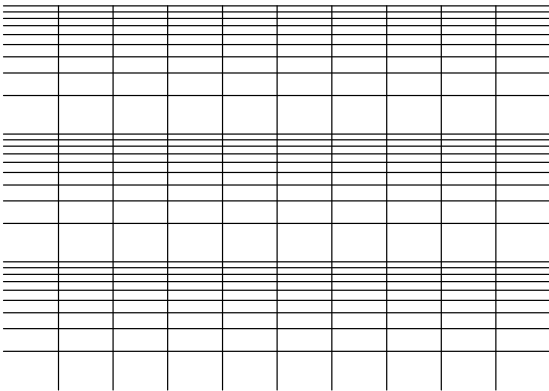


Figure 3. IGBT Output Characteristic



VE-Trac™ Direct Module NVH660S75L4SPFC

TYPICAL CHARACTERISTICS




VE-Trac™ Direct Module NVH660S75L4SPFC

TYPICAL CHARACTERISTICS

VE-

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