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

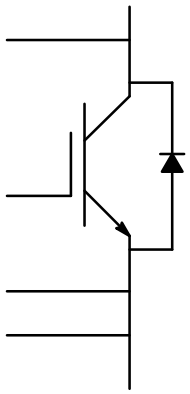


Figure 1. Pin Description

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

Symbol	Parameter	Rating	Unit
T			

CHARACTERISTICS OF IGBT (T_{vj} = 25

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 T_{vj} = 150°C T_{vj} = 175°C	− − −	1.45 1.33 1.30	1.70 − −	
		I_F = 660 A	T_{vj} = 25°C T_{vj} = 150°C T_{vj} = 175°C	− − −	1.58 1.52 1.50	− − −	
E_{rr}	Reverse Recovery Energy	I_F = 450 A, V_F = 400 V, V_{GE} = +15/−8 V, Rg.on = 4 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.9 A/nS, T_{vj} = 175°C	− − −	2 7 9	− − −	mJ
Q_{rr}	Recovered Charge	I_F = 450 A, V_F = 400 V, V_{GE} = −8 V, Rg.on = 4 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.9 A/nS, T_{vj} = 175°C	− − −	7 26 33	− − −	μC
I_{rr}	Peak Reverse Recovery Current	I_F = 450 A, V_F = 400 V, V_{GE} = −8 V, Rg.on = 4 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.9 A/nS, T_{vj} = 175°C	− − −	120 227 264	− − −	A

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. Coolinig 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. Coolinig Jacket	−	0.23		°C/W

ORDERING INFORMATION

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

TYPICAL CHARACTERISTICS

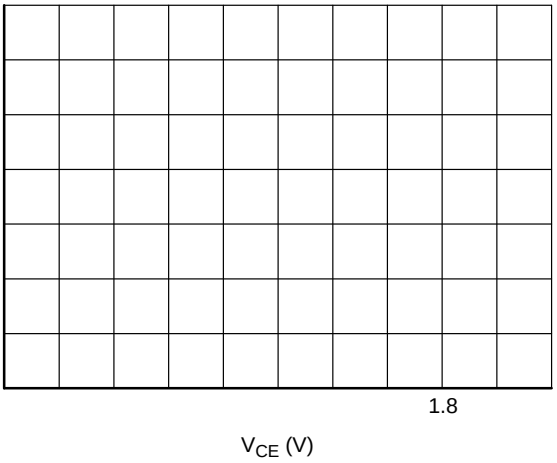


Figure 2. IGBT Output Characteristic

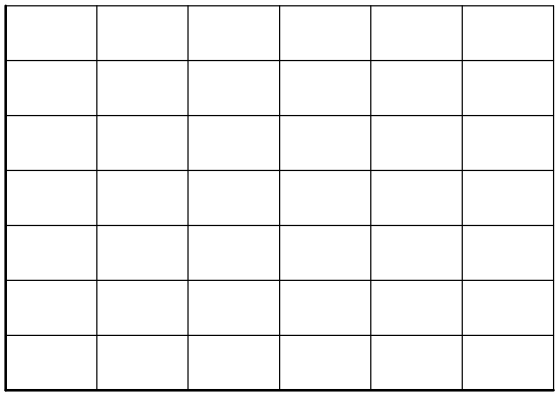
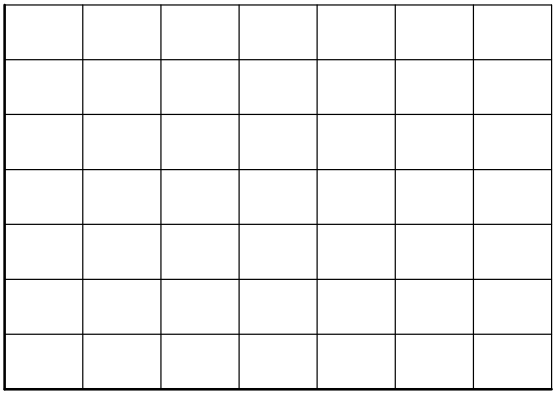
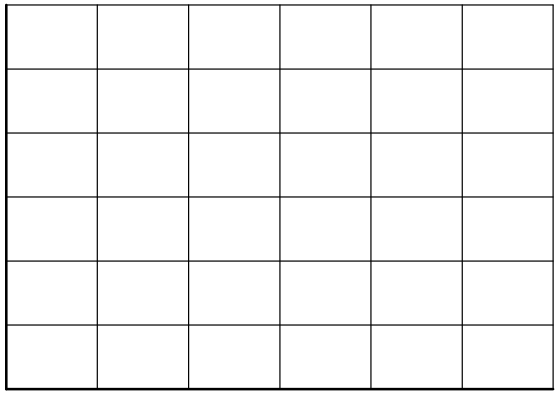
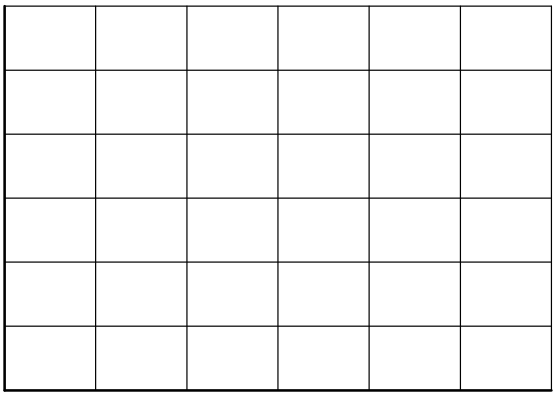
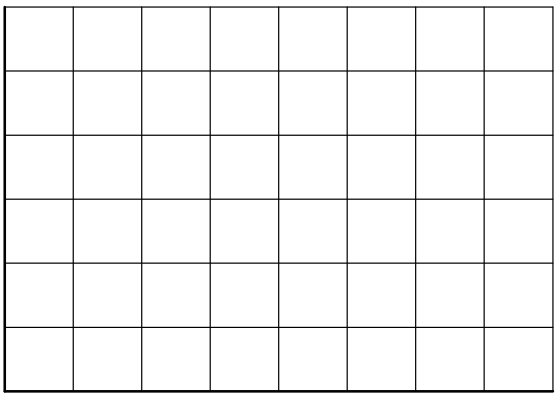


Figure 3. IGBT Output Characteristic

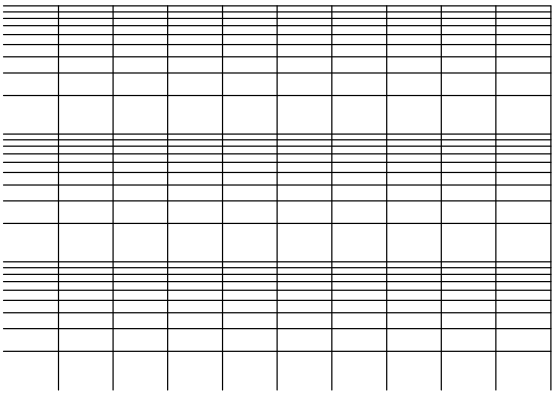


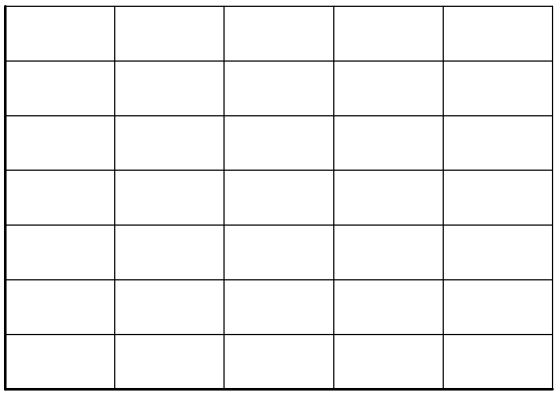






TYPICAL CHARACTERISTICS





TYPICAL CHARACTERISTICS

VE−

VE−Trac™ Direct Module NVH660S75L4SPFC

PUBLICATION ORDERING INFORMATION

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