VFTV010R015NB

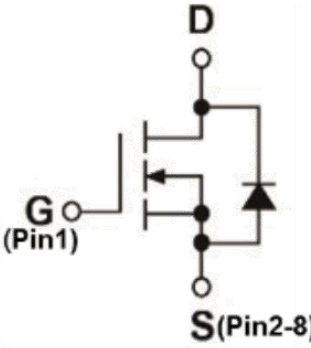
Datasheet

1.5mΩ, 100V, N-Channel Power MOSFET VFTV010R015NB

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
100V	1.5mΩ@10V	330A

Symbol

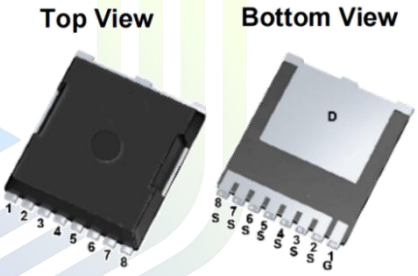


Symbol of VFTV010R015NB

Features

- Extremely low $R_{DS(ON)}$
- Excellent stability and uniformity
- Excellent Low FOM
- 100% EAS Guaranteed

Package Type



TOLL-8

Package Type of VFTV010R015NB

Application

- BMS
- Switched mode power supply
- Telecom power
- Server power
- LED Backlighting

Ordering Information

Product Name	Package
VFTV010R015NB	TOLL-8

Absolute Maximum Ratings (T_A= 25 ºC, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current Note 1	T_C=25ºC	I_D	330	A
	T_C=100ºC		210	
Pulsed Drain Current Note 2	T_C=25ºC	$I_{D, pulse}$	1320	A
Continuous Diode Forward Current Note 1	T_C=25ºC	I_S	330	A
Max Power Dissipation Note 3	T_C=25ºC	P_D	295	W
Avalanche Energy, Single Pulse Note4		E_{AS}	2730	mJ
Operation and storage temperature		T_J,T_{STG}	-55 to 150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{θJC}$	-	0.498	-	ºC/W
Thermal Resistance, Junction-to-Ambient Note5	$R_{θJA}$	-	31.8	-	

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Pulse width limited by safe operating area.
3. Based on max. junction temperature, using junction-case thermal resistance.
4. V_{DD}=80V, V_{GS}=10V, L=0.5mH, starting T_A=25 °C.
5. When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.

Electrical Characteristics (T_A= 25 ºC, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250uA	100	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	Forward	I_{GSSF}	V_{GS}=20V, V_{DS}=0V	-	-	100	nA
	Reverse	I_{GSSR}	V_{GS}=-20V, V_{DS}=0V	-	-	-100	
Gate Threshold Voltage		$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2	3	4	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=95A	-	1.2	1.5	mΩ
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS}=50V V_{GS}=0V f=1MHz	-	12425	-	pF
Output Capacitance		C_{oss}		-	3385	-	pF
Reverse Transfer Capacitance		C_{rss}		-	41	-	pF
Gate Resistance		R_G	F=1MHz, Open Drain	-	1.9	-	Ω
Gate to Source Charge		Q_{gs}	V_{DS}=50V I_D=95A V_{GS}=10V	-	50	-	nC
Gate to Drain Charge		Q_{gd}		-	37	-	
Gate Charge Total		Q_g		-	162	-	
Switching Characteristics							
Turn-on Delay Time		$t_{d(on)}$	V_{DS}=50V I_D=20A R_G=2.7Ω V_{GS}=10V	-	51	-	ns
Rise Time		t_r		-	67	-	
Turn-off Delay Time		$t_{d(off)}$		-	121	-	
Fall Time		t_f		-	39	-	
Reverse Diode Characteristics							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS}=0V, I_S=95A	-	0.87	1.2	V
Reverse Recovery Time		t_{rr}	V_R=50V I_S=20A di/dt=100A/us	-	104	-	ns
Reverse Recovery Charge		Q_{rr}		-	294	-	uC

Electrical Characteristics Diagrams

Figure 1: Output Characteristics

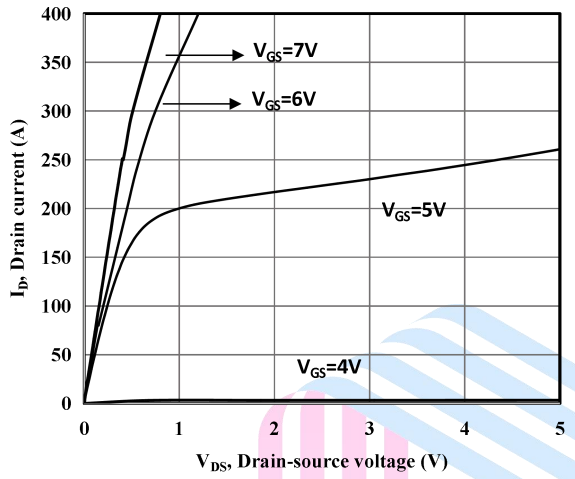


Figure 2: Transfer Characteristics

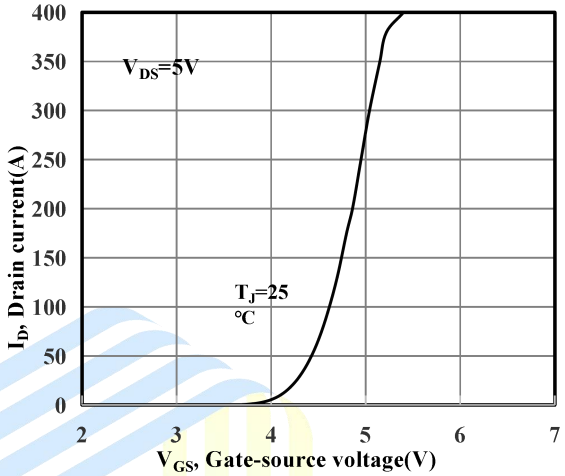


Figure 3. Forward Characteristics of Body Diode

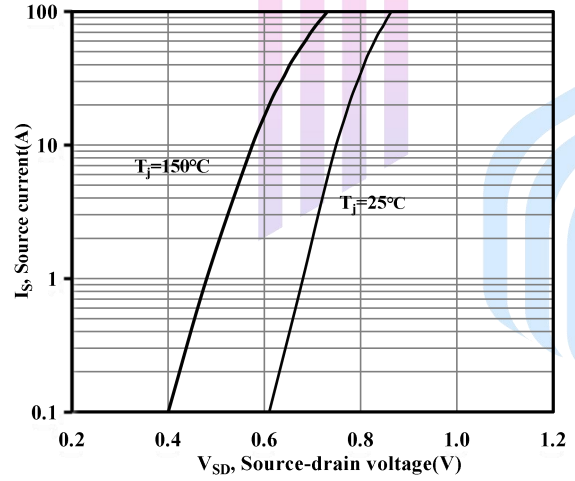


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

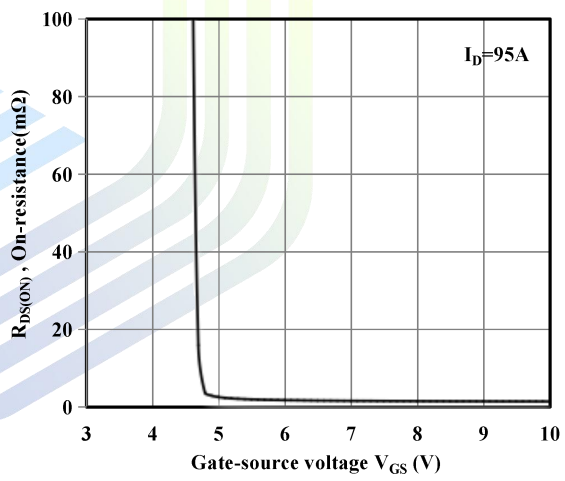


Figure 5. $R_{DS(ON)}$ vs. I_D

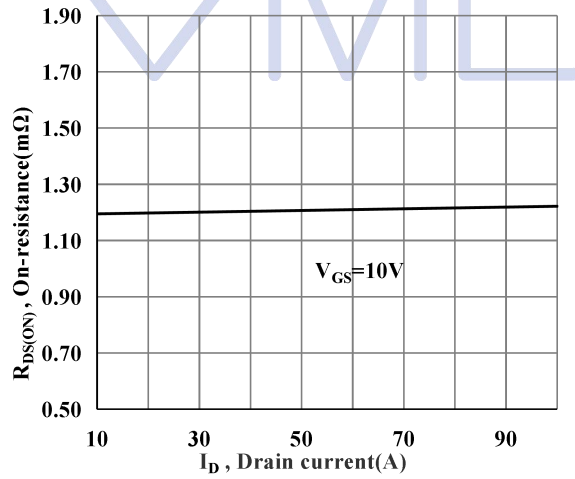


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

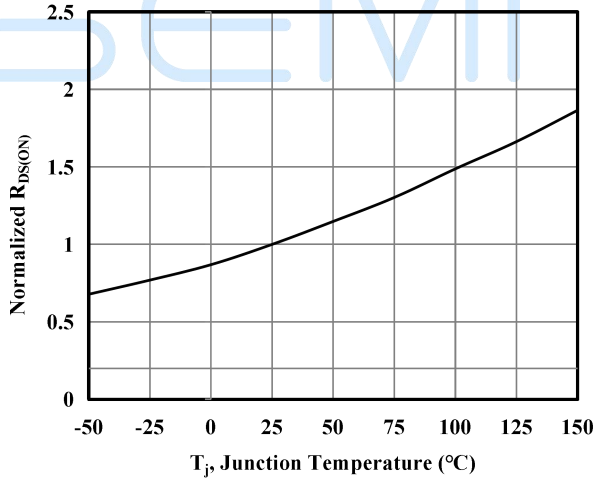


Figure 7. Capacitance Characteristics

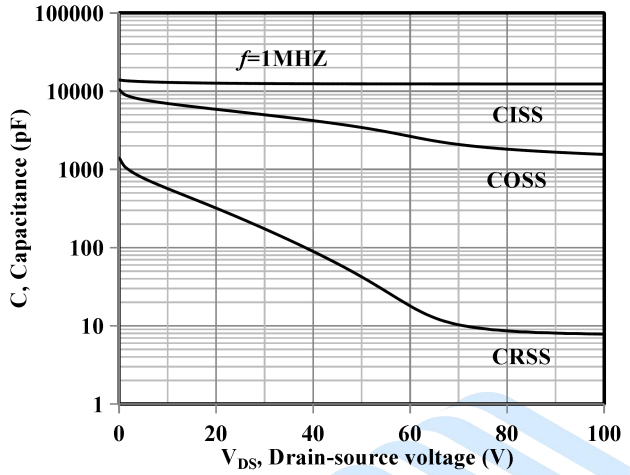


Figure 8. Gate Charge Characteristics

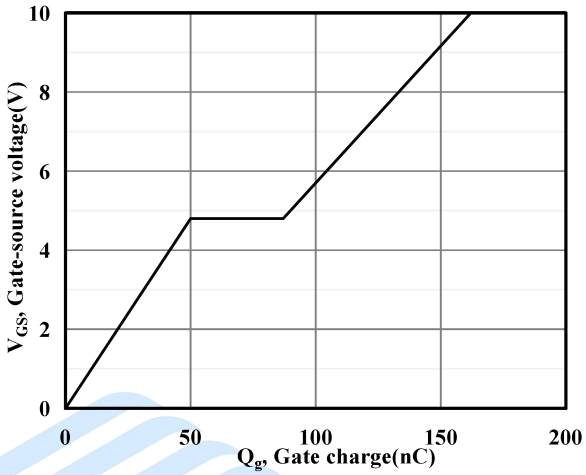


Figure 9. Power Dissipation

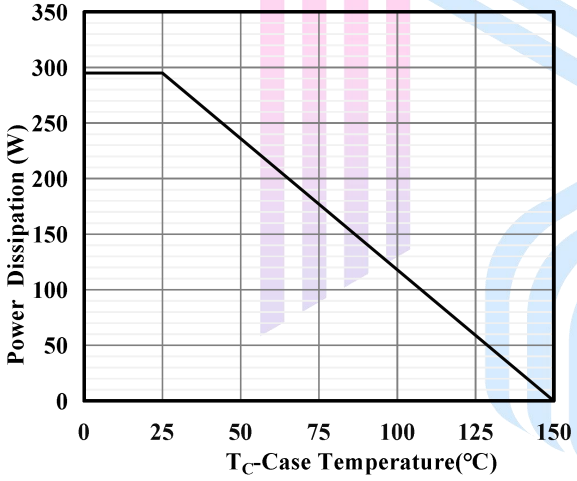


Figure 10. Safe Operating Area

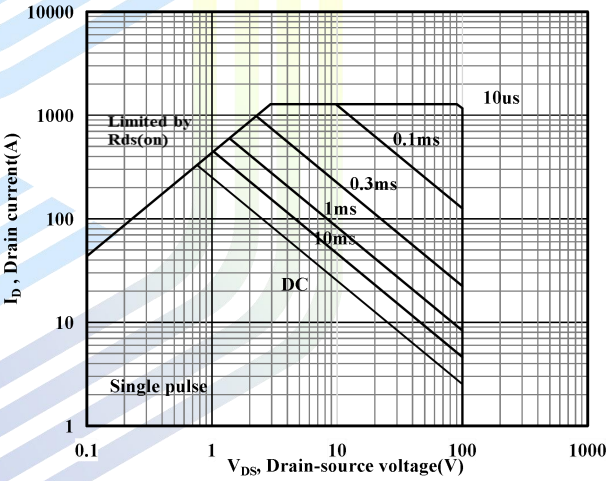
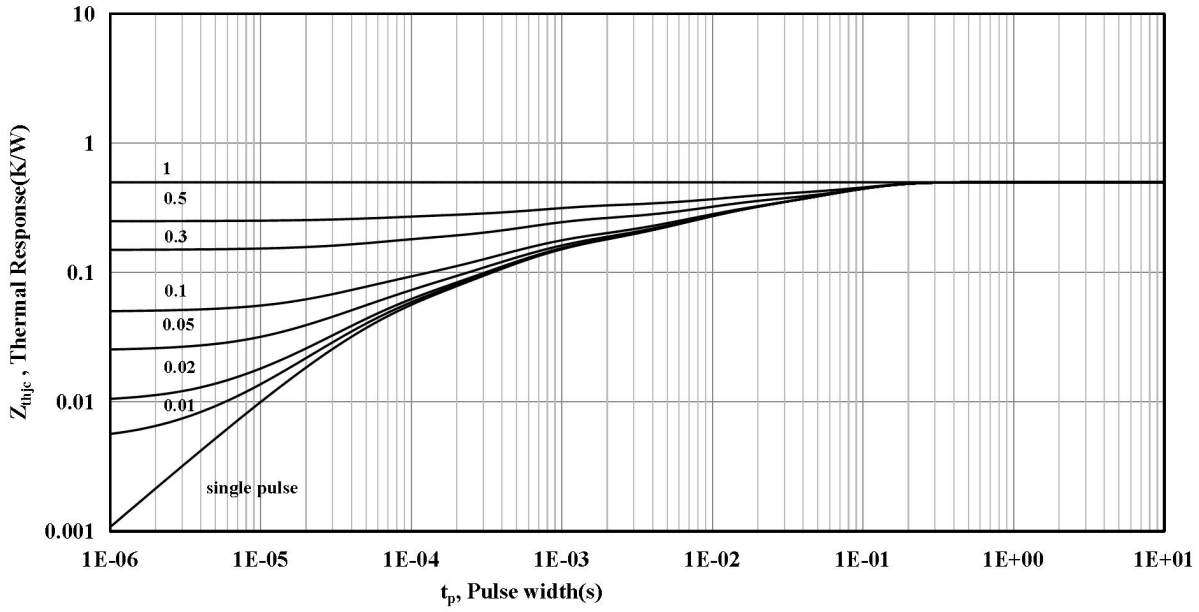
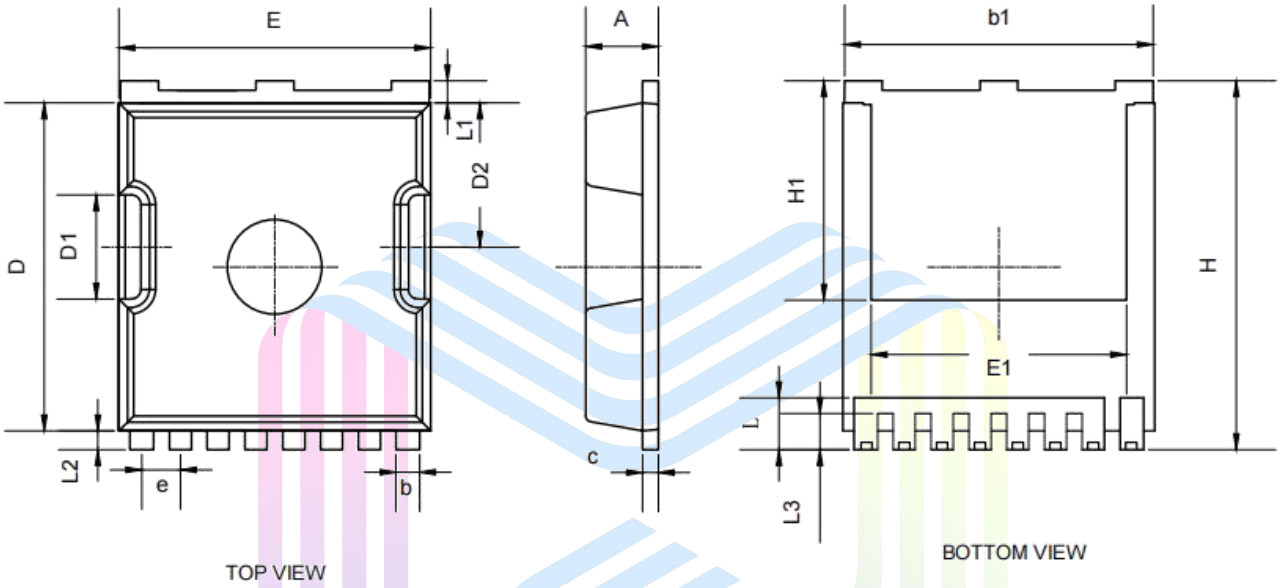


Figure 11. Normalized Maximum Transient Thermal Impedance



Mechanical Dimensions

TOLL-8 Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	MAX
A	2.15	2.45
b	0.60	0.90
b1	9.65	9.95
c	0.40	0.60
D	10.18	10.58
D1	3.15	3.45
D2	4.40	4.70
E	9.70	10.10
E1	8.10REF	
e	1.20BSC	
H	11.48	11.90
H1	6.95REF	
L	1.55	2.10
L1	0.50	0.90
L2	0.48	0.70
L3	1.15 BSC	

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