VTTD060R50BNA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
600V	5.0Ω@10V	2A

Symbol

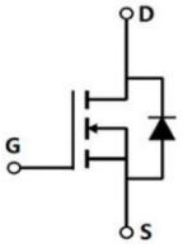


Figure 1 Symbol of VTTD060R50BNA

Features

- Low $R_{DS(on)}$
- Low FOM
- Extremely low switching loss
- Good stability and uniformity

Package Type

TO-220-3L-F

Figure 2 Package Type of VTTD060R50BNA

Application

- Consumer electronics power supply
- LED Lighting
- Standby Power
- Charger

Ordering Information

Product Name	Package
VTTD060R50BNA	TO-220-3L-F

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	600	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current[Note1]	T_A= 25 ºC	I_D	2	A
Pulsed Drain Current [Note2]		I_{DM}	9	
Avalanche Current[Note3]		I_{AS}	5.8	
Single Pulsed Avalanche Energy[Note3]		E_{AS}	8.4	mJ
Total Power Dissipation[Note5]	T_C= 25 ºC	P_D	25	W
Junction Temperature		T_J	150	ºC
Storage Temperature		T_{STG}	-55 to 150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case[Note6]	$R_{\theta JC}$		5		ºC/W

Electrical Characteristics (T_J= 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	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 600V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note4]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2.0	3.2	4.0	V
Static Drain-Source On-Resistance[Note4]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 1A		3.6	5.0	Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=50V		337		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		20.5		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		0.4		pF
Total Gate Charge	Q_g	V_{DS}=300V		13.7		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		1.7		
Gate-Drain Charge	Q_{gd}	I_D= 1A		3.8		
Gate Resistance	Rg	f = 1MHz, Open drain		3.3		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 300V		12		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		21		
Turn-off Delay Time	$t_{d(off)}$	I_D= 2A		30		
Turn-off Fall Time	t_f	R_G=3Ω		24		
Diode Characteristics						
Diode Forward Voltage [Note4]	V_{SD}	V_{GS}=0V, I_S= 2A			1.2	V

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink.

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

3.E_{AS} condition: V_{DD} = 100V, V_{GS} = 10V, L = 0.5mH, R_G=25Ω Starting T_J = 25°C.

4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

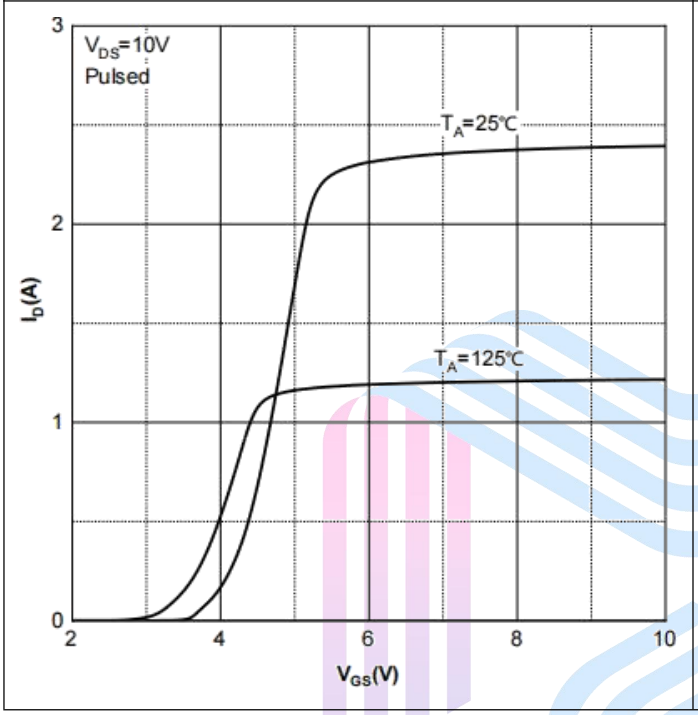


Figure 4: Output Characteristics

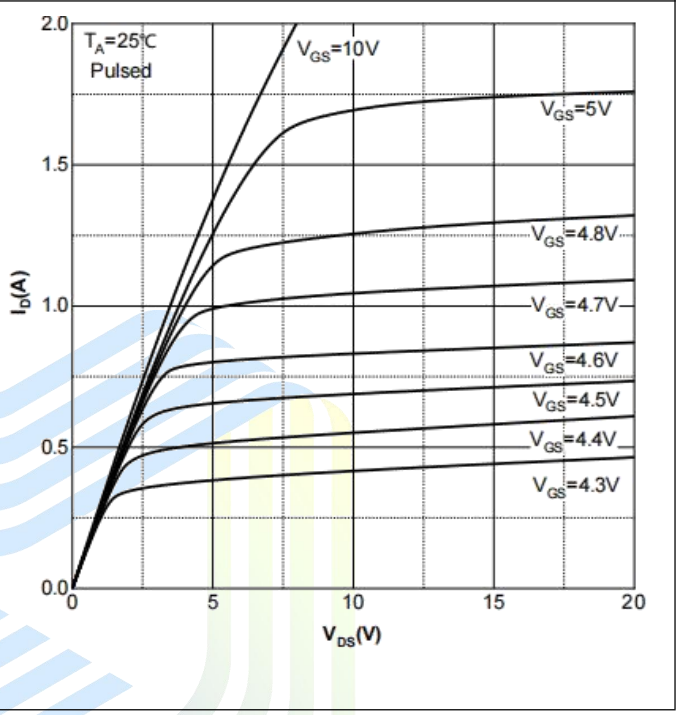


Figure 5: On-Resistance vs. Drain Current

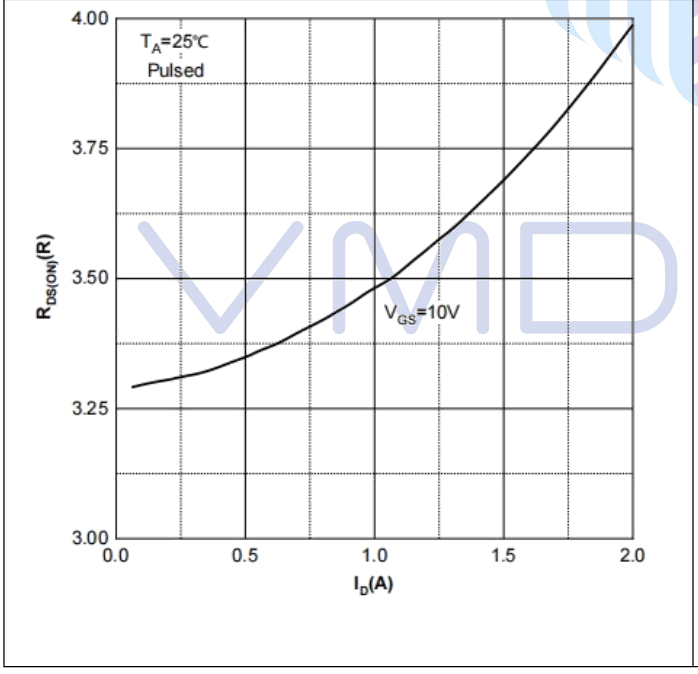


Figure 6: On-Resistance vs. Gate Voltage

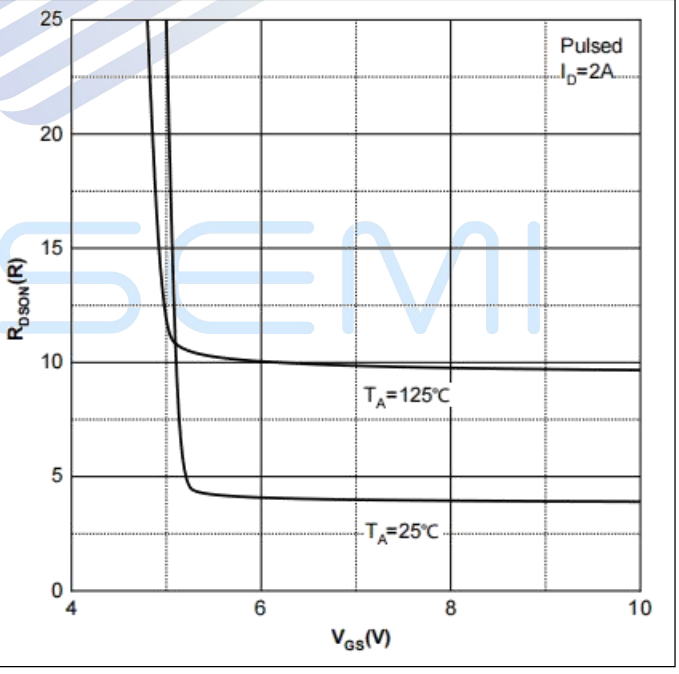


Figure 7: Body Diode Characteristics

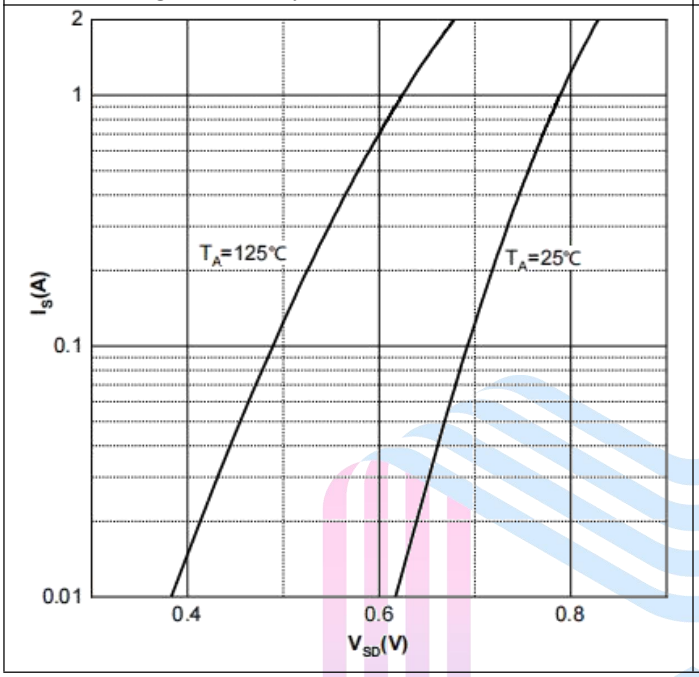
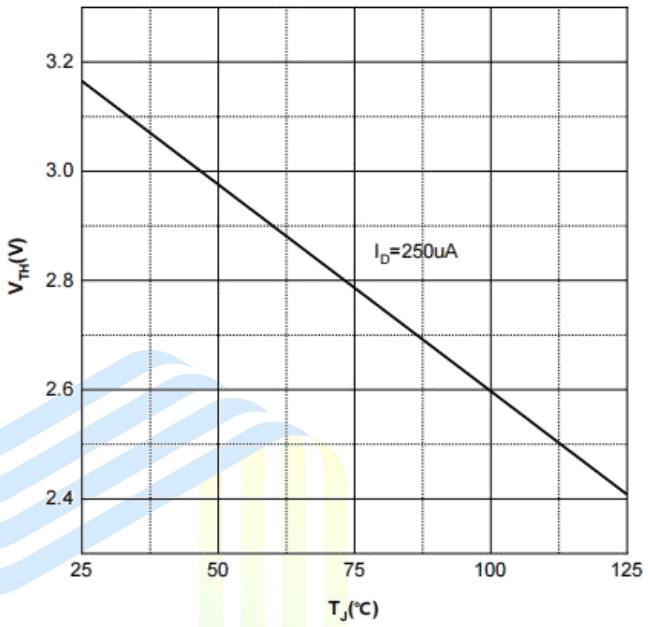
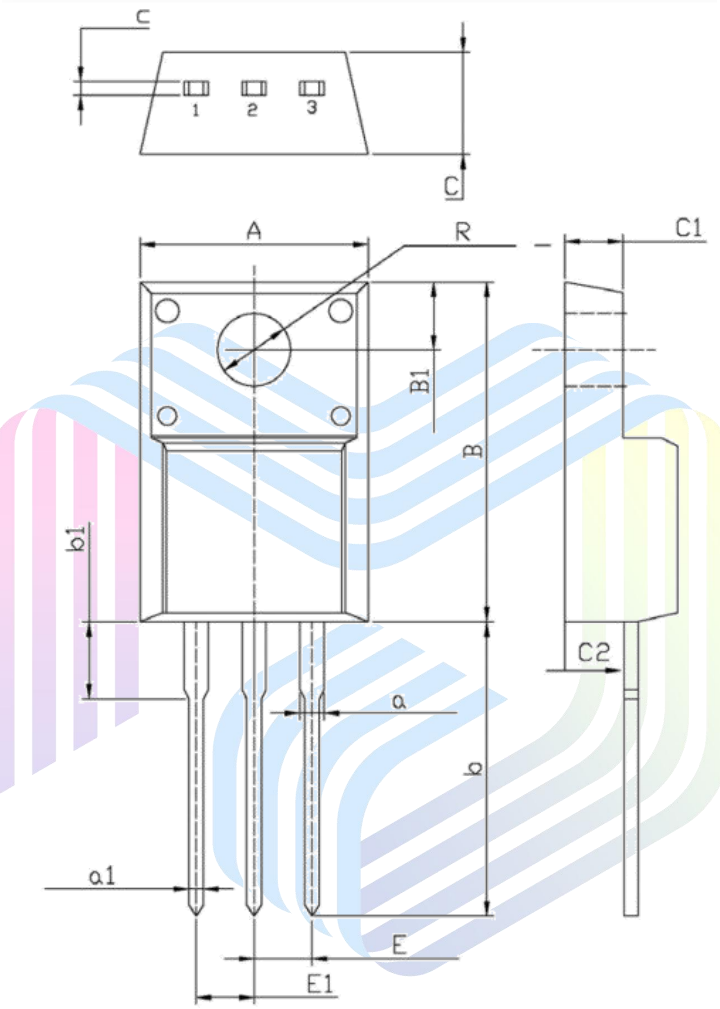


Figure 8: Threshold Voltage



Mechanical Dimensions:

TO-220-3L-F Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
C	4.500	4.900	0.177	0.193
c	0.400	0.600	0.016	0.024
A	9.960	10.360	0.392	0.408
B	15.670	16.070	0.617	0.633
B1	3.300	3.500	0.130	0.138
R	3.080	3.280	0.121	0.129
b	12.480	13.480	0.491	0.531
b1	2.900	3.900	0.114	0.154
a	1.080	1.480	0.043	0.058
a1	0.700	0.900	0.028	0.035
E	2.340	2.740	0.092	0.108
E1	2.340	2.740	0.092	0.108
C1	2.340	2.740	0.092	0.108
C2	2.560	2.960	0.101	0.117

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