VFTA010R080NA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
100V	8mΩ@10V	95A
	10mΩ@10V	

Symbol

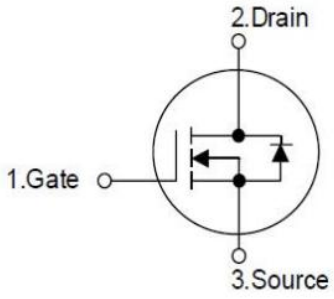


Figure 1 Symbol of VFTA010R080NA

Features

- $R_{DS(ON)\_max}$ = 8.0mΩ@V_{GS} = 10V
- Extremely low switching loss
- Excellent stability and uniformity EMI Improved
- Fast switching and soft recovery

Package Type

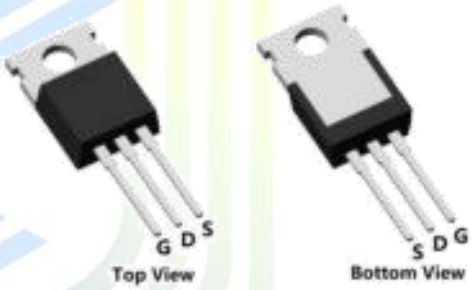


Figure 2 Package Type of VFTA010R080NA

Application

- BMS
- Switched mode power supply
- E-tools
- Server/Telecom

Ordering Information

Product Name	Package
VFTA010R080NA	TO-220

Absolute Maximum Ratings

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current Note1	T_C=25ºC	I_D	95	A
	T_C=100ºC		59	
Pulsed Drain Current Note2 T_C=25ºC		I_{DM}	282	A
Max Power Dissipation Note3 T_C=25ºC		P_D	90	W
Avalanche Current, Single Pulse Note4		I_{AS}	33.5	A
Avalanche Energy, Single Pulse Note4		E_{AS}	281	mJ
Continuous Diode Forward Current T_C=25ºC		I_S	94	A
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 Note4	$R_{\theta JC}$		1.4		ºC/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$		60		

Notes:

1) Calculated continuous current based on maximum allowable junction temperature $T_{J(MAX)}$ =150°C.

2) Repetitive rating; pulse width limited by max. junction temperature.

3) P_D is based on max. junction temperature, using junction-case thermal resistance.

4) EAS test condition: V_{DS}= 25V, V_{GS}= 10V, L=0.5mH, R_G= 25Ω, Starting T_J=25°C

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	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	1.2	1.65	2.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		5.8	8	mΩ
		V_{GS}=4.5V, I_D=20A		7.4	10	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=20V		1880		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		1299		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		113		pF
Gate Resistance	R_G	f=1MHz		0.65		Ω
Total Gate Charge (@V_{GS}=4.5V)	Q_g			16.9		nC
Total Gate Charge (@V_{GS}=10V)	Q_g	V_{DS}=50V,		32.8		
Gate to Source Charge	Q_{gs}	I_D=30A		5.7		
Gate to Drain Charge	Q_{gd}			8.0		
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,		6.5		ns
Rise Time	t_r	V_{GS}=10V,		4.8		
Turn-off Delay Time	$t_{d(off)}$	I_D=30A,		22.7		
Fall Time	t_f	R_G=3Ω		7.0		
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_D=30A		0.87	1.2	V
Reverse Recovery Time	t_{rr}	VR=50V,		26		ns
Reverse Recovery Charge	Q_{rr}	I_F=30A,		21		nC
Peak Reverse Recovery Current	I_{rrm}	di/dt=100A/us		1.6		A

Typical Performance Characteristics

Figure 3: Typ. Output Characteristics

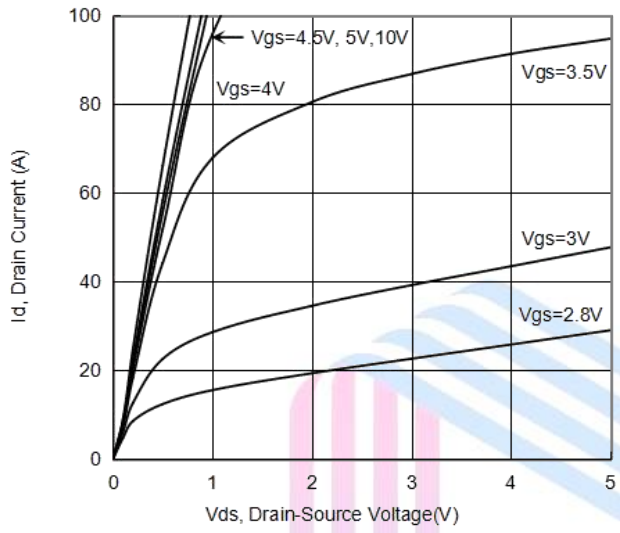


Figure 4: Typ. Transfer Characteristics

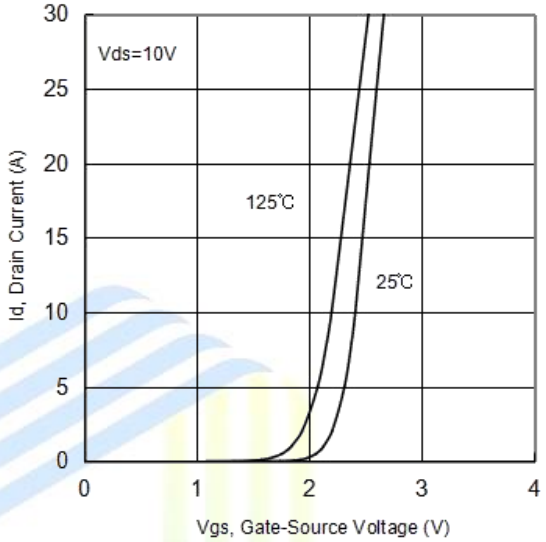


Figure 5: Forward Characteristics of Body Diode

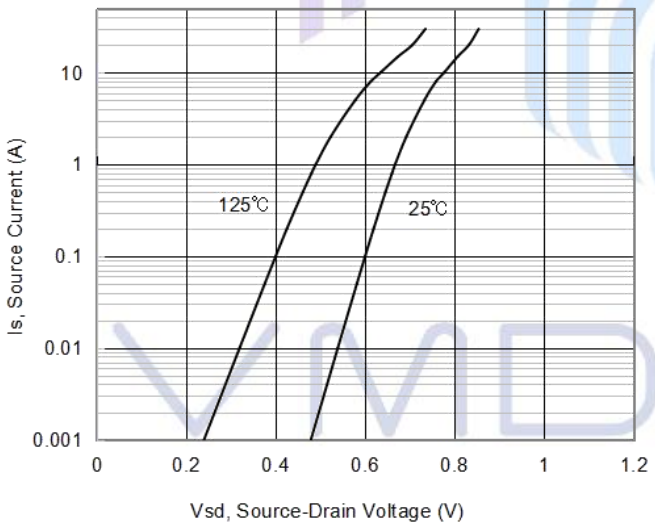


Figure 6: On-Resistance vs.Gate-source voltage

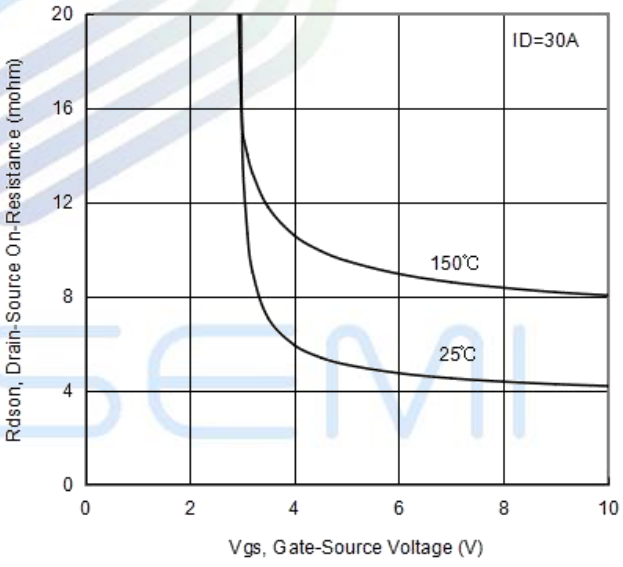


Figure 7: Drain-Source On-State Resistance

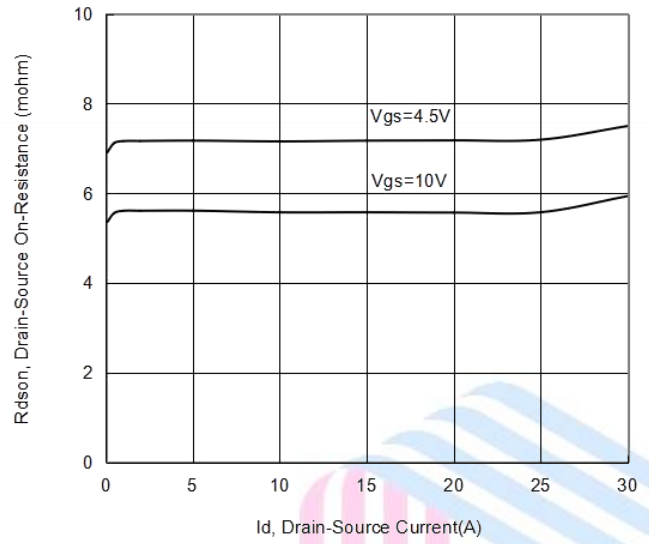


Figure 8: Normalized Rdson vs Temperature

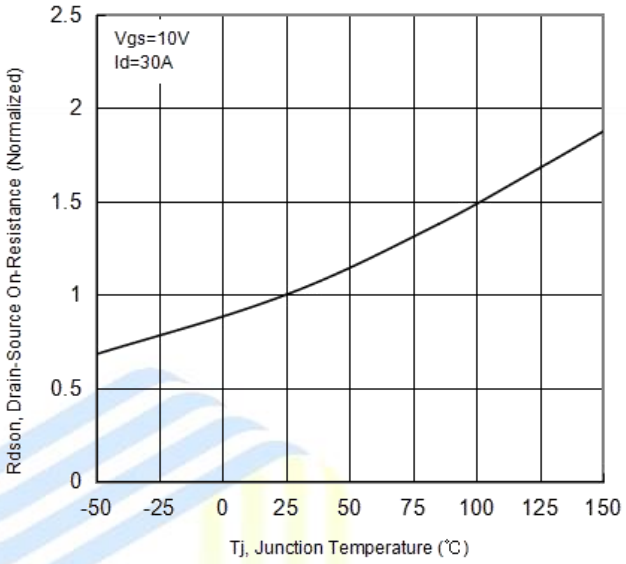


Figure 9: Typ. Capacitance

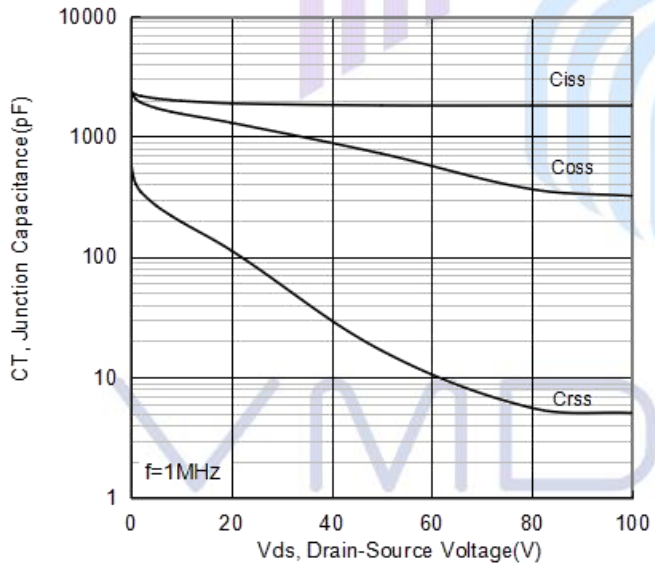


Figure 10: Gate Charge Characteristics

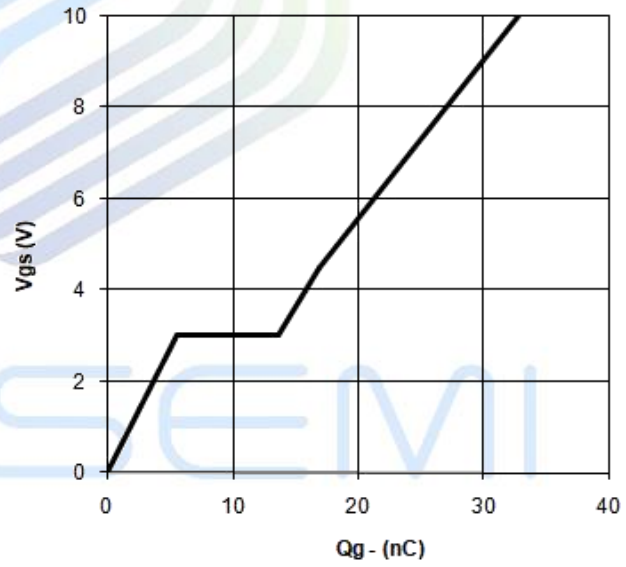


Figure11: Power Dissipation

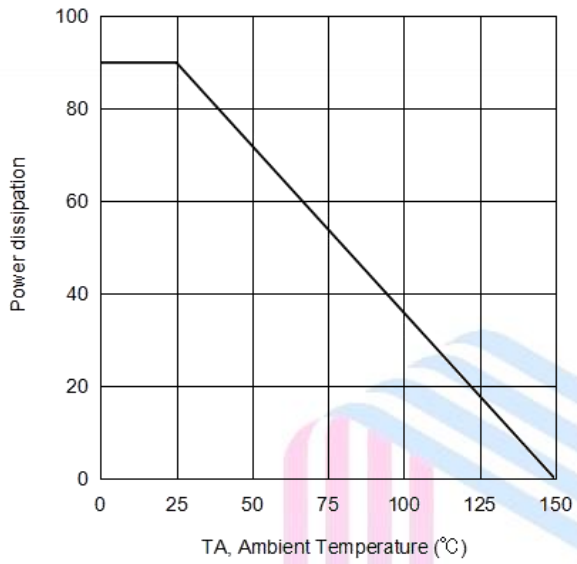


Figure12: Safe Operating Area

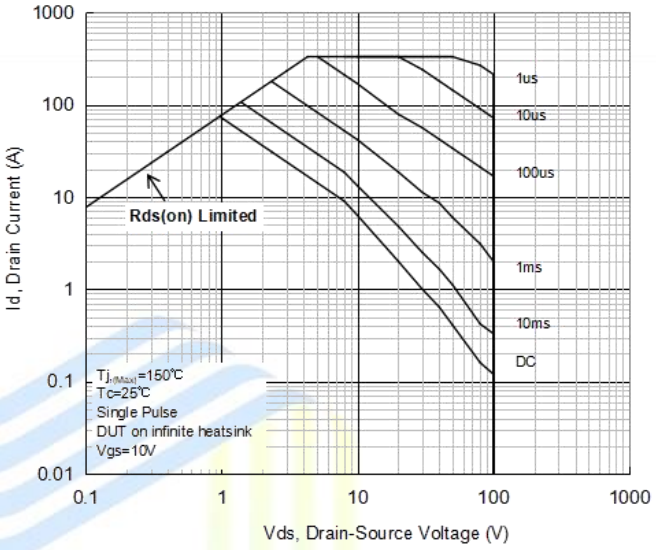
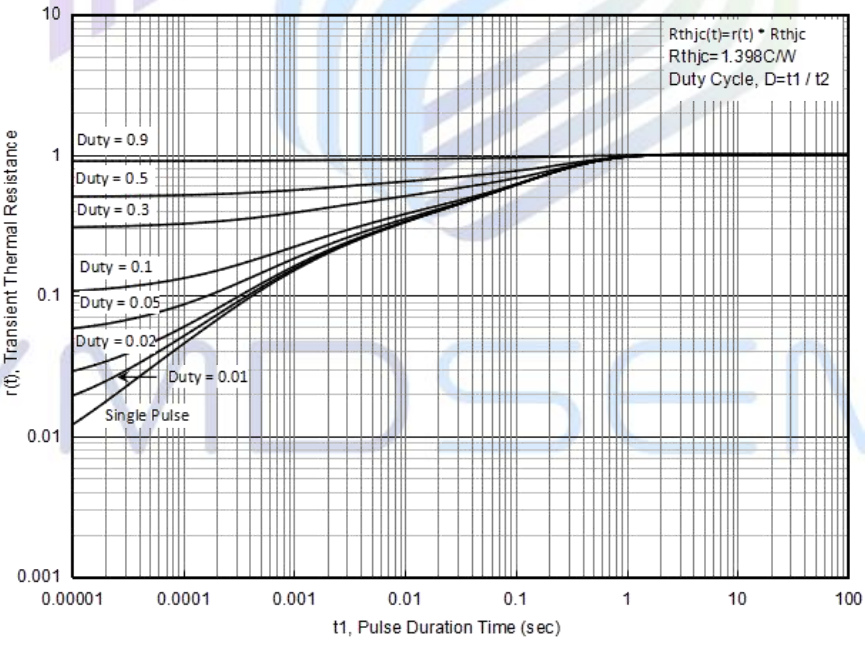
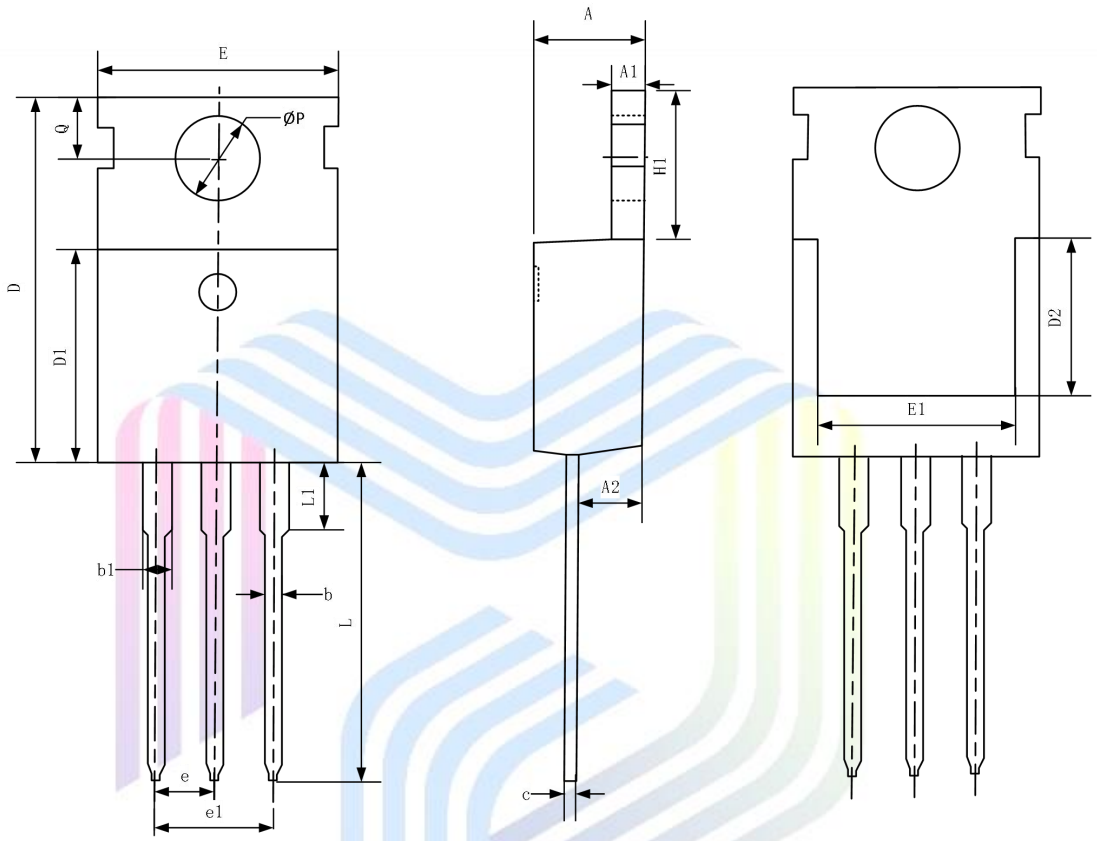


Figure 13: Transient Thermal Resistance



Mechanical Dimensions

TO220 Package Information



SYMBOL	MILLIMETER	
	MIN	MAX
A	4. 37	4. 70
Al	1. 25	1.40
A2	2. 20	2.60
b	0. 70	0.95
b1	1. 17	1.47
c	0.45	0. 60
D	15. 10	16. 10
D1	8. 80	9.40
D2	5. 50	-
E	9. 70	10. 30
E1	7.00	-
e	2. 54 BSC	
e1	5.08 BSC	
Hl	6.25	*6.* 85
L	12. 75	13. 80
L1	-	3.40
Ø P	3. 40	3.80
Q	2. 60	3.00

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