Siliconix incorporated

VN88 SERIES

N-Channel Enhancement-Mode MOS Transistors

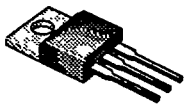
T-39-07

PRODUCT SUMMARY

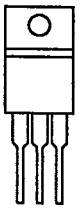
PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN88AD	80	4	1.49	TO-220
VN88AFD	80	4	1.29	TO-220SD

Performance Curves: VNDQ09 (See Section 7)

TO-220/TO-220SD



TOP VIEW



1 2 3

TO-220

1 GATE
2 & TAB – DRAIN
3 SOURCE

TO-220SD

1 SOURCE
2 GATE
3 & TAB – DRAIN

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)[2]

PARAMETERS/TEST CONDITIONS		SYMBOL	VN88AD	VN88AFD	UNITS
Drain-Source Voltage		V_{DS}	80	80	V
Gate-Source Voltage		V_{GS}	±30	±30	
Continuous Drain Current	T_C = 25°C	I_D	1.49	1.29	A
	T_C = 100°C		0.94	0.81	
Pulsed Drain Current[1]		I_{DM}	3	3	
Power Dissipation	T_C = 25°C	P_D	20	15	W
	T_C = 100°C		8	6	
Operating Junction and Storage Temperature		T_J, T_{stg}	–55 to 150		°C
Lead Temperature (1/16" from case for 10 seconds)		T_L	300		

THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN88AD	VN88AFD	UNITS
Junction-to-Case	R_{thJC}	6.25	8.3	°C/W

[1]Pulse width limited by maximum junction temperature
[2]Absolute maximum ratings have been revised from previous data sheet

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VN88 SERIES

T-39-07

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ELECTRICAL CHARACTERISTICS[1]			LIMITS			
				VN88[4]		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[2]	MIN	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 10 µA	120	80		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1 mA	1.6	0.8	2.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±15 V	± 1		±100	nA
		V_{DS} = 0 V, V_{GS} = ±15 V, T_C = 125°C	± 5		±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 80 V	0.03		10	µA
		V_{GS} = 0 V, V_{DS} = 64 V, T_C = 125°C	0.3		500	µA
On-State Drain Current[3]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V	1.8	1.5		A
Drain-Source On-Resistance[3]	$r_{DS(ON)}$	V_{GS} = 5 V, I_D = 0.3 A	4.2		5.6	Ω
		V_{GS} = 10 V, I_D = 1 A	3.6		4	Ω
		V_{GS} = 10 V, I_D = 1 A, T_C = 125°C	6.8		8	Ω
Forward Transconductance[3]	g_{FS}	V_{DS} = 10 V, I_D = 0.5 A	350	170		mS
Common Source Output Conductance[3]	g_{OS}	V_{DS} = 7.5 V, I_D = 0.1 A	225			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	35		50	pF
Output Capacitance	C_{oss}		15		40	pF
Reverse Transfer Capacitance	C_{rss}		2		10	pF
SWITCHING						
Turn-On Time	t_{ON}	V_{DD} = 25 V, R_L = 23 Ω, I_D = 1 A, V_{GEN} = 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	6		15	ns
Turn-Off Time	t_{OFF}		8		15	ns

NOTES: 1. T_C = 25 °C unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test: PW = 300 µs, duty cycle ≤ 2%.
4. Data sheet limits have been revised.