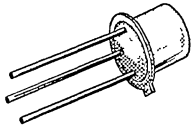
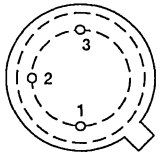
VN90AB

N-Channel Enhancement-Mode MOS Transistor

TO-205AD (TO-39) BOTTOM VIEW





1 SOURCE
2 GATE
3 DRAIN

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
90	5	0.67	TO-205AD

Performance Curves: **VNDQ09** (See Section 7)

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

PARAMETERS/TEST CONDITIONS		SYMBOL	VN90AB	UNITS
Drain-Source Voltage		V_{DS}	90	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	0.67	A
	T_C = 100°C		0.42	
Pulsed Drain Current[1]		I_{DM}	2	
Power Dissipation	T_C = 25°C	P_D	5	W
	T_C = 100°C		2	
Operating Junction Temperature		T_j	-55 to 150	°C
Storage Temperature		T_{stg}	-55 to 150	
Lead Temperature (1/16" from case for 10 seconds)		T_L	300	

THERMAL RESISTANCE[2]

THERMAL RESISTANCE	SYMBOL	VN90AB	UNITS
Junction-to-Ambient	R_{thJC}	25	°C/W

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

Siliconix incorporated

ELECTRICAL CHARACTERISTICS[1]			LIMITS			
				VN90AB		
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	90		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1 mA	1.6	0.8	2	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±15	±1		±100	nA
		V_{DS} = 0 V, V_{GS} = ±15, T_C = 125°C	±5		±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 90 V	0.03		10	µA
		V_{GS} = 0 V, V_{DS} = 72 V, T_C = 125°C	0.30		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 = 0.3A	4.2		5.3	Ω
		V_{GS} = 10 V, I_D = 1 A	3.6		5	Ω
		V_{GS} = 10 V, I_D = 1 A, [4]T_C = 125°C	6.8		10	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} = 10 V, I_D = 0.5 A	300			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	35		50	pF
Output Capacitance	C_{oss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	15		40	pF
Reverse Transfer Capacitance	C_{rss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	2		10	pF
SWITCHING						
Turn-On Delay Time	t_{ON}	V_{DD} = 25 V, R_L = 23 Ω, I_D = 1 A, V_{GEN} = 0 to 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	6		10	ns
Turn-Off Delay Time	t_{OFF}	V_{DD} = 25 V, R_L = 23 Ω, I_D = 1 A, V_{GEN} = 0 to 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	8		10	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. This parameter has been revised from previous datasheet.