



VN1706B, VN1706D

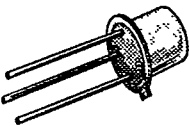
N-Channel Enhancement-Mode MOS Transistors

PRODUCT SUMMARY

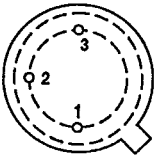
PART NUMBER	V(BR)DSS (V)	rDS(ON) (Ω)	ID (A)	PACKAGE
VN1706B	170	6	0.63	TO-205AD
VN1706D	170	6	1.12	TO-220

Performance Curves: VNDB24 (See Section 7)

TO-205AD (TO-39)

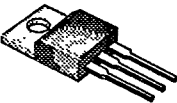


BOTTOM VIEW

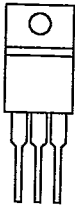


- 1 SOURCE
- 2 GATE
- 3 DRAIN & CASE

TO-220



TOP VIEW



- 1 GATE
- 2 & TAB - DRAIN
- 3 SOURCE

ABSOLUTE MAXIMUM RATINGS (Tc = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	VN1706B	VN1706D	UNITS
Drain-Source Voltage		V _{DS}	170	170	V
Gate-Source Voltage		V _{GS}	±20	±30	
Continuous Drain Current	T _C = 25°C	I _D	0.63	1.12	A
	T _C = 100°C		0.4	0.7	
Pulsed Drain Current ¹		I _{DM}	3	3	
Power Dissipation	T _C = 25°C	P _D	6.25	20	W
	T _C = 100°C		2.5	8	
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		

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THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN1706B	VN1706D	UNITS
Junction-to-Ambient	RthJA	170	80	°C/W

¹Pulse width limited by maximum junction temperature

VN1706B, VN1706D

T-39-05



ELECTRICAL CHARACTERISTICS ¹				LIMITS			
PARAMETER	SYMBOL	TEST CONDITIONS	TYP ²	VN1706		UNIT	
				MIN	MAX		
STATIC							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 100 μA	230	170		V	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	1.4	0.8	2.0		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V V _{GS} = ±15 V T _C = 125°C	±1 ±5		±100 ±500	nA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 120 V V _{GS} = 0 V T _C = 125°C	0.01 1		10 500	μA	
On-State Drain Current ³	I _{D(ON)}	V _{DS} = 10 V, V _{GS} = 10 V	1.5	1		A	
Drain-Source On-Resistance ³	r _{DS(ON)}	V _{GS} = 2.5 V, I _D = 0.1 A	7.5		10	Ω	
		V _{GS} = 10 V	5		6		
		I _D = 0.5 V T _C = 125°C	10.8		14.8		
Forward Transconductance ³	g _{FS}	V _{DS} = 10 V, I _D = 0.5 A	530	300		mS	
Common Source Output Conductance ³	g _{OS}	V _{DS} = 7.5 V, I _D = 0.5 A	475			μS	
DYNAMIC							
Input Capacitance	C _{iss}	V _{DS} = 25 V V _{GS} = 0 V f = 1 MHz	105		125	pF	
Output Capacitance	C _{oss}		25		50		
Reverse Transfer Capacitance	C _{rss}		5		20		
SWITCHING							
Turn-On Time	t _{d(ON)}	V _{DD} = 60 V, R _L = 150 Ω I _D = 0.4 A, V _{GEN} = 10 V R _G = 25 Ω (Switching time is essentially independent of operating temperature)	3		8	ns	
	t _r		2		8		
Turn-Off Time	t _{d(OFF)}		13		18		
	t _f		9		12		

- NOTES: 1. $T_C = 25^\circ\text{C}$ unless otherwise noted.
 2. For design aid only, not subject to production testing.
 3. Pulse test: $PW = 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.