

VN46AFD

N-Channel Enhancement-Mode MOS Transistor

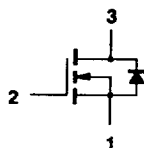
 **Siliconix**
incorporated

T-39-07

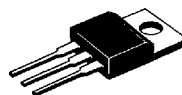
PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
40	3	1.46

Performance Curves: VNDQ06

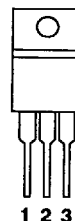


TO-220SD



1 SOURCE
2 GATE
3 & TAB - DRAIN

FRONT VIEW



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	1.46	A
	$T_C = 100^\circ\text{C}$		0.92	
Pulsed Drain Current ¹		I_{DM}	3	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	15	W
	$T_C = 100^\circ\text{C}$		6	
Operating Junction Temperature Range		T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	
Lead Temperature ($1/16"$ from case for 10 sec.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	LIMITS	UNITS
Junction-to-Case	R_{thJC}	8.3	K/W

¹Pulse width limited by maximum junction temperature



VN46AFD

SPECIFICATIONS ^a			LIMITS			
PARAMETER	SYMBOL	TEST CONDITIONS	TYP ^b	MIN	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = 10 μA, V _{GS} = 0 V	70	40		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	1.5	0.8	2.5	
Gate-Body Leakage	I _{GSS}	V _{GS} = ± 15 V, V _{DS} = 0 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40 V, V _{GS} = 0 V			10	μA
		V _{DS} = 32 V, V _{GS} = 0 V, T _C = 125°C			500	
On-State Drain Current ^c	I _{D(ON)}	V _{DS} = 10 V, V _{GS} = 10 V	1.8	1		A
Drain-Source On-Resistance ^c	r _{DS(ON)}	V _{GS} = 5 V, I _D = 0.3 A	1.8		5	Ω
		V _{GS} = 10 V, I _D = 1 A	1.3		3	
		T _C = 125°C	2.6		6	
Forward Transconductance ^c	g _{FS}	V _{DS} = 10 V, I _D = 0.5 A	350	170		mS
Common Source Output Conductance ^c	g _{OS}	V _{DS} = 10 V, I _D = 0.1 A	1100			μS
DYNAMIC						
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	35		50	pF
Output Capacitance	C _{oss}		25		65	
Reverse Transfer Capacitance	C _{rss}		5		10	
SWITCHING						
Turn-On Time	t _{ON}	V _{DD} = 25 V, R _L = 32 Ω, I _D = 1 A V _{GEN} = 10 V, R _G = 25 Ω	8		15	nS
Turn-Off Time	t _{OFF}	(Switching time is essentially independent of operating temperature)	9.5		15	

NOTES:

a. $T_C = 25^\circ C$ unless otherwise noted.

b. For design aid only, not subject to production testing.

c. Pulse test; $PW = \leq 300 \mu S$, duty cycle $\leq 2\%$.