VN46AFD
N-Channel Enhancement-Mode MOS Transistor

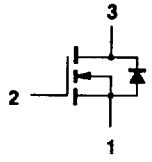
Siliconix incorporated

T-39-07

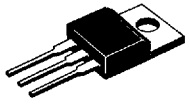
PRODUCT SUMMARY

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

Performance Curves: VNDQ06

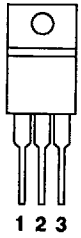


TO-220SD



1 SOURCE
2 GATE
3 & TAB – DRAIN

FRONT VIEW



ABSOLUTE MAXIMUM RATINGS (T_C = 25°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°C	I_D	1.46	A
	T_C = 100°C		0.92	
Pulsed Drain Current[1]		I_{DM}	3	
Power Dissipation	T_C = 25°C	P_D	15	W
	T_C = 100°C		6	
Operating Junction Temperature Range		T_J	-55 to 150	°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

[1]Pulse width limited by maximum junction temperature

Siliconix incorporated

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°C unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = ≤ 300 µS, duty cycle ≤ 2%.

6