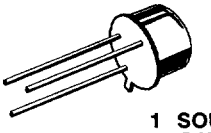
VP0300 SERIES
P-Channel Enhancement-Mode MOS Transistors

Siliconix incorporated

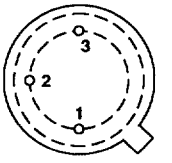
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VP0300B	-30	2.5	-1.25	TO-39
VP0300L	-30	2.5	-0.32	TO-92
VP0300M	-30	2.5	-0.5	TO-237

TO-39 (TO-205AD)



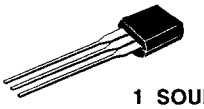
BOTTOM VIEW



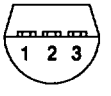
1 SOURCE
2 GATE
3 & CASE-DRAIN

Performance Curves: VPMH03

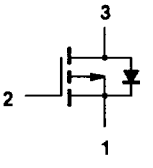
TO-92 (TO-226AA)



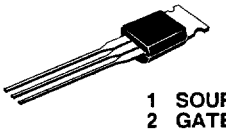
BOTTOM VIEW



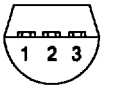
1 SOURCE
2 GATE
3 DRAIN



TO-237



BOTTOM VIEW



1 SOURCE
2 GATE
3 & TAB-DRAIN

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS VP0300B[2]	LIMITS VP0300L	LIMITS VP0300M	UNITS
Drain-Source Voltage		V_{DS}	-30	-30	-30	V
Gate-Source Voltage		V_{GS}	±20	±30	±30	
Continuous Drain Current	T_A = 25°C	I_D	-1.25	-0.32	-0.5	A
	T_A = 100°C		-0.79	-0.2	-0.32	
Pulsed Drain Current[1]		I_{DM}	-3	-2.4	-3	
Power Dissipation	T_A = 25°C	P_D	6.25	0.8	1	W
	T_A = 100°C		2.5	0.32	0.4	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150			°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	300			

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	LIMITS VP0300B[2]	LIMITS VP0300L	LIMITS VP0300M	UNITS
Junction-to-Ambient	R_{thJA}	20	156	125	K/W

[1]Pulse width limited by maximum junction temperature
[2]Reference case temperature for all tests

SPECIFICATIONS[a]			LIMITS[d]			
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	-55	-30		V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -1 mA	-3.6	-2.8	-4.5	
Gate-Body Leakage[c]	I_{GSS}	V_{GS} = ±30 V, V_{DS} = 0 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -25 V, V_{GS} = 0 V			-10	µA
		T_J = 125°C			-500	
On-State Drain Current	$I_{D(ON)}$	V_{DS} = -10 V, V_{GS} = -12 V	-1.6	1.5		A
Drain-Source On-Resistance[c]	$r_{DS(ON)}$	V_{GS} = -12 V, I_D = -1 A	1.8		2.5	Ω
		T_J = 125°C	3.1		3.63	
Forward Transconductance[c]	g_{FS}	V_{DS} = -10 V, I_D = -0.5 A	290			mS
Common Source Output Conductance[c]	g_{OS}	V_{DS} = -7.5 V, I_D = -0.05 A	800			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz	130		150	pF
Output Capacitance	C_{oss}		75		100	
Reverse Transfer Capacitance	C_{rss}		20		60	
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	16		30	ns
Turn-Off Time	t_{OFF}	(Switching time is essentially independent of operating temperature)	13		30	

NOTES:
a. T_A = 25°C unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = ≤ 300 µS, duty cycle ≤ 2%.
d. Reference case temperature for VP0300B.

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