

# VP0808B/L/M, VP1008B/L/M

## P-Channel Enhancement-Mode MOSFET Transistors

### Product Summary

Part Number	$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max ( $\Omega$ )	$V_{GS(th)}$ (V)	$I_D$ (A)
VP0808B	-80	5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.88
VP0808L		5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.28
VP0808M		5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.31
VP1008B	-100	5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.79
VP1008L		5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.28
VP1008M		5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.31

### Features

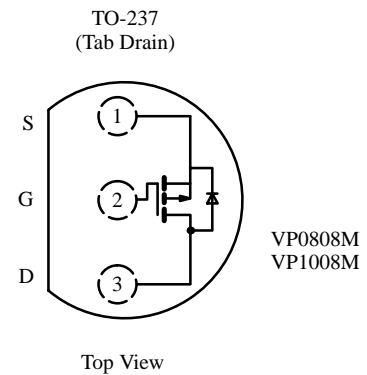
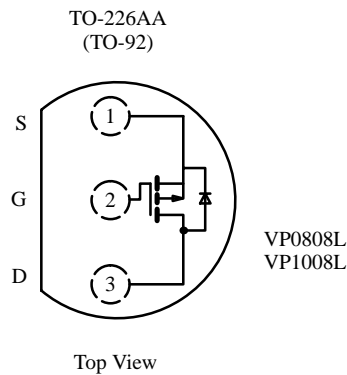
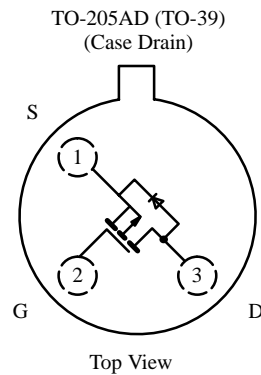
- High-Side Switching
- Low On-Resistance: 2.5  $\Omega$
- Moderate Threshold: -3.4 V
- Fast Switching Speed: 40 ns
- Low Input Capacitance: 75 pF

### Benefits

- Ease in Driving Switches
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Switching
- Easily Driven Without Buffer

### Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Power Supply, Converter Circuits
- Motor Control



### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	VP0808B <sup>b</sup>	VP0808L	VP0808M	VP1008B <sup>b</sup>	VP1008L	VP1008M	Unit	
Drain-Source Voltage	$V_{DS}$	-80	-80	-80	-100	-100	-100	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	$\pm 30$	$\pm 30$	$\pm 20$	$\pm 30$	$\pm 30$	V	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )	$I_D$	$T_A = 25^\circ\text{C}$	-0.88	-0.28	-0.31	-0.79	-0.28	-0.31	A
		$T_A = 100^\circ\text{C}$	-0.53	-0.17	-0.20	-0.53	-0.17	-0.20	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	-3	-3	-3	-3	-3	-3	A	
Power Dissipation	$P_D$	$T_A = 25^\circ\text{C}$	6.25	0.8	1	6.25	0.8	1	W
		$T_A = 100^\circ\text{C}$	2.5	0.32	0.4	2.5	0.32	0.4	
Maximum Junction-to-Ambient	$R_{thJA}$		156	125		156	125	$^\circ\text{C}/\text{W}$	
Maximum Junction-to-Case	$R_{thJC}$	20			20			$^\circ\text{C}/\text{W}$	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150						$^\circ\text{C}$	

#### Notes

- Pulse width limited by maximum junction temperature.
- Reference case for all temperature testing.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70218.

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## Specifications<sup>a</sup>

Parameter	Symbol	Test Conditions	Typ <sup>b</sup>	Limits				Unit
				VP0808B/L/M		VP1008B/L/M		
				Min	Max	Min	Max	
<b>Static</b>								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0 \text{ V}, I_D = -10 \mu\text{A}$	-110	-80		-100		V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -1 \text{ mA}$	-3.4	-2	-4.5	-2	-4.5	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ $T_J = 125^\circ\text{C}$			$\pm 100$		$\pm 100$	nA
					$\pm 500$		$\pm 500$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -80 \text{ V}, V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			-10			$\mu\text{A}$
					-500			
			$V_{DS} = -100 \text{ V}, V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$					
On-State Drain Current <sup>c</sup>	$I_{D(on)}$	$V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}$	-2	-1.1		-1.1		A
Drain-Source On-Resistance <sup>c</sup>	$r_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -1 \text{ A}$ $T_J = 125^\circ\text{C}$	2.5		5		5	$\Omega$
			4.4		8		8	
Forward Transconductance <sup>c</sup>	$g_{fs}$	$V_{DS} = -10 \text{ V}, I_D = -0.5 \text{ A}$	325	200		200		mS
Common Source Output Conductance <sup>c</sup>	$g_{os}$	$V_{DS} = -7.5 \text{ V}, I_D = -0.1 \text{ A}$	0.45					
<b>Dynamic</b>								
Input Capacitance	$C_{iss}$	$V_{DS} = -25 \text{ V}, V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$	75		150		150	pF
Output Capacitance	$C_{oss}$		40		60		60	
Reverse Transfer Capacitance	$C_{rss}$		18		25		25	
<b>Switching<sup>d</sup></b>								
Turn-On Time	$t_{d(on)}$	$V_{DD} = -25 \text{ V}, R_L = 47 \Omega$ $I_D \cong -0.5 \text{ A}, V_{GEN} = -10 \text{ V}$ $R_G = 25 \Omega$	11		15		15	ns
	$t_r$		30		40		40	
Turn-Off Time	$t_{d(off)}$		20		30		30	
	$t_f$		20		30		30	

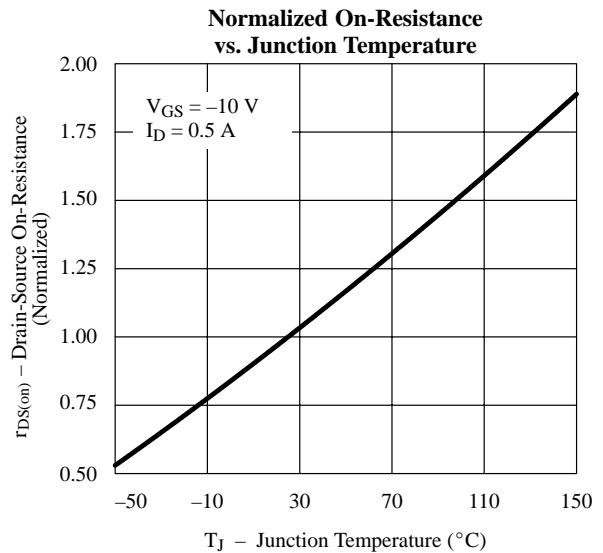
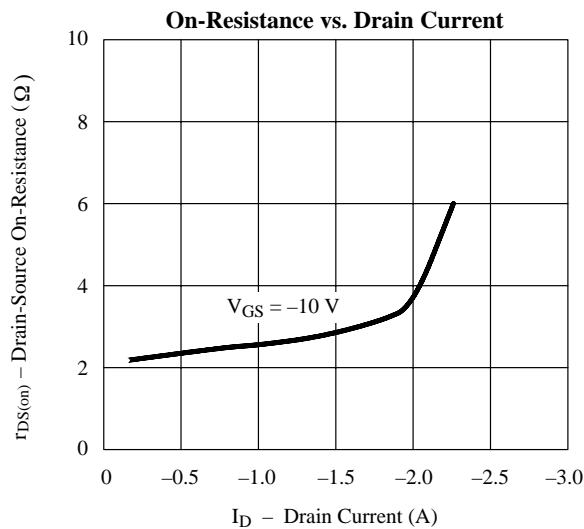
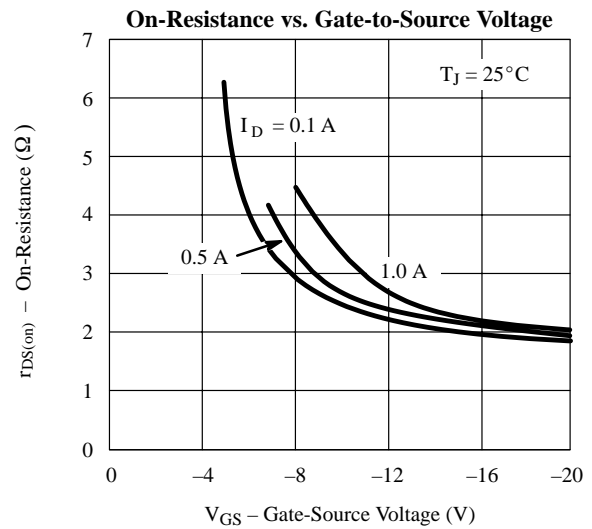
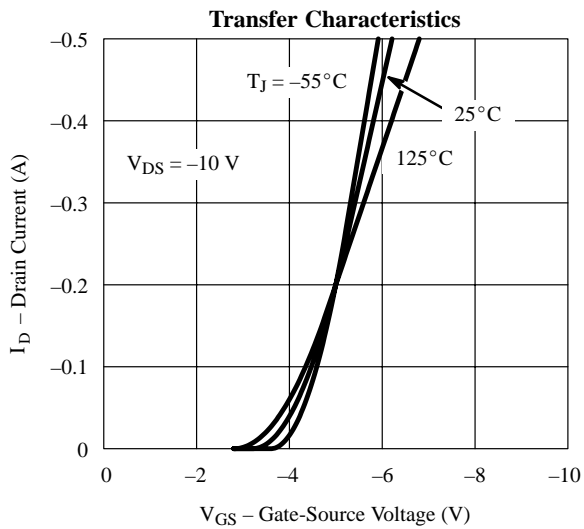
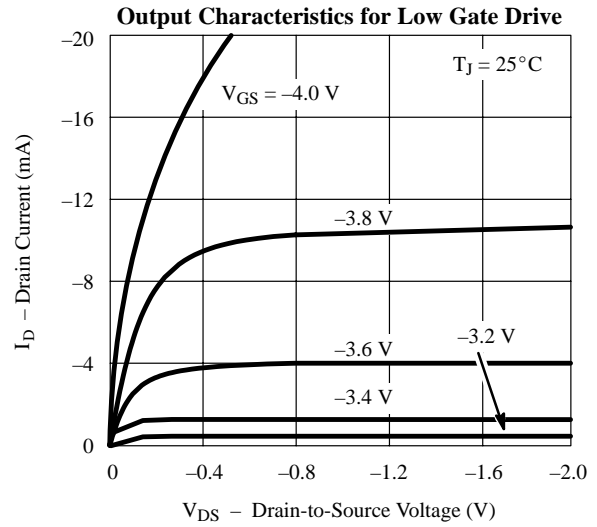
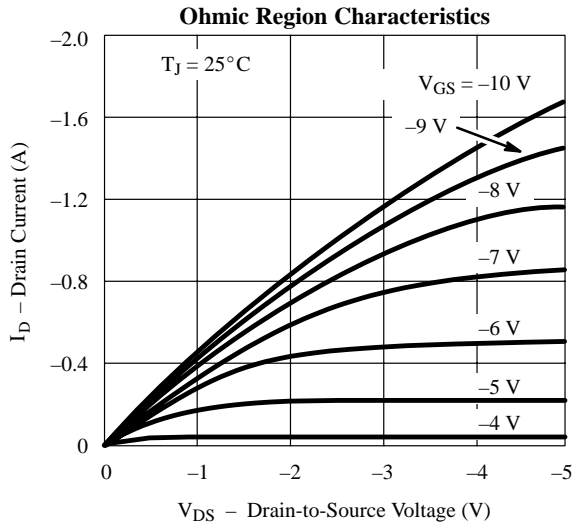
### Notes

- $T_A = 25^\circ\text{C}$  unless otherwise noted.
- For DESIGN AID ONLY, not subject to production testing.
- Pulse test:  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
- Switching time is essentially independent of operating temperature.

VPDV10

# VP0808B/L/M, VP1008B/L/M

## Typical Characteristics (25°C Unless Otherwise Noted)



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