

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 (Ω)	$V_{GS(th)}$ (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

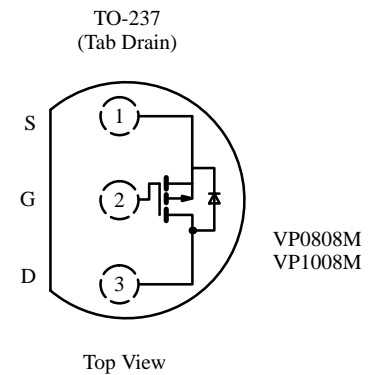
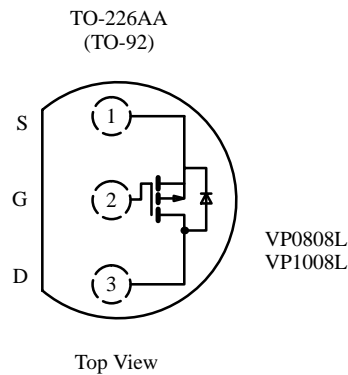
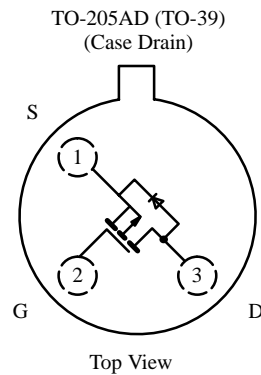
- High-Side Switching
- Low On-Resistance: 2.5 Ω
- Moderate Threshold: -3.4 V
- Fast Switching Speed: 40 ns
- Low Input Capacitance: 75 pF

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 ^b	VP0808L	VP0808M	VP1008B ^b	VP1008L	VP1008M	Unit
Drain-Source Voltage	V_{DS}	-80	-80	-80	-100	-100	-100	V
Gate-Source Voltage	V_{GS}	± 20	± 30	± 30	± 20	± 30	± 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
		$T_A = 100^\circ\text{C}$	-0.53	-0.17	-0.20	-0.53	-0.17	-0.20
Pulsed Drain Current ^a	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
		$T_A = 100^\circ\text{C}$	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^a

Parameter	Symbol	Test Conditions	Typ ^b	Limits				Unit	
				VP0808B/L/M		VP1008B/L/M			
				Min	Max	Min	Max		
Static									
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}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$ $T_J = 125^\circ\text{C}$			± 100		± 100	nA	
					± 500		± 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			μA	
			$V_{DS} = -100\ \text{V}, V_{GS} = 0\ \text{V}$ $T_J = 125^\circ\text{C}$						-10
On-State Drain Current ^c	$I_{D(on)}$	$V_{DS} = -15\ \text{V}, V_{GS} = -10\ \text{V}$	-2	-1.1		-1.1		A	
Drain-Source On-Resistance ^c	$r_{DS(on)}$	$V_{GS} = -10\ \text{V}, I_D = -1\ \text{A}$ $T_J = 125^\circ\text{C}$	2.5		5		5	Ω	
			4.4		8		8		
Forward Transconductance ^c	g_{fs}	$V_{DS} = -10\ \text{V}, I_D = -0.5\ \text{A}$	325	200		200		mS	
Common Source Output Conductance ^c	g_{os}	$V_{DS} = -7.5\ \text{V}, I_D = -0.1\ \text{A}$	0.45						
Dynamic									
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		
Switching^d									
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		

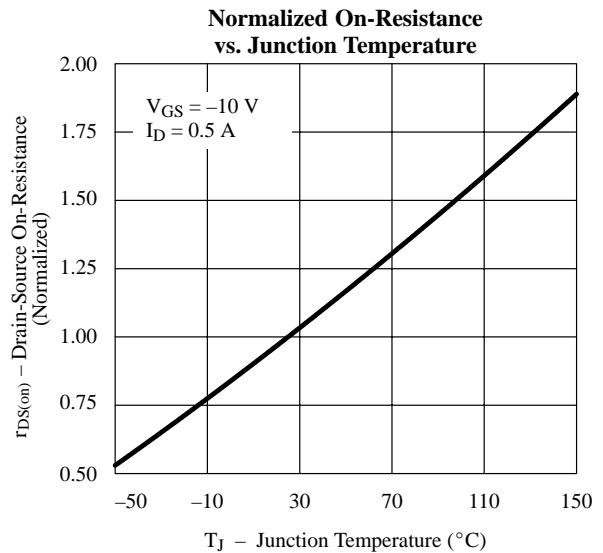
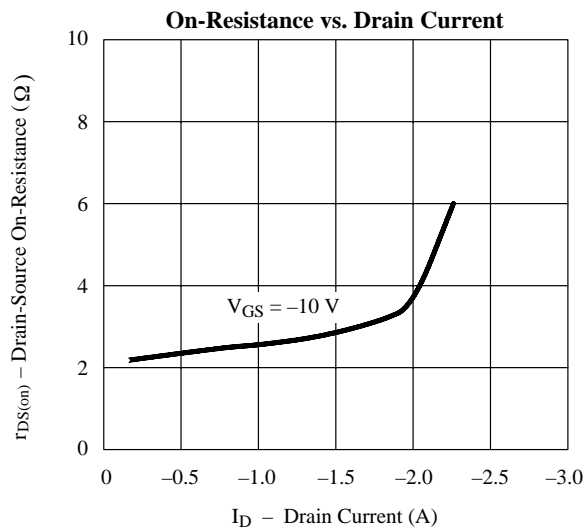
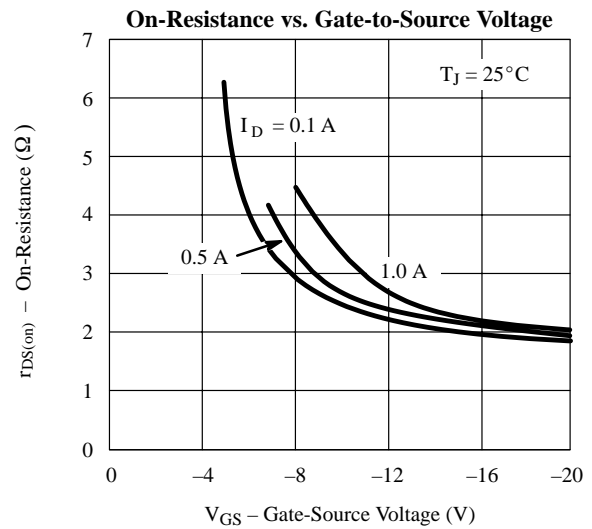
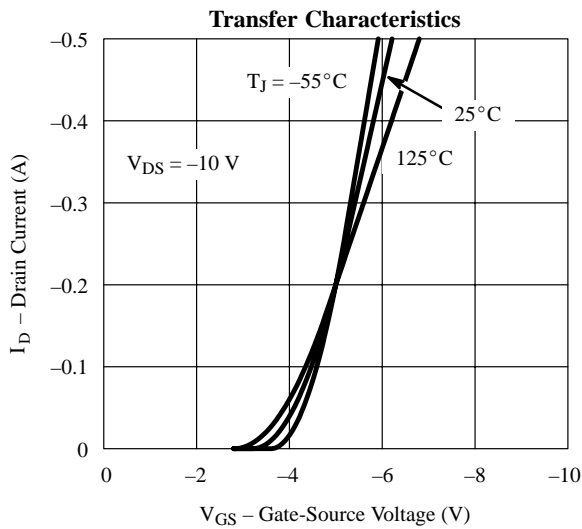
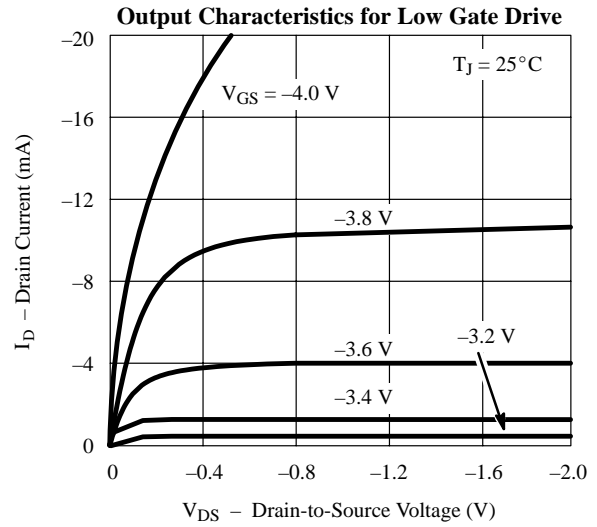
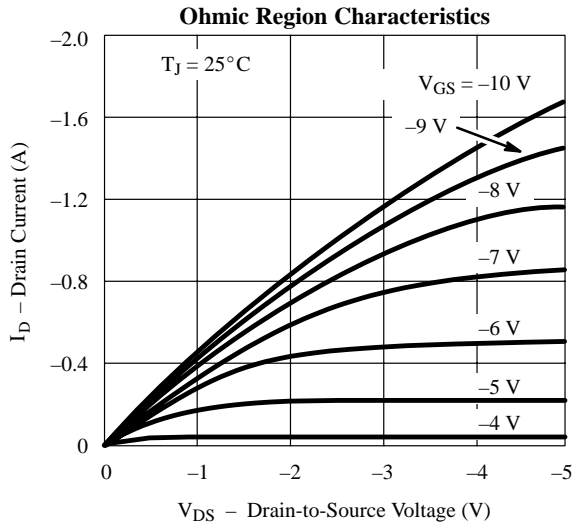
Notes

- $T_A = 25^\circ\text{C}$ 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

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Typical Characteristics (25°C Unless Otherwise Noted)



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