



VP2020L, BSS92
Vishay Siliconix

P-Channel 200-V (D-S) MOSFETs

PRODUCT SUMMARY				
Part Number	V _{(BR)DSS} Min (V)	r _{DS(on)} Max (Ω)	V _{GS(th)} (V)	I _D (A)
VP2020L	-200	20 @ V _{GS} = -4.5 V	-0.8 to -2.5	-0.12
BSS92	-200	20 @ V _{GS} = -10 V	-0.8 to -2.8	-0.15

FEATURES

- High-Side Switching
- Secondary Breakdown Free: -220 V
- Low On-Resistance: 11.5 Ω
- Low-Power/Voltage Driven
- Excellent Thermal Stability

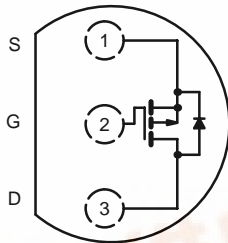
BENEFITS

- Ease in Driving Switches
- Full-Voltage Operation
- Low Offset Voltage
- Easily Driven Without Buffer
- No High-Temperature "Run-Away"

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Power Supply, Converters
- Motor Control
- Switches

TO-226AA (TO-92)



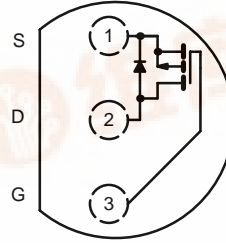
Top View
VP2020L

Device Marking Front View



"S" = Siliconix Logo
xxyy = Date Code

TO-92-18CD (TO-18 Lead Form)



Top View
BSS92

Device Marking Front View



"S" = Siliconix Logo
xxyy = Date Code

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)				
Parameter	Symbol	VP2020L	BSS92	Unit
Drain-Source Voltage	V _{DS}	-200	-200	V
Gate-Source Voltage	V _{GS}	±20	±20	
Continuous Drain Current (T _J = 150°C)	I _D	T _A = 25°C	-0.12	-0.15
		T _A = 100°C	-0.08	-0.09
Pulsed Drain Current ^a	I _{DM}	-0.48	-0.6	A
Power Dissipation	P _D	T _A = 25°C	0.8	1.0
		T _A = 100°C	0.32	0.4
Thermal Resistance, Junction-to-Ambient	R _{thJA}	156	125	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150		°C

^a Pulse width limited by maximum junction temperature.

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SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)									
Parameter	Symbol	Test Conditions	Typ ^a	Limits				Unit	
				VP2020L		BSS92			
				Min	Max	Min	Max		
Static									
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -10 μA		-220				V	
		V _{GS} = 0 V, I _D = -250 μA	-220			-200			
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -1 mA	-1.9	-0.8	-2.5	-0.8	-2.8		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±10		±100	nA	
		T _J = 125 °C			±50				
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 0.8 x V _{(BR)DSS} , V _{GS} = 0 V			-1			μA	
		T _J = 125 °C			-100				
		V _{DS} = -200 V, V _{GS} = 0 V					-60		
		T _J = 125 °C					-200		
		V _{DS} = -60 V, V _{GS} = 0 V					-0.2		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = -10 V, V _{GS} = -4.5 V	-250	-100				mA	
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = -10 V, I _D = -0.1 A	11.5				20	Ω	
		V _{GS} = -4.5 V, I _D = -0.1 A	15		20				
		T _J = 125 °C	28		40				
		V _{GS} = -4.5 V, I _D = -0.05 A	15						
		T _J = 125 °C	28						
Forward Transconductance ^b	g _{fs}	V _{DS} = -10 V, I _D = -0.1 A	170	100				mS	
		V _{DS} = -25 V, I _D = -0.1 A	170			60			
Diode Forward Voltage	V _{SD}	I _S = -0.3 A, V _{GS} = 0 V	-0.9				-1.2	V	
Dynamic									
Input Capacitance	C _{iss}	V _{DS} = -25 V, V _{GS} = 0 V f = 1 MHz	30		70		130	pF	
Output Capacitance	C _{oss}		10		20		30		
Reverse Transfer Capacitance	C _{rss}		3		10		15		
Switching^c									
Turn-On Time	t _{d(on)}	V _{DD} = -25 V, R _L = 250 Ω I _D ≅ -0.1 A, V _{GEN} = -10 V R _G = 25 Ω	6		10			ns	
	t _r		8		15				
Turn-Off Time	t _{d(off)}		18		30				
	t _f		17		25				

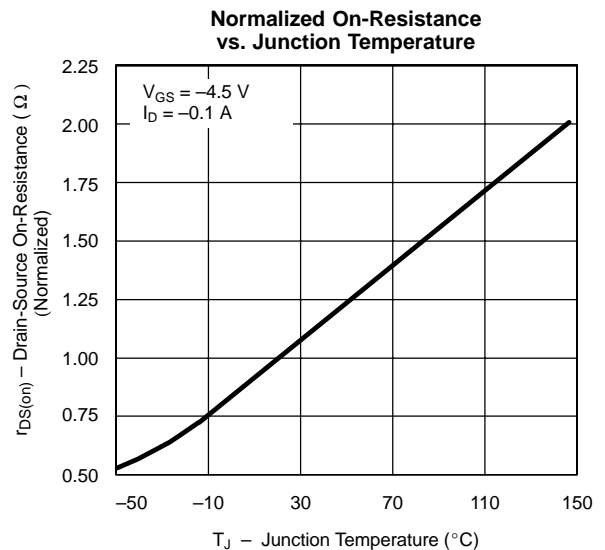
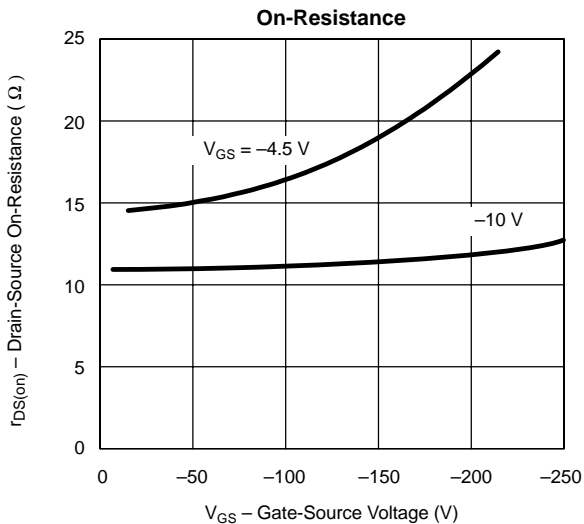
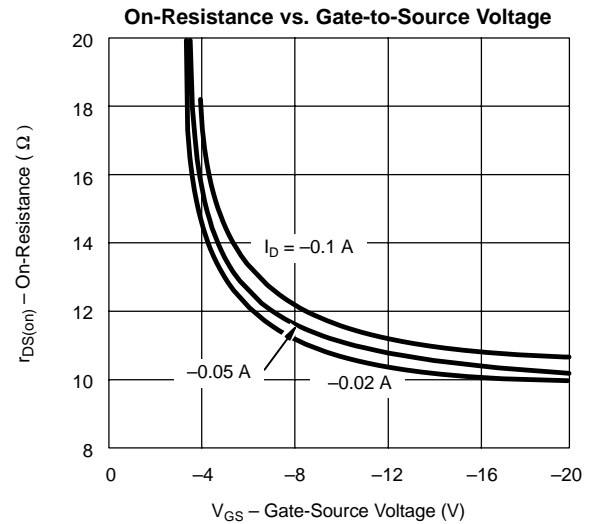
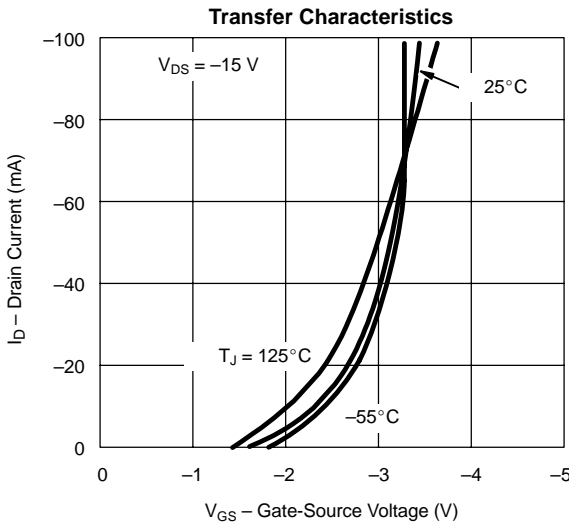
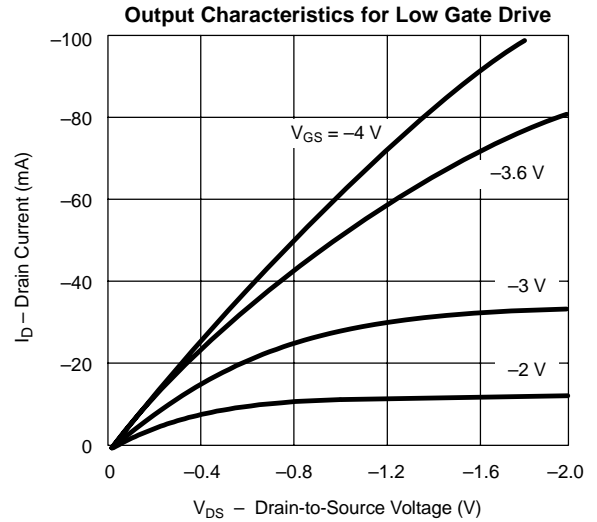
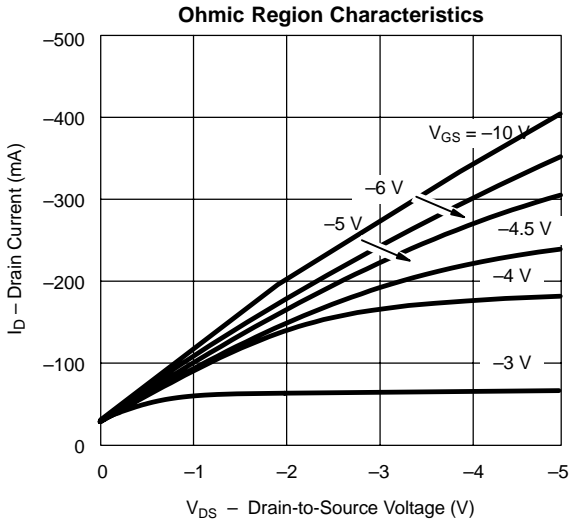
Notes

- a. For DESIGN AID ONLY, not subject to production testing.
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- c. Switching time is essentially independent of operating temperature.

VPDQ20



TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)





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