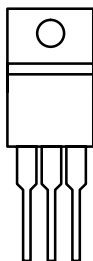


P-Channel Enhancement-Mode Transistor

Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-100	0.20	-20

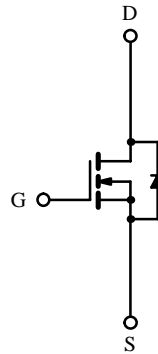
TO-220AB



G D S

Top View

Drain Connected to Tab



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	-100	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	-20	A
		$T_C = 100^\circ\text{C}$	-12	
Pulsed Drain Current	I_{DM}	-80		
Avalanche Current	I_{AR}	-20		
Repetitive Avalanche Energy ^a	E_{AR}	20	mJ	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	125	W
		$T_C = 100^\circ\text{C}$	50	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$	
Lead Temperature ($1/16''$ from case for 10 sec.)	T_L	300		

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}		80	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	R_{thJC}		1.0	
Case-to-Sink	R_{thCS}	1.0		

Notes:

a. Duty cycle $\leq 1\%$

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70287.

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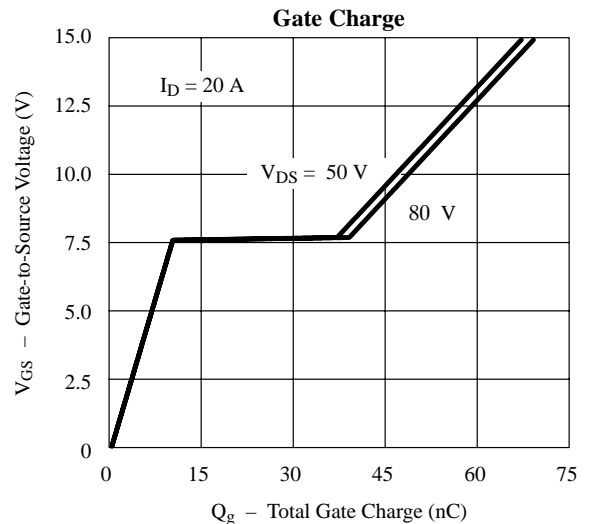
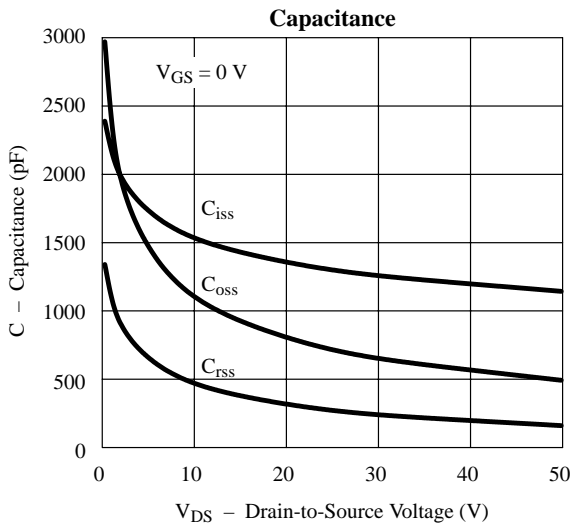
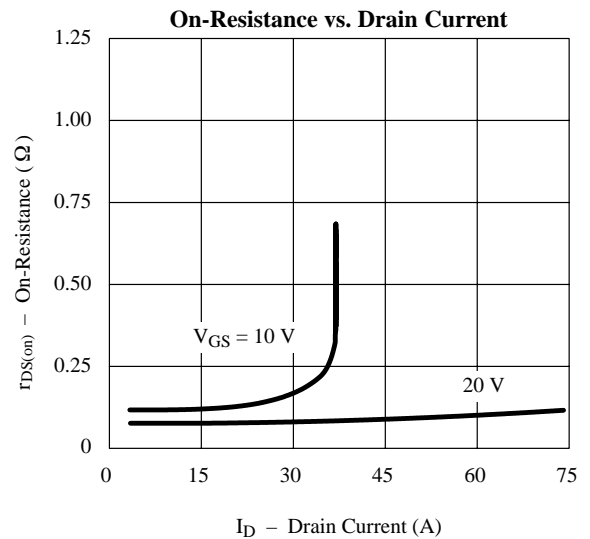
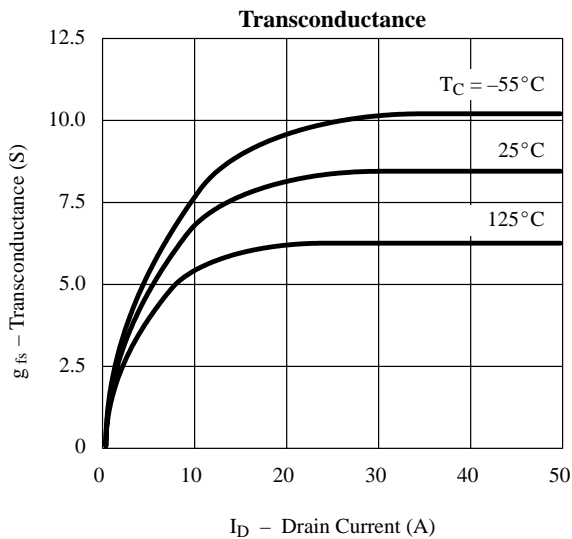
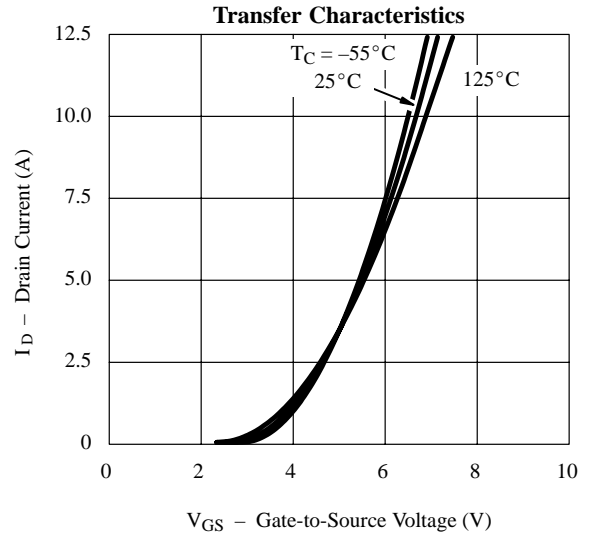
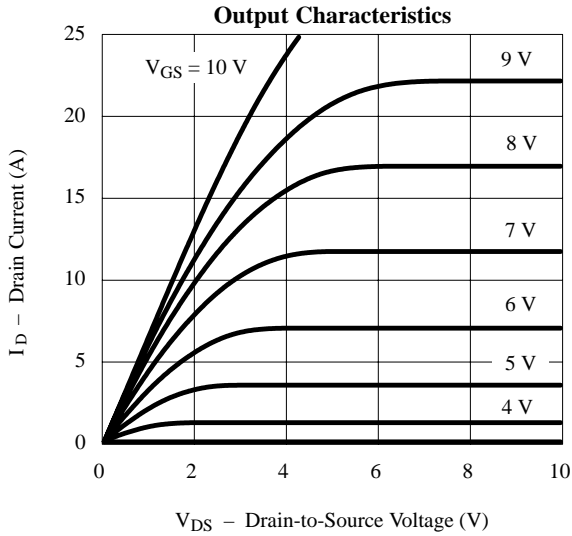
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Limit			Unit
			Min	Typ ^a	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-2.0		-4.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 12\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -80\text{ V}, V_{GS} = 0\text{ V}$			-250	μA
		$V_{DS} = -80\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			-1000	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = -10\text{ V}, V_{GS} = -10\text{ V}$	-20			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -12\text{ A}$		0.15	0.20	Ω
		$V_{GS} = -10\text{ V}, I_D = -12\text{ A}, T_J = 125^\circ\text{C}$		0.24	0.30	
Forward Transconductance ^b	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -12\text{ A}$	4.8	6.7		S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = -25\text{ V}, f = 1\text{ MHz}$		1300		pF
Output Capacitance	C_{oss}			700		
Reverse Transfer Capacitance	C_{rss}			250		
Total Gate Charge ^c	Q_g	$V_{DS} = -50\text{ V}, V_{GS} = -10\text{ V}, I_D = -20\text{ A}$		47	60	nC
Gate-Source Charge ^c	Q_{gs}			10	18	
Gate-Drain Charge ^c	Q_{gd}			27	36	
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = -40\text{ V}, R_L = 2.1\ \Omega$ $I_D \approx -19\text{ A}, V_{GEN} = -10\text{ V}, R_G = 4.7\ \Omega$		10	30	ns
Rise Time ^c	t_r			50	80	
Turn-Off Delay Time ^c	$t_{d(off)}$			25	80	
Fall Time ^c	t_f			15	60	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I_S				-20	A
Pulsed Current	I_{SM}				-80	
Diode Forward Voltage ^b	V_{SD}	$I_F = -20\text{ A}, V_{GS} = 0\text{ V}$			-1.7	V
Reverse Recovery Time	t_{rr}	$I_F = -20\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		150		ns
Reverse Recovery Charge	Q_{rr}				0.3	

Notes:

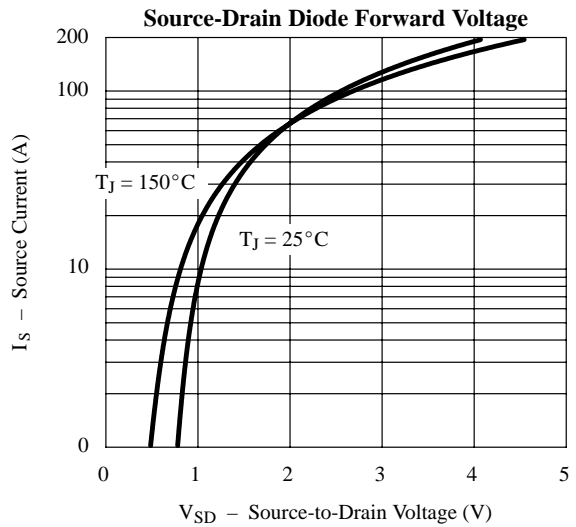
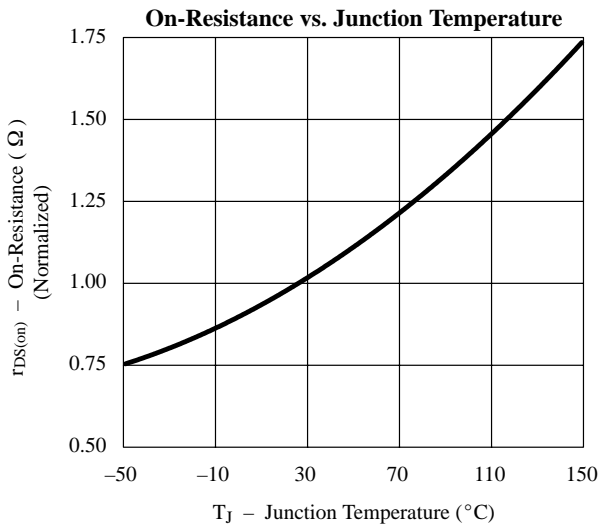
- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)



SMP20P10

Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

