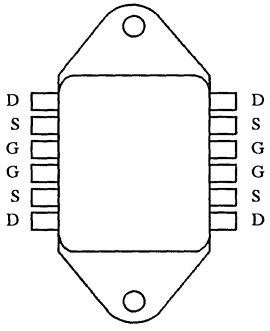
Siliconix

MOD100B/100C

Four N-Channel Enhancement-Mode Transistors

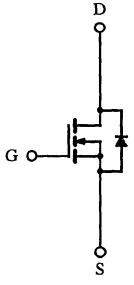
Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.08	21



Leadform Options

MOD100B . . . Bent Down
MOD100C . . . Bent Up



N-Channel MOSFET

Absolute Maximum Ratings (T_C = 25°C Unless Otherwise Noted)

Parameter		Symbol	Single Die	All Die	Unit
Drain-Source Voltage		V_{DS}	100	100	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current (T_J = 150°C)	T_C = 25°C	I_D	21	84	A
	T_C = 100°C		21	70	
Pulsed Drain Current		I_{DM}	125	440	
Avalanche Current (See Thermal Ratings)		I_A	21		
Maximum Power Dissipation	T_C = 25°C	P_D	150	400	W
	T_C = 100°C		60	100	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to 150		°C
Isolation Voltage		V_{ISOL}	1000		V

Thermal Resistance Ratings

Parameter	Symbol	Typical	Single Die	All Die	Unit
Maximum Junction-to-Ambient	R_{thJA}		30	30	°C/W
Maximum Junction-to-Case	R_{thJC}		0.83	0.31	
Case-to-Sink	R_{thCS}	0.1			

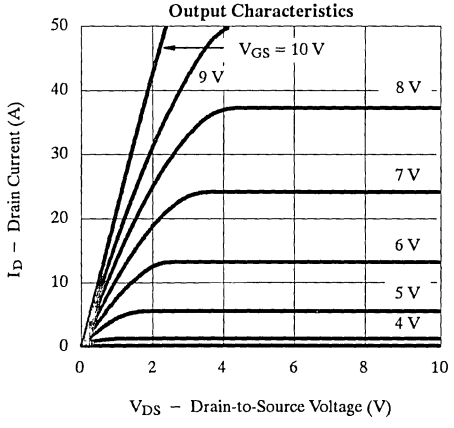
Specifications (T_J = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Limit			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 mA	2.0		4.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V			250	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 125°C			1000	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 10 V, V_{GS} = 10 V	21			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A		0.070	0.08	Ω
		V_{GS} = 10 V, I_D = 20 A, T_J = 125°C		0.100	0.120	
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 20 A	9.0	11.0		S
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		2800		pF
Output Capacitance	C_{oss}			1100		
Reverse Transfer Capacitance	C_{rss}			400		
Total Gate Charge	Q_g	V_{DS} = 50 V, V_{GS} = 10 V, I_D = 21 A		90	125	nC
Gate-Source Charge	Q_{gs}			18	22	
Gate-Drain Charge	Q_{gd}			30	65	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 24 V, R_L = 1.2 Ω I_D ≅ 20 A, V_{GEN} = 10 V, R_G = 4.7 Ω		15	35	ns
Rise Time	t_r			30	100	
Turn-Off Delay Time	$t_{d(off)}$			50	125	
Fall Time	t_f			20	100	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I_S				21	A
Pulsed Current	I_{SM}				125	
Diode Forward Voltage[a]	V_{SD}	I_F = 21 A, V_{GS} = 0 V			2.5	V
Reverse Recovery Time	t_{rr}	I_F =21A, di/dt = 100 A/µs		150		ns
Reverse Recovery Charge	Q_{rr}			0.5		µC

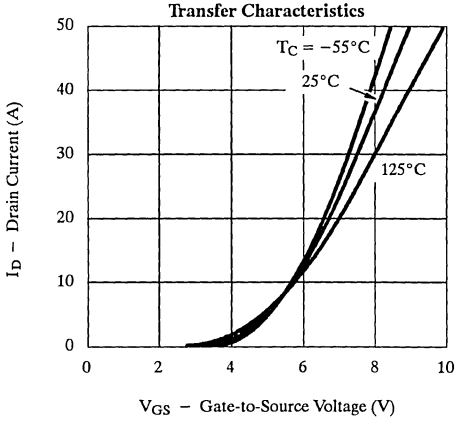
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)

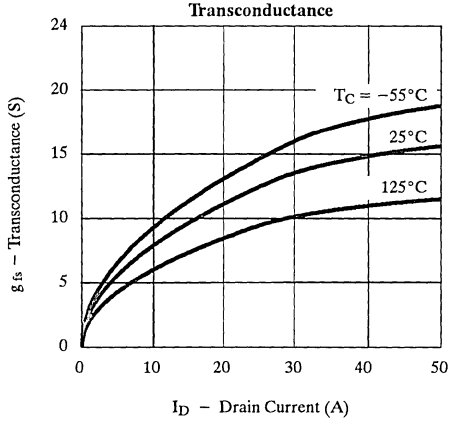
Output Characteristics



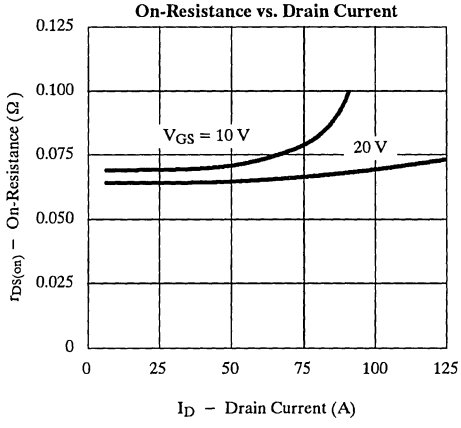
Transfer Characteristics



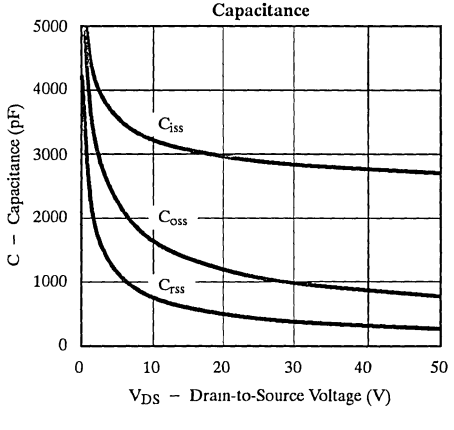
Transconductance



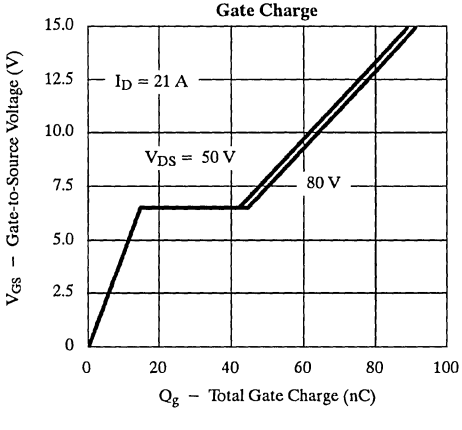
On-Resistance vs. Drain Current



Capacitance



Gate Charge



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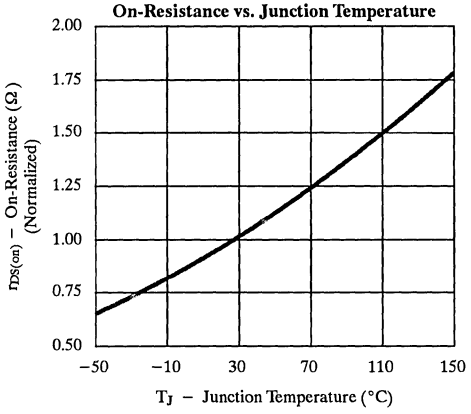

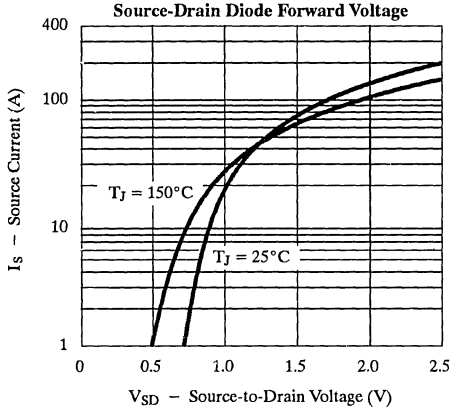

Thermal Ratings