TEMIC

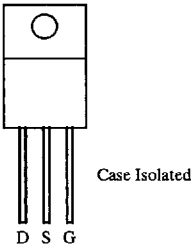
Siliconix **2N7080**

P-Channel Enhancement-Mode Transistor

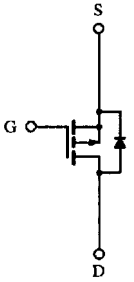
Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
−200	0.500	−9.5

TO-254AA
Hermetic Package



Top View



P-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	−200	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150°C)	T_C = 25°C	I_D	−9.5	A
	T_C = 100°C		−6.1	
Pulsed Drain Current		I_{DM}	−38	
Maximum Power Dissipation	T_C = 25°C	P_D	100	W
	T_C = 100°C		40	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to 150	°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}		50	°C/W
Maximum Junction-to-Case	R_{thJC}		1.25	
Case-to-Sink	R_{thCS}	0.2		

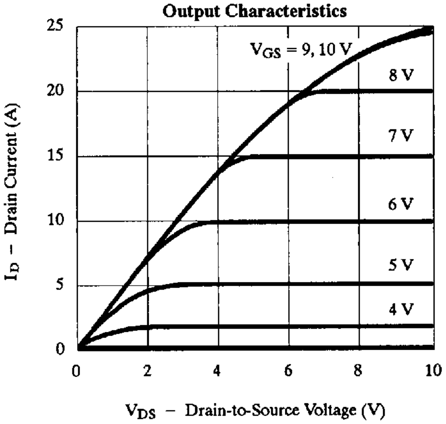
Specifications (T_J = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Limit			Unit
			Min	Typ[a]	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = −250 µA	−200			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = −250 µA	−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} = −160 V, V_{GS} = 0 V			−25	µA
		V_{DS} = −160 V, V_{GS} = 0 V, T_J = 125°C			−250	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} = −10 V, V_{GS} = −10 V	−9.5			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = −10 V, I_D = −6.1 A		0.28	0.500	Ω
		V_{GS} = −10 V, I_D = −6.1 A, T_J = 125°C		0.5	1.0	
Forward Transconductance[b]	g_{fs}	V_{DS} = −15 V, I_D = −6.1 A	4.0	4.8		S
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = −25 V, f = 1 MHz		1300		pF
Output Capacitance	C_{oss}			450		
Reverse Transfer Capacitance	C_{rss}			200		
Total Gate Charge[c]	Q_g	V_{DS} = −100 V, V_{GS} = −10 V, I_D = −9.5 A		55	75	nC
Gate-Source Charge[c]	Q_{gs}			9.0	15	
Gate-Drain Charge[c]	Q_{gd}			30	45	
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = −100 V, R_L = 10.2 Ω I_D = −9.5 A, V_{GEN} = −10 V, R_G = 4.7 Ω		10	25	ns
Rise Time[c]	t_r			30	50	
Turn-Off Delay Time[c]	$t_{d(off)}$			35	80	
Fall Time[c]	t_f			16	40	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I_S				−9.5	A
Pulsed Current	I_{SM}				−38	
Diode Forward Voltage[b]	V_{SD}	I_F = −9.5 A, V_{GS} = 0 V			−2.0	V
Reverse Recovery Time	t_{rr}	I_F = −9.5 A, di/dt = 100 A/µs		200		ns
Reverse Recovery Charge	Q_{rr}			1.0		µC

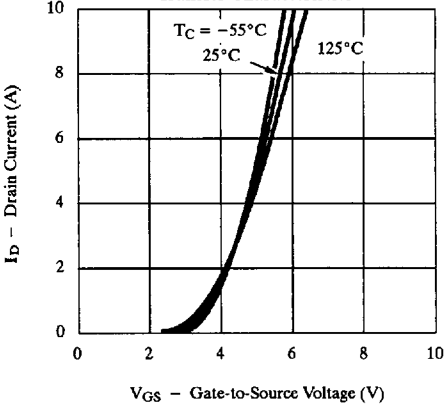
Notes:
a. For design aid only; not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
c. Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)

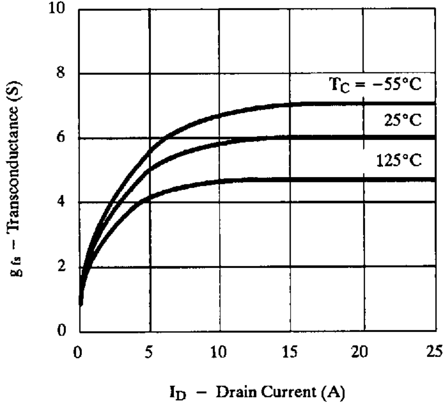
Negative signs omitted for clarity.



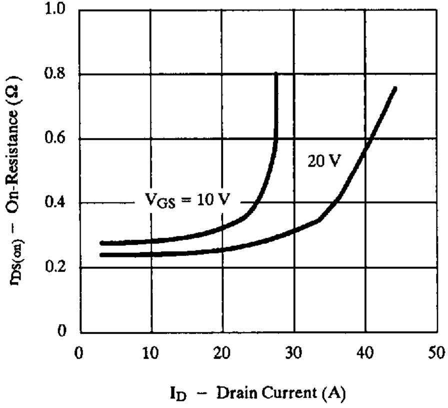
Output Characteristics



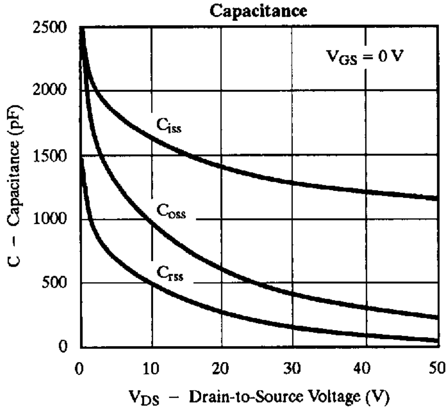
Transfer Characteristics



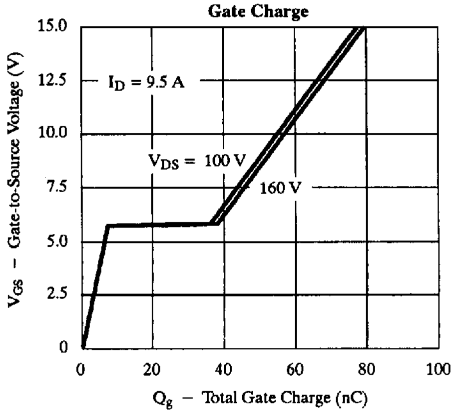
Transconductance



On-Resistance vs. Drain Current



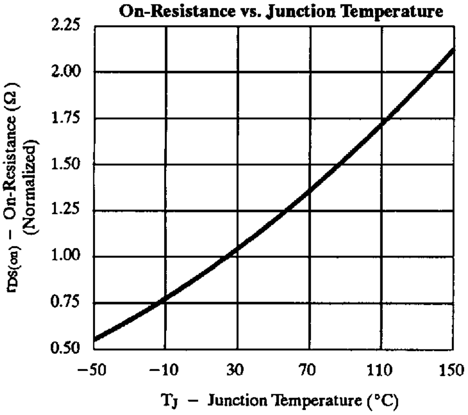
Capacitance



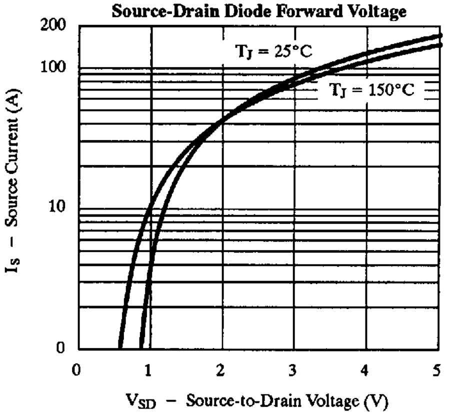
Gate Charge

Typical Characteristics (25°C Unless Otherwise Noted)

Negative signs omitted for clarity.

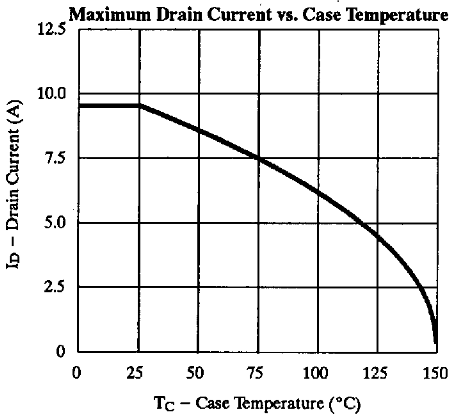


On-Resistance vs. Junction Temperature

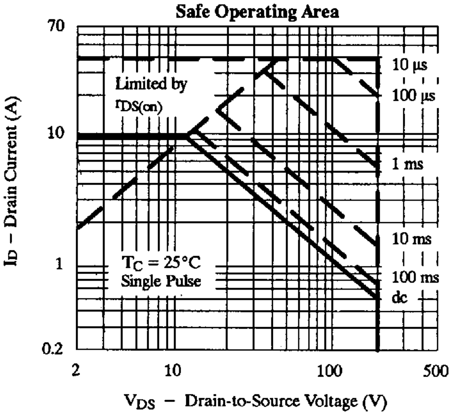


Source-Drain Diode Forward Voltage

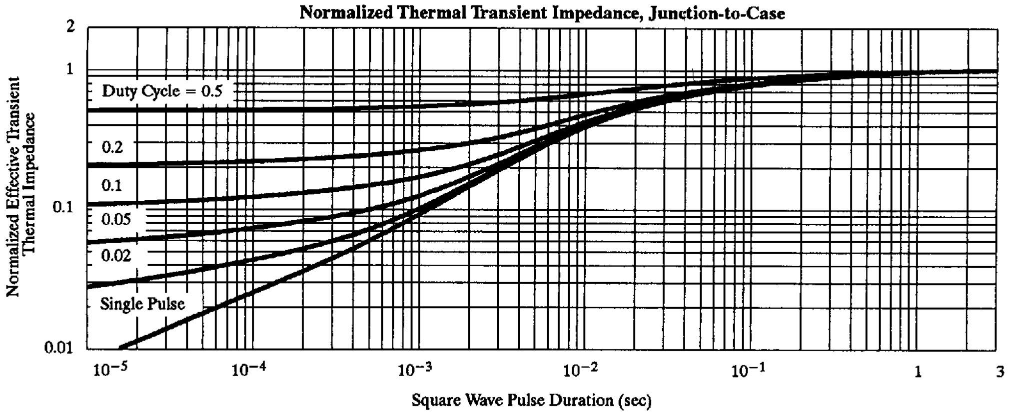
Thermal Ratings



Maximum Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case