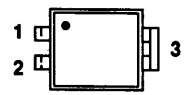
Siliconix incorporated

2N7004

N-Channel Enhancement Mode Transistor

4-PIN DIP
(Similar to TO-250)

TOP VIEW



1 GATE
2 SOURCE
3 DRAIN

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
100	0.60	1.0

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A = 25°C	I_D	1.0	A
	T_A = 100°C		0.63	
Pulsed Drain Current[1]		I_{DM}	8.0	
Power Dissipation	T_A = 25°C	P_D	1.0	W
	T_A = 100°C		0.40	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

[1]Pulse width limited by maximum junction temperature.

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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 = 1000 µA		2.0	4.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0 V			250	µA
		V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0 V, T_J = 125°C			1000	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 2 V, V_{GS} = 10 V		1.0		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 0.8 A	0.5		0.60	Ω
		V_{GS} = 10 V, I_D = 0.8 A, T_J = 125°C	0.9		1.1	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 0.8 A	0.9	0.8		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	170		250	pF
Output Capacitance	C_{oss}		75		100	
Reverse Transfer Capacitance	C_{rss}		23		40	
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 1 A	6		7.0	nC
Gate-Source Charge[2]	Q_{gs}		1.2			
Gate-Drain Charge[2]	Q_{gd}		2.5			
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50 V, R_L = 62 Ω, I_D ≃ 0.8 A, V_{GEN} = 10 V, R_G = 25 Ω	7		20	ns
Rise Time[2]	t_r		18		25	
Turn-Off Delay Time[2]	$t_{d(off)}$		24		25	
Fall Time[2]	t_f		11		20	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25°C)						
Continuous Current	I_S				1.0	A
Pulsed Current[3]	I_{SM}				8.0	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V			2.5	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	65			ns
Reverse Recovery Charge	Q_{rr}		0.12			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

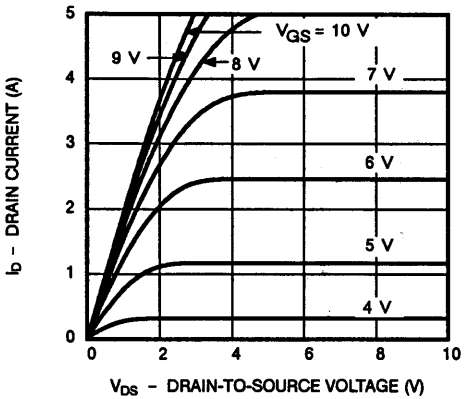


Figure 2. Transfer Characteristics

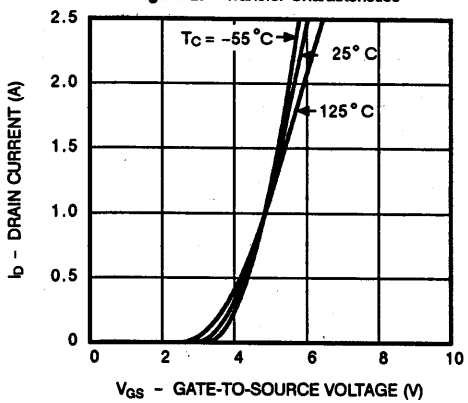


Figure 3. Transconductance

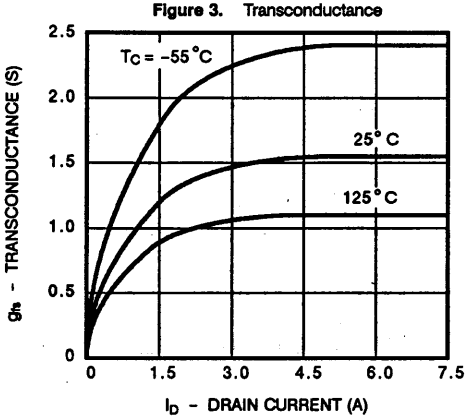


Figure 4. On-Resistance

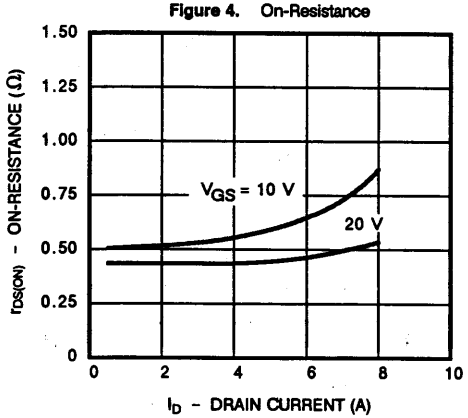


Figure 5. Capacitance

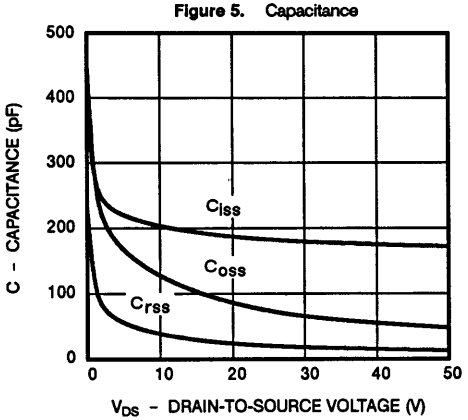
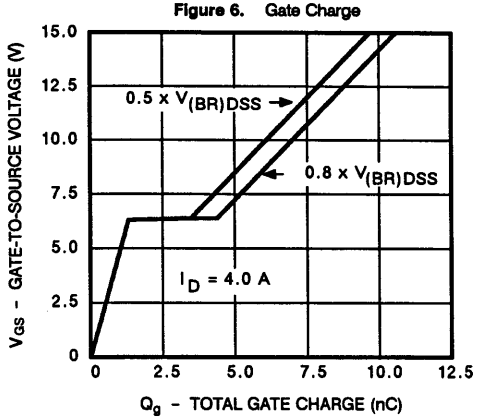


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

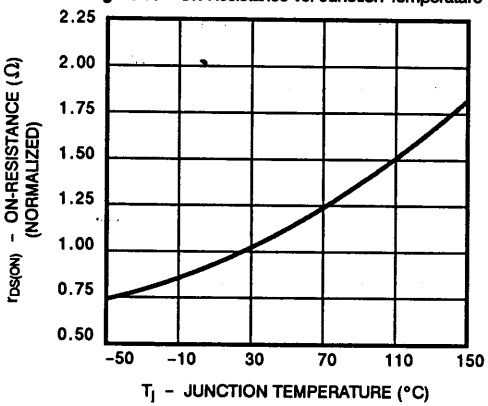
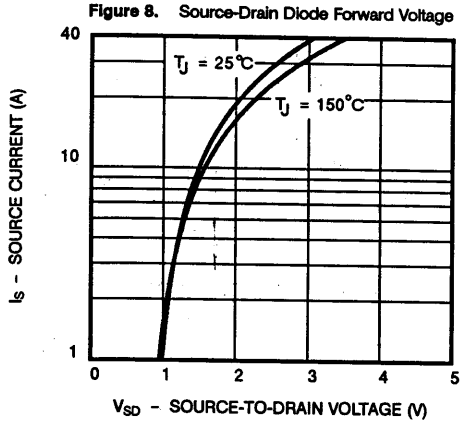


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

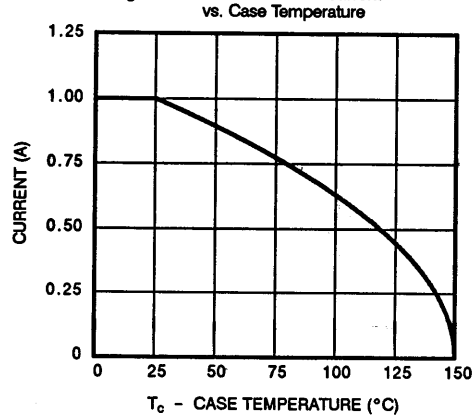
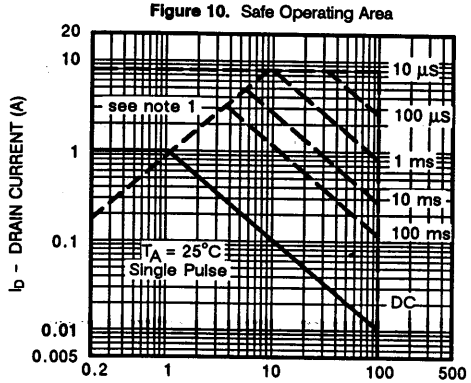


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

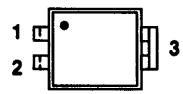
Siliconix incorporated

2N7005

N-Channel Enhancement Mode Transistor

4-PIN DIP
(Similar to TO-250)

TOP VIEW



1 GATE
2 SOURCE
3 DRAIN

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
200	1.5	0.60

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A = 25°C	I_D	0.60	A
	T_A = 100°C		0.38	
Pulsed Drain Current[1]		I_{DM}	2.5	
Power Dissipation	T_A = 25°C	P_D	1.0	W
	T_A = 100°C		0.4	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

[1]Pulse width limited by maximum junction temperature.

4

2N7005

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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 = 1000 µA		2.0	4.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0 V			250	µA
		V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0 V, T_J = 125°C			1000	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 2 V, V_{GS} = 10 V		0.6		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 0.3 A	1.0		1.5	Ω
		V_{GS} = 10 V, I_D = 0.3 A, T_J = 125°C	1.8		2.7	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 0.3 A	0.7	0.5		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	175		240	pF
Output Capacitance	C_{oss}		65		80	
Reverse Transfer Capacitance	C_{rss}		20		40	
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 0.6 A	7.5		10	nC
Gate-Source Charge[2]	Q_{gs}		1.6			
Gate-Drain Charge[2]	Q_{gd}		5			
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 100 V, R_L = 300 Ω, I_D ≃ 0.3 A, V_{GEN} = 10 V, R_G = 25 Ω	7		20	ns
Rise Time[2]	t_r		18		30	
Turn-Off Delay Time[2]	$t_{d(off)}$		35		45	
Fall Time[2]	t_f		20		30	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25°C)						
Continuous Current	I_S				0.60	A
Pulsed Current[3]	I_{SM}				2.5	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V			2.0	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	65			ns
Reverse Recovery Charge	Q_{rr}		0.12			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

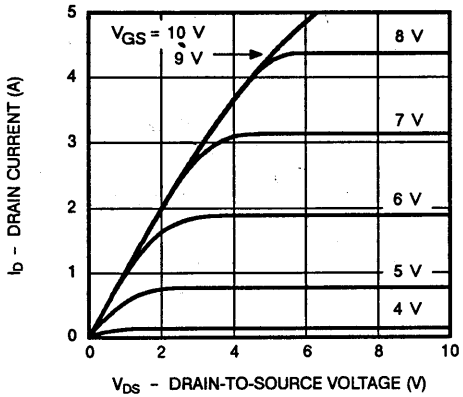


Figure 2. Transfer Characteristics

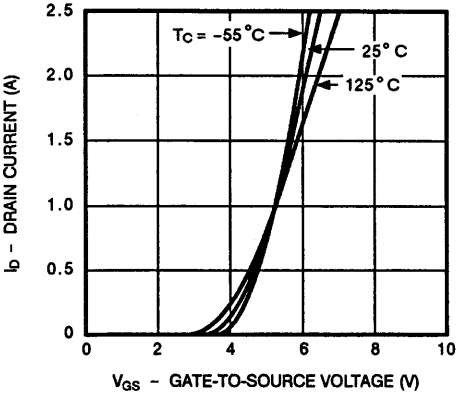


Figure 3. Transconductance

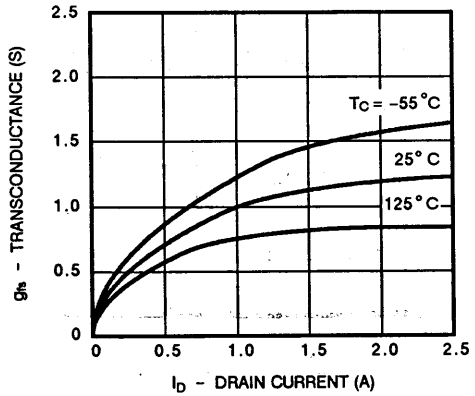


Figure 4. On-Resistance

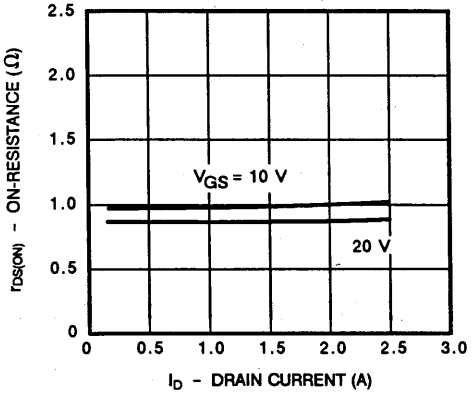


Figure 5. Capacitance

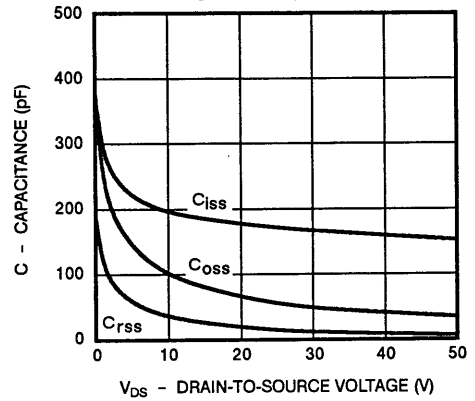
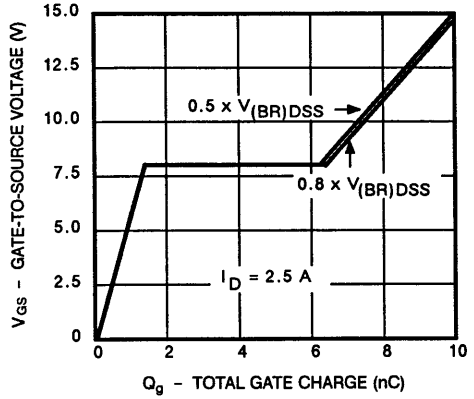


Figure 6. Gate Charge



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TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

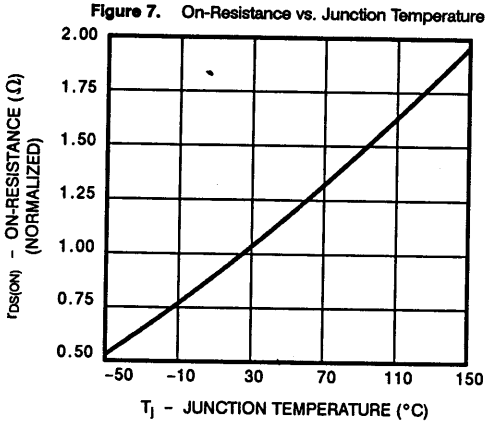
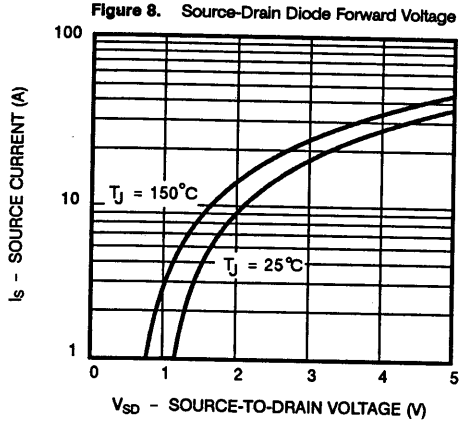


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

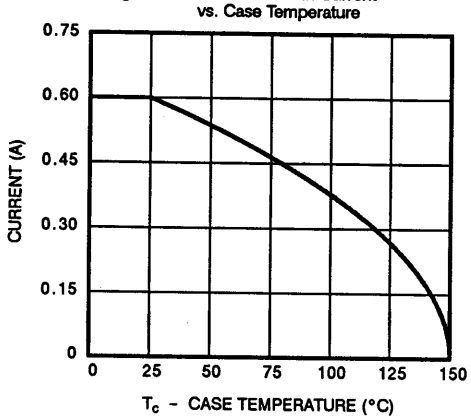
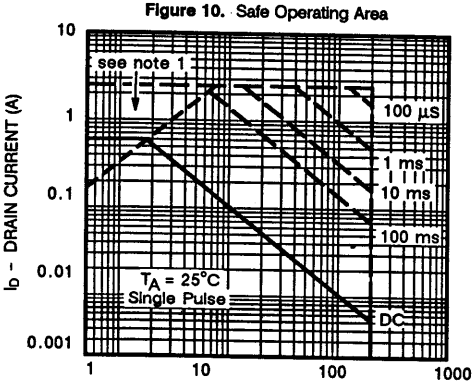


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

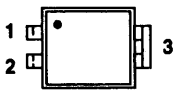
Siliconix incorporated

2N7012, 2N7013

N-Channel Enhancement Mode Transistors

4-PIN DIP
(Similar to TO-250)

TOP VIEW



1 GATE
2 SOURCE
3 DRAIN

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
2N7012	60	0.35	1.2
2N7013	40	0.35	1.2

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS 2N7012	LIMITS 2N7013	UNITS
Drain-Source Voltage		V_{DS}	60	40	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current	T_A = 25°C	I_D	1.2	1.2	A
	T_A = 100°C		0.80	0.80	
Pulsed Drain Current[1]		I_{DM}	10	10	
Power Dissipation	T_A = 25°C	P_D	1.0	1.0	W
	T_A = 100°C		0.4	0.4	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

[1]Pulse width limited by maximum junction temperature.

4

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER		SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	2N7012 2N7013	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA		60 40		V
Gate Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1000 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} = $V_{(BR)DSS}$, V_{GS} = 0 V			250	µA
			V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0 V, T_J = 125°C			1000	
On-State Drain Current[1]		$I_{D(ON)}$	V_{DS} = 2 V, V_{GS} = 10 V		1.2		A
Drain-Source On-State Resistance[1]		$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 1.0 A	0.3		0.35	Ω
			V_{GS} = 10 V, I_D = 1.0 A, T_J = 125°C	0.55		0.64	
Forward Transconductance[1]		g_{fs}	V_{DS} = 15 V, I_D = 1.0 A	1.5	1.2		S
DYNAMIC							
Input Capacitance		C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	220		300	pF
Output Capacitance		C_{oss}		120		200	
Reverse Transfer Capacitance		C_{rss}		30		100	
Total Gate Charge[2]		Q_g	V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 15 A	4.8		6.0	nC
Gate-Source Charge[2]		Q_{gs}		1			
Gate-Drain Charge[2]		Q_{gd}		2			
Turn-On Delay Time[2]		$t_{d(on)}$	V_{DD} = 30 V, R_L = 25 Ω I_D ≃ 1.2 A, V_{GEN} = 10 V, R_G = 25 Ω	7		20	ns
Rise Time[2]		t_r		13		30	
Turn-Off Delay Time[2]		$t_{d(off)}$		18		30	
Fall Time[2]		t_f		13		25	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25°C)							
Continuous Current		I_S				1.2	A
Pulsed Current[3]		I_{SM}				10	
Forward Voltage[1]		V_{SD}	I_F = I_S, V_{GS} = 0 V			1.6	V
Reverse Recovery Time		t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	45			ns
Reverse Recovery Charge		Q_{rr}		0.6			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

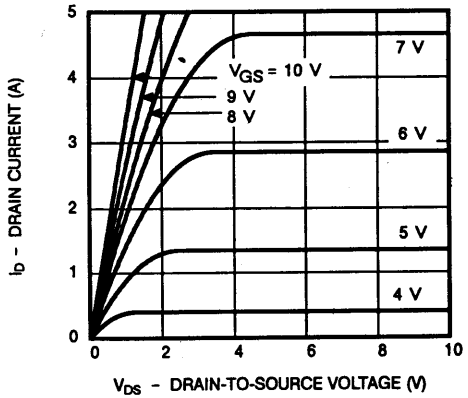


Figure 2. Transfer Characteristics

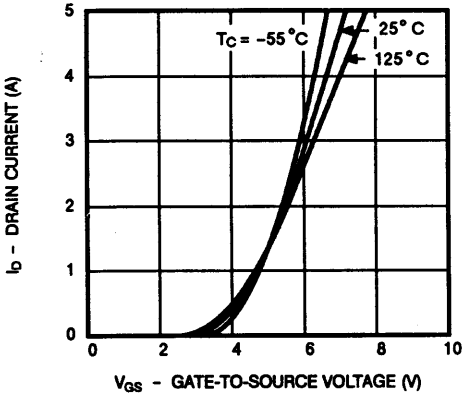


Figure 3. Transconductance

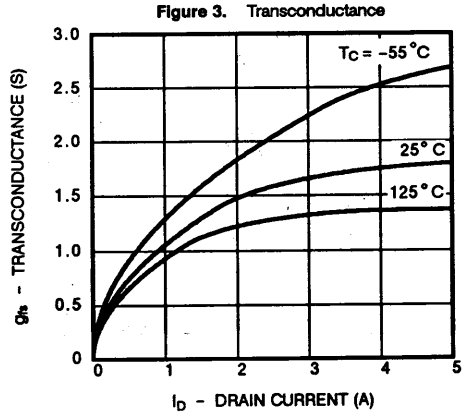


Figure 4. On-Resistance

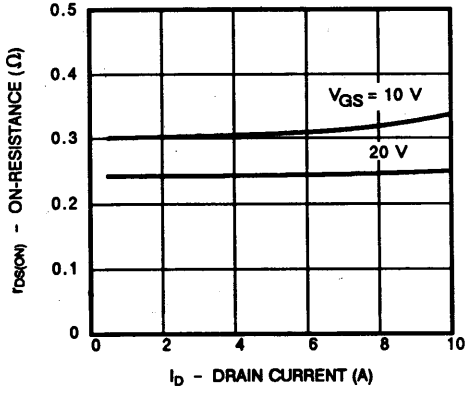


Figure 5. Capacitance

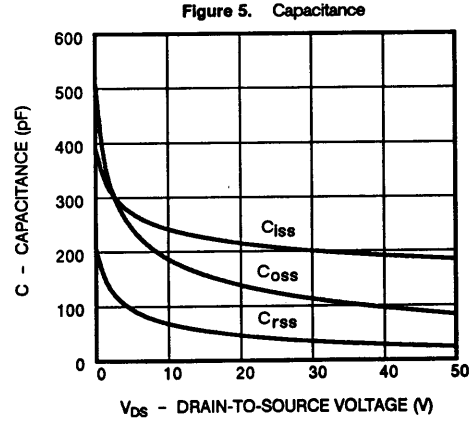
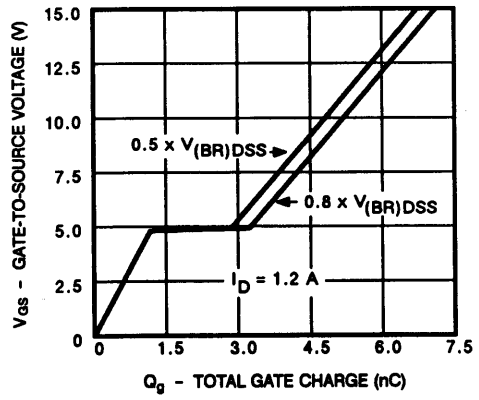


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

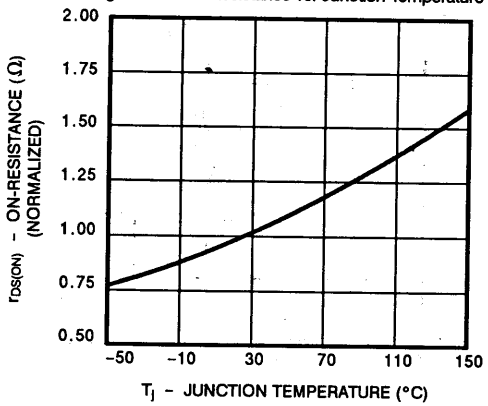
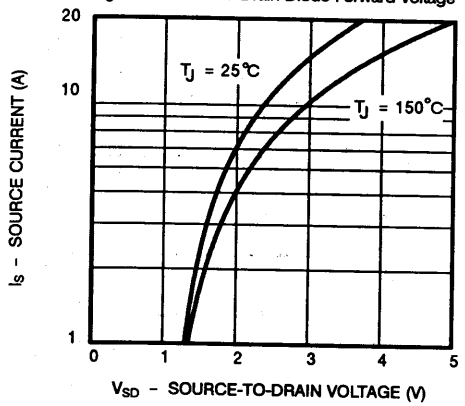


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Ambient Temperature

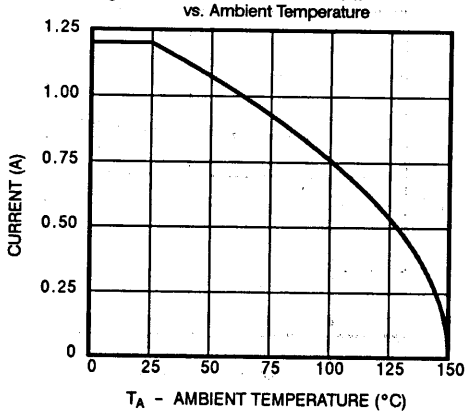
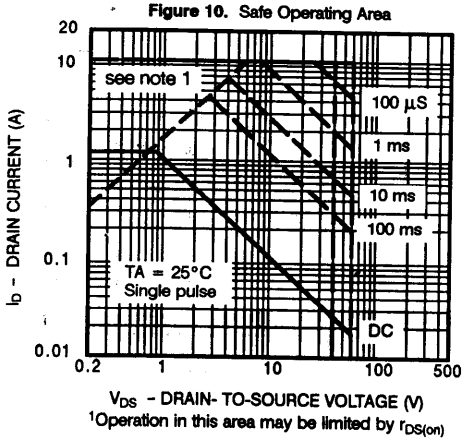


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

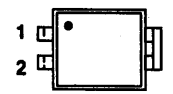
Siliconix incorporated

2N7016

P-Channel Enhancement Mode Transistor

4-PIN DIP
(Similar to TO-250)

TOP VIEW



1 GATE
2 SOURCE
3 DRAIN

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
-60	1.0	-0.70

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)[1]

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A = 25°C	I_D	0.70	A
	T_A = 100°C		0.45	
Pulsed Drain Current[2]		I_{DM}	10	
Power Dissipation	T_A = 25°C	P_D	1.0	W
	T_A = 100°C		0.4	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

[1]Negative signs for current and voltage ratings have been omitted for the sake of clarity.
[2]Pulse width limited by maximum junction temperature.

4

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

P-Channel Device – Negative Signs Have Been Omitted for Clarity

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA		60		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1000 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} = $V_{(BR)DSS}$, V_{GS} = 0 V			250	µA
		V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0 V, T_J = 125°C			1000	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5 V, V_{GS} = 10 V		0.7		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 0.70 A	0.85		1.0	Ω
		V_{GS} = 10 V, I_D = 0.70 A, T_J = 125°C	1.6		1.9	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 2 A	0.90	0.50		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	200		290	pF
Output Capacitance	C_{oss}		110		160	
Reverse Transfer Capacitance	C_{rss}		25		60	
Total Gate Charge[2]	Q_g	V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 0.7 A	6.1		7.5	nC
Gate-Source Charge[2]	Q_{gs}		0.8			
Gate-Drain Charge[2]	Q_{gd}		3.5			
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 40 V, R_L = 40 Ω, I_D ≅ 1 A, V_{GEN} = 10 V, R_G = 25 Ω	8		20	ns
Rise Time[2]	t_r		9		20	
Turn-Off Delay Time[2]	$t_{d(off)}$		16		25	
Fall Time[2]	t_f		25		30	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25°C)						
Continuous Current	I_S				0.70	A
Pulsed Current[3]	I_{SM}				10	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V	1.3		1.8	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	60			ns
Reverse Recovery Charge	Q_{rr}		0.15			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

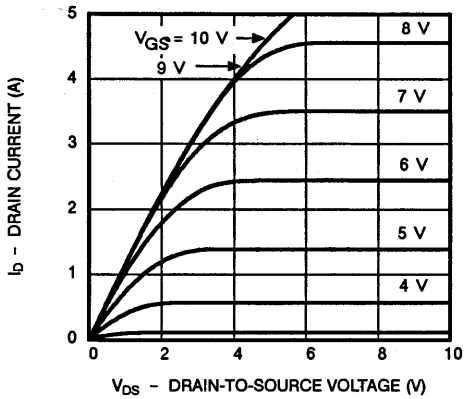


Figure 2. Transfer Characteristics

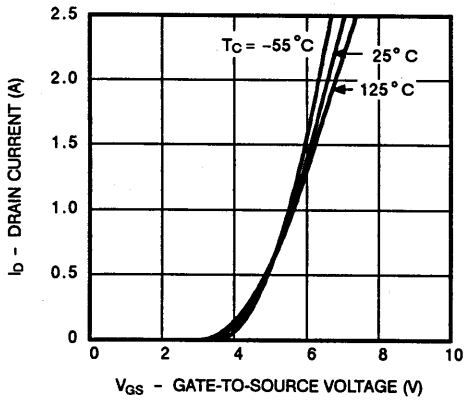


Figure 3. Transconductance

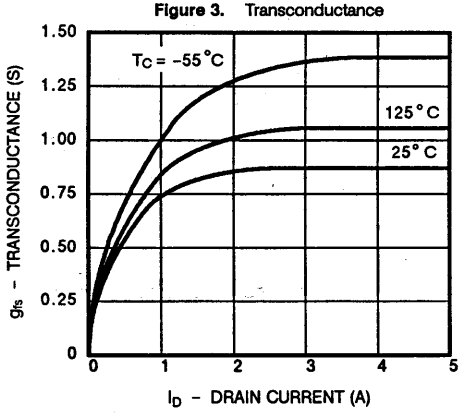


Figure 4. On-Resistance

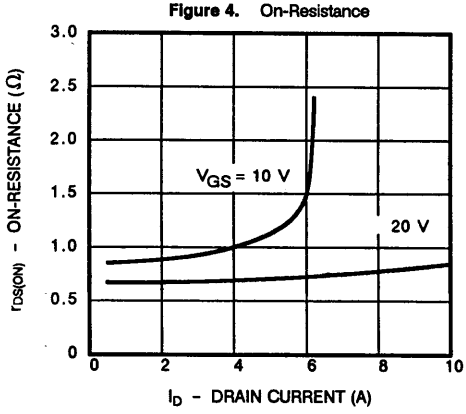


Figure 5. Capacitance

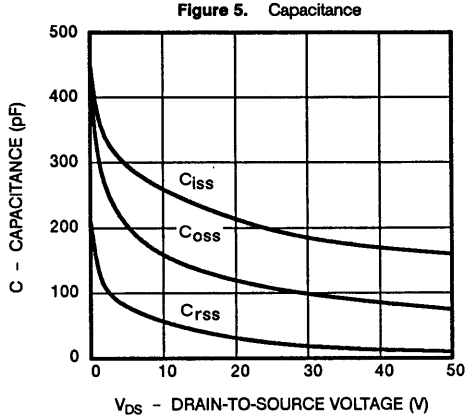
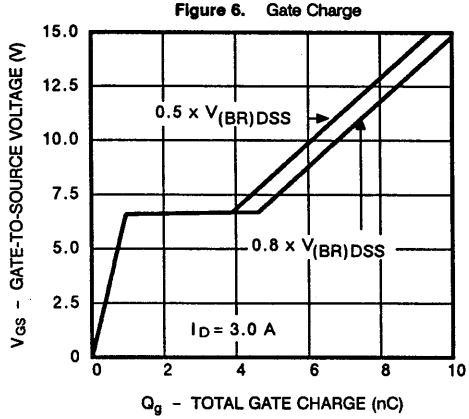


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

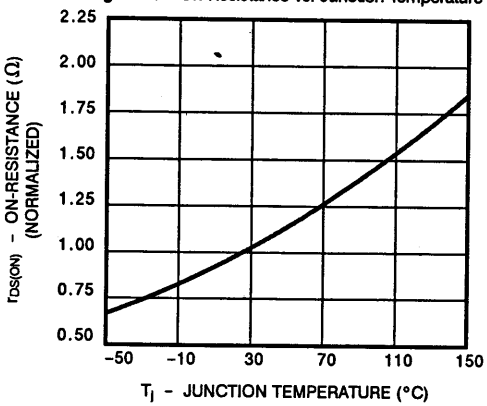
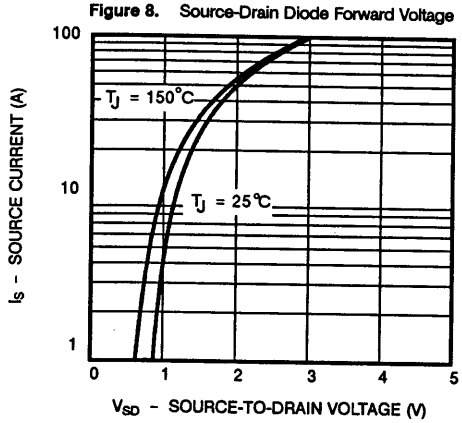


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Ambient Temperature

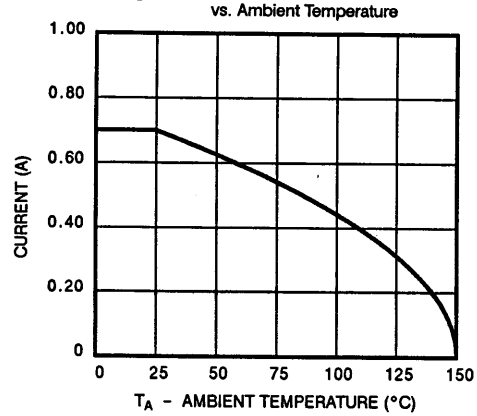
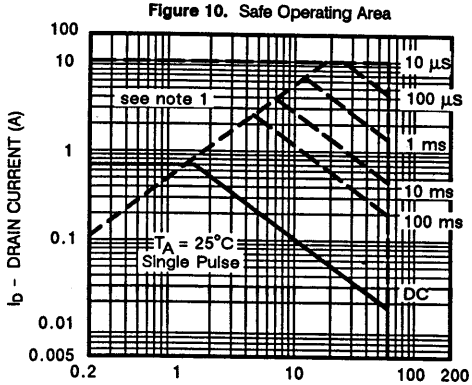


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Siliconix incorporated

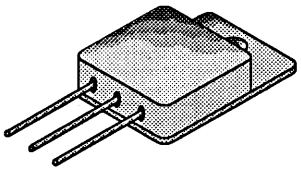
2N7071

N-Channel Enhancement Mode Transistor

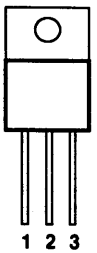
PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
100	0.100	23

TO-254AA
Hermetic Package



TOP VIEW



1 DRAIN
2 SOURCE
3 GATE
Case Isolated

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	23	A
	T_C = 100°C		15	
Pulsed Drain Current[1]		I_{DM}	92	
Power Dissipation	T_C = 25°C	P_D	100	W
	T_C = 100°C		40	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.25	K/W
Junction-to-Ambient	R_{thJA}		50	
Case-to-Sink	R_{thCS}	0.2		

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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 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} = 80 V, V_{GS} = 0 V			25	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 125°C			250	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5 V, V_{GS} = 10 V		24		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 15 A	0.075		0.100	Ω
		V_{GS} = 10 V, I_D = 15 A, T_J = 125°C	0.12		0.16	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 15 A	10	6.0	18	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	1550			pF
Output Capacitance	C_{oss}		550			
Reverse Transfer Capacitance	C_{rss}		150			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 23 A	50	30	77	nC
Gate-Source Charge[2]	Q_{gs}		10	4.6	13	
Gate-Drain Charge[2]	Q_{gd}		23	13	35	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50 V, R_L = 2.1 Ω, $I_D \simeq$ 23 A, V_{GEN} = 10 V, R_G = 4.7 Ω	15		30	ns
Rise Time[2]	t_r		80		120	
Turn-Off Delay Time[2]	$t_{d(off)}$		40		80	
Fall Time[2]	t_f		30		60	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				23	A
Pulsed Current[3]	I_{SM}				92	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V		0.6	2.0	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	150		300	ns
Reverse Recovery Charge	Q_{rr}		0.5			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

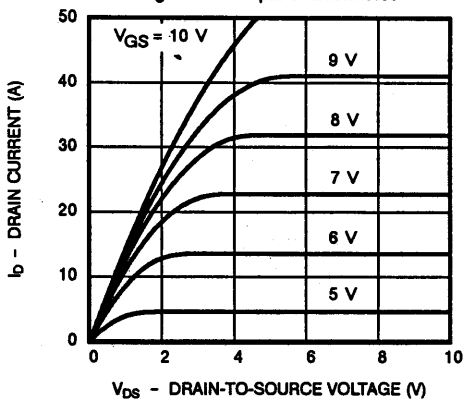


Figure 2. Transfer Characteristics

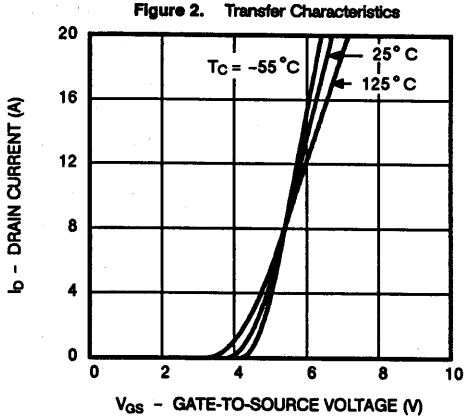


Figure 3. Transconductance

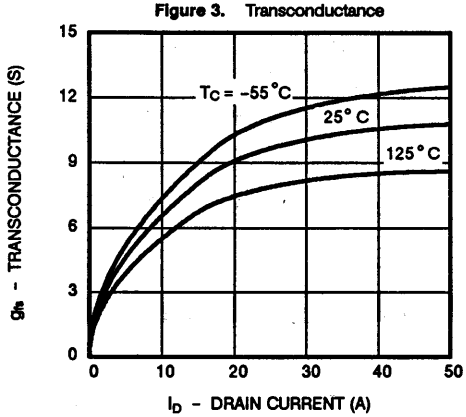


Figure 4. On-Resistance

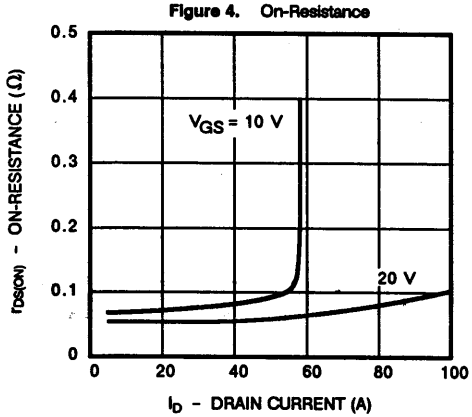


Figure 5. Capacitance

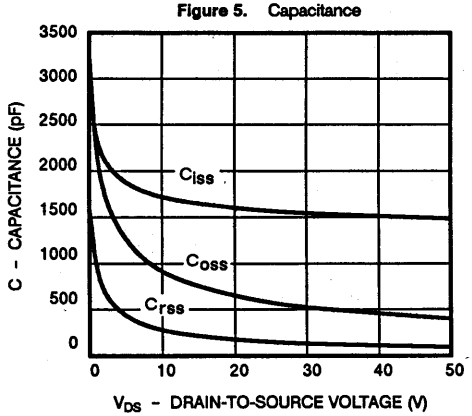
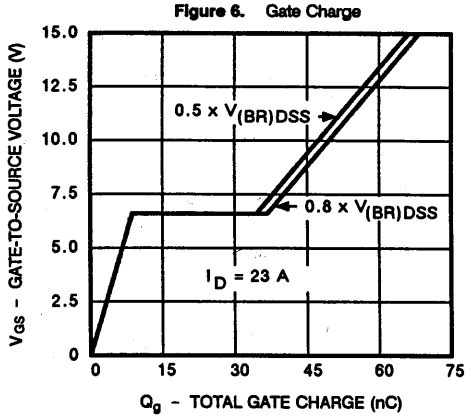


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

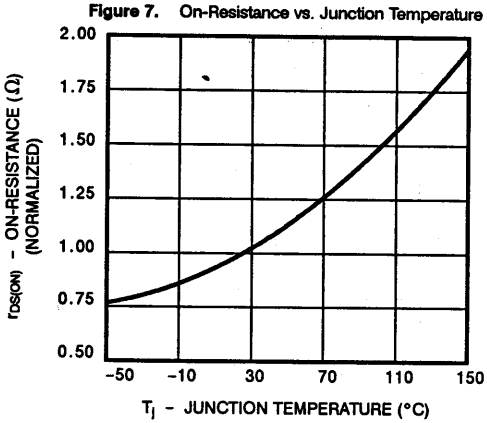
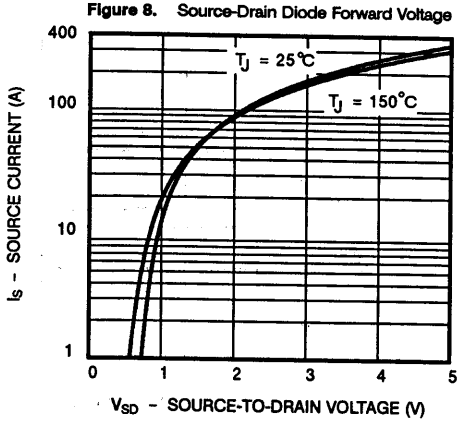


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

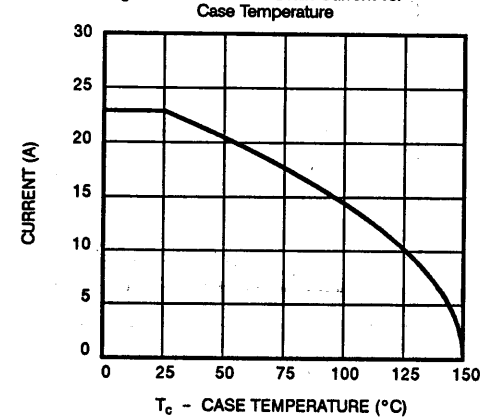
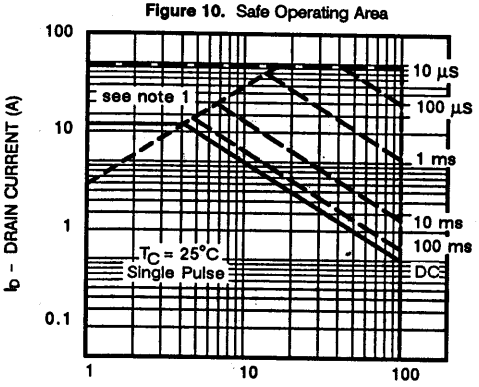
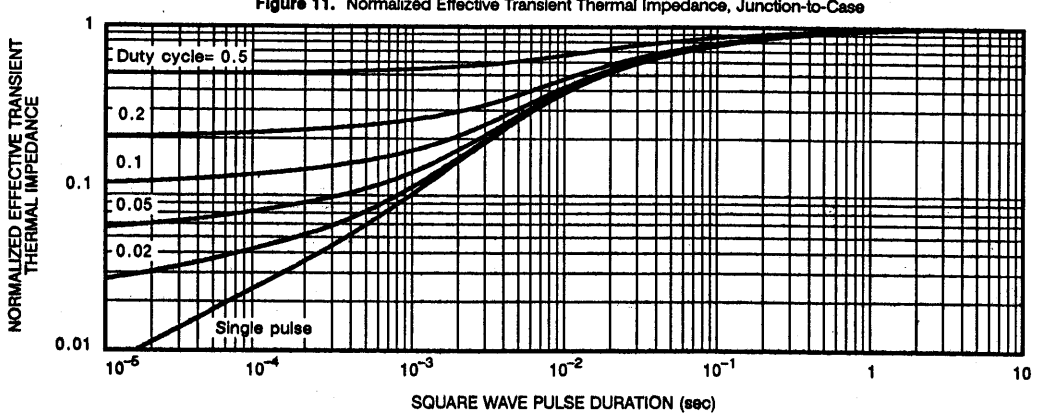


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

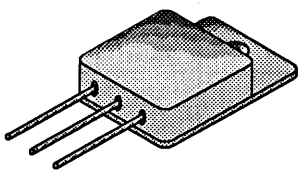
2N7072

N-Channel Enhancement Mode Transistor

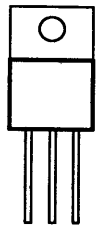
PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
200	0.20	16

TO-254AA
Hermetic Package



TOP VIEW



1 DRAIN
2 SOURCE
3 GATE
Case Isolated

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	16	A
	T_C = 100°C		10	
Pulsed Drain Current[1]		I_{DM}	64	
Power Dissipation	T_C = 25°C	P_D	100	W
	T_C = 100°C		40	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.25	K/W
Junction-to-Ambient	R_{thJA}		50	
Case-to-Sink	R_{thCS}	0.2		

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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} = 80 V, V_{GS} = 0 V			25	µA
		V_{DS} = 160 V, V_{GS} = 0 V, T_J = 125°C			250	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5 V, V_{GS} = 10 V		16		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 10 A	0.14		0.20	Ω
		V_{GS} = 10 V, I_D = 10 A, T_J = 125°C	0.26		0.36	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 10 A	8.0	6.0	18	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	1550			pF
Output Capacitance	C_{oss}		500			
Reverse Transfer Capacitance	C_{rss}		220			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 16 A	42	30	77	nC
Gate-Source Charge[2]	Q_{gs}		9	4.6	13	
Gate-Drain Charge[2]	Q_{gd}		22	13	35	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 100 V, R_L = 6.25 Ω, $I_D \simeq$ 16 A, V_{GEN} = 10 V, R_G = 4.7 Ω	15		30	ns
Rise Time[2]	t_r		60		120	
Turn-Off Delay Time[2]	$t_{d(off)}$		40		80	
Fall Time[2]	t_f		20		60	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				16	A
Pulsed Current[3]	I_{SM}				64	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V		0.6	2.0	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	150		300	ns
Reverse Recovery Charge	Q_{rr}		0.5			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

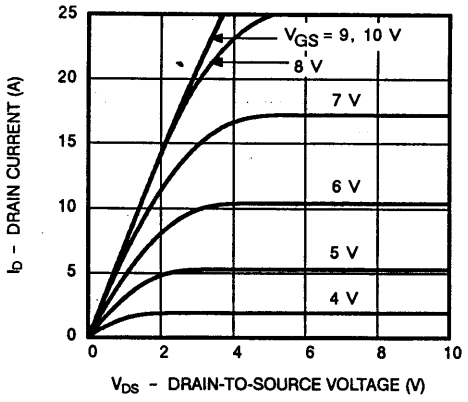


Figure 2. Transfer Characteristics

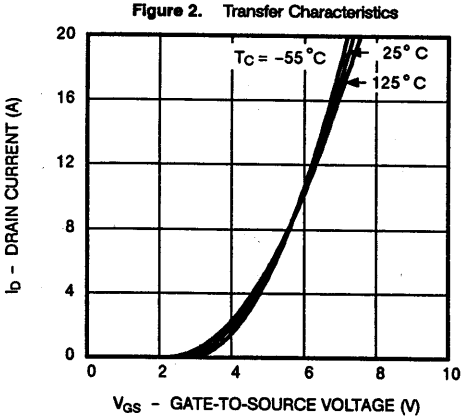


Figure 3. Transconductance

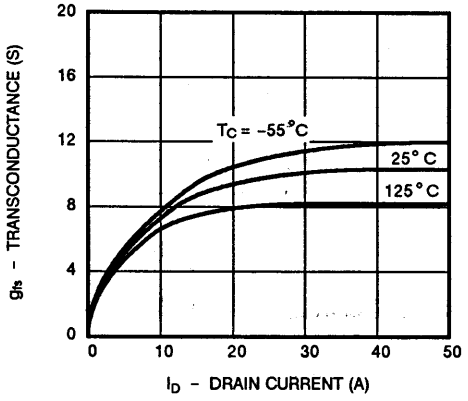


Figure 4. On-Resistance

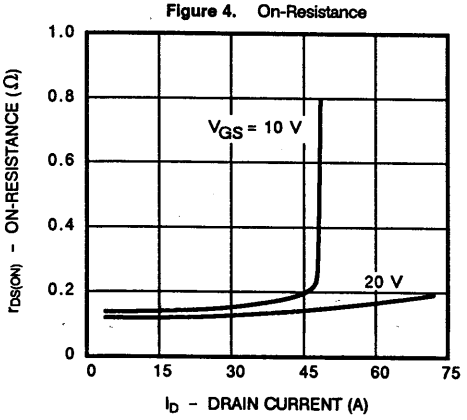


Figure 5. Capacitance

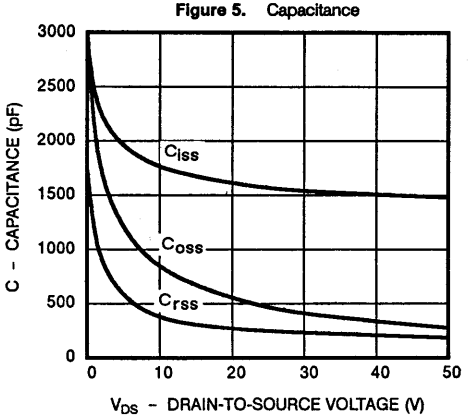
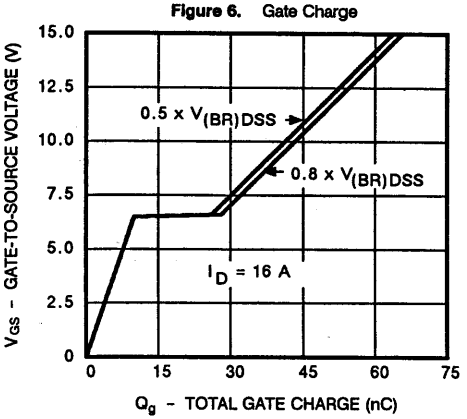


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

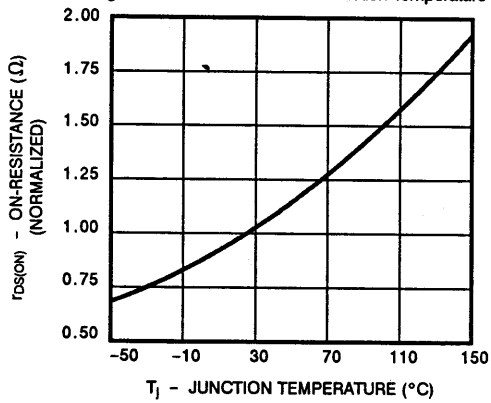
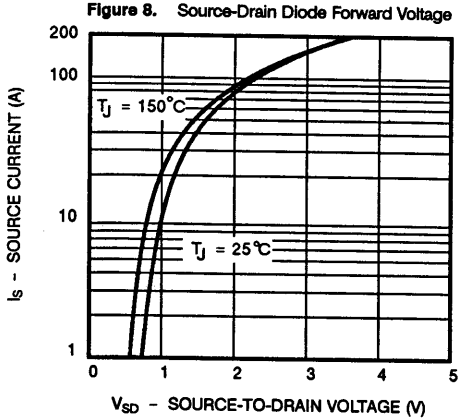


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

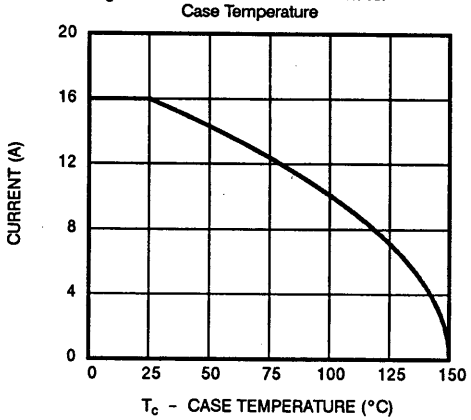
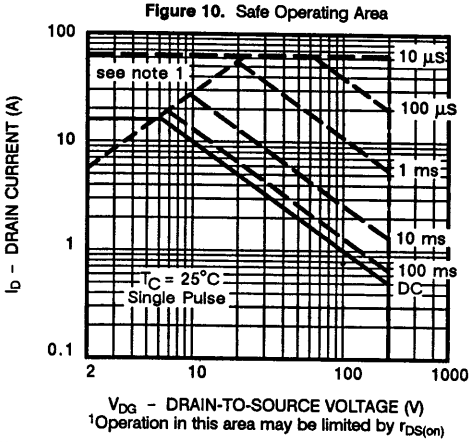
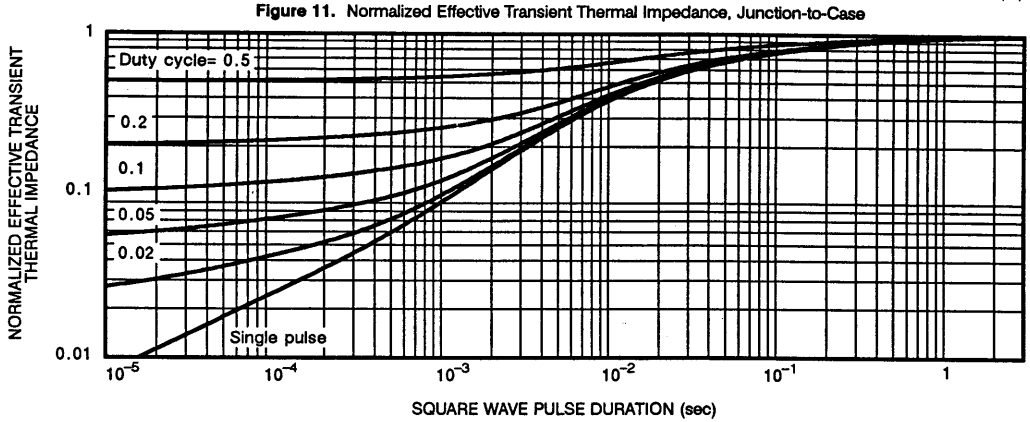


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

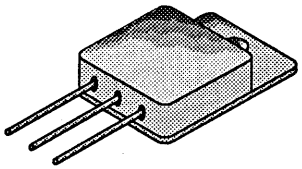
2N7073

N-Channel Enhancement Mode Transistor

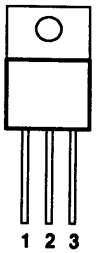
PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
400	0.55	9.0

TO-254AA
Hermetic Package



TOP VIEW



1 DRAIN
2 SOURCE
3 GATE
Case Isolated

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	400	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	9.0	A
	T_C = 100°C		5.5	
Pulsed Drain Current[1]		I_{DM}	36	
Power Dissipation	T_C = 25°C	P_D	100	W
	T_C = 100°C		40	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.25	K/W
Junction-to-Ambient	R_{thJA}		50	
Case-to-Sink	R_{thCS}	0.2		

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA		400		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} = 320 V, V_{GS} = 0 V			25	µA
		V_{DS} = 320 V, V_{GS} = 0 V, T_J = 125°C			250	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V		9.0		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 5.5 A	0.45		0.55	Ω
		V_{GS} = 10 V, I_D = 5.5 A, T_J = 125°C	0.90		1.1	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 5.5 A	4.8	4.0	12	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	1500			pF
Output Capacitance	C_{oss}		300			
Reverse Transfer Capacitance	C_{rss}		120			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 9 A	58	30	77	nC
Gate-Source Charge[2]	Q_{gs}		10	4.6	13	
Gate-Drain Charge[2]	Q_{gd}		27	13	35	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 200 V, R_L = 22 Ω, I_D ≃ 9 A, V_{GEN} = 10 V, R_G = 4.7 Ω	16		40	ns
Rise Time[2]	t_r		28		60	
Turn-Off Delay Time[2]	$t_{d(off)}$		54		110	
Fall Time[2]	t_f		30		60	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				9.0	A
Pulsed Current[3]	I_{SM}				36	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V		0.6	2.0	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	250		500	ns
Reverse Recovery Charge	Q_{rr}		1.0			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

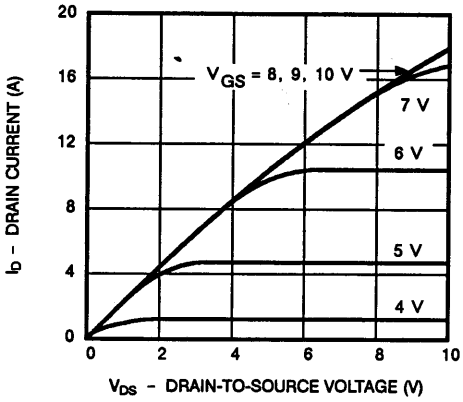


Figure 2. Transfer Characteristics

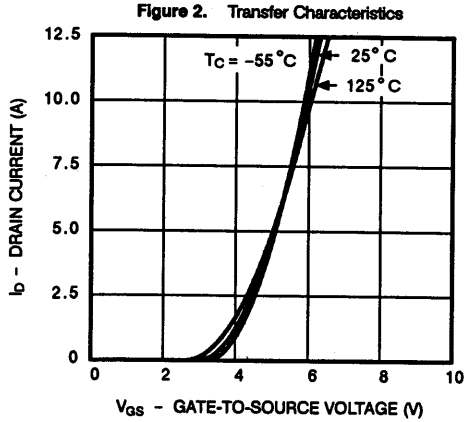


Figure 3. Transconductance

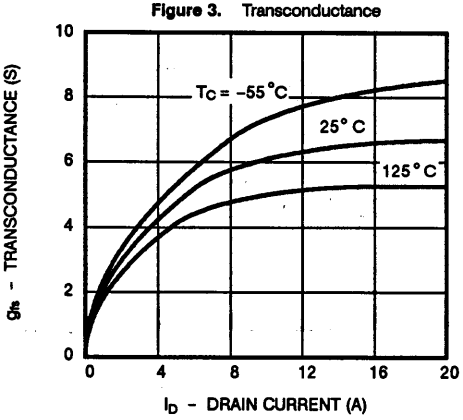


Figure 4. On-Resistance

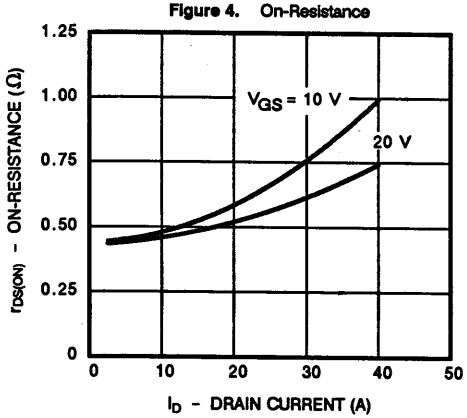


Figure 5. Capacitance

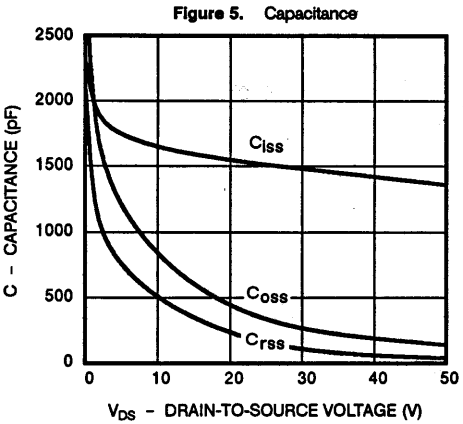
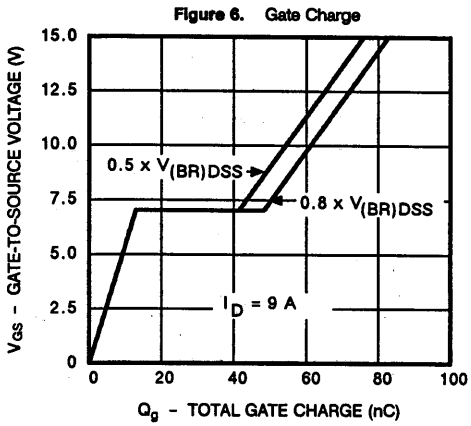


Figure 6. Gate Charge



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TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

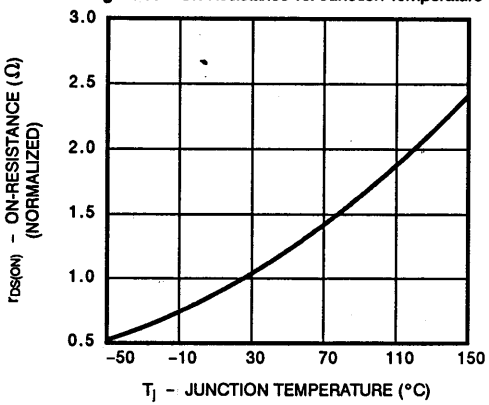
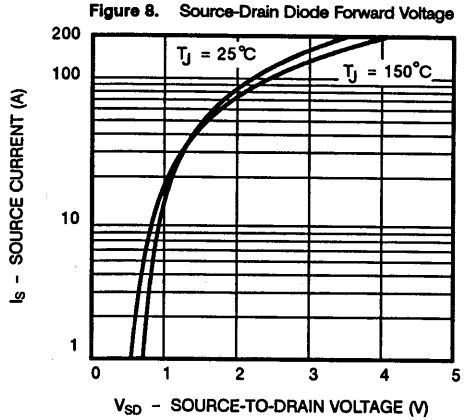


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

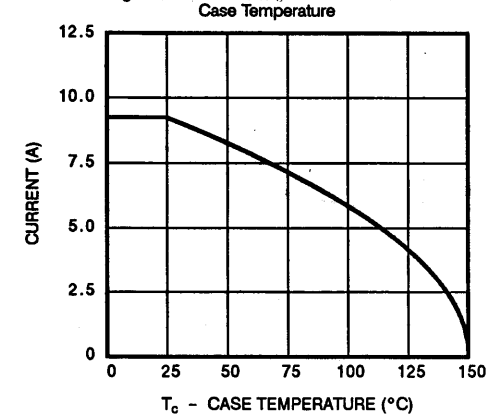
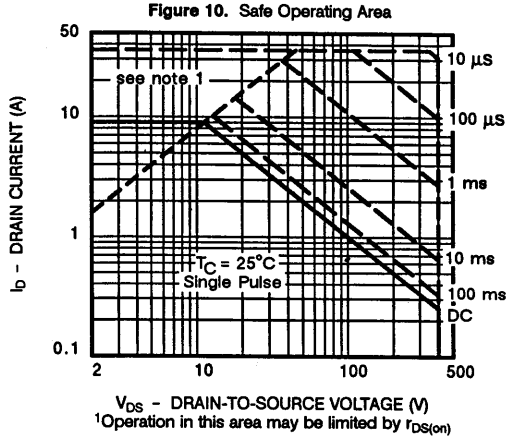
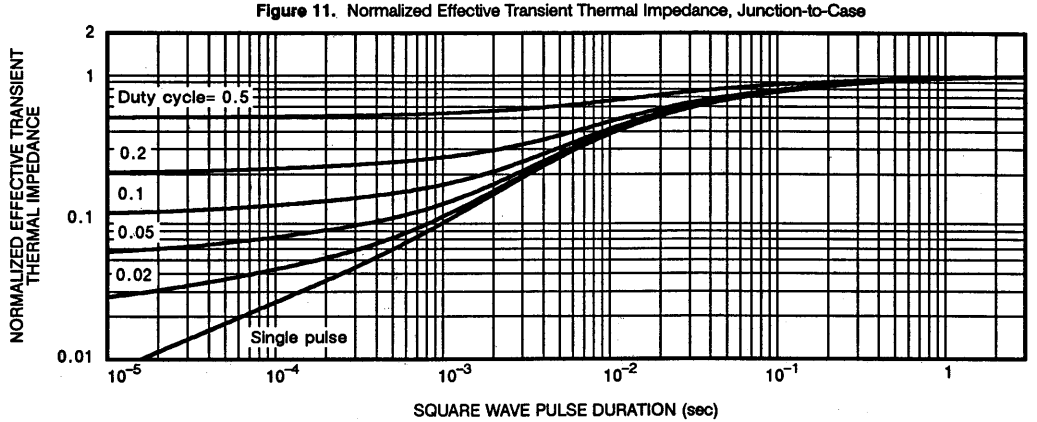


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case

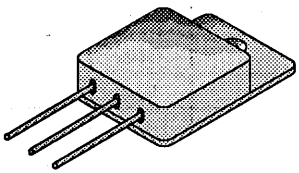


Siliconix incorporated

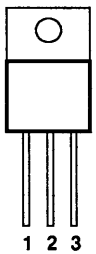
2N7074

N-Channel Enhancement Mode Transistor

TO-254AA
Hermetic Package



TOP VIEW



1 DRAIN
2 SOURCE
3 GATE
Case Isolated

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
500	0.85	7.0

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	500	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	7.0	A
	T_C = 100°C		4.5	
Pulsed Drain Current[1]		I_{DM}	28	
Power Dissipation	T_C = 25°C	P_D	100	W
	T_C = 100°C		40	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.25	K/W
Junction-to-Ambient	R_{thJA}		50	
Case-to-Sink	R_{thCS}	0.2		

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA		500		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} = 400 V, V_{GS} = 0 V			25	µA
		V_{DS} = 400 V, V_{GS} = 0 V, T_J = 125°C			250	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V		7.0		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 4.5 A	0.8		0.85	Ω
		V_{GS} = 10 V, I_D = 4.5 A, T_J = 125°C	1.40		1.62	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 4.5 A	4.3	4.0	12	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	1500			pF
Output Capacitance	C_{oss}		250			
Reverse Transfer Capacitance	C_{rss}		75			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 7 A	54	30	77	nC
Gate-Source Charge[2]	Q_{gs}		10	4.6	13	
Gate-Drain Charge[2]	Q_{gd}		26	13	35	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 250 V, R_L = 36 Ω, $I_D \simeq$ 7 A, V_{GEN} = 10 V, R_G = 4.7 Ω	15		40	ns
Rise Time[2]	t_r		20		50	
Turn-Off Delay Time[2]	$t_{d(off)}$		50		110	
Fall Time[2]	t_f		18		50	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				7.0	A
Pulsed Current[3]	I_{SM}				28	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V		0.6	2.0	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	250		500	ns
Reverse Recovery Charge	Q_{rr}		1.0			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

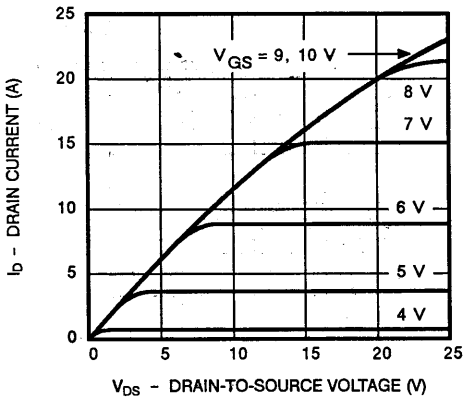


Figure 2. Transfer Characteristics

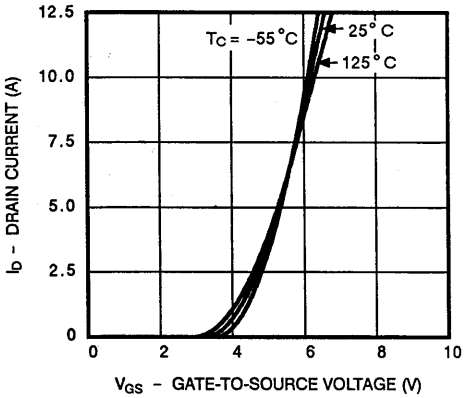


Figure 3. Transconductance

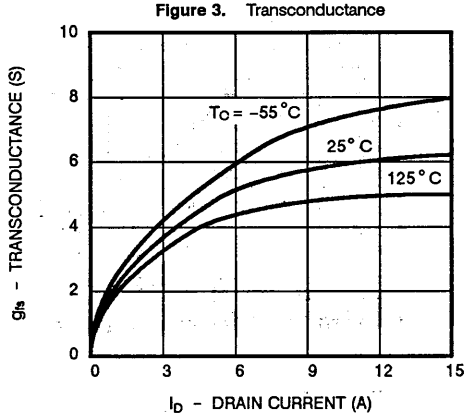


Figure 4. On-Resistance

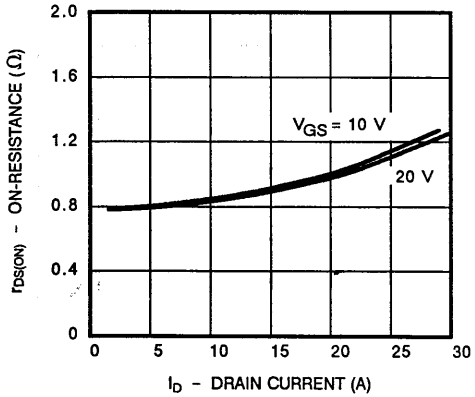


Figure 5. Capacitance

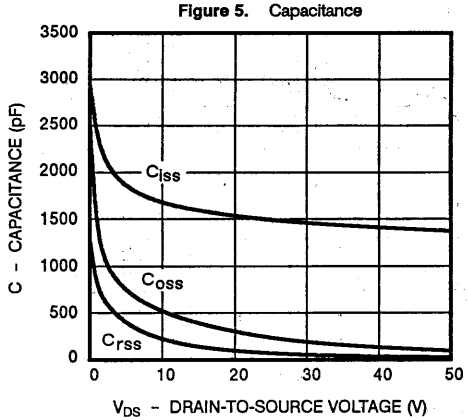
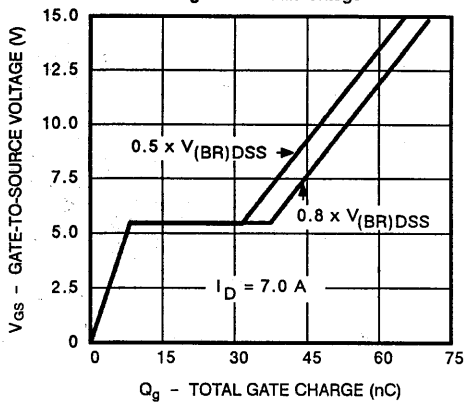


Figure 6. Gate Charge



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TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

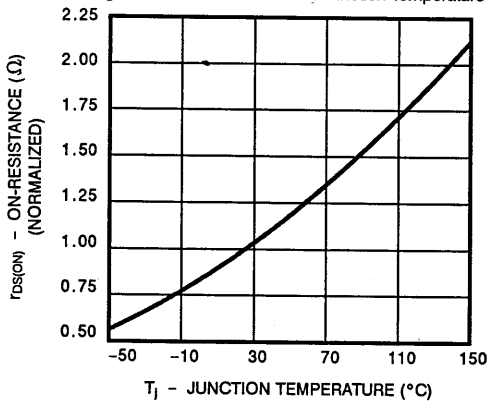
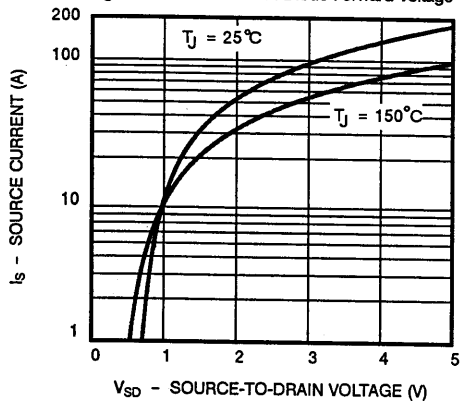


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

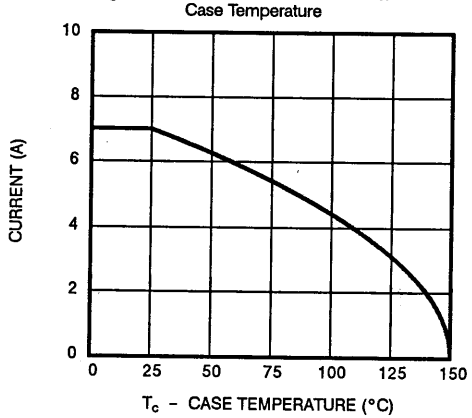
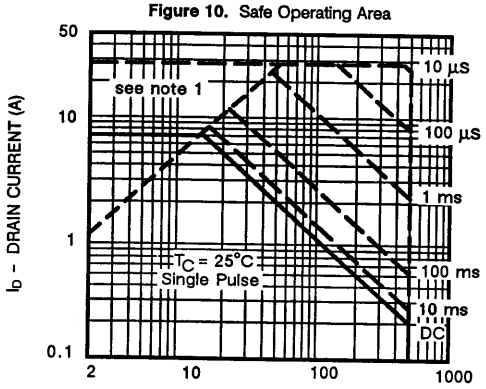
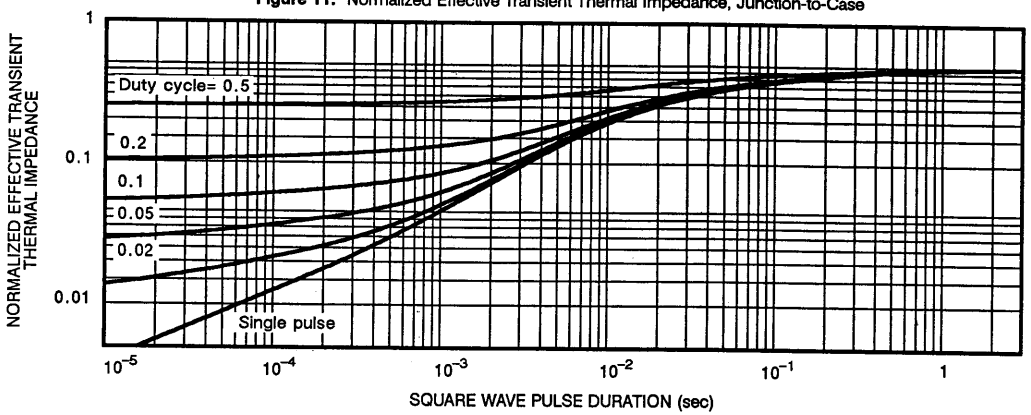


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case

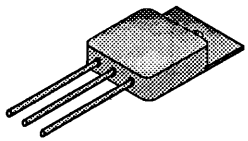


Siliconix incorporated

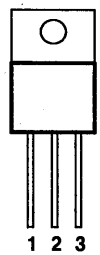
2N7082

N-Channel Enhancement Mode Transistor

TO-257AB
Hermetic Package



TOP VIEW



1 GATE
2 DRAIN
3 SOURCE
Case Isolated

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
200	0.30	9.0

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	9.0	A
	T_C = 100°C		5.5	
Pulsed Drain Current[1]		I_{DM}	36	
Power Dissipation	T_C = 25°C	P_D	50	W
	T_C = 100°C		20	
Operating Junction & 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

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		2.5	K/W
Junction-to-Ambient	R_{thJA}		80	
Case-to-Sink	R_{thCS}	1.0		

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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[1]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V		9.0		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 5.5 A	0.25		0.30	Ω
		V_{GS} = 10 V, I_D = 5.5 A, T_J = 125°C	0.50		0.60	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 5.5 A	3.8	3.0		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	780			pF
Output Capacitance	C_{oss}		220			
Reverse Transfer Capacitance	C_{rss}		70			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 9 A	23	14	39	nC
Gate-Source Charge[2]	Q_{gs}		5	2.2	7.0	
Gate-Drain Charge[2]	Q_{gd}		13	8.0	20	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50 V, R_L = 11 Ω, I_D ≃ 9 A, V_{GEN} = 10 V, R_G = 7.5 Ω	8		30	ns
Rise Time[2]	t_r		50		80	
Turn-Off Delay Time[2]	$t_{d(off)}$		35		60	
Fall Time[2]	t_f		20		40	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				9.0	A
Pulsed Current[3]	I_{SM}				36	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V			2.5	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	150		500	ns
Reverse Recovery Charge	Q_{rr}		0.8			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

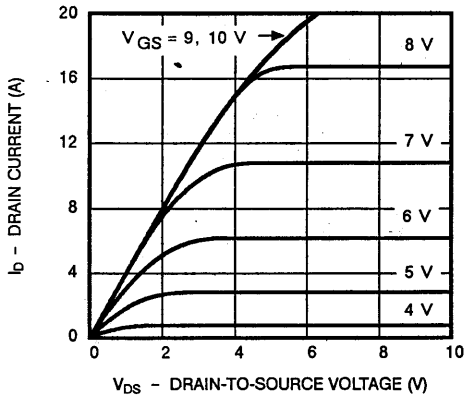


Figure 2. Transfer Characteristics

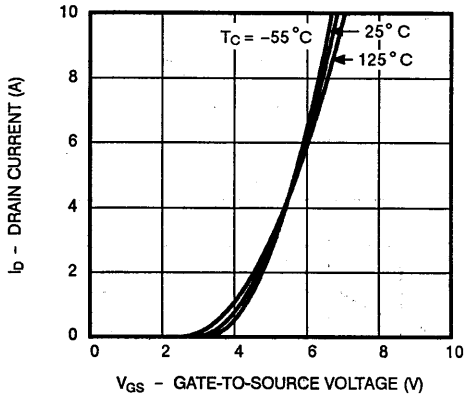


Figure 3. Transconductance

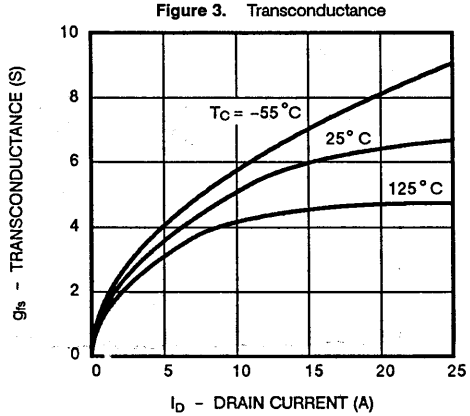


Figure 4. On-Resistance

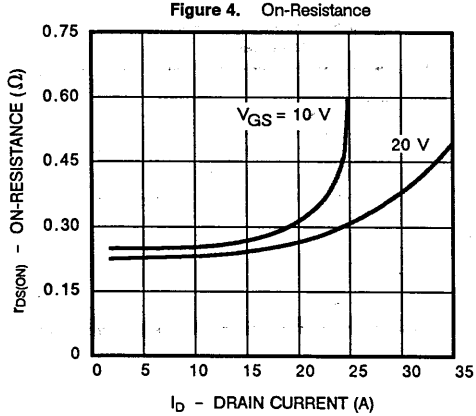


Figure 5. Capacitance

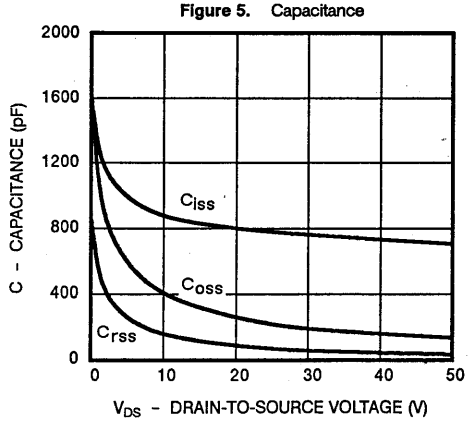
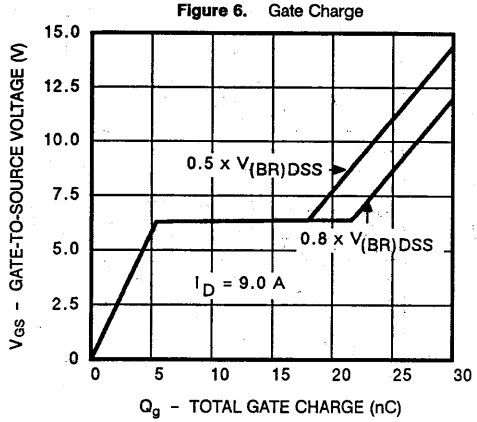


Figure 6. Gate Charge



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TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

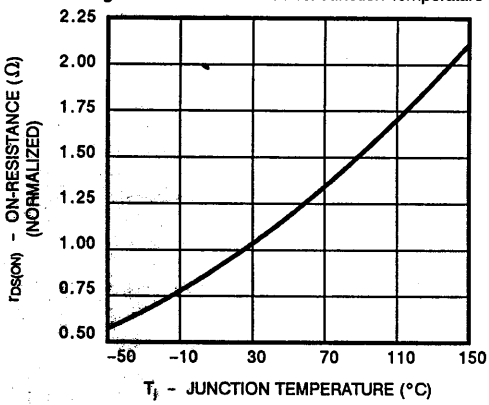
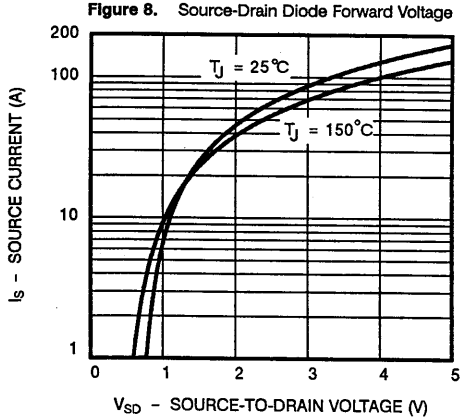


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

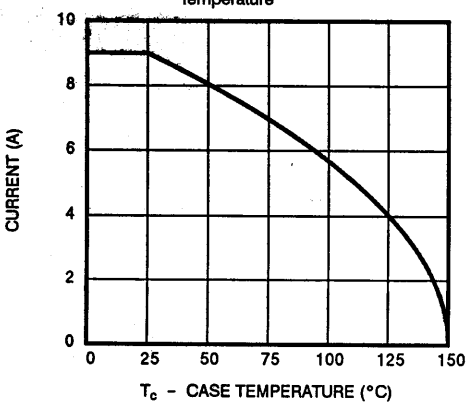
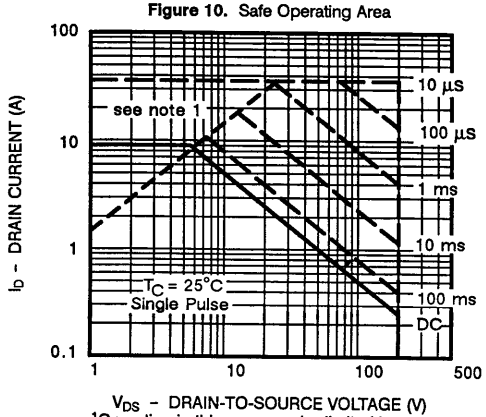
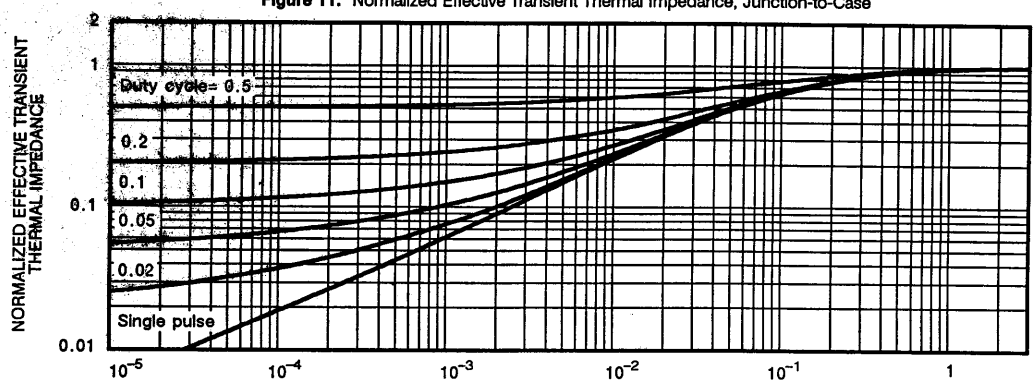


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case

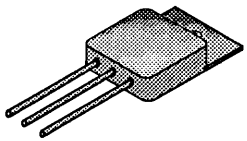


Siliconix incorporated

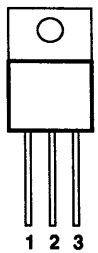
2N7092

P-Channel Enhancement Mode Transistor

TO-257AB
Hermetic Package



TOP VIEW



1 GATE
2 DRAIN
3 SOURCE
Case Isolated

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
-200	0.50	-8.0

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless Otherwise Noted)[1]

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25°C	I_D	8.0	A
	T_C = 100°C		5.1	
Pulsed Drain Current[2]		I_{DM}	32	
Power Dissipation	T_C = 25°C	P_D	70	W
	T_C = 100°C		27	
Operating Junction & 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[1]

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.8	K/W
Junction-to-Ambient	R_{thJA}		80	
Case-to-Sink	R_{thCS}	1.0		

[1]Negative signs for current and voltage ratings have been omitted for the sake of clarity.
[2]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)
P-Channel Device – Negative Signs Have Been Omitted for Clarity

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS MIN	LIMITS MAX	UNIT
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[1]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V		8.0		A
Drain-Source On-State Resistance[1]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 5.1 A	0.28		0.50	Ω
		V_{GS} = 10 V, I_D = 5.1 A, T_J = 125°C	0.56		1.0	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15 V, I_D = 5.1 A	5.0	4.0		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	1300			pF
Output Capacitance	C_{oss}		500			
Reverse Transfer Capacitance	C_{rss}		250			
Total Gate Charge[2]	Q_g	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 8 A	55	30	90	nC
Gate-Source Charge[2]	Q_{gs}		10	5.0	15	
Gate-Drain Charge[2]	Q_{gd}		30	10	50	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 100 V, R_L = 12.5 Ω, $I_D \simeq$ 8 A, V_{GEN} = 10 V, R_G = 4.7 Ω	10		30	ns
Rise Time[2]	t_r		45		80	
Turn-Off Delay Time[2]	$t_{d(off)}$		40		80	
Fall Time[2]	t_f		40		60	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				8.0	A
Pulsed Current[3]	I_{SM}				32	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0 V			2.6	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100 A/µs	200			ns
Reverse Recovery Charge	Q_{rr}		1.0			µC

[1]Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

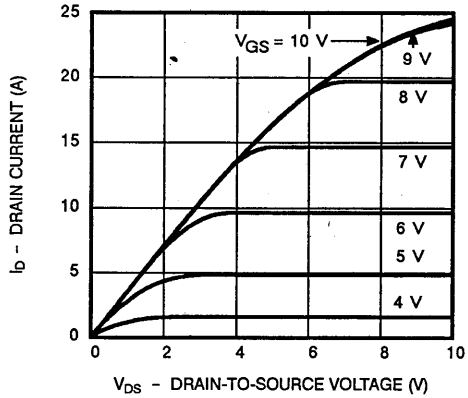


Figure 2. Transfer Characteristics

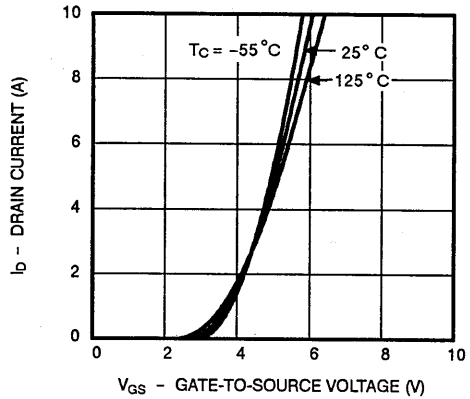


Figure 3. Transconductance

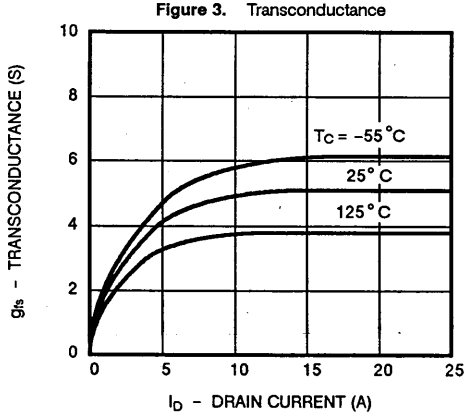


Figure 4. On-Resistance

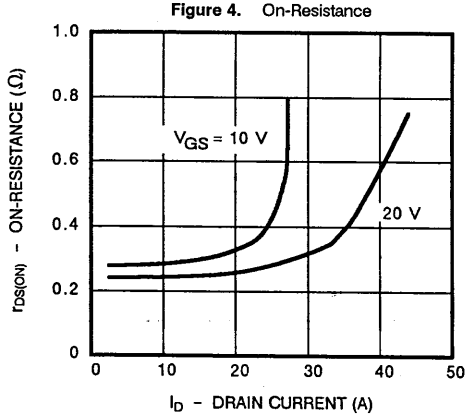


Figure 5. Capacitance

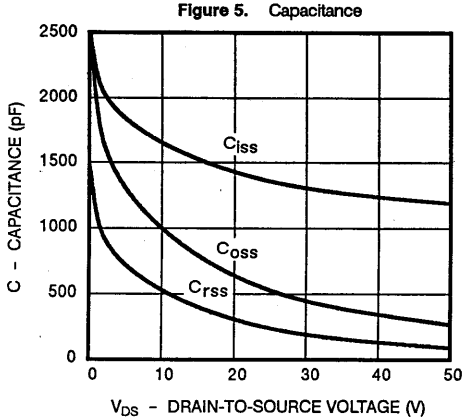
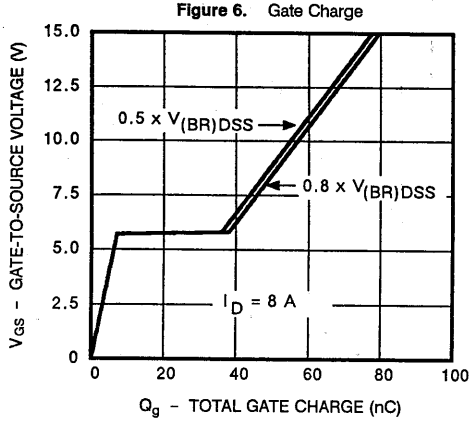


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

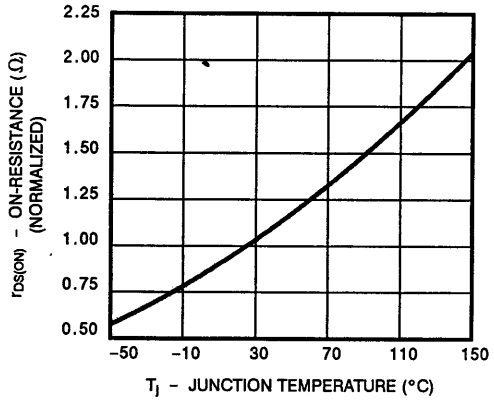
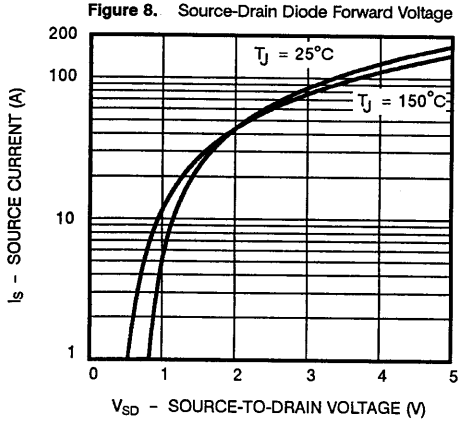


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

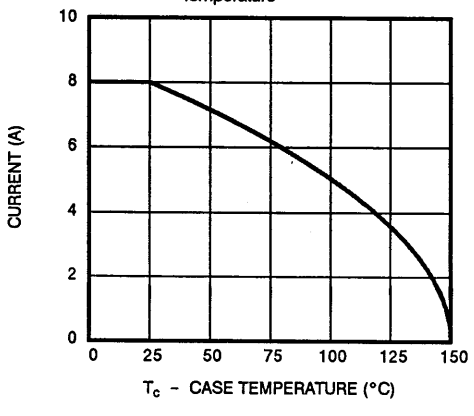
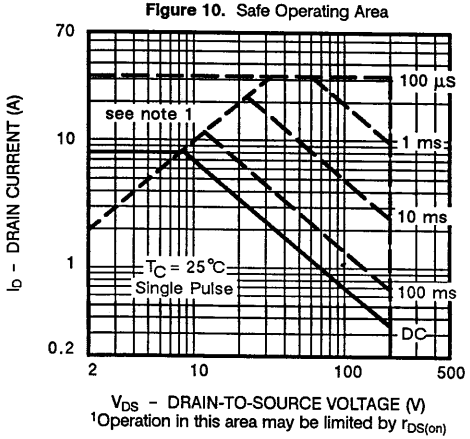


Figure 10. Safe Operating Area



[1]Operation in this area may be limited by $r_{DS(on)}$

Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case