Siliconix incorporated

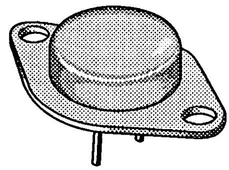
MOSPOWER

2N6804

P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/562 where applicable

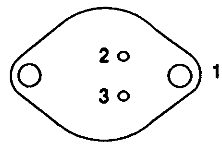
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6804	100	0.30	11.0



TO-204AA (TO-3)

BOTTOM VIEW



1 DRAIN (CASE)
2 GATE
3 SOURCE

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6804	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	T_C = 25°C	I_D	11.0	A
	T_C = 100°C		7.0	
Pulsed Drain Current[1]		I_{DM}	50	
Avalanche Current		I_A	3.1	
Power Dissipation	T_C = 25°C	P_D	75	W
	T_C = 100°C		30	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	1.67	K/W
Junction-to-Ambient	R_{thJA}	-	30	
Case-to-Sink	R_{thCS}	0.1	-	

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

4

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 1000 μA		$V_{(BR)DSS}$	100	-	-	V
Gate Threshold Voltage $V_{DS} = V_{GS}$, I_D = 250 μA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current $V_{DS} = V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	μA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J =125°C		I_{DSS}	-	-	250	μA
On-State Drain Current[2] V_{DS} = 4.0 V, V_{GS} = 10 V		$I_{D(on)}$	11	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 7.0 A		$r_{DS(on)}$	-	0.25	0.30	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 7.0 A, T_J = 125°C		$r_{DS(on)}$	-	0.40	0.55	Ω
Forward Transconductance[2] V_{DS} =10 V, I_D = 7 A		g_{fs}	3.0	3.5	9.0	S(℧)
Input Capacitance	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	625	-	pF
Output Capacitance		C_{oss}	-	250	-	pF
Reverse Transfer Capacitance		C_{rss}	-	105	-	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 11 A (Gate charge is essentially independent of operating temperature)	Q_g	13	24	29	nC
Gate-Source Charge		Q_{gs}	2.9	3.4	5.8	nC
Gate-Drain Charge		Q_{gd}	6.7	13.5	15	nC
Turn-On Delay Time	V_{DD} = 35 V, R_L = 4.5 Ω, I_D = 7 A, V_{GEN} = 10 V, R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	9	60	ns
Rise Time		t_r	-	50	140	ns
Turn-Off Delay Time		$t_{d(off)}$	-	32	140	ns
Fall Time		t_f	-	38	140	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	11	A
Pulsed Current[1]	I_{SM}	-	-	50	A
Forward Voltage[2] $I_F = I_S$, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time $I_F = I_S$, dI_F/dt = 100 A/μs	t_{rr}	-	110	250	ns
Reverse Recovered Charge $I_F = I_S$, dI_F/dt = 100 A/μs	Q_{rr}	-	0.4	-	μC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

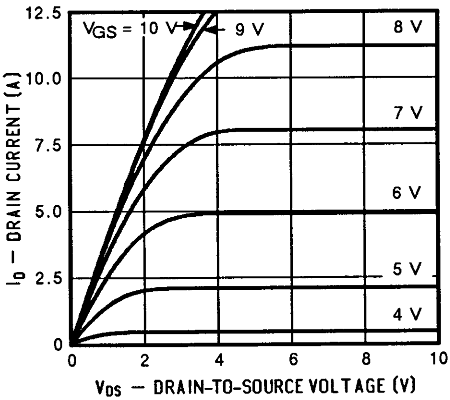


FIGURE 2: Typical Transfer Characteristics

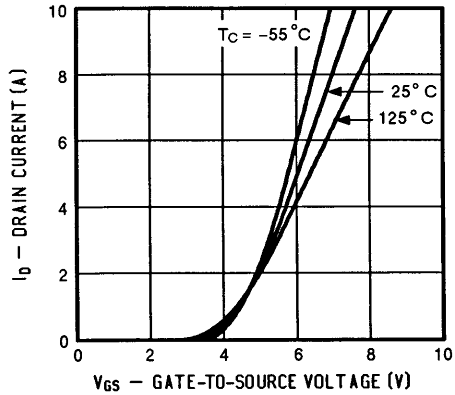


FIGURE 3: Typical Transconductance

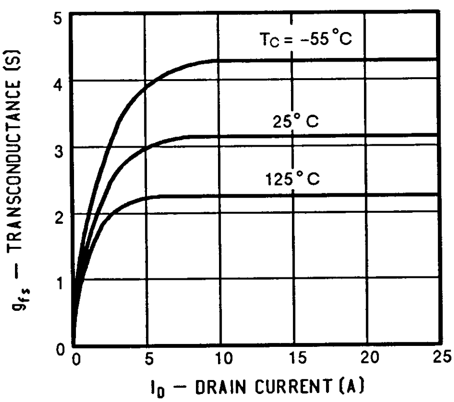


FIGURE 4: Typical On-Resistance

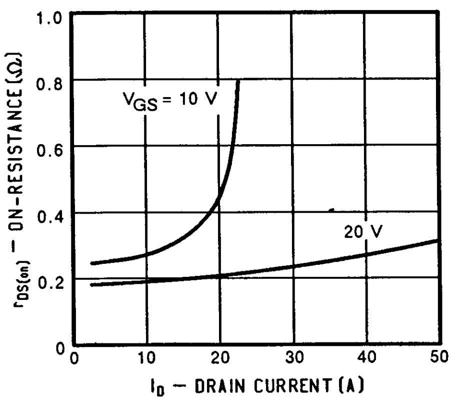


FIGURE 5: Typical Capacitance

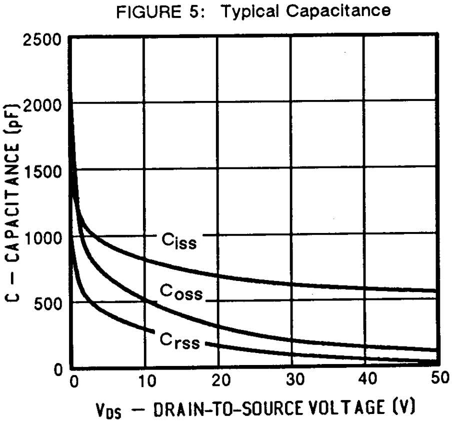
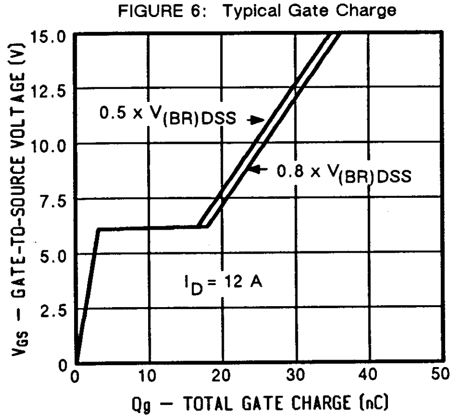


FIGURE 6: Typical Gate Charge



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PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

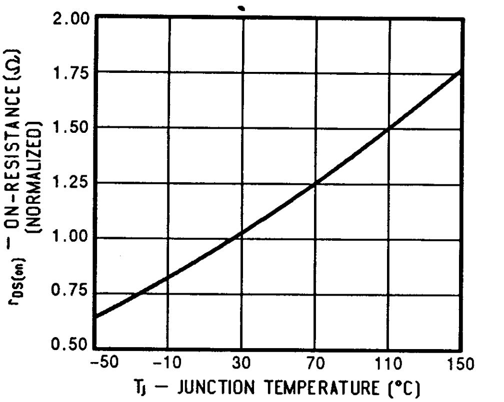


FIGURE 8: Typical Source-Drain Diode Forward Voltage

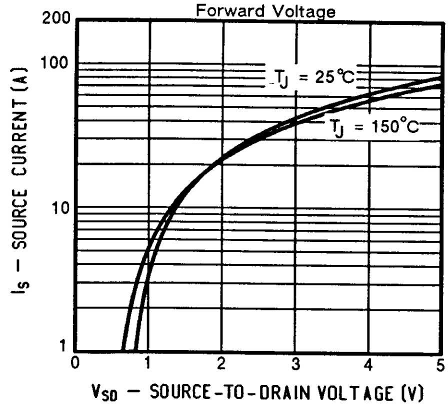


FIGURE 9: Maximum Drain Current vs. Case Temperature

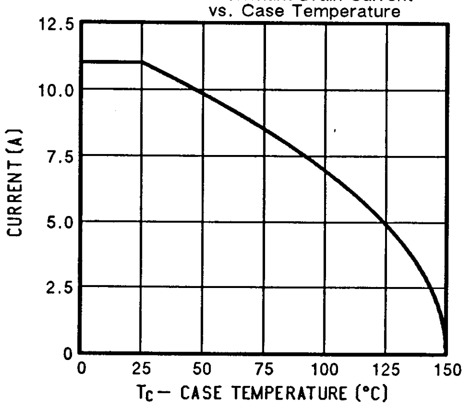
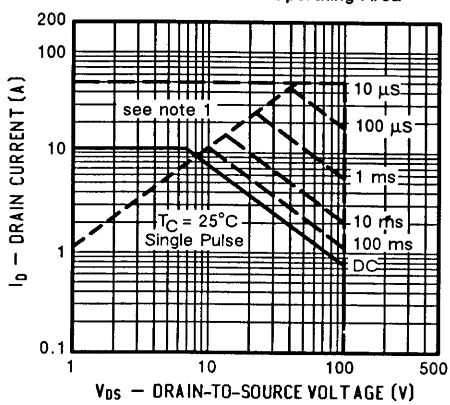
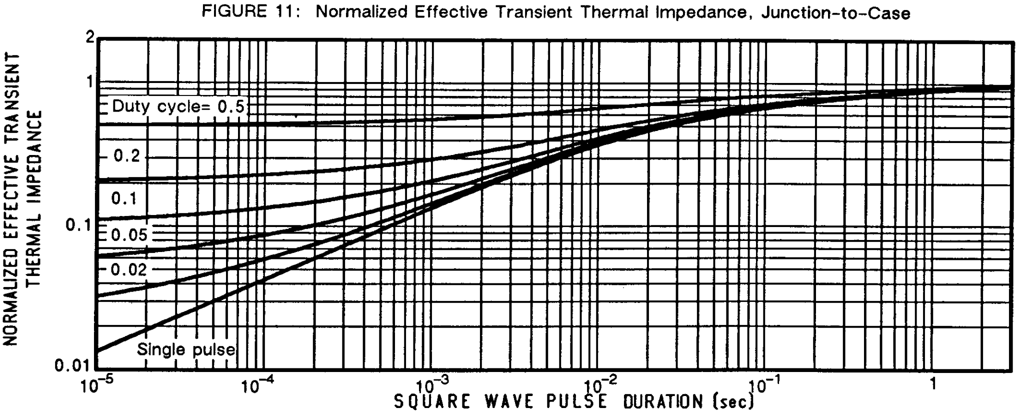


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

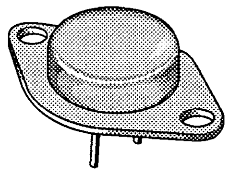
MOSPOWER

2N6806

P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/562 where applicable

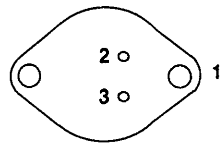
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6806	200	0.80	6.5



TO-204AA (TO-3)

BOTTOM VIEW



1 DRAIN (CASE)
2 GATE
3 SOURCE

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6806	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	T_C = 25°C	I_D	6.5	A
	T_C = 100°C		4.0	
Pulsed Drain Current[1]		I_{DM}	28	
Avalanche Current		I_A	3.1	
Power Dissipation	T_C = 25°C	P_D	75	W
	T_C = 100°C		30	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	1.67	K/W
Junction-to-Ambient	R_{thJA}	-	30	
Case-to-Sink	R_{thCS}	0.1	-	

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

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS	TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	V_{GS} = 0, I_D = 1000 µA	$V_{(BR)DSS}$	200	-	-	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA	$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage	V_{DS} = 0, V_{GS} = ±20 V	I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current	V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0	I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current	V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C	I_{DSS}	-	-	250	µA
On-State Drain Current[2]	V_{DS} = 5.2 V, V_{GS} = 10 V	$I_{D(on)}$	6.5	-	-	A
Drain-Source On-State Resistance[2]	V_{GS} = 10 V, I_D = 4.0 A	$r_{DS(on)}$	-	0.50	0.80	Ω
Drain-Source On-State Resistance[2]	V_{GS} = 10 V, I_D = 4.0 A, T_J = 125°C	$r_{DS(on)}$	-	1.0	1.6	Ω
Forward Transconductance[2]	V_{DS} = 10 V, I_D = 4.0 A	g_{fs}	2.0	2.8	6.0	S(℧)
Input Capacitance	V_{GS} = 0 V_{DS} = 25 V f = 1 MHz	C_{iss}	-	630	-	pF
Output Capacitance		C_{oss}	-	220	-	pF
Reverse Transfer Capacitance		C_{rss}	-	70	-	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 6.5 A (Gate charge is essentially independent of operating temperature)	Q_g	13	27.5	29	nC
Gate-Source Charge		Q_{gs}	2.8	3.0	5.6	nC
Gate-Drain Charge		Q_{gd}	7.1	15	16	nC
Turn-On Delay Time	V_{DD} = 63 V, R_L = 15 Ω I_D ≃ 4 A, V_{GEN} = 10 V R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	6.5	50	ns
Rise Time		t_r	-	33	100	ns
Turn-Off Delay Time		$t_{d(off)}$	-	30	100	ns
Fall Time		t_f	-	21	80	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	6.5	A
Pulsed Current[1]	I_{SM}	-	-	28	A
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/µs	t_{rr}	-	160	400	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/µs	Q_{rr}	-	1.6	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

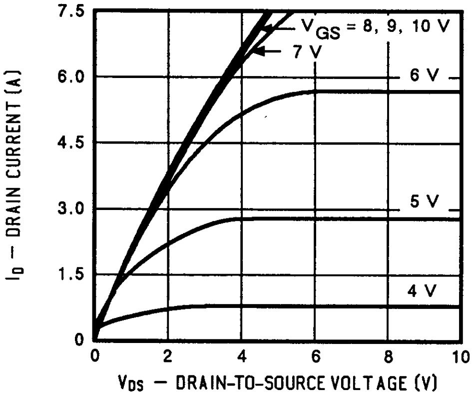


FIGURE 2: Typical Transfer Characteristics

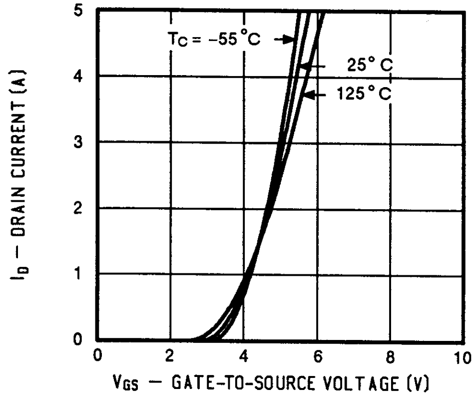


FIGURE 3: Typical Transconductance

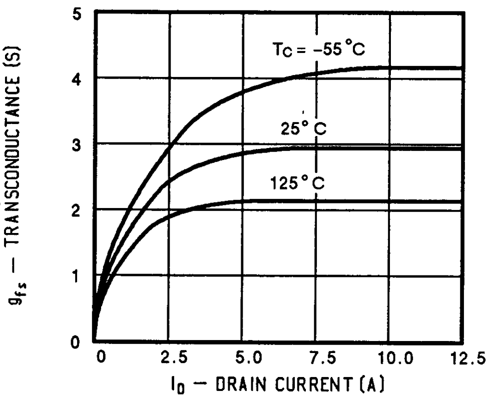


FIGURE 4: Typical On-Resistance

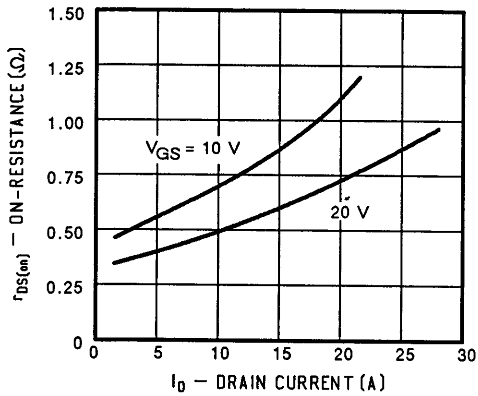


FIGURE 5: Typical Capacitance

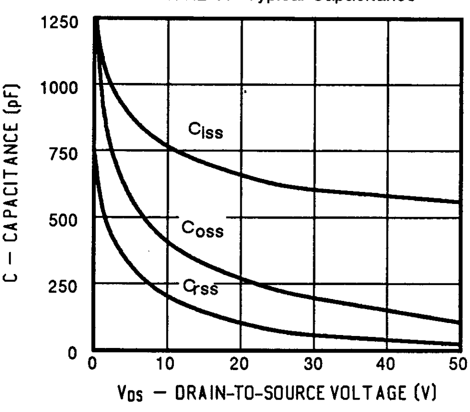
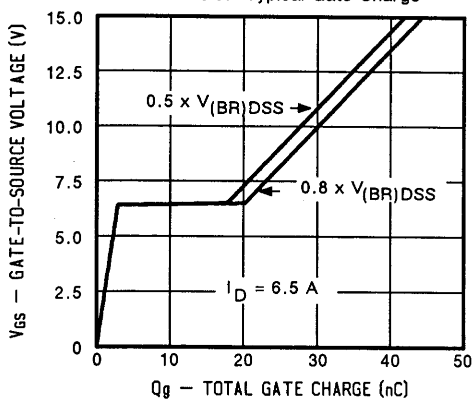


FIGURE 6: Typical Gate Charge



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PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

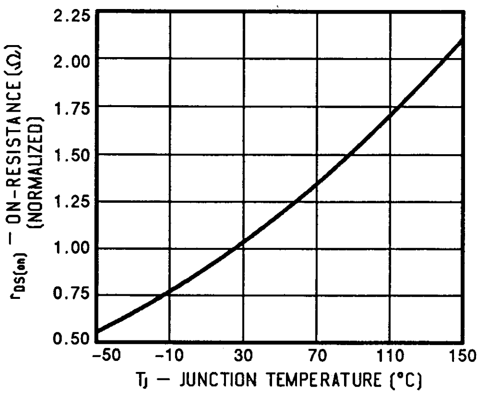


FIGURE 8: Typical Source-Drain Diode Forward Voltage

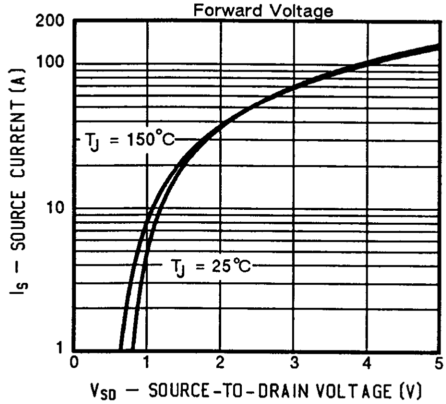


FIGURE 9: Maximum Drain Current vs. Case Temperature

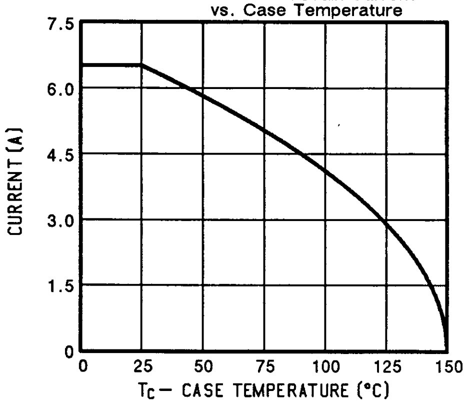
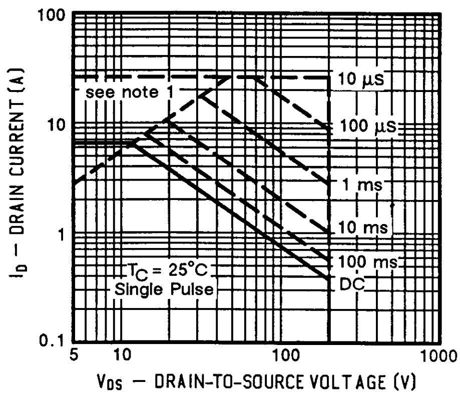
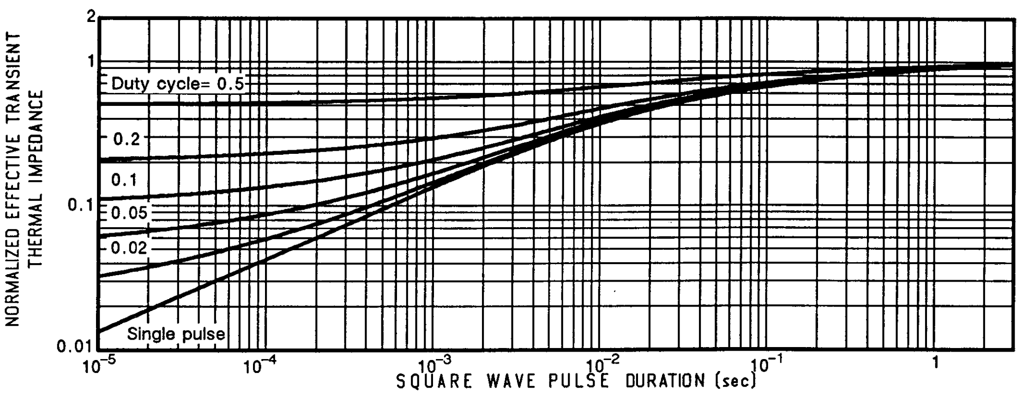


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



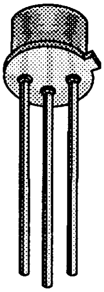
Siliconix incorporated

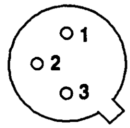
MOSPOWER

2N6845

P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/563 where applicable

BOTTOM VIEW





1 DRAIN
2 GATE
3 SOURCE

TO-205AF (TO-39)

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6845	100	0.60	4.0

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6845	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	T_C = 25°C	I_D	4.0	A
	T_C = 100°C		2.5	
Pulsed Drain Current[1]		I_{DM}	16	
Avalanche Current		I_A	2.2	
Power Dissipation	T_C = 25°C	P_D	20	W
	T_C = 100°C		8	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	6.25	K/W
Junction-to-Ambient	R_{thJA}	-	175	

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

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Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 1000 μA	$V_{(BR)DSS}$	100	-	-	V
Gate Threshold Voltage V_{DS} = V_{GS}, I_D = 250 μA	$V_{GS(th)}$	2.0	-	4.0	
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V	I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0	I_{DSS}	-	-	250	μA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C	I_{DSS}	-	-	250	
On-State Drain Current[2] V_{DS} = 2.4 V, V_{GS} = 10 V	$I_{D(on)}$	4.0	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 2.0 A	$r_{DS(on)}$	-	0.50	0.60	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 2.0 A, T_J = 125°C	$r_{DS(on)}$	-	0.90	1.08	
Forward Transconductance[2] V_{DS} = 15 V, I_D = 2.0 A	g_{fs}	1.25	1.4	3.75	S(℧)

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Input Capacitance	V_{GS} = 0 V_{DS} = 25 V f = 1 MHz	C_{iss}	200	350	400	pF
Output Capacitance		C_{oss}	75	205	225	
Reverse Transfer Capacitance		C_{rss}	20	80	100	
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 4.0 A (Gate charge is essentially independent of operating temperature)	Q_g	7.6	10.4	17	nC
Gate-Source Charge		Q_{gs}	1.3	1.8	2.6	
Gate-Drain Charge		Q_{gd}	3.9	5.6	8.8	
Turn-On Delay Time	V_{DD} = 40 V, R_L = 15 Ω I_D ≃ 2.6 A, V_{GEN} = 10 V R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	9	60	ns
Rise Time		t_r	-	27	100	
Turn-Off Delay Time		$t_{d(off)}$	-	37	50	
Fall Time		t_f	-	30	70	

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	4.0	A
Pulsed Current[1]	I_{SM}	-	-	16	
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/μs	t_{rr}	-	80	200	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/μs	Q_{rr}	-	0.26	-	μC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

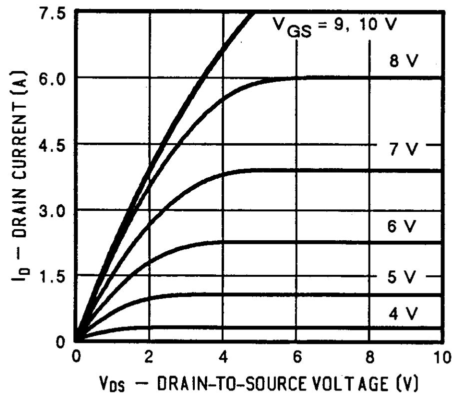


FIGURE 2: Typical Transfer Characteristics

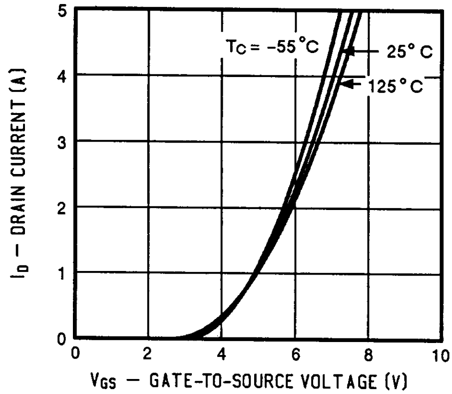


FIGURE 3: Typical Transconductance

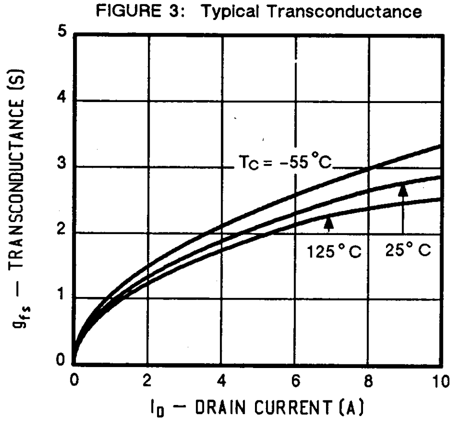


FIGURE 4: Typical On-Resistance

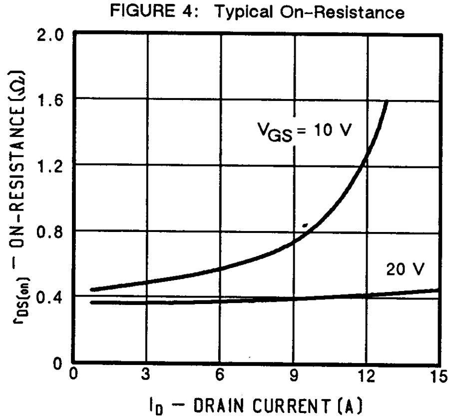


FIGURE 5: Typical Capacitance

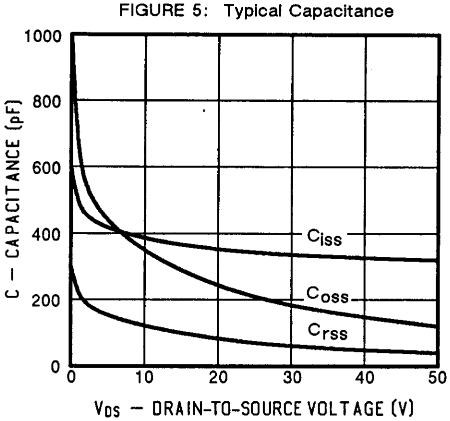
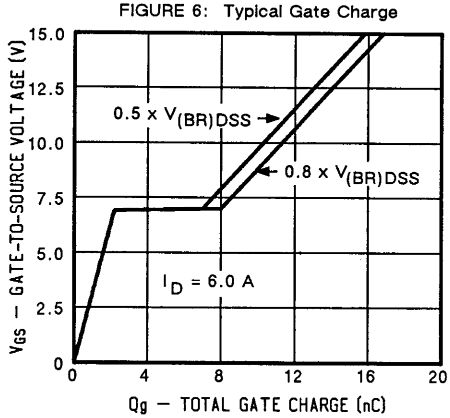


FIGURE 6: Typical Gate Charge



Siliconix incorporated

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

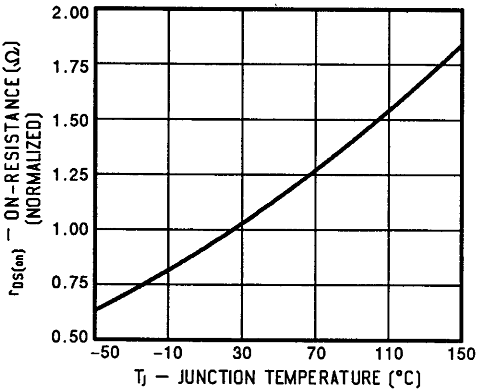


FIGURE 8: Typical Source-Drain Diode Forward Voltage

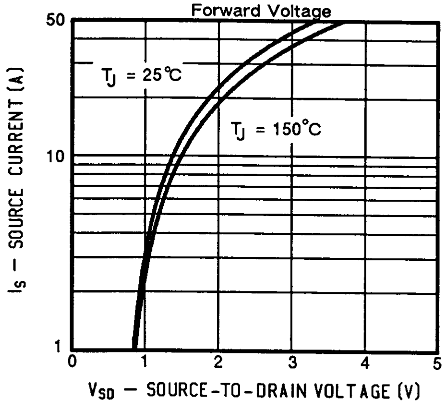


FIGURE 9: Maximum Drain Current vs. Case Temperature

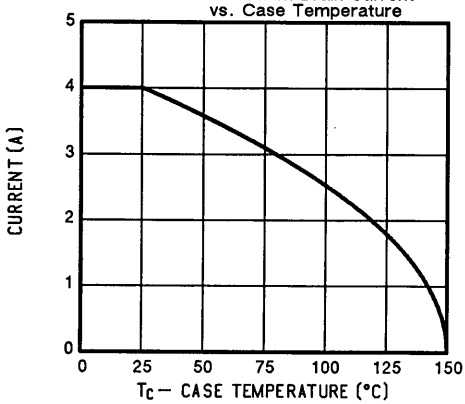
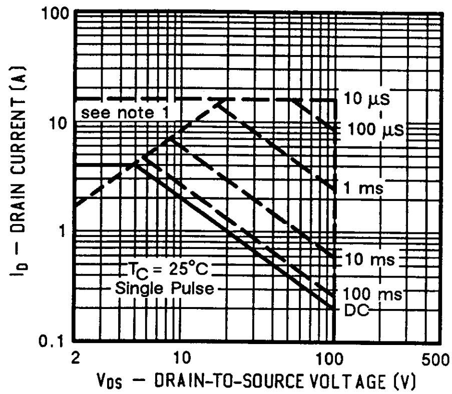
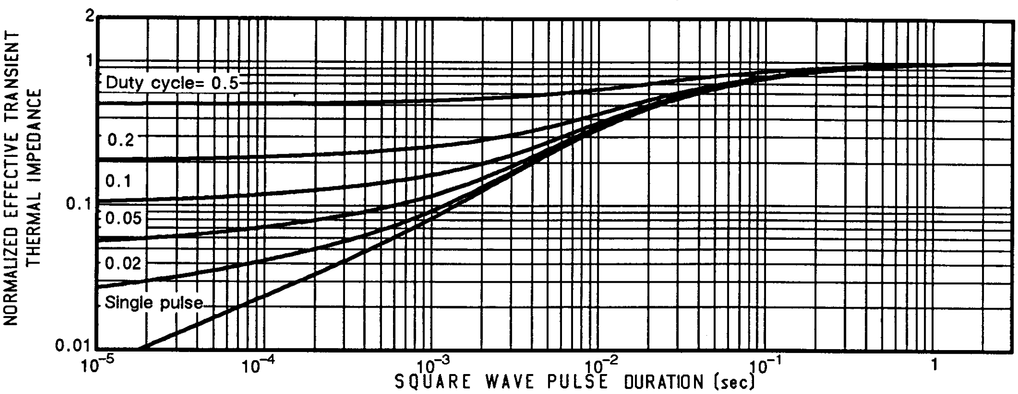


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



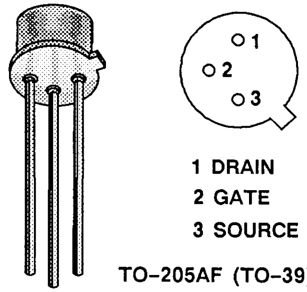
Siliconix incorporated

MOSPOWER

2N6847

P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/563 where applicable

BOTTOM VIEW



1 DRAIN
2 GATE
3 SOURCE

TO-205AF (TO-39)

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6847	200	1.5	2.5

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6847	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	T_C = 25°C	I_D	2.5	A
	T_C = 100°C		1.6	
Pulsed Drain Current[1]		I_{DM}	10	
Avalanche Current		I_A	2.2	
Power Dissipation	T_C = 25°C	P_D	20	W
	T_C = 100°C		8	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	6.25	K/W
Junction-to-Ambient	R_{thJA}	-	175	

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

4

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 1000 µA		$V_{(BR)DSS}$	200	-	-	V
Gate Threshold Voltage V_{DS} = V_{GS}, I_D = 250 µA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J =125°C		I_{DSS}	-	-	250	µA
On-State Drain Current[2] V_{DS} = 3.8 V, V_{GS} = 10 V		$I_{D(on)}$	2.5	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 1.6 A		$r_{DS(on)}$	-	1.0	1.5	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 1.6 A, T_J = 125°C		$r_{DS(on)}$	-	1.75	2.94	Ω
Forward Transconductance[2] V_{DS} =15 V, I_D = 1.6 A		g_{fs}	1.0	1.4	3.0	S(℧)
Input Capacitance	V_{GS} = 0 V_{DS} = 25 V f = 1 MHz	C_{iss}	200	310	400	pF
Output Capacitance		C_{oss}	50	110	125	pF
Reverse Transfer Capacitance		C_{rss}	20	40	45	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 2.5 A (Gate charge is essentially independent of operating temperature)	Q_g	7.0	14	15	nC
Gate-Source Charge		Q_{gs}	1.1	1.8	2.2	nC
Gate-Drain Charge		Q_{gd}	3.2	6.5	7.2	nC
Turn-On Delay Time	V_{DD} = 75 V, R_L = 45Ω I_D ≅ 1.6 A, V_{GEN} = 10 V R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	10	50	ns
Rise Time		t_r	-	23	70	ns
Turn-Off Delay Time		$t_{d(off)}$	-	45	40	ns
Fall Time		t_f	-	31	50	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	2.5	A
Pulsed Current[1]	I_{SM}	-	-	10	A
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/µS	t_{rr}	-	105	300	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/µS	Q_{rr}	-	0.23	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

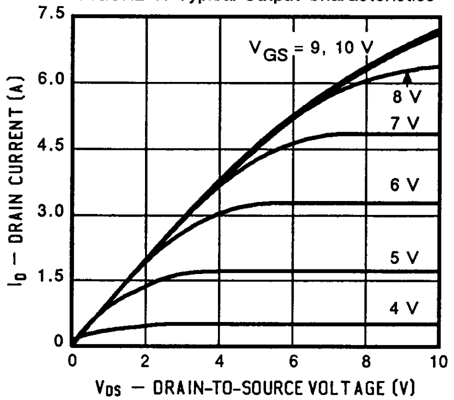


FIGURE 2: Typical Transfer Characteristics

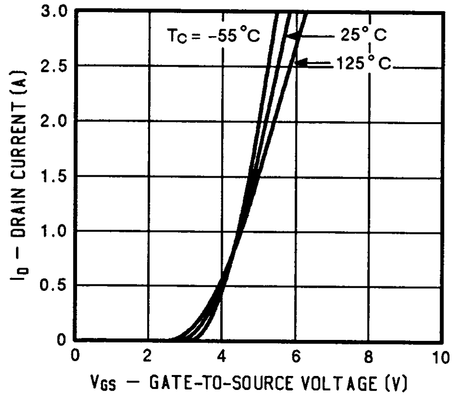


FIGURE 3: Typical Transconductance

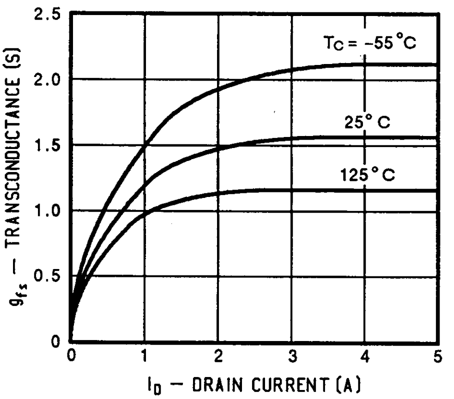


FIGURE 4: Typical On-Resistance

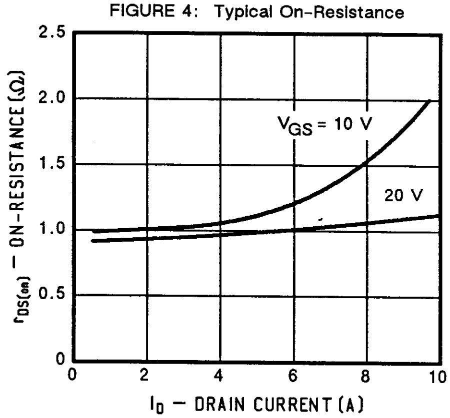


FIGURE 5: Typical Capacitance

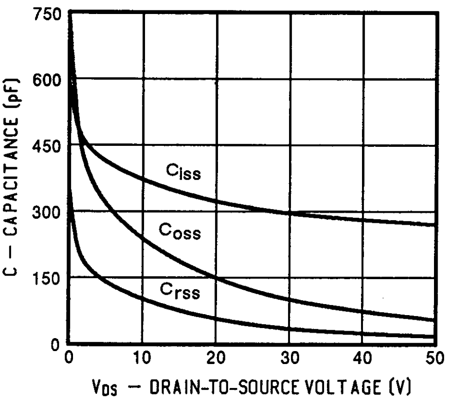
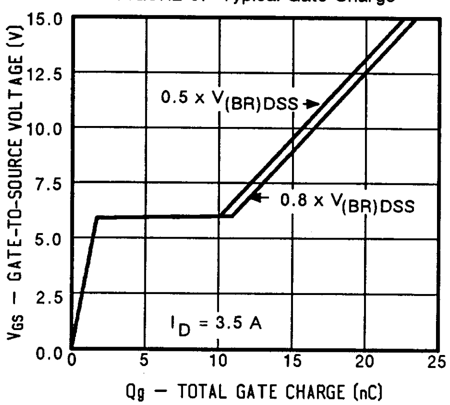


FIGURE 6: Typical Gate Charge



4

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

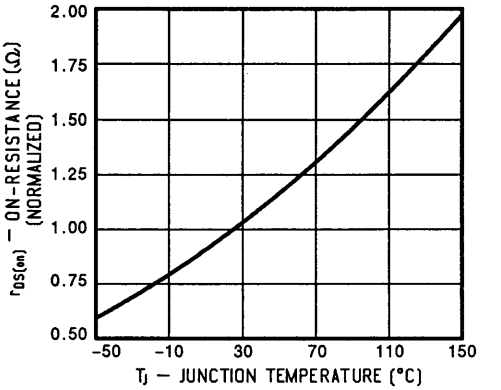


FIGURE 8: Typical Source-Drain Diode Forward Voltage

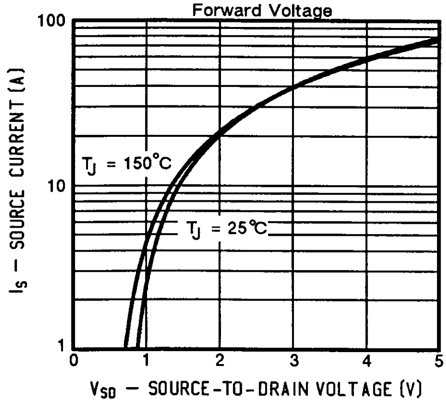


FIGURE 9: Maximum Drain Current vs. Case Temperature

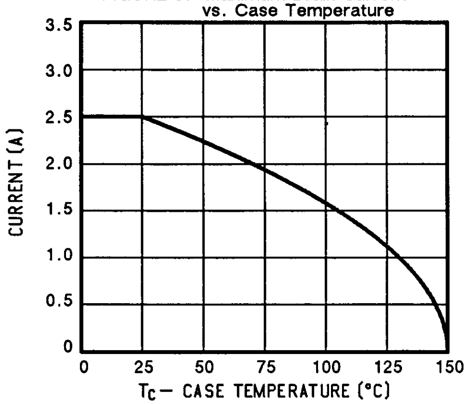
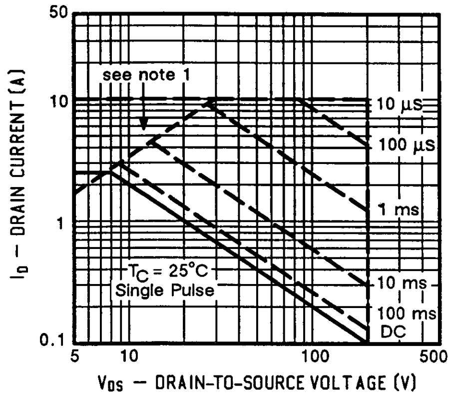
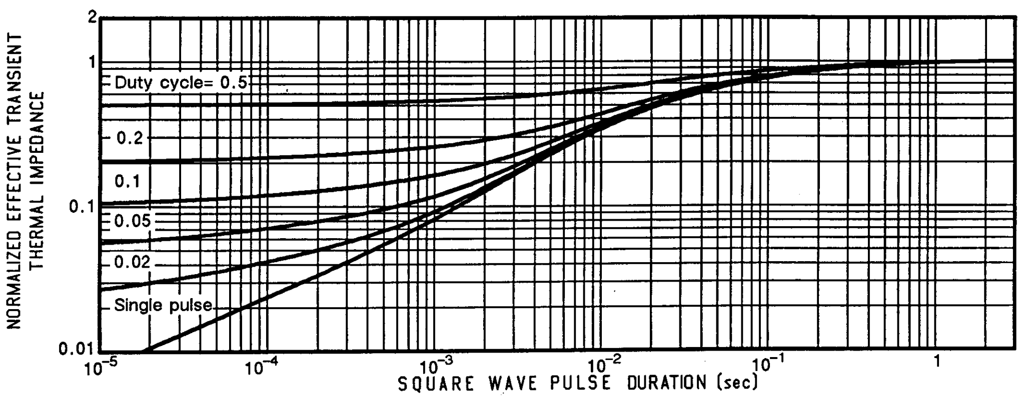


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case

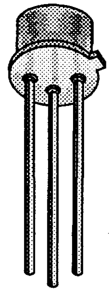


Siliconix incorporated

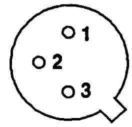
MOSPOWER

2N6849

P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/564 where applicable



BOTTOM VIEW



1 DRAIN
2 GATE
3 SOURCE

TO-205AF (TO-39)

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6849	100	0.30	6.5

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6849	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	T_C = 25°C	I_D	6.5	A
	T_C = 100°C		4.0	
Pulsed Drain Current[1]		I_{DM}	25	
Avalanche Current		I_A	3.1	
Power Dissipation	T_C = 25°C	P_D	25	W
	T_C = 100°C		10	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	5.0	K/W
Junction-to-Ambient	R_{thJA}	-	175	

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

4

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 1000 μA		$V_{(BR)DSS}$	100	-	-	V
Gate Threshold Voltage V_{DS} = V_{GS}, I_D = 250 μA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V_{DS} = $V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	μA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C		I_{DSS}	-	-	250	μA
On-State Drain Current[2] V_{DS} = 2.1 V, V_{GS} = 10 V		$I_{D(on)}$	6.5	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 3.0 A		$r_{DS(on)}$	-	0.25	0.30	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 3.0 A, T_J = 125°C		$r_{DS(on)}$	-	0.40	0.54	Ω
Forward Transconductance[2] V_{DS} = 15 V, I_D = 3.0 A		g_{fs}	2.5	2.8	7.5	S(℧)
Input Capacitance	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	625	-	pF
Output Capacitance		C_{oss}	-	280	-	pF
Reverse Transfer Capacitance		C_{rss}	-	105	-	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 6.5 A (Gate charge is essentially independent of operating temperature)	Q_g	13	24	30	nC
Gate-Source Charge		Q_{gs}	2.4	3.4	5.0	nC
Gate-Drain Charge		Q_{gd}	6.7	13.5	15	nC
Turn-On Delay Time	V_{DD} = 42 V, R_L = 10 Ω, I_D ≃ 4.1 A, V_{GEN} = 10 V, R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	9	60	ns
Rise Time		t_r	-	50	140	ns
Turn-Off Delay Time		$t_{d(off)}$	-	32	140	ns
Fall Time		t_f	-	38	140	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	6.5	A
Pulsed Current[1]	I_{SM}	-	-	26	A
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/μs	t_{rr}	-	110	250	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/μs	Q_{rr}	-	0.4	-	μC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

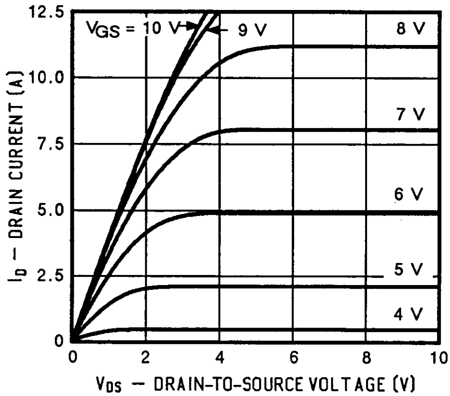


FIGURE 2: Typical Transfer Characteristics

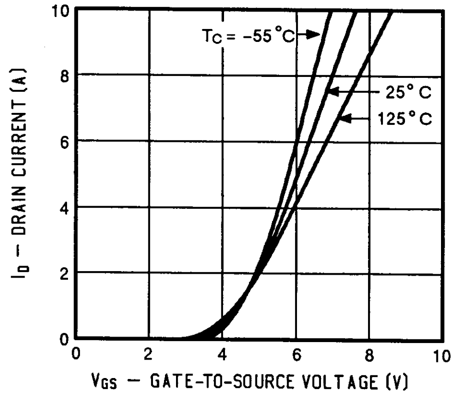


FIGURE 3: Typical Transconductance

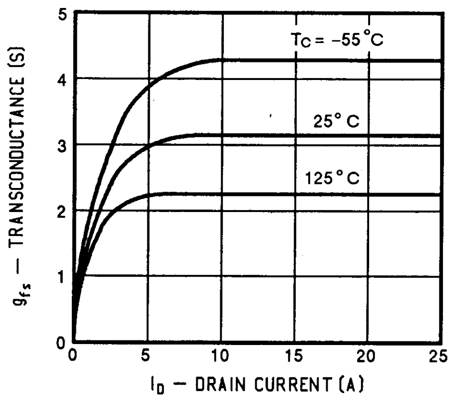


FIGURE 4: Typical On-Resistance

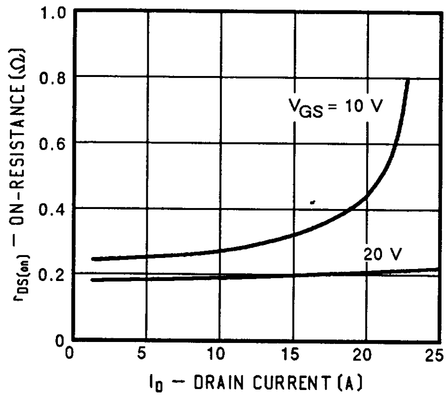


FIGURE 5: Typical Capacitance

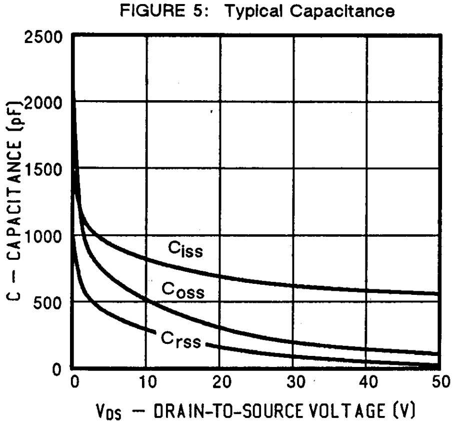
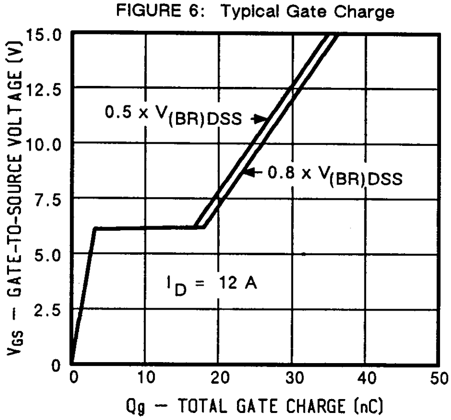


FIGURE 6: Typical Gate Charge



PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

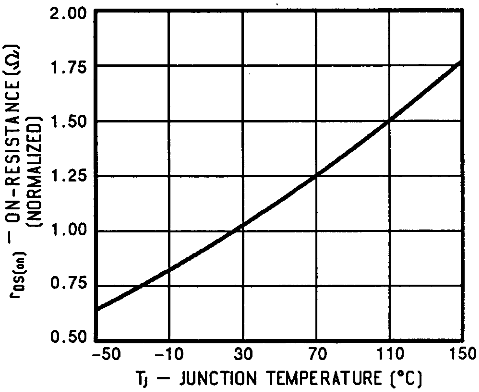


FIGURE 8: Typical Source-Drain Diode Forward Voltage

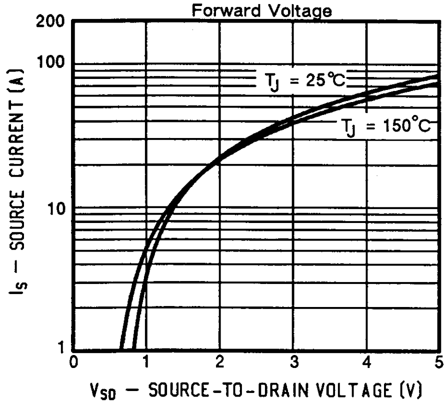


FIGURE 9: Maximum Drain Current vs. Case Temperature

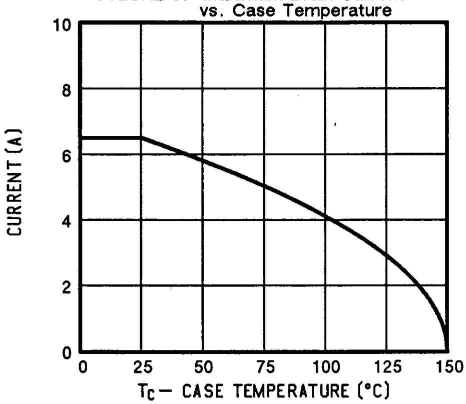
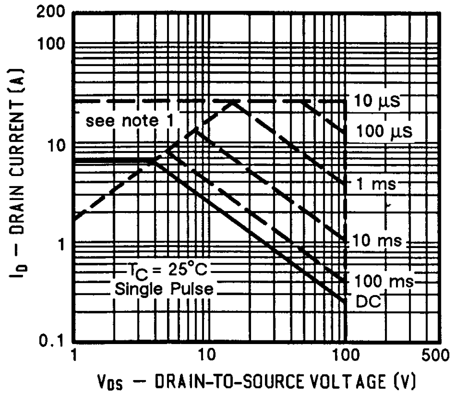
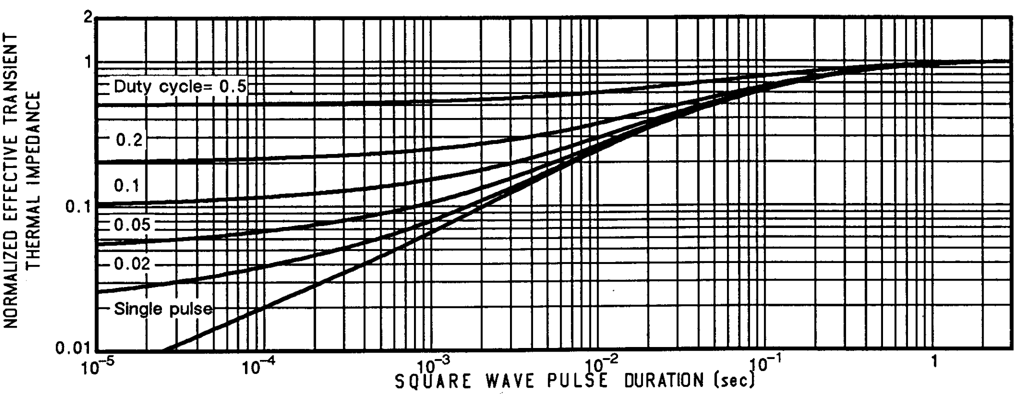


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

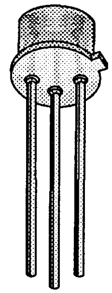
MOSPOWER

2N6851

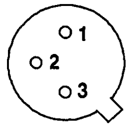
P-Channel Enhancement Mode Transistor[2]
Parametric limits in accordance with MIL-S-19500/564 where applicable

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6851	200	0.80	4.0



BOTTOM VIEW



1 DRAIN
2 GATE
3 SOURCE

TO-205AF (TO-39)

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6851	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	T_C = 25°C	I_D	4.0	A
	T_C = 100°C		2.4	
Pulsed Drain Current[1]		I_{DM}	20	A
Avalanche Current		I_A	3.1	A
Power Dissipation	T_C = 25°C	P_D	25	W
	T_C = 100°C		10	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	5.0	K/W
Junction-to-Ambient	R_{thJA}	-	175	K/W

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

4

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

P-Channel Device
Negative signs have been omitted for clarity

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 1000 μA		$V_{(BR)DSS}$	200	-	-	V
Gate Threshold Voltage $V_{DS} = V_{GS}$, I_D = 250 μA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current $V_{DS} = V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	μA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C		I_{DSS}	-	-	250	μA
On-State Drain Current[2] V_{DS} = 3.3 V, V_{GS} = 10 V		$I_{D(on)}$	4.0	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 2.0 A		$r_{DS(on)}$	-	0.50	0.80	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 2.0 A, T_J = 125°C		$r_{DS(on)}$	-	1.0	1.6	Ω
Forward Transconductance[2] V_{DS} = 15 V, I_D = 2.0 A		g_{fs}	2.2	2.4	6.6	S(℧)
Input Capacitance	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	630	-	pF
Output Capacitance		C_{oss}	-	220	-	pF
Reverse Transfer Capacitance		C_{rss}	-	70	-	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 4.0 A (Gate charge is essentially independent of operating temperature)	Q_g	13	27	31	nC
Gate-Source Charge		Q_{gs}	2.5	3.4	5.0	nC
Gate-Drain Charge		Q_{gd}	7.2	14	16	nC
Turn-On Delay Time	V_{DD} = 95 V, R_L = 39 Ω, I_D ≈ 2.4 A, V_{GEN} = 10 V, R_G = 7.5 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	6.5	50	ns
Rise Time		t_r	-	33	100	ns
Turn-Off Delay Time		$t_{d(off)}$	-	30	80	ns
Fall Time		t_f	-	21	80	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	4.0	A
Pulsed Current[1]	I_{SM}	-	-	20	A
Forward Voltage[2] $I_F = I_S$, V_{GS} = 0	V_{SD}	0.8	-	2.0	V
Reverse Recovery Time $I_F = I_S$, dI_F/dt = 100 A/μs	t_{rr}	-	160	400	ns
Reverse Recovered Charge $I_F = I_S$, dI_F/dt = 100 A/μs	Q_{rr}	-	1.6	-	μC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

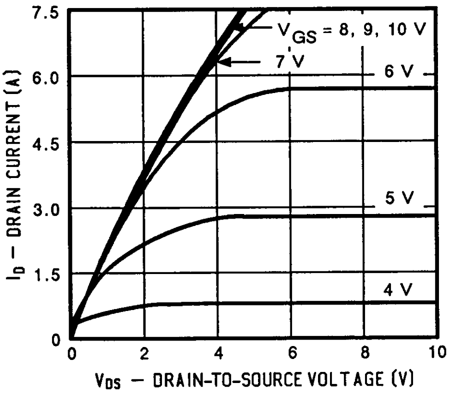


FIGURE 2: Typical Transfer Characteristics

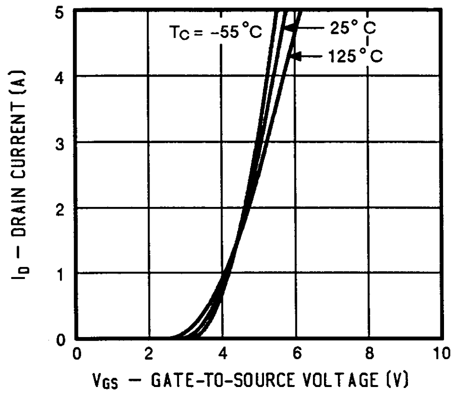


FIGURE 3: Typical Transconductance

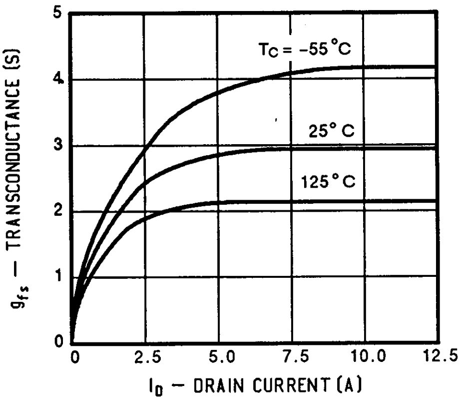


FIGURE 4: Typical On-Resistance

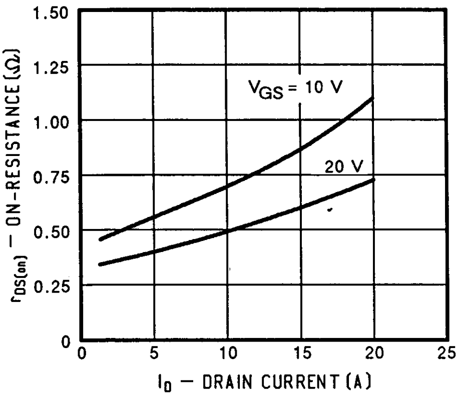


FIGURE 5: Typical Capacitance

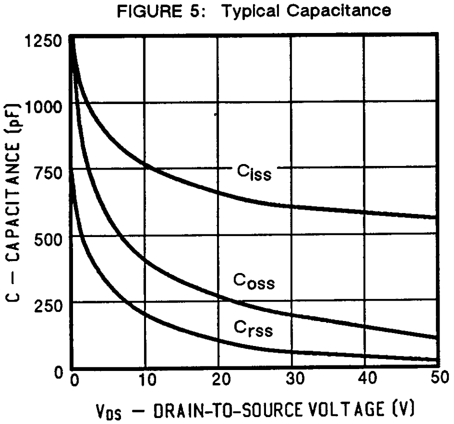
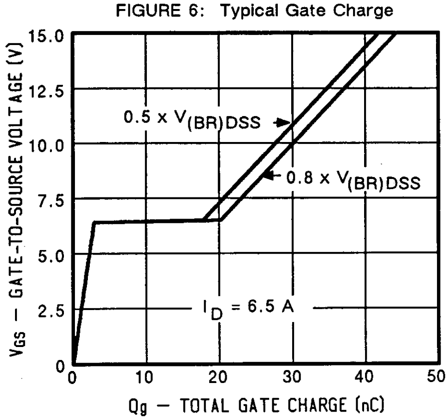


FIGURE 6: Typical Gate Charge



4

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

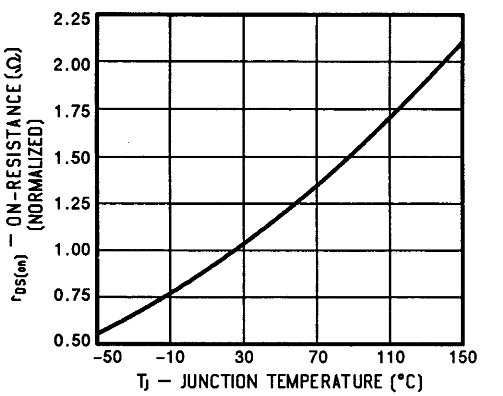


FIGURE 8: Typical Source-Drain Diode Forward Voltage

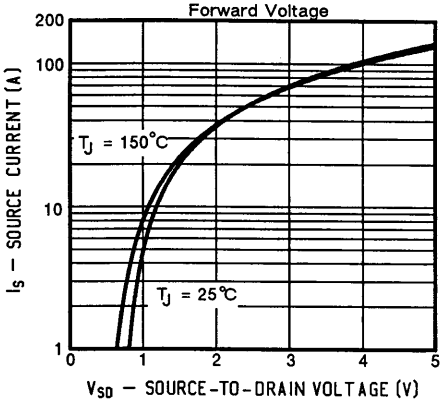


FIGURE 9: Maximum Drain Current vs. Case Temperature

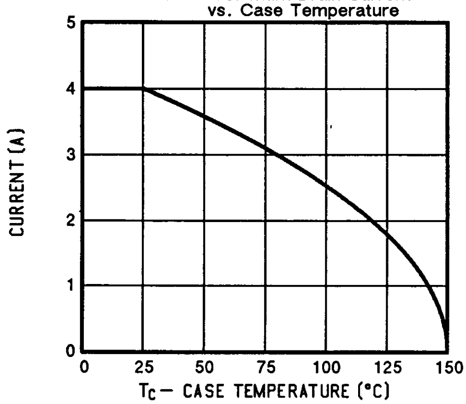
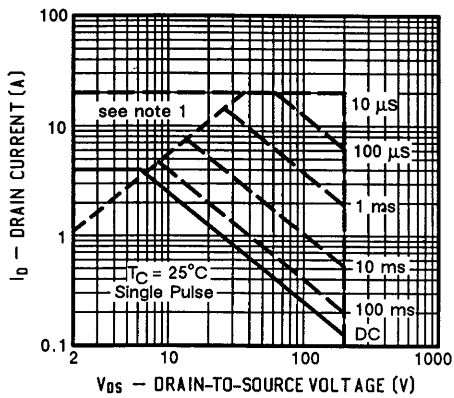
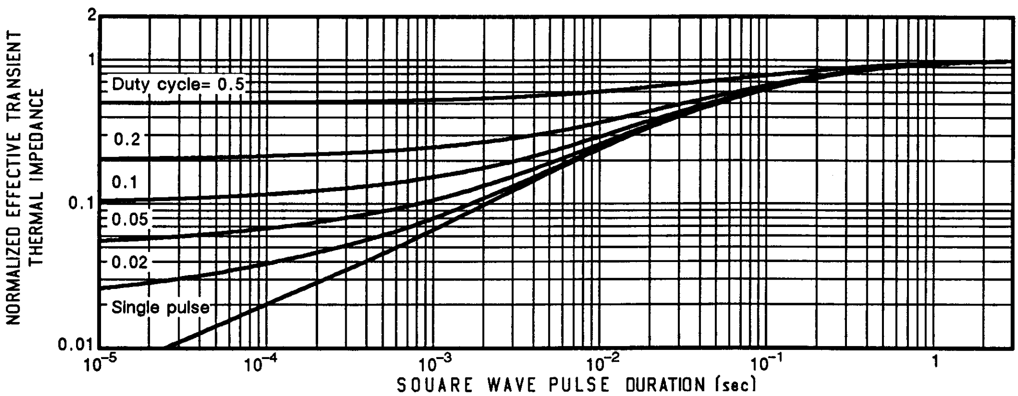


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



2N6905 SERIES

Siliconix incorporated

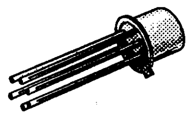
N-Channel JFET Pairs

The 2N6905 Series of high-performance monolithic dual JFETs features extremely low noise, tight offset voltage and drift over temperature specifications. It is targeted for use in a wide range of precision instrumentation applications. The 2N6905 Series has a wide selection of both offset and drift ranges with the prime device, the 2N6905, featuring 5 mV offset and 10 µV/°C drift. The three devices allow designers to make important cost/benefit decisions. This series is available in a TO-71 hermetically sealed package and is available with military screening. (See Section 1.)

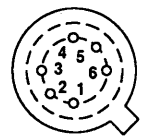
For additional design information please see performance curves NNR, which are located in Section 7.

PART NUMBER	$V_{(BR)GSS}$ MIN (V)	g_{fs} MIN (mS)	I_G MAX (pA)	$\|V_{GS1} - V_{GS2}\|$ MAX (mV)
2N6905	−35	2	−5	5
2N6906	−35	2	−5	10
2N6907	−35	2	−5	25

TO-71



BOTTOM VIEW



1 SOURCE 1
2 DRAIN 1
3 GATE 1
4 SOURCE 2
5 DRAIN 2
6 GATE 2

SIMILAR PRODUCTS

- High-Gain, See 2N5911 Series
- SO-8, See SST404 Series
- Chips, Order 2N690XCHP

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMIT	UNITS
Gate-Drain Voltage		V_{GD}	−35	V
Gate-Source Voltage		V_{GS}	−35	V
Forward Gate Current		I_G	10	mA
Power Dissipation	Per Side	P_D	300	mW
	Total		500	
Power Derating	Per Side		2.6	mW/°C
	Total		5	
Operating Junction Temperature		T_J	−55 to 150	°C
Storage Temperature		T_{stg}	−65 to 200	°C
Lead Temperature (1/16" from case for 10 seconds)		T_L	300	°C

ELECTRICAL CHARACTERISTICS[1]			LIMITS							
				2N6905		2N6906		2N6907		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[2]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1\ \mu A$, $V_{DS} = 0\ V$	-55	-35		-35		-35		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	$V_{DS} = 15\ V$, $I_D = 1\ nA$	-1.5	-0.2	-3	-0.2	-3	-0.2	-3	V
Saturation Drain Current[3]	I_{DSS}	$V_{DS} = 10\ V$, $V_{GS} = 0\ V$	3.5	0.5	10	0.5	10	0.5	10	mA
Gate Reverse Current	I_{GSS}	$V_{GS} = -15\ V$, $V_{DS} = 0\ V$	-2		-15		-15		-15	pA
		$T_A = 125°C$	-1							nA
Gate Operating Current	I_G	$V_{DG} = 15\ V$, $I_D = 200\ \mu A$	-2		-5		-5		-5	pA
		$T_A = 125°C$	-0.8		-5		-5		-5	nA
Drain-Source On-Resistance[4]	$r_{DS(ON)}$	$V_{GS} = 0\ V$, $I_D = 0.1\ mA$	250							Ω
Gate-Source Voltage	V_{GS}	$V_{DG} = 15\ V$, $I_D = 200\ \mu A$	-1		-2.3		-2.3		-2.3	V
Gate-Source Forward Voltage[4]	$V_{GS(F)}$	$I_G = 1\ mA$, $V_{DS} = 0\ V$	0.7							V
DYNAMIC										
Common-Source Forward Transconductance	g_{fs}	$V_{DS} = 10\ V$, $V_{GS} = 0\ V$, $f = 1\ kHz$	4	2	7	2	7	2	7	mS
Common-Source Output Conductance	g_{os}	$V_{DS} = 10\ V$, $V_{GS} = 0\ V$, $f = 1\ kHz$	4		20		20		20	µS
Common-Source Input Capacitance	C_{iss}	$V_{DG} = 15\ V$, $I_D = 200\ \mu A$, $f = 1\ MHz$	4		8		8		8	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	$V_{DG} = 15\ V$, $I_D = 200\ \mu A$, $f = 1\ MHz$	1.5		3		3		3	pF
Equivalent Input Noise Voltage	$\bar{e}_n$	$V_{DS} = 10\ V$, $V_{GS} = 0\ V$, $f = 10\ Hz$	10		15		15		15	$nV/\sqrt{Hz}$
MATCHING										
Differential Gate-Source Voltage	$\lvert V_{GS1} - V_{GS2} \rvert$	$V_{DG} = 10\ V$, $I_D = 200\ \mu A$			5		10		25	mV
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta \lvert V_{GS1} - V_{GS2} \rvert}{\Delta T}$	$V_{DG} = 10\ V$, $I_D = 200\ \mu A$, $T = -55$ to $25°C$			10		25		25	µV/°C
		$V_{DG} = 10\ V$, $I_D = 200\ \mu A$, $T = 25$ to $125°C$			10		25		50	µV/°C
Saturation Drain Current Ratio[4]	$\frac{I_{DSS1}}{I_{DSS2}}$	$V_{DS} = 10\ V$, $V_{GS} = 0\ V$	0.97							
Transconductance Ratio[4]	$\frac{g_{fs1}}{g_{fs2}}$	$V_{DG} = 10\ V$, $I_D = 0.2\ mA$, $f = 1\ kHz$	0.97							
Differential Output Conductance[4]	$\lvert g_{os1} - g_{os2} \rvert$	$V_{DG} = 10\ V$, $I_D = 0.2\ mA$, $f = 1\ kHz$	0.1							µS
Differential Gate Current[4]	$\lvert I_{G1} - I_{G2} \rvert$	$V_{DG} = 15\ V$, $I_D = 0.2\ mA$, $T_A = 25°C$	1							pA
Common Mode Rejection Ratio	CMRR	$V_{DG} = 10$ to $20\ V$, $I_D = 200\ \mu A$	102	95		95		95		dB

NOTES:
1. $T_A = 25°C$ unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test; PW = 300 µs, duty cycle ≤ 3%.
4. This parameter not registered with JEDEC.

4

2N6908 SERIES

Siliconix incorporated

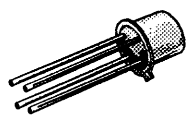
N-Channel JFET Circuits

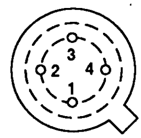
The 2N6908 Series is much more than a JFET. The addition of back-to-back diodes effectively clamps input "over-voltage" while a high-performance JFET provides an effective amplification stage. With the addition of a source resistor, a complete common-source amplifier is created which provides both low leakage and very low noise. This performance is especially effective as a small signal pre-amplifier as well as impedance matching between low and high impedance sources. Finally, its TO-72 package is hermetically sealed and is available with full military screening per MIL-S-19500. (See Section 1.)

For additional design information please see performance curves NBB, which are located in Section 7.

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$V_{(BR)GSS}$ MIN (V)	g_{fs} MIN (μS)	I_{DSS} MAX (mA)
2N6908	-1.8	-30	100	2
2N6909	-2.3	-30	400	3.5
2N6910	-3.5	-30	1200	5

TO-72 **BOTTOM VIEW**

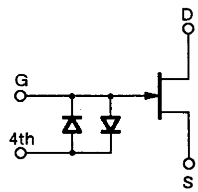




1 SOURCE
2 DRAIN
3 GATE
4 DIODES

SIMILAR PRODUCTS

- SOT-143, See SST6908 Series
- Chips, Order 2N69XXCHP



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMIT	UNITS
Gate-Drain Voltage	V_{GD}	-30	V
Gate-Source Voltage	V_{GS}	-30	
Forward Gate Current	I_G	10	mA
Power Dissipation	P_D	300	mW
Power Derating		2.4	mW/°C
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{stg}	-55 to 200	
Lead Temperature (1/16" from case for 10 seconds)	T_L	300	

ELECTRICAL CHARACTERISTICS [1]			LIMITS							
				2N6908		2N6909		2N6910		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP [2]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1\ \mu A$, $V_{DS} = 0$ V, $V_{G4} = 0$ V	-50	-30		-30		-30		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	$V_{DS} = 10$ V, $I_D = 1$ nA, $V_{G4} = 0$ V		-0.3	-1.8	-0.6	-2.3	-0.9	-3.5	V
Saturation Drain Current [3]	I_{DSS}	$V_{DS} = 10$ V, $V_{GS} = 0$ V, $V_{G4} = 0$ V		0.05	2	0.2	3.5	0.6	5	mA
Gate Reverse Current	I_{GSS}	$V_{GS} = -15$ V, $V_{DS} = 0$ V, $V_{G4} = 0$ V	-2		-25		-25		-25	pA
		$T_A = 125°C$	-1							nA
Gate Operating Current	I_G	$V_{DG} = 15$ V, $I_D = 50\ \mu A$	-2							pA
Forward Gate Diode Current 4	I_{G4}	$V_{G4} = \pm 100$ mV	± 1		± 10		± 10		± 10	pA
Gate-Source Forward Voltage	$V_{GS(F)}$	$I_G = \pm 0.5$ mA, $V_{DS} = 0$ V, $V_{G4} = 0$ V	± 0.7		± 1.2		± 1.2		± 1.2	V
DYNAMIC										
Common-Source Forward Transconductance	g_{fs}	$V_{DS} = 15$ V, $V_{GS} = 0$ V, $V_{G4} = 0$ V, f = 1 kHz		0.1	3	0.4	3.5	1.2	4	mS
Common-Source Output Conductance	g_{os}	$V_{DS} = 15$ V, $V_{GS} = 0$ V, $V_{G4} = 0$ V, f = 1 kHz			50		75		100	µS
Common-Source Input Capacitance	C_{iss}	$V_{DS} = 10$ V, $V_{GS} = 0$ V, $V_{G4} = 0$ V, f = 1 MHz	3.2		5		5		5	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 10$ V, $V_{GS} = 0$ V, $V_{G4} = 0$ V, f = 1 MHz	1.5		2		2		2	pF
Equivalent Input Noise Voltage	$\bar{e}_n$	$V_{DS} = 10$ V, $V_{GS} = 0$ V, f = 100 Hz	12		25		25		25	$nV/\sqrt{Hz}$
Noise Figure	NF	$V_{DS} = 15$ V, $V_{GS} = 0$ V, f = 1 kHz, $R_G = 1\ M\Omega$	0.1		1		1		1	dB

NOTES:
1. $T_A = 25°C$ unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test; PW = 300 µs, duty cycle ≤ 3%.
4. Forward diode current when a voltage is applied between gate and fourth lead.

Siliconix incorporated

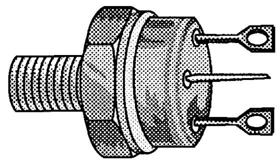
MOSPOWER

2N6962

N-Channel Enhancement Mode Transistor Parametric limits in accordance with MIL-S-19500/568 where applicable

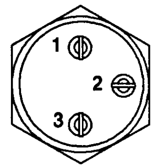
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6962	100	0.060	30



TO-210AC (TO-61)
ISOLATED CASE

TOP VIEW



1 SOURCE
2 GATE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6962	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	T_C = 25°C	I_D	30	A
	T_C = 100°C		24	
Pulsed Drain Current[1]		I_{DM}	120	
Avalanche Current		I_A	5.9	
Power Dissipation	T_C = 25°C	P_D	150	W
	T_C = 100°C		60	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	0.83	K/W
Junction-to-Ambient	R_{thJA}	-	40	
Case-to-Sink	R_{thCS}	0.4	-	

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
This device contains beryllium oxide

Siliconix incorporated

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage $V_{GS} = 0$, $I_D = 250\ \mu A$		$V_{(BR)DSS}$	100	-	-	V
Gate Threshold Voltage $V_{DS} = V_{GS}$, $I_D = 250\ \mu A$		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage $V_{DS} = 0$, $V_{GS} = \pm 20$ V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current $V_{DS} = 0.8 \times V_{(BR)DSS}$, $V_{GS} = 0$		I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current $V_{DS} = 0.8 \times V_{(BR)DSS}$, $V_{GS} = 0$, $T_J = 125°C$		I_{DSS}	-	-	250	µA
On-State Drain Current[2] $V_{DS} = 1.8$ V, $V_{GS} = 10$ V		$I_{D(on)}$	30	-	-	A
Drain-Source On-State Resistance[2] $V_{GS} = 10$ V, $I_D = 24$ A		$r_{DS(on)}$	-	0.45	0.060	Ω
Drain-Source On-State Resistance[2] $V_{GS} = 10$ V, $I_D = 24$ A, $T_J = 125°C$		$r_{DS(on)}$	-	0.08	0.094	Ω
Forward Transconductance[2] $V_{DS} = 15$ V, $I_D = 24$ A		g_{fs}	9.0	12	27	S(℧)
Input Capacitance	$V_{GS} = 0$, $V_{DS} = 25$ V, f = 1 MHz	C_{iss}	-	2800	3200	pF
Output Capacitance		C_{oss}	-	1100	1700	pF
Reverse Transfer Capacitance		C_{rss}	-	400	700	pF
Total Gate Charge	$V_{DS} = 0.5 \times V_{(BR)DSS}$, $V_{GS} = 10$ V, $I_D = 30$ A (Gate charge is essentially independent of operating temperature)	Q_g	48	62	109	nC
Gate-Source Charge		Q_{gs}	6.4	13	19	nC
Gate-Drain Charge		Q_{gd}	24	29	64	nC
Turn-On Delay Time	$V_{DD} = 25$ V, $R_L = 1\ \Omega$, $I_D \simeq 24$ A, $V_{GEN} = 10$ V, $R_G = 4.7\ \Omega$ (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	15	35	ns
Rise Time		t_r	-	30	100	ns
Turn-Off Delay Time		$t_{d(off)}$	-	50	125	ns
Fall Time		t_f	-	20	100	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	30	A
Pulsed Current[1]	I_{SM}	-	-	120	A
Forward Voltage[2] $I_F = I_S$, $V_{GS} = 0$	V_{SD}	0.60	-	1.9	V
Reverse Recovery Time $I_F = I_S$, $dI_F/dt = 100\ A/\mu s$	t_{rr}	-	150	400	ns
Reverse Recovered Charge $I_F = I_S$, $dI_F/dt = 100\ A/\mu s$	Q_{rr}	-	0.5	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

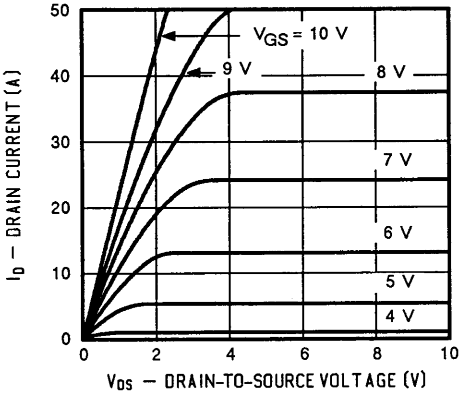


FIGURE 2: Typical Transfer Characteristics

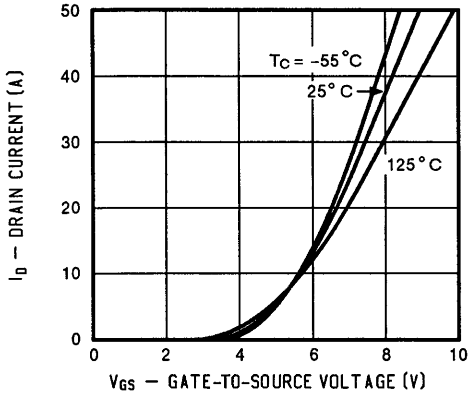


FIGURE 3: Typical Transconductance

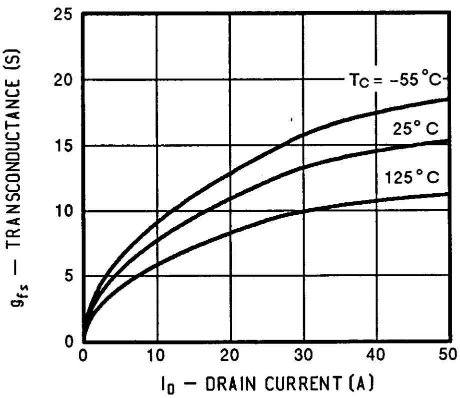


FIGURE 4: Typical On-Resistance

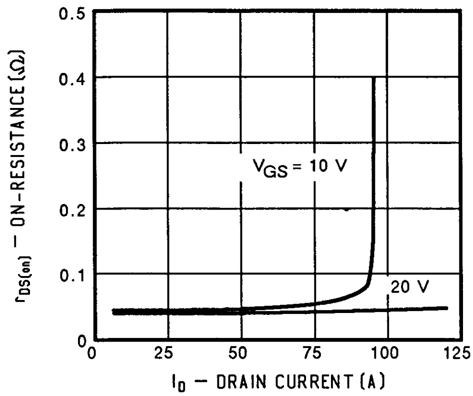


FIGURE 5: Typical Capacitance

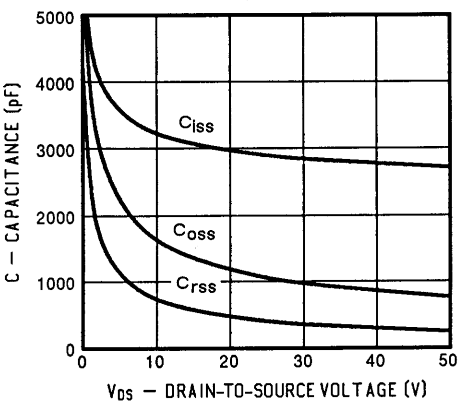
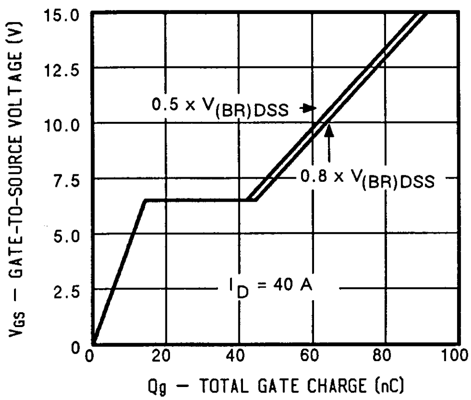


FIGURE 6: Typical Gate Charge



4

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

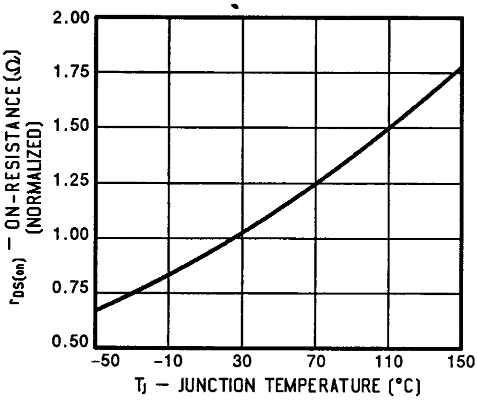


FIGURE 8: Typical Source-Drain Diode Forward Voltage

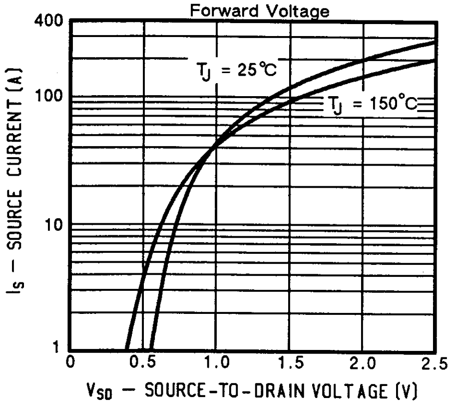


FIGURE 9: Maximum Drain Current vs. Case Temperature

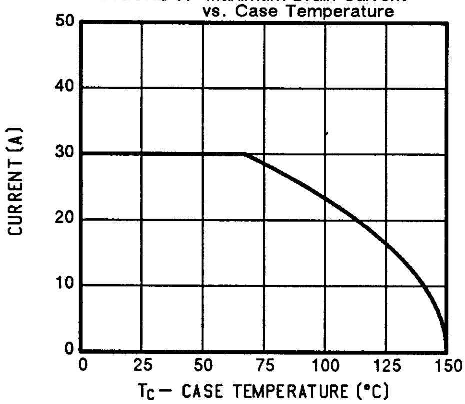
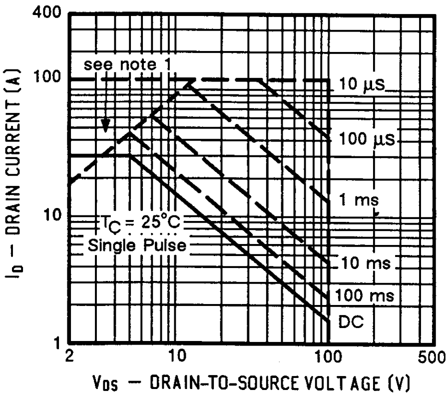
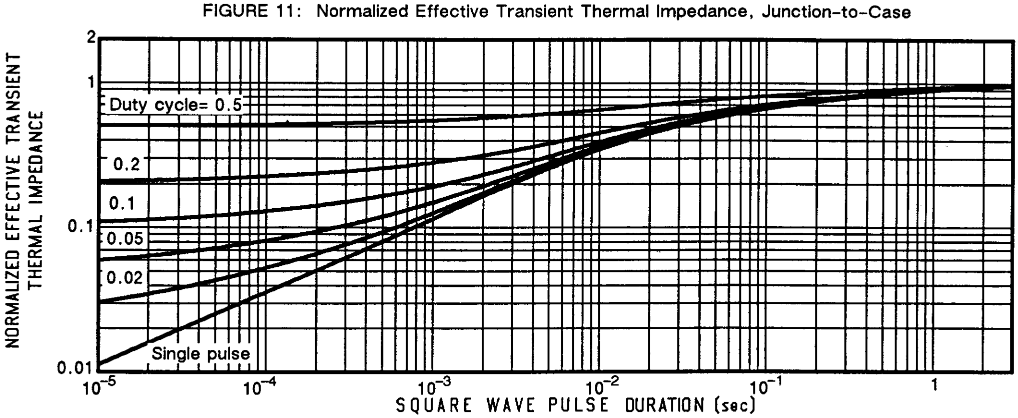


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

MOSPOWER

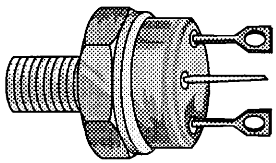
2N6963

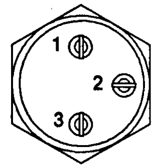
N-Channel Enhancement Mode Transistor
Parametric limits in accordance with
MIL-S-19500/568 where applicable

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6963	200	0.090	30

TOP VIEW





TO-210AC (TO-61)
ISOLATED CASE

1 SOURCE
2 GATE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6963	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	T_C = 25°C	I_D	30	A
	T_C = 100°C		18	
Pulsed Drain Current[1]		I_{DM}	120	
Avalanche Current		I_A	6.0	
Power Dissipation	T_C = 25°C	P_D	150	W
	T_C = 100°C		60	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	0.83	K/W
Junction-to-Ambient	R_{thJA}	-	40	
Case-to-Sink	R_{thCS}	0.4	-	

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
This device contains beryllium oxide

4

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS	TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	V_{GS} = 0, I_D = 250 µA	$V_{(BR)DSS}$	200	-	-	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA	$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage	V_{DS} = 0, V_{GS} = ±20 V	I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current	V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0	I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current	V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C	I_{DSS}	-	-	250	µA
On-State Drain Current[2]	V_{DS} = 2.7 V, V_{GS} = 10 V	$I_{D(on)}$	30	-	-	A
Drain-Source On-State Resistance[2]	V_{GS} = 10 V, I_D = 19 A	$r_{DS(on)}$	-	0.075	0.090	Ω
Drain-Source On-State Resistance[2]	V_{GS} = 10 V, I_D = 19 A, T_J = 125°C	$r_{DS(on)}$	-	0.13	0.160	Ω
Forward Transconductance[2]	V_{DS} = 15 V, I_D = 19 A	g_{fs}	9.0	13	15.5	S(℧)
Input Capacitance	V_{GS} = 0 V_{DS} = 25 V f = 1 MHz	C_{iss}	-	2750	3200	pF
Output Capacitance		C_{oss}	-	850	1700	pF
Reverse Transfer Capacitance		C_{rss}	-	300	250	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 30 A (Gate charge is essentially independent of operating temperature)	Q_g	-	63	-	nC
Gate-Source Charge		Q_{gs}	-	14	-	nC
Gate-Drain Charge		Q_{gd}	-	32	-	nC
Turn-On Delay Time	V_{DD} = 95 V, R_L = 5 Ω I_D ≃ 19 A, V_{GEN} = 10 V R_G = 4.7Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	15	35	ns
Rise Time		t_r	-	30	130	ns
Turn-Off Delay Time		$t_{d(off)}$	-	50	130	ns
Fall Time		t_f	-	20	100	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	30	A
Pulsed Current[1]	I_{SM}	-	-	120	A
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.6	-	1.8	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/µs	t_{rr}	-	150	650	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/µs	Q_{rr}	-	0.5	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

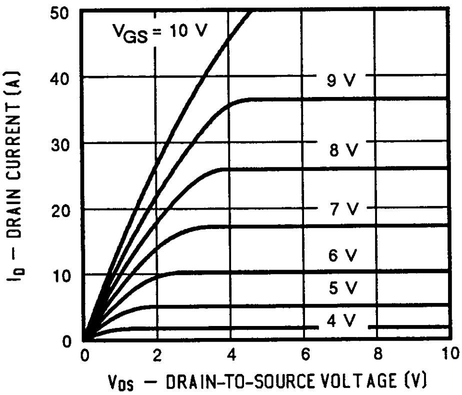


FIGURE 2: Typical Transfer Characteristics

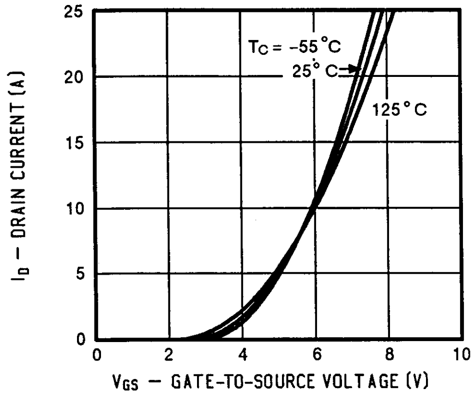


FIGURE 3: Typical Transconductance

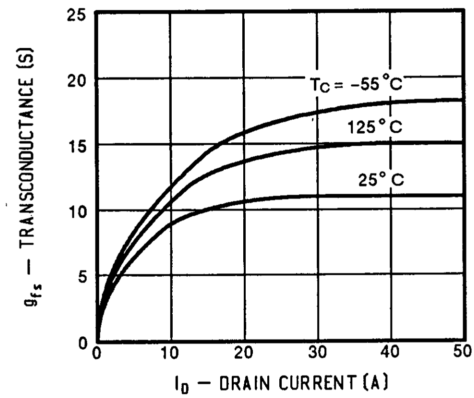


FIGURE 4: Typical On-Resistance

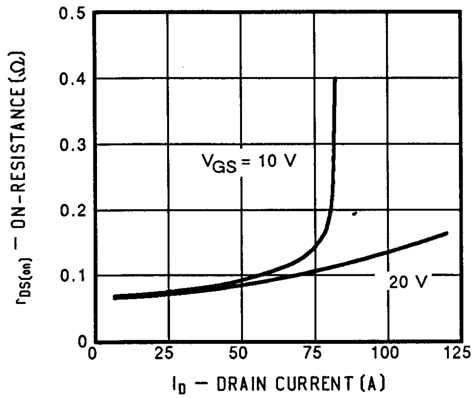


FIGURE 5: Typical Capacitance

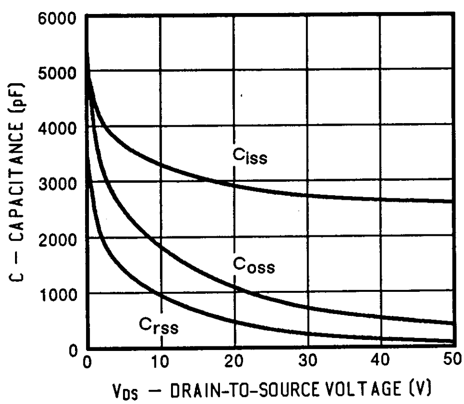
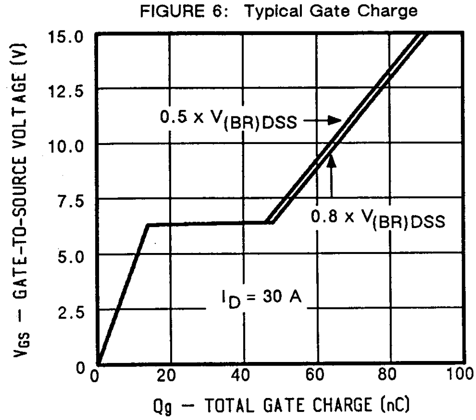


FIGURE 6: Typical Gate Charge



4

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

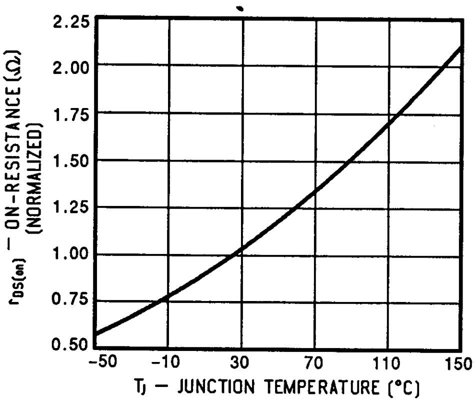


FIGURE 8: Typical Source-Drain Diode Forward Voltage

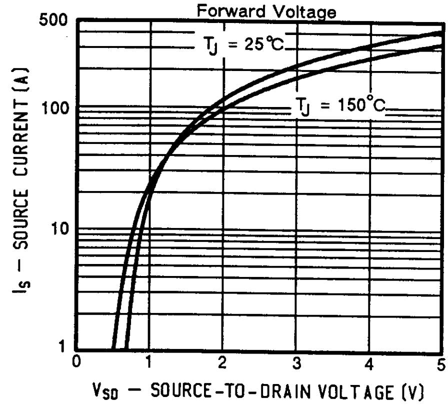


FIGURE 9: Maximum Drain Current vs. Case Temperature

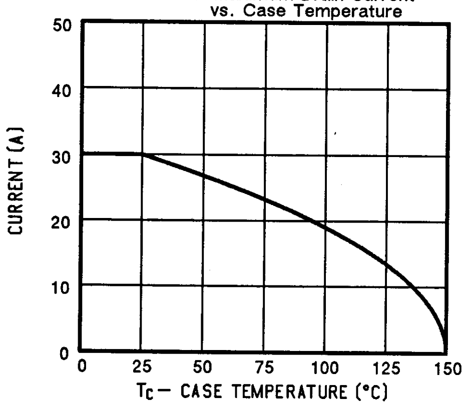
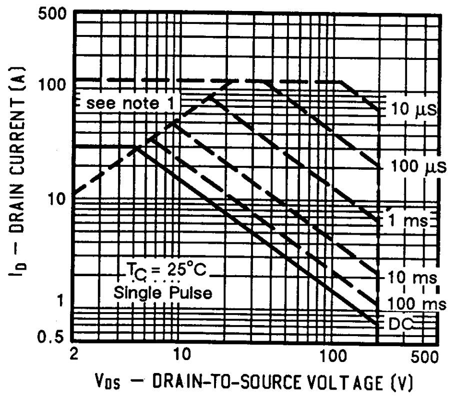
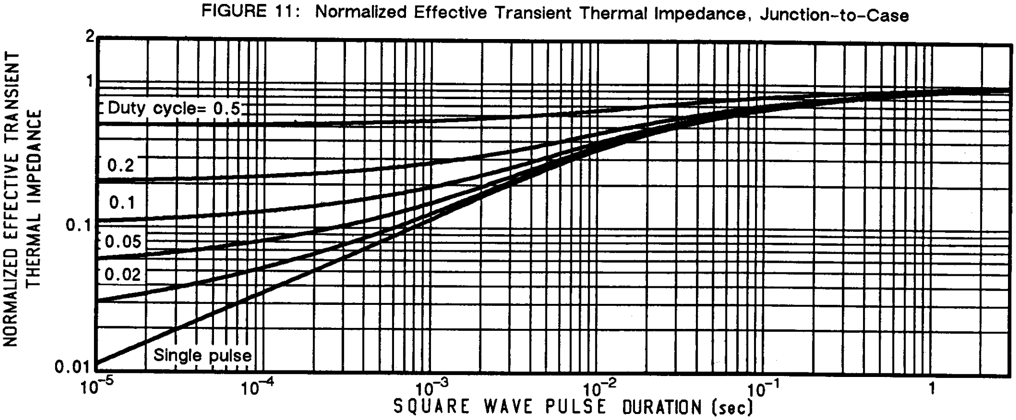


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



Siliconix incorporated

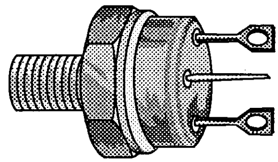
MOSPOWER

2N6964

N-Channel Enhancement Mode Transistor
Parametric limits in accordance with MIL-S-19500/568 where applicable

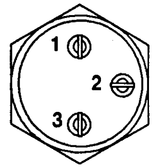
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6964	400	0.30	15



TO-210AC (TO-61)
ISOLATED CASE

TOP VIEW



1 SOURCE
2 GATE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6964	Units
Drain-Source Voltage		V_{DS}	400	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C = 25°C	I_D	15	A
	T_C = 100°C		9.5	
Pulsed Drain Current[1]		I_{DM}	60	A
Avalanche Current		I_A	5.9	A
Power Dissipation	T_C = 25°C	P_D	150	W
	T_C = 100°C		60	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	0.83	K/W
Junction-to-Ambient	R_{thJA}	-	40	K/W
Case-to-Sink	R_{thCS}	0.4	-	K/W

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
This device contains beryllium oxide

4

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 250 µA		$V_{(BR)DSS}$	400	-	-	V
Gate Threshold Voltage V_{DS} = V_{GS}, I_D = 250 µA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J = 125°C		I_{DSS}	-	-	250	µA
On-State Drain Current[2] V_{DS} = 4.5 V, V_{GS} = 10 V		$I_{D(on)}$	15	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 9.0 A		$r_{DS(on)}$	-	0.22	0.30	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 9.0 A, T_J = 125°C		$r_{DS(on)}$	-	0.40	0.66	Ω
Forward Transconductance[2] V_{DS} = 15 V, I_D = 9.0 A		g_{fs}	8	8.5	24	S(℧)
Input Capacitance	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	2700	3200	pF
Output Capacitance		C_{oss}	-	450	700	pF
Reverse Transfer Capacitance		C_{rss}	-	160	250	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 15 A (Gate charge is essentially independent of operating temperature)	Q_g	52	77	118	nC
Gate-Source Charge		Q_{gs}	5.3	14	16	nC
Gate-Drain Charge		Q_{gd}	25	39	56	nC
Turn-On Delay Time	V_{DD} = 180 V, R_L = 20 Ω, I_D ≃ 9.0 A, V_{GEN} = 10 V, R_G = 4.7 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	14	35	ns
Rise Time		t_r	-	30	60	ns
Turn-Off Delay Time		$t_{d(off)}$	-	54	150	ns
Fall Time		t_f	-	15	75	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	15	A
Pulsed Current[1]	I_{SM}	-	-	56	A
Forward Voltage[2] I_F = I_S, V_{GS} = 0	V_{SD}	0.6	-	1.7	V
Reverse Recovery Time I_F = I_S, dI_F/dt = 100 A/µs	t_{rr}	-	300	800	ns
Reverse Recovered Charge I_F = I_S, dI_F/dt = 100 A/µs	Q_{rr}	-	2.0	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

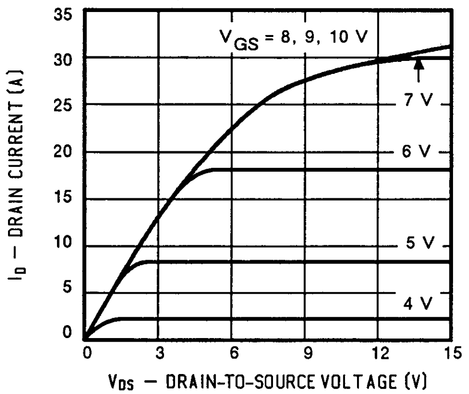


FIGURE 2: Typical Transfer Characteristics

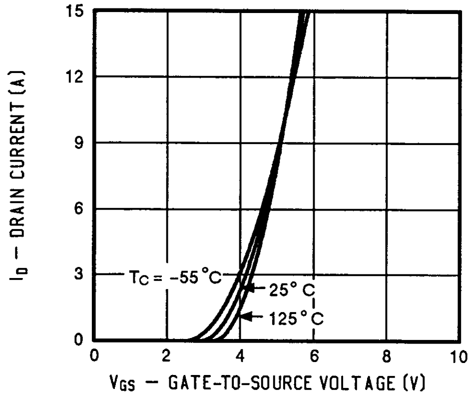


FIGURE 3: Typical Transconductance

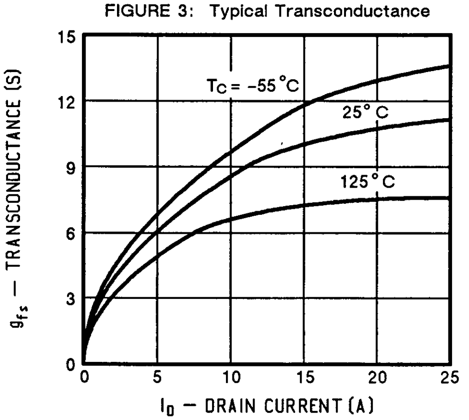


FIGURE 4: Typical On-Resistance

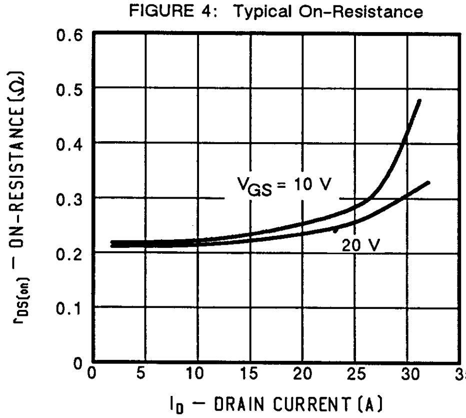


FIGURE 5: Typical Capacitance

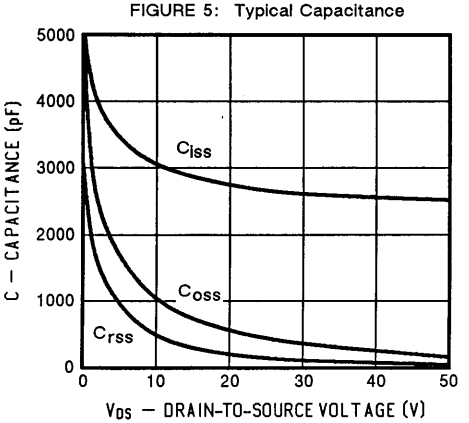
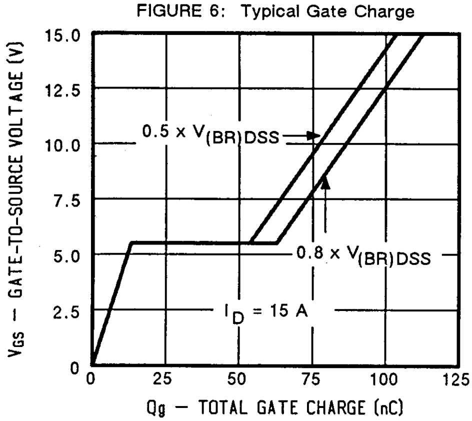


FIGURE 6: Typical Gate Charge



PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

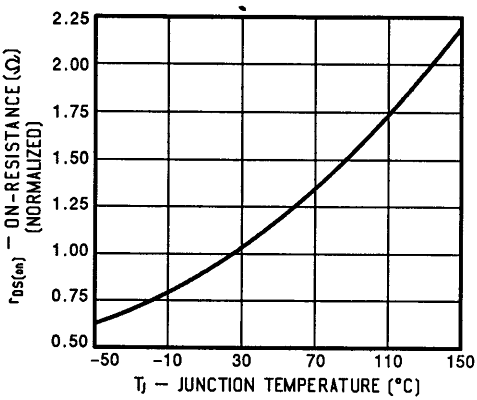


FIGURE 8: Typical Source-Drain Diode Forward Voltage

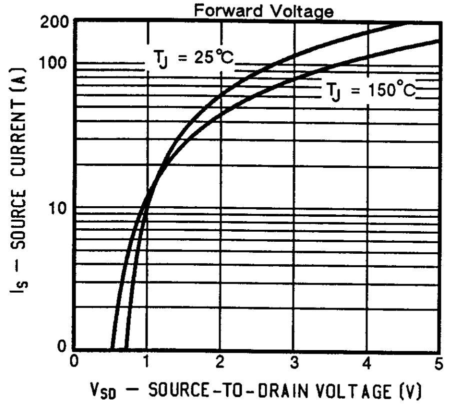


FIGURE 9: Maximum Drain Current vs. Case Temperature

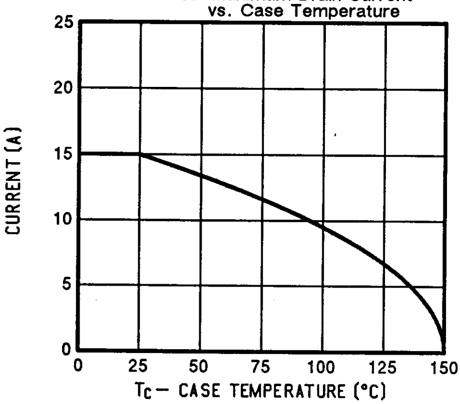
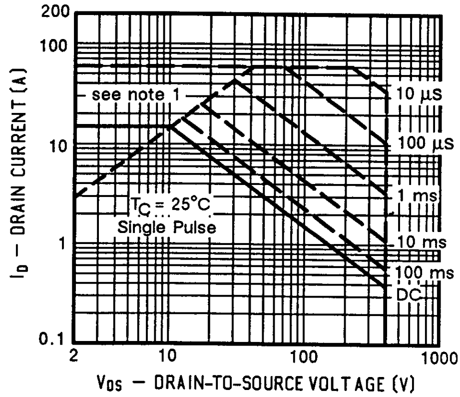
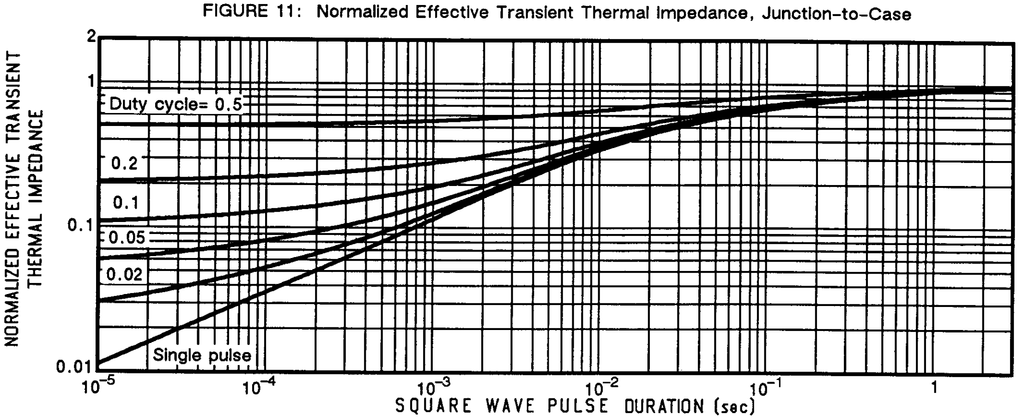


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case



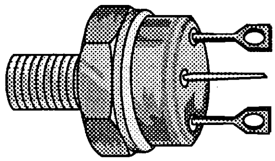
Siliconix incorporated

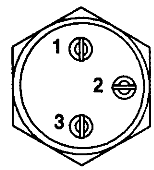
MOSPOWER

2N6965

N-Channel Enhancement Mode Transistor
Parametric limits in accordance with MIL-S-19500/568 where applicable

TOP VIEW





TO-210AC (TO-61)
ISOLATED CASE

1 SOURCE
2 GATE
3 DRAIN

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (VOLTS)	$r_{DS(on)}$ (OHMS)	I_D (AMPS)
2N6965	500	0.40	13

ABSOLUTE MAXIMUM RATINGS (T_C= 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	2N6965	Units
Drain-Source Voltage		V_{DS}	500	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	T_C = 25°C	I_D	13	A
	T_C = 100°C		8.3	
Pulsed Drain Current[1]		I_{DM}	50	
Avalanche Current		I_A	5.9	
Power Dissipation	T_C = 25°C	P_D	150	W
	T_C = 100°C		60	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}	-	0.83	K/W
Junction-to-Ambient	R_{thJA}	-	40	
Case-to-Sink	R_{thCS}	0.4	-	

[1]Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
This device contains beryllium oxide

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage V_{GS} = 0, I_D = 250 µA		$V_{(BR)DSS}$	500	-	-	V
Gate Threshold Voltage $V_{DS} = V_{GS}$, I_D = 250 µA		$V_{GS(th)}$	2.0	-	4.0	V
Gate-Body Leakage V_{DS} = 0, V_{GS} = ±20 V		I_{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0		I_{DSS}	-	-	250	µA
Zero Gate Voltage Drain Current V_{DS} = 0.8 x $V_{(BR)DSS}$, V_{GS} = 0, T_J =125°C		I_{DSS}	-	-	250	µA
On-State Drain Current[2] V_{DS} = 5.2 V, V_{GS} = 10 V		$I_{D(on)}$	13	-	-	A
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 8.3 A		$r_{DS(on)}$	-	0.30	0.40	Ω
Drain-Source On-State Resistance[2] V_{GS} = 10 V, I_D = 8.3 A, T_J = 125°C		$r_{DS(on)}$	-	0.60	0.88	Ω
Forward Transconductance[2] V_{DS} = 15 V, I_D = 8.3 A		g_{fs}	8	10	24	S(℧)
Input Capacitance	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	2700	3200	pF
Output Capacitance		C_{oss}	-	410	700	pF
Reverse Transfer Capacitance		C_{rss}	-	140	250	pF
Total Gate Charge	V_{DS} = 0.5 x $V_{(BR)DSS}$, V_{GS} = 10 V, I_D = 13 A (Gate charge is essentially independent of operating temperature)	Q_g	55	75	124	nC
Gate-Source Charge		Q_{gs}	5.2	12	15	nC
Gate-Drain Charge		Q_{gd}	27	35	61	nC
Turn-On Delay Time	V_{DD} = 210 V, R_L = 25 Ω, I_D = 7.75 A, V_{GEN} = 10 V, R_G = 4.7 Ω (Switching time is essentially independent of operating temperature)	$t_{d(on)}$	-	13	35	ns
Rise Time		t_r	-	26	50	ns
Turn-Off Delay Time		$t_{d(off)}$	-	55	150	ns
Fall Time		t_f	-	17	70	ns

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	Min.	Typ.	Max.	Units
Continuous Current	I_S	-	-	13	A
Pulsed Current[1]	I_{SM}	-	-	52	A
Forward Voltage[2] $I_F = I_S$, V_{GS} = 0	V_{SD}	0.6	-	1.6	V
Reverse Recovery Time $I_F = I_S$, dI_F/dt = 100 A/µs	t_{rr}	-	300	1000	ns
Reverse Recovered Charge $I_F = I_S$, dI_F/dt = 100 A/µs	Q_{rr}	-	2.0	-	µC

[1] Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)
[2] Pulse test: Pulse width ≤ 300 µsec, Duty Cycle ≤ 2%

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

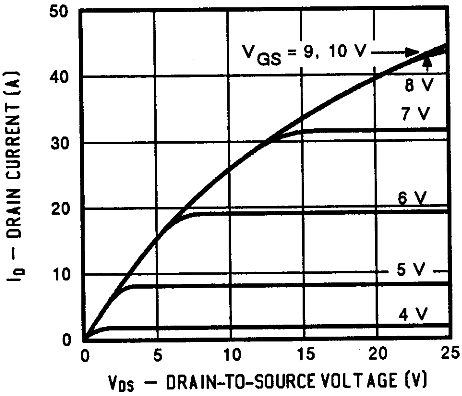


FIGURE 2: Typical Transfer Characteristics

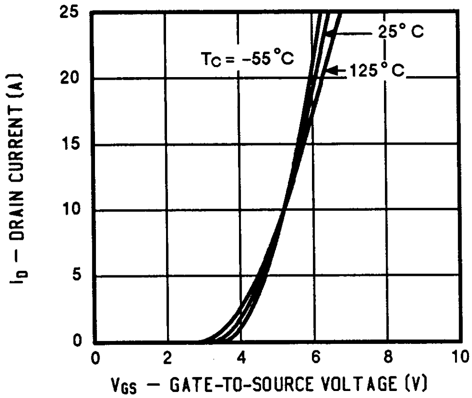


FIGURE 3: Typical Transconductance

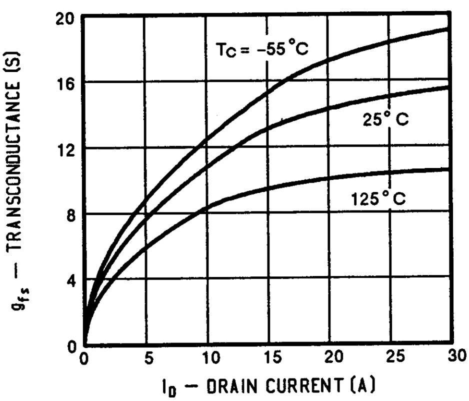


FIGURE 4: Typical On-Resistance

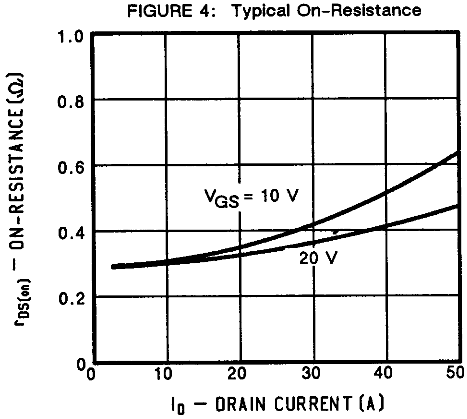


FIGURE 5: Typical Capacitance

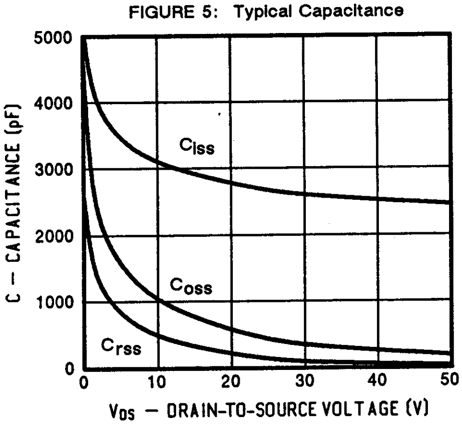
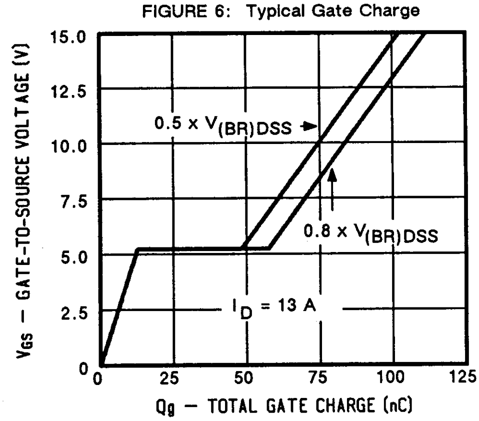


FIGURE 6: Typical Gate Charge



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Siliconix incorporated

PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

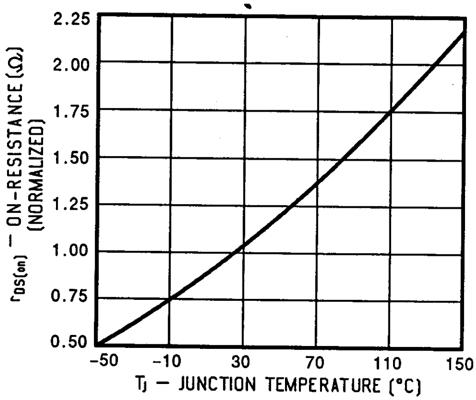


FIGURE 8: Typical Source-Drain Diode Forward Voltage

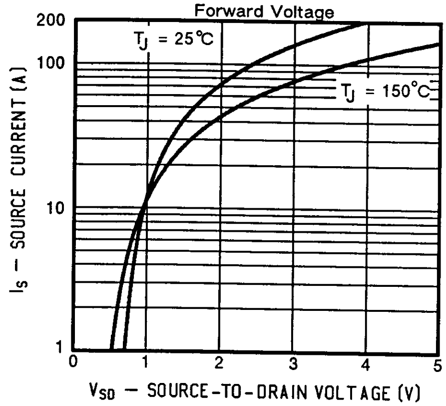


FIGURE 9: Maximum Drain Current vs. Case Temperature

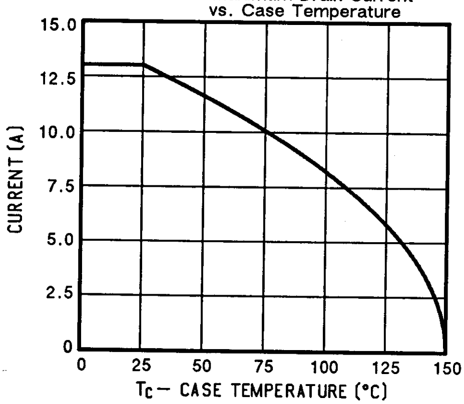
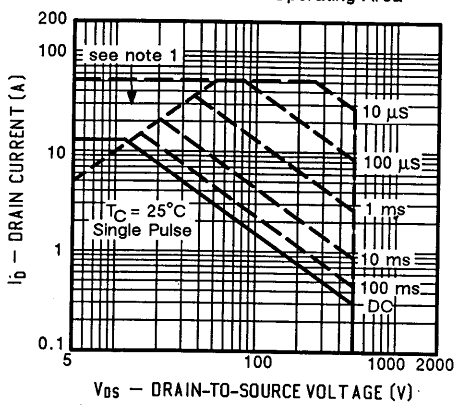


FIGURE 10: Safe Operating Area



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

FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Case