

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage $V_{GS} = 0, I_D = 10 \mu\text{A}$		$V_{(BR)DSS}$	80	120	-	V
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 1 \text{ mA}$		$V_{GS(th)}$	0.8	1.6	2.0	
Gate-Body Leakage $V_{DS} = 0, V_{GS} = \pm 15 \text{ V}$		$I_{GSS}$	-	$\pm 1$	$\pm 100$	nA
Zero Gate Voltage Drain Current $V_{DS} = 64 \text{ V}, V_{GS} = 0$		$I_{DSS}$	-	0.05	10	$\mu\text{A}$
Zero Gate Voltage Drain Current $V_{DS} = 64 \text{ V}, V_{GS} = 0, T_J = 125^\circ\text{C}$		$I_{DSS}$	-	0.3	500	
On-State Drain Current <sup>2</sup> $V_{DS} = 10 \text{ V}, V_{GS} = 10 \text{ V}$		$I_{D(on)}$	1.5	1.8	-	A
Drain-Source On-State Resistance <sup>2</sup> $V_{GS} = 10 \text{ V}, I_D = 1 \text{ A}$		$r_{DS(on)}$	-	3.6	4	$\Omega$
Drain-Source On-State Resistance <sup>2</sup> $V_{GS} = 10 \text{ V}, I_D = 1 \text{ A}, T_J = 125^\circ\text{C}$		$r_{DS(on)}$	-	6.8	8.0	
Forward Transconductance <sup>2</sup> $V_{DS} = 10 \text{ V}, I_D = 0.5 \text{ A}$		$g_{fs}$	170	350	-	mS
Common Source Output Conductance $V_{DS} = 10 \text{ V}, I_D = 0.5 \text{ A}$		$g_{os}$	-	300	-	$\mu\text{S}$
Input Capacitance	$V_{GS} = 0$ $V_{DS} = 25 \text{ V}$ $f = 1 \text{ MHz}$	$C_{iss}$	-	37	50	pF
Output Capacitance		$C_{oss}$	-	15	40	
Reverse Transfer Capacitance		$C_{rss}$	-	2	10	
Turn-On Time	$V_{DD} = 25 \text{ V}, R_L = 23 \Omega$ $I_D = 1 \text{ A}, V_{GEN} = 10 \text{ V}$ $R_G = 25 \Omega$ (Switching time is essentially independent of operating temperature)	$t_{(on)}$	-	6	10	ns
Turn-Off Time		$t_{(off)}$	-	8	10	

## TO-92 Only

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Continuous Current		$I_S$	-	-	0.29	A
Pulsed Current <sup>1</sup>		$I_{SM}$	-	-	1.6	
Forward Voltage <sup>2</sup> $I_F = I_S = 0.29 \text{ A}, V_{GS} = 0$		$V_{SD}$	-	0.8	1.2	V

<sup>1</sup> Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)<sup>2</sup> Pulse test: Pulse width  $\leq 300 \mu\text{sec}$ , Duty Cycle  $\leq 2\%$

**PERFORMANCE CURVES** (25°C Unless otherwise noted)

FIGURE 1: Typical Output Characteristics

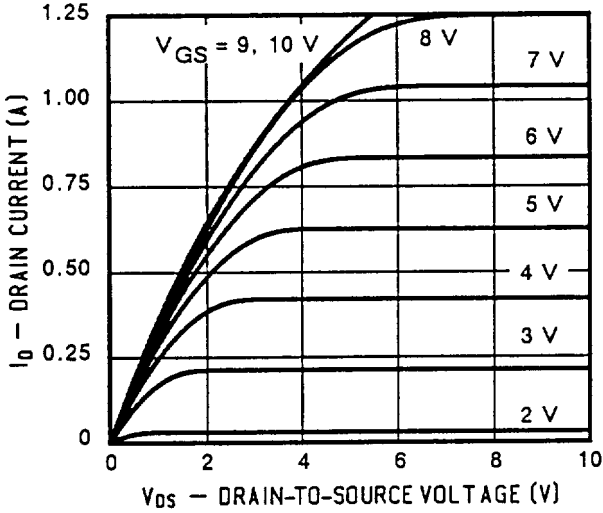


FIGURE 2: Typical Transfer Characteristics

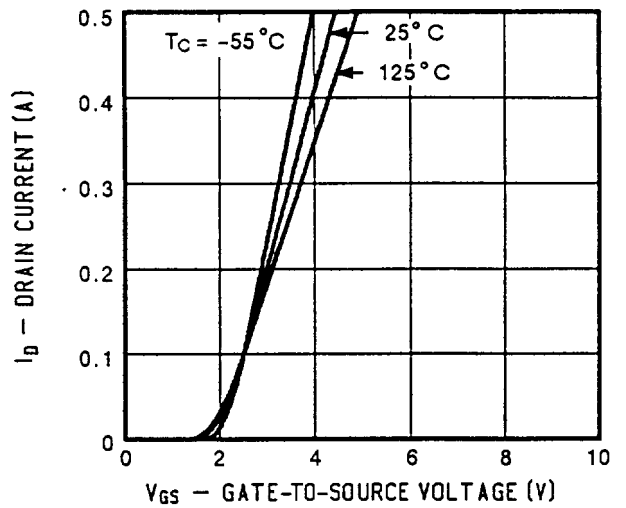


FIGURE 3: Typical Transconductance

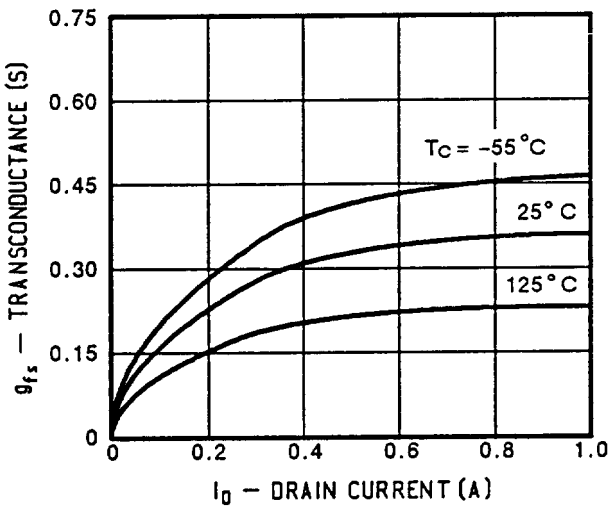


FIGURE 4: Typical On-Resistance

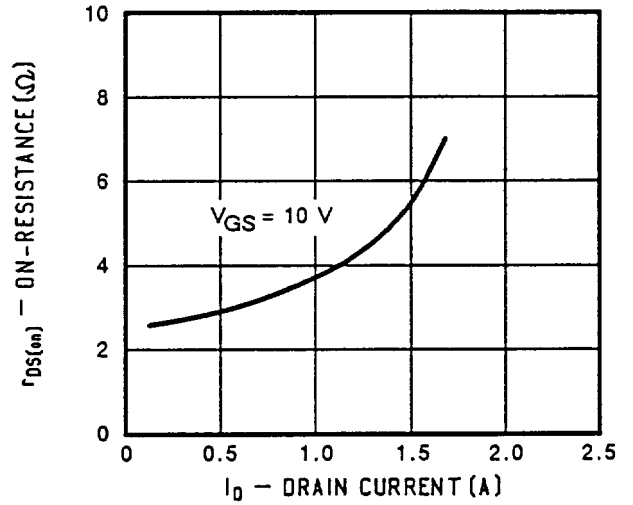


FIGURE 5: Typical Capacitance

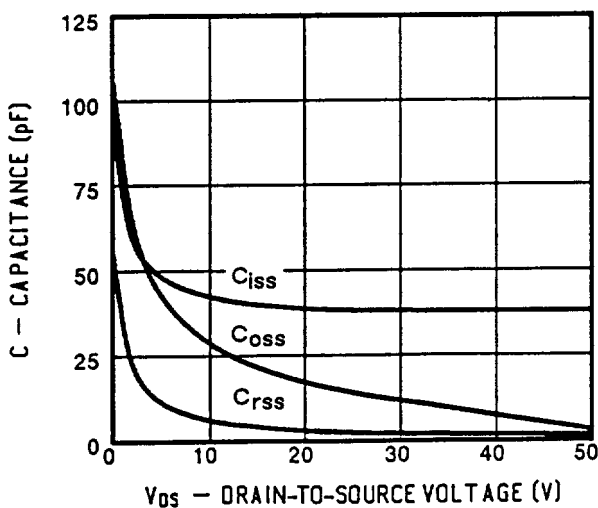
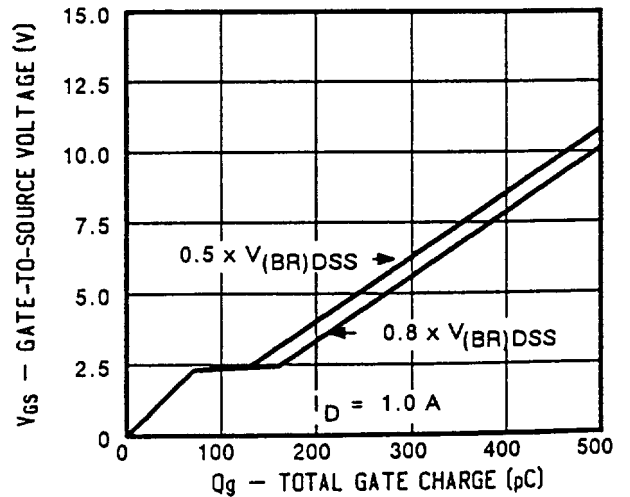


FIGURE 6: Typical Gate Charge



PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 7: On-Resistance vs. Junction Temperature

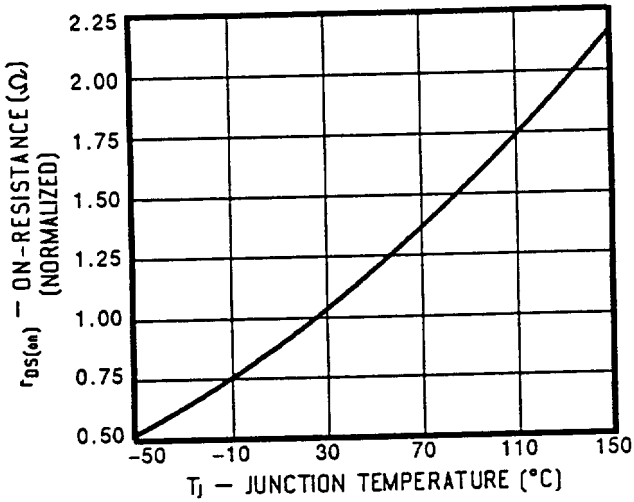


FIGURE 8: Typical Source-Drain Diode Forward Voltage

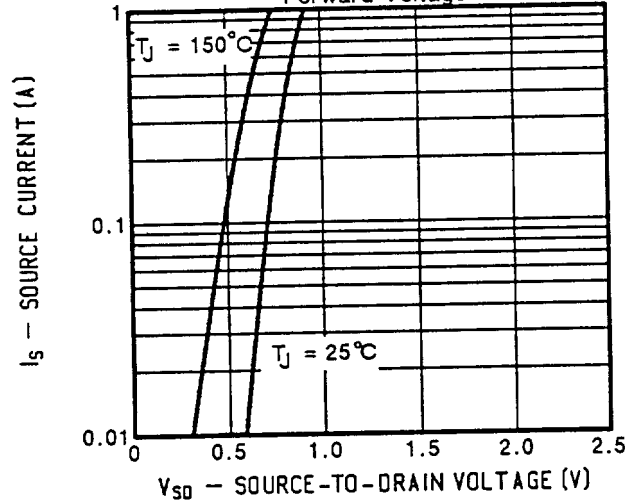


FIGURE 9: Maximum Avalanche and Drain Current vs. Ambient Temperature

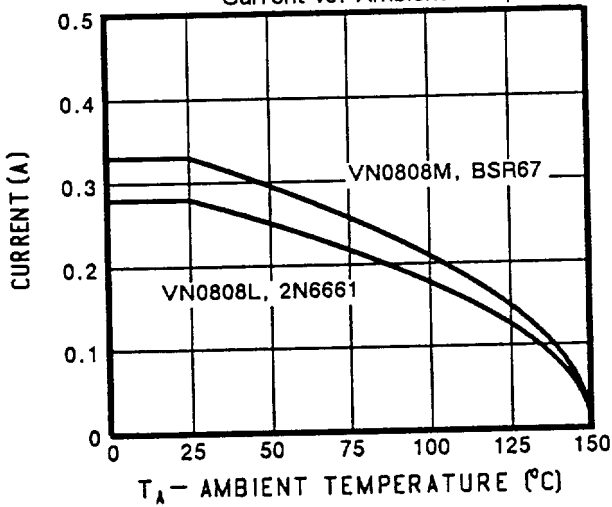


FIGURE 10: Safe Operating Area

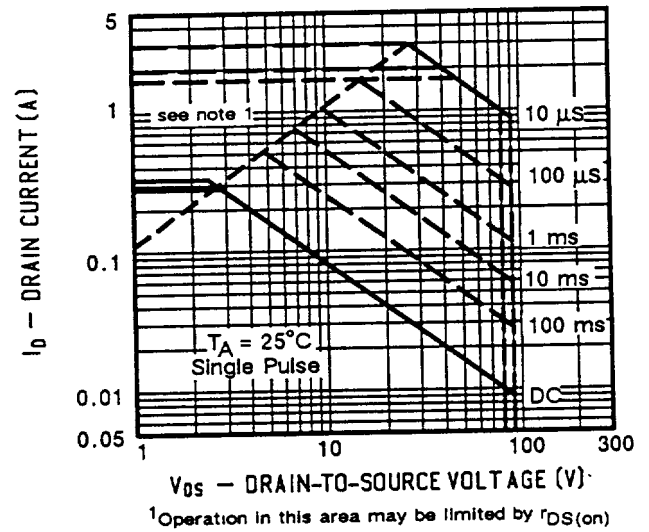
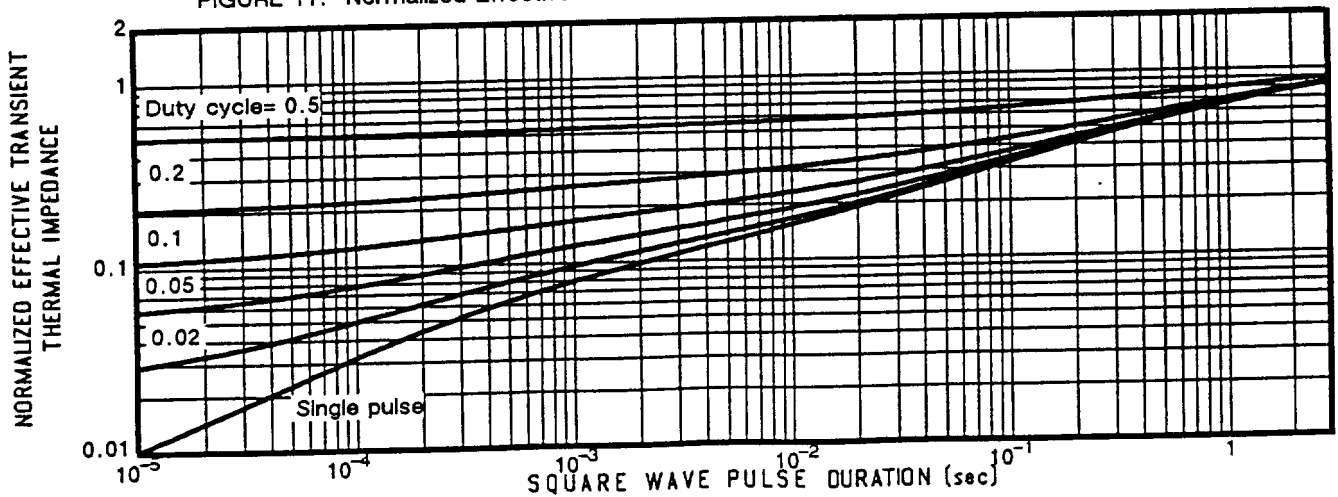


FIGURE 11: Normalized Effective Transient Thermal Impedance, Junction-to-Ambient (TO-92)



**PERFORMANCE CURVES (25°C Unless otherwise noted)**

FIGURE 12: Low Voltage Output Characteristics

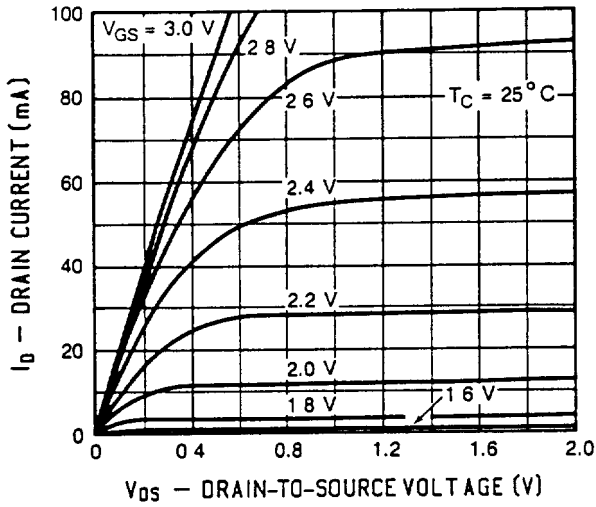


FIGURE 13: Ohmic Region Characteristics

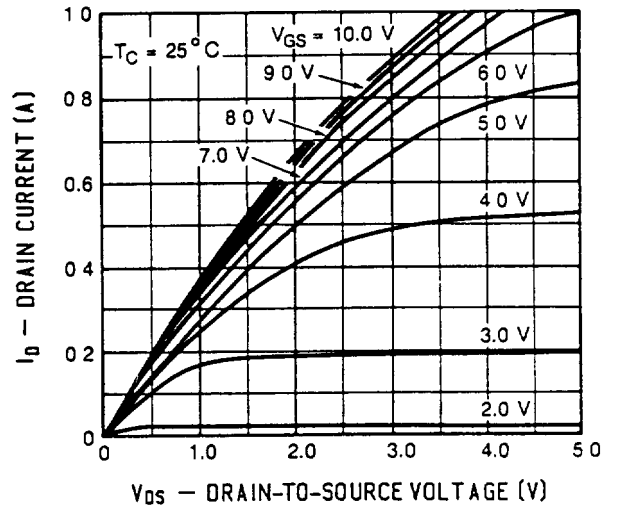


FIGURE 14: On-Resistance vs. Gate to Source Voltage

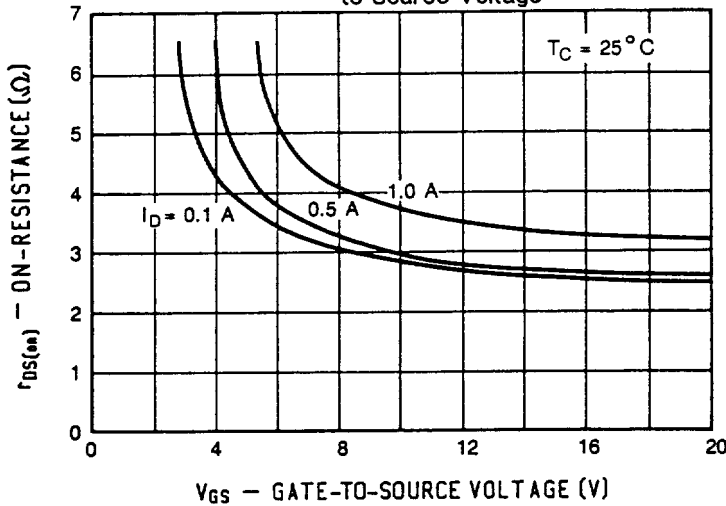


FIGURE 15: Off State Current

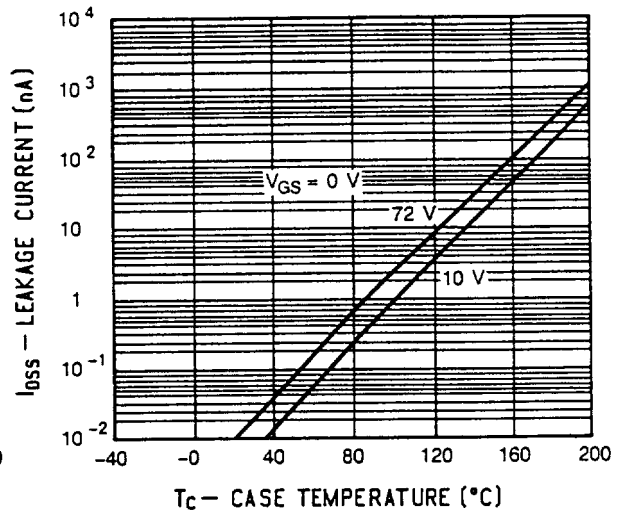


FIGURE 16: Switching Effects on Drive Resistance

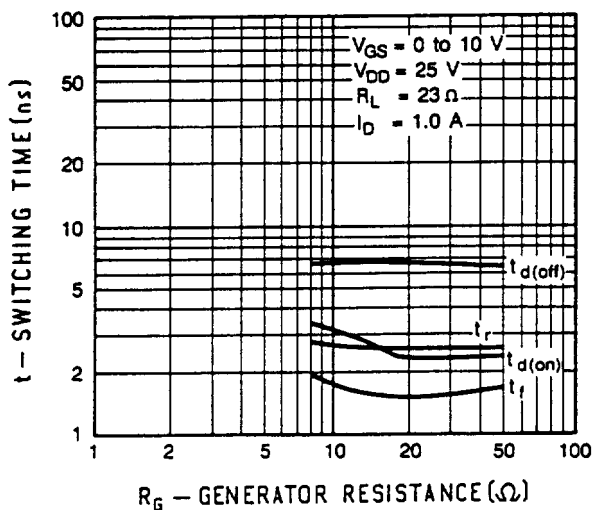
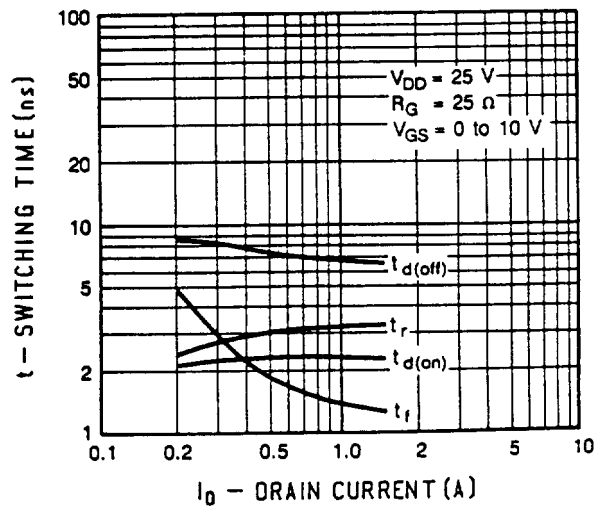


FIGURE 17: Effects on Load Conditions



PERFORMANCE CURVES (25°C Unless otherwise noted)

FIGURE 18: Equivalent Input Noise Voltage vs. Frequency

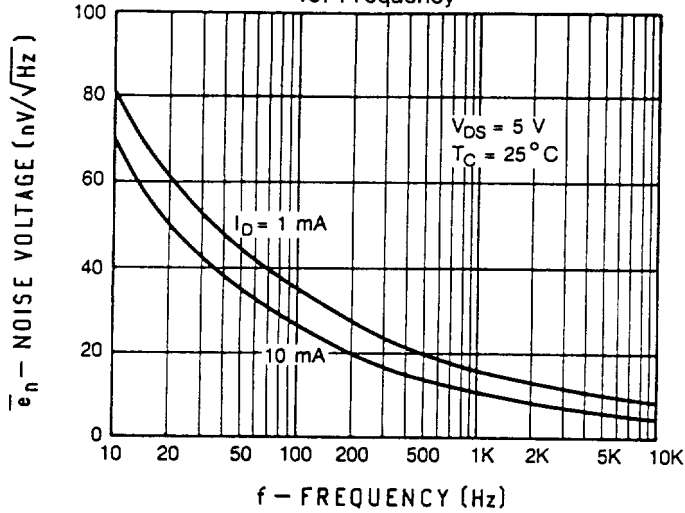


FIGURE 19: Threshold Region

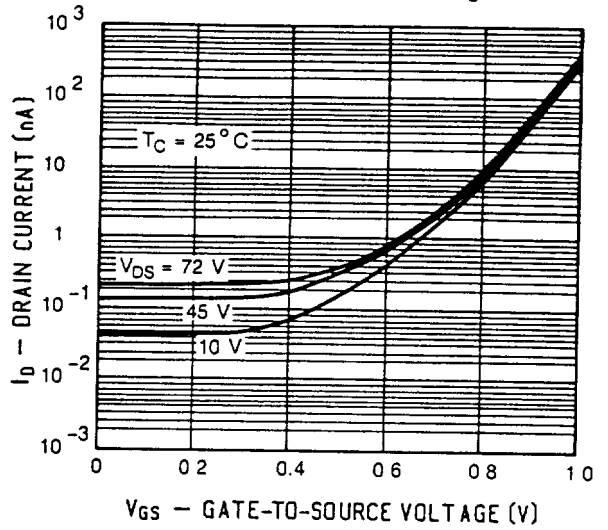


FIGURE 20: Output Conductance vs. Drain Current

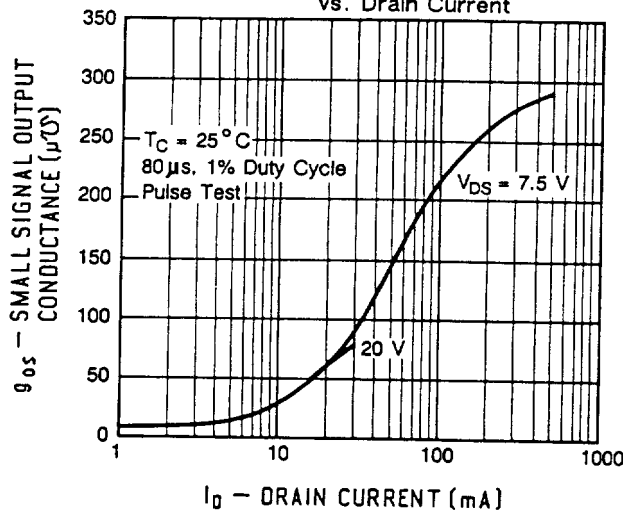
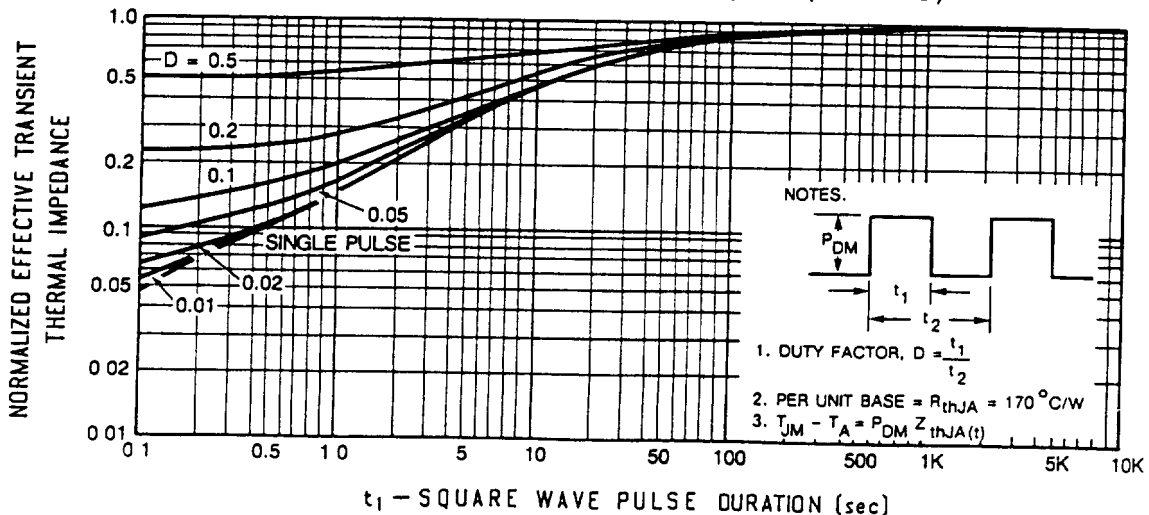
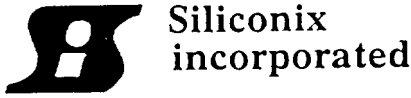


FIGURE 21: Transient Thermal Response (TO-205AD)



352-706



**VN0808L, 2N6661  
VN0808M, BSR67**

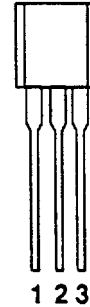
**MOSPOWER**

N-Channel Enhancement Mode Transistors

**PRODUCT SUMMARY**

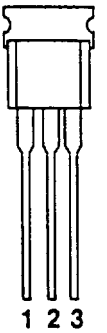
PART NUMBER	V <sub>(BR)DSS</sub> (VOLTS)	r <sub>DS(on)</sub> (OHMS)	I <sub>D</sub> (AMPS)	PACKAGE OPTION
VN0808L	80	4	0.29	TO-92
2N6661	90	4	0.28	TO-205 AD
VN0808M	80	4	0.33	TO-237
BSR67	80	4	0.33	TO-237

TO-92 FRONT VIEW



1 SOURCE  
2 GATE  
3 DRAIN

TO-237 FRONT VIEW



1 SOURCE  
2 GATE  
3 DRAIN

TO-205 AD BOTTOM VIEW



1 DRAIN  
2 GATE  
3 SOURCE

**ABSOLUTE MAXIMUM RATINGS** (T<sub>A</sub> = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	Symbol	VN 0808L	2N 6661	VN 0808M	BSR 67	Units	
Drain-Source Voltage	V <sub>DS</sub>	80	90	80	80	V	
Gate-Source Voltage, Pulsed	V <sub>GS</sub>	± 40	± 40	± 40	± 40		
Continuous Drain Current	I <sub>D</sub>	T <sub>A</sub> = 25°C	0.29	0.28	0.33	0.33	A
		T <sub>A</sub> = 100°C	0.18	0.18	0.21	0.21	
Pulsed Drain Current <sup>1</sup>	I <sub>DM</sub>	1.6	3.0	2.0	2.0		
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> = 25°C	0.80	0.73	1.0	1.0	W
		T <sub>A</sub> = 100°C	0.32	0.29	0.4	0.4	
Operating Junction & Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150				°C	
Lead Temperature (1/16" from case for 10 secs.)	T <sub>L</sub>	300					

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	Symbol	TO-92	TO-205	TO-237	Units
Junction-to-Ambient	R <sub>thJA</sub>	156	170	125	°C/W

<sup>1</sup>Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, figure 11)