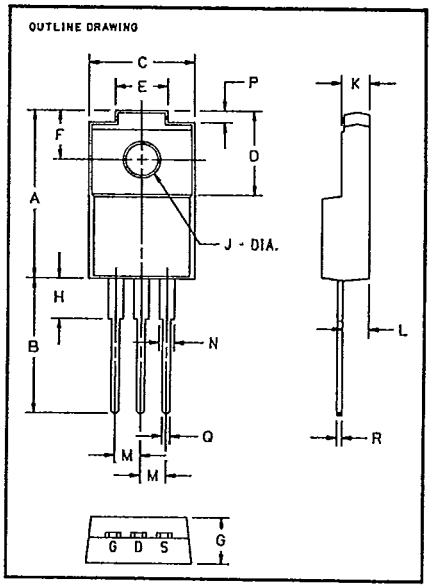
POWEREX

J732
J988 Tentative

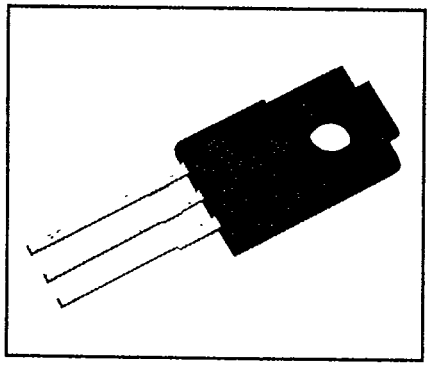
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Single EXMOS™ MOSFET
10 Amperes/450-500 Volts



450-500 Volts J732, J988
Outline Drawing

Dimension	Inches	Millimeters
A	.669±.012	17±0.3
B	.531 Min.	13.5 Min.
C	.413 Max.	10.5 Max.
D	.335±.012	8.5±0.3
E	.205±.008	5.2±0.2
F	.197±.012	5.0±0.3
G	.185 Max.	4.7 Max.
H	.157 Max.	4.0 Max.
J	.126+.008/−.000	3.2+0.2/−0.0
K	.110±.008	2.8±0.2
L	.102±.008	2.6±0.2
M	.100±.010	2.54±0.25
N	.059 Max.	1.5 Max.
P	.047±.012	1.2±0.3
Q	.031±.004	0.8±0.1
R	.020±.004	0.5±0.1



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Single EXMOS™ MOSFET
10 Amperes/450-500 Volts

Description
Powerex Single EXMOS™ MOSFET Transistors are designed for use in applications requiring hi-frequency switching and low loss control.

Features:
- ☐ TO-220F Isolated Package
- ☐ Vertical DMOS Construction
- ☐ Low Drive Requirement
- ☐ No Second Breakdown

Applications:
- ☐ AC Motor Control
- ☐ UPS Inverters
- ☐ Switch Mode Power Supply
- ☐ PWM Regulators

Ordering Information
Select the complete four digit module part number you desire from the table i.e. J988 is a 500 Volt, 10 Ampere Single EXMOS™ MOSFET, and J732 is a 450 Volt, 10 Ampere Single EXMOS™ MOSFET.

Type	V_{DSS} Volts (450-500)	Current Rating Amperes (10)
J732	—	—
J988	—	—

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T-39-11

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Maximum Ratings T_C =25°C unless otherwise specified

Characteristics	Symbol	J732/J988	Units
Junction Temperature	T_J	−55 to 150	°C
Storage Temperature	T_{STG}	−55 to 150	°C
Drain Source Voltage	V_{DSS}	450/500	Volts
Gate-Source Voltage	V_{GSS}	±30	Volts
Continuous Drain Current	I_D	5	Amperes
Continuous Source Current	I_S	5	Amperes
Pulsed Drain Current Repetitive	I_{DM}	30	Amperes
Power Dissipation	P_T	45	Watts
V isolation	V_{RMS}	1500	Volts
Max. Mounting Torque, Mounting Screw (M3)	—	7	in.-lb.

Static Electrical Characteristics T_C, T_J =25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	J732			J988			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}$, $V_{GS}=0V$	—	—	1	—	—	1	mA
Gate Source Leakage Current	$\pm I_{GSS}$	$V_{GS}=\pm 30V$, $V_{DS}=0V$	—	—	0.1	—	—	0.1	μA
Gate Source Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$, $V_{DS}=10V$	2	3	4	2	3	4	Volts
Drain Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V$, $I_D=5A$	—	0.6	0.78	—	0.7	0.9	Ω
Drain Source On State Voltage	$V_{DS(on)}$	$V_{GS}=10V$, $I_D=5A$	—	3.0	3.9	—	3.5	4.5	Volts
Thermal Resistance, Junction to Case	$R_{\theta JC}$	—	—	—	2.78	—	—	2.78	°C/W

Source Drain Diode Characteristics T_C, T_J =25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	J732/J988			Units
			Min.	Typ.	Max.	
Source-Drain Voltage	V_{SD}	$I_S=50A$, $V_{GS}=0V$	—	1.0	—	Volts
Reverse Recovery Time	t_{rr}	$I_S=10A$, $dI_S/dt=-20A/\mu s$, $V_{GS}=0V$	—	900	—	ns

Dynamic Electrical Characteristics T_C, T_J =25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	J732/J988			Units
			Min.	Typ.	Max.	
Forward Transconductance	g_{fs}	$I_D=5A$, $V_{DS}=10V$	2	4	—	mhos
Input Capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=25V$, f=1MHz	—	1300	—	pF
Output Capacitance	C_{oss}		—	230	—	pF
Reverse Transfer Capacitance	C_{rss}		—	80	—	pF
Turn On Time (Note 1)	t_{on}	$V_{DD}=200V$, $I_D=5A$, $V_{GS}=10V$	—	100	200	ns
Turn Off Time (Note 1)	t_{off}	$R_{GEN}=R_{GS}=50\Omega$	—	150	300	ns

Note 1: Turn on Time (t_{on})=Turn on Delay ($t_{d(on)}$)+Rise Time (t_r)
Turn-off Time (t_{off})=Turn Off Delay ($t_{d(off)}$)+Fall Time (t_f)

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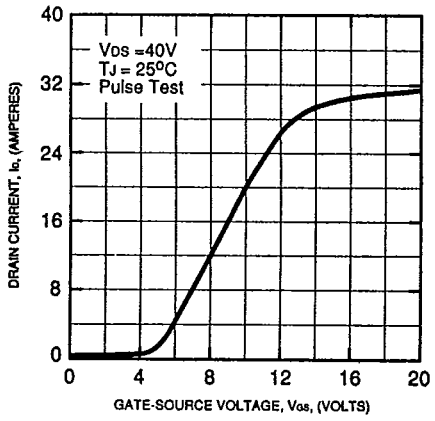
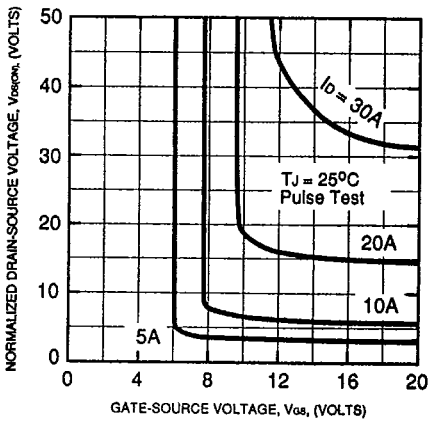
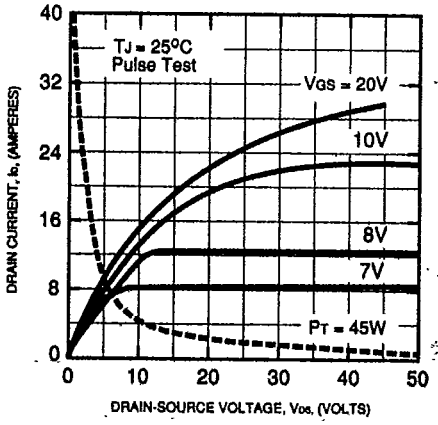
TRANSFER CHARACTERISTICS (TYPICAL) J732



NORMALIZED DRAIN-SOURCE ON-STATE VOLTAGE (TYPICAL) J732



COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) J732



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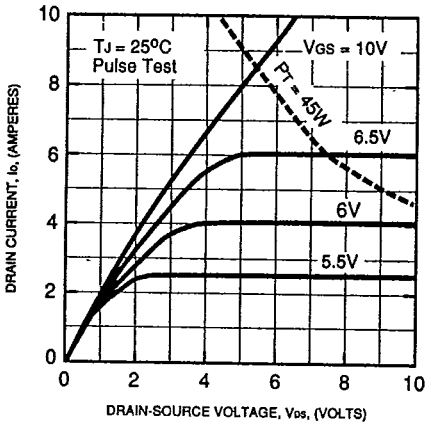
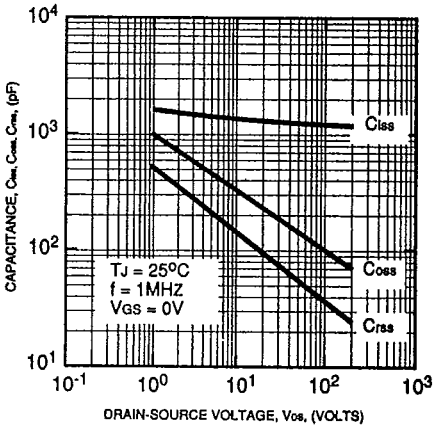
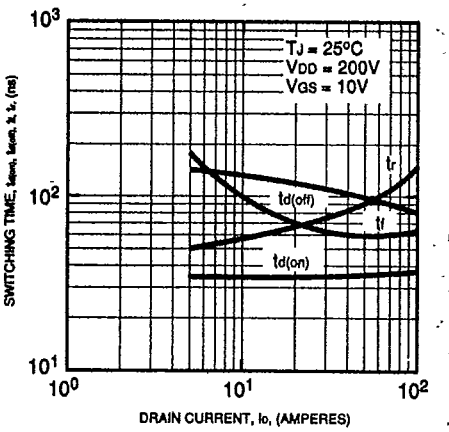


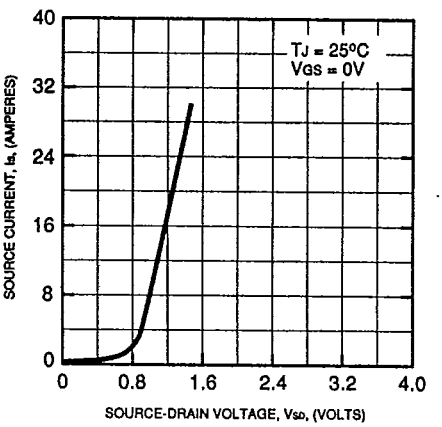
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL) J732



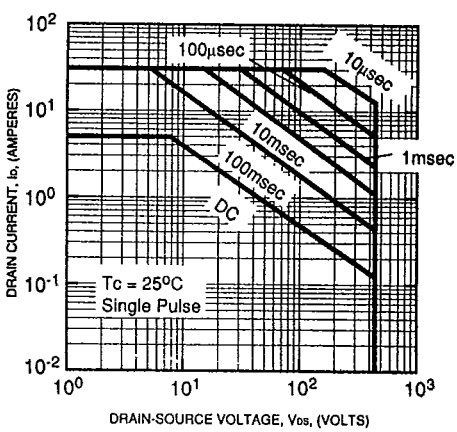
SWITCHING CHARACTERISTICS (TYPICAL) J732



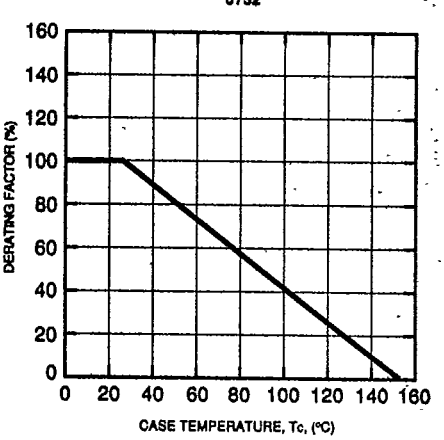
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL) J732



FORWARD BIAS SAFE OPERATING AREA (S.O.A.) J732



TEMPERATURE DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.) J732



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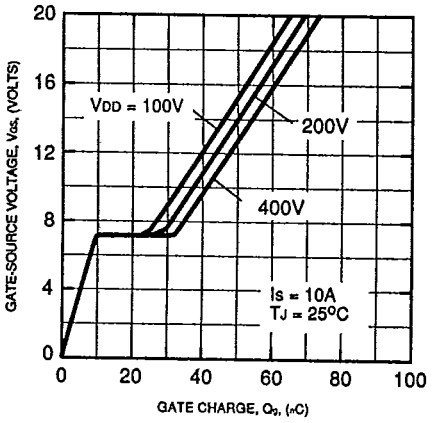
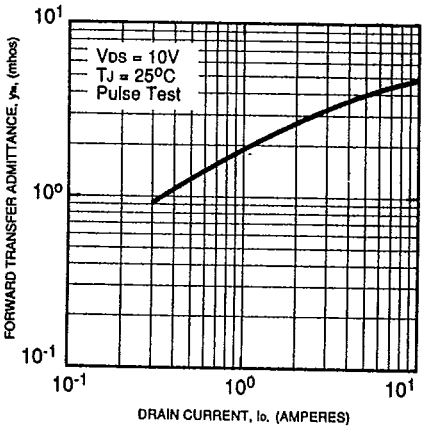
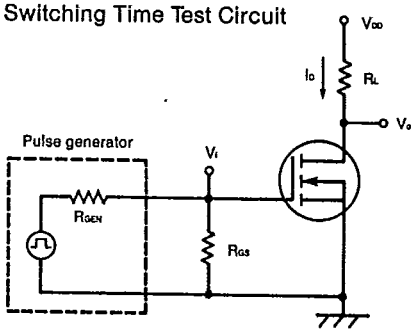
GATE CHARGE VS. V_{GS} (TYPICAL) J732

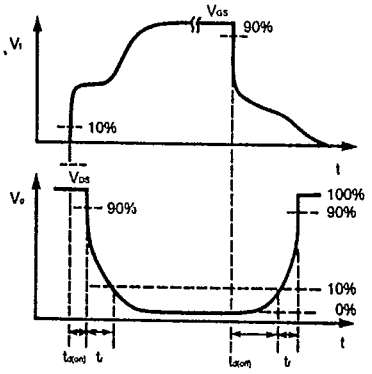


FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL) J732



Switching Time Test Circuit





Notice: MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling should be observed.

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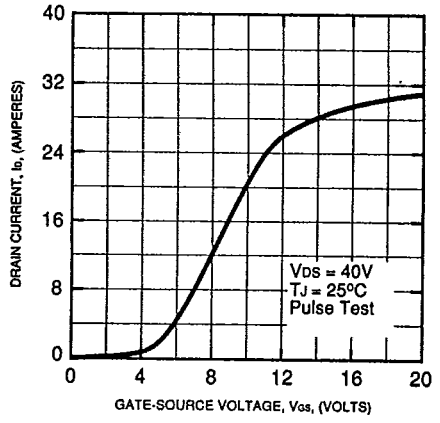
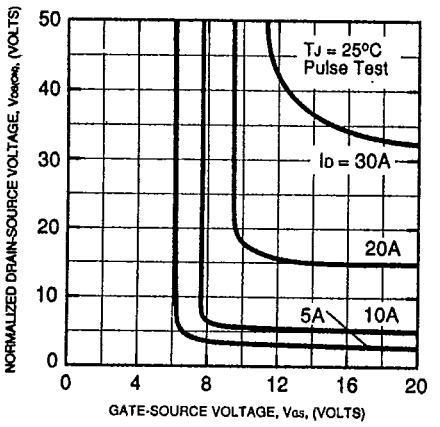
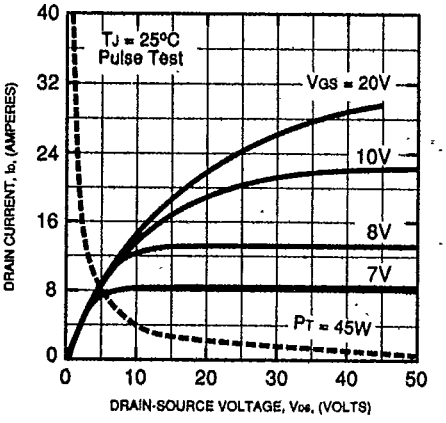


NORMALIZED DRAIN-SOURCE ON-STATE VOLTAGE (TYPICAL) J988



COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) J988



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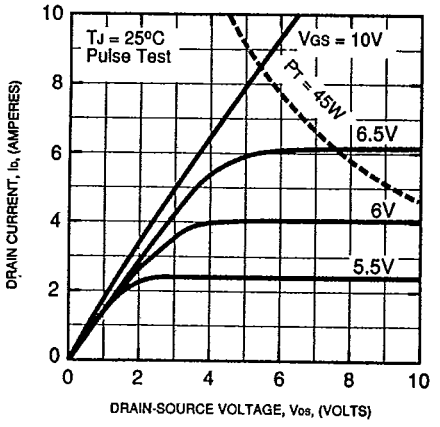
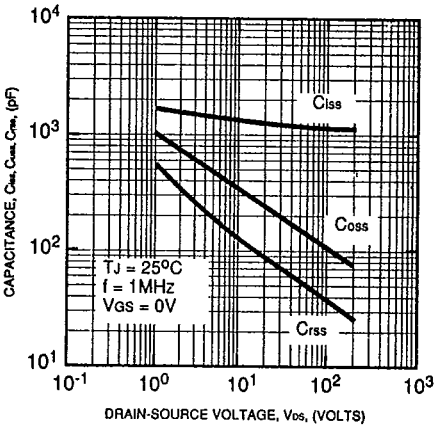
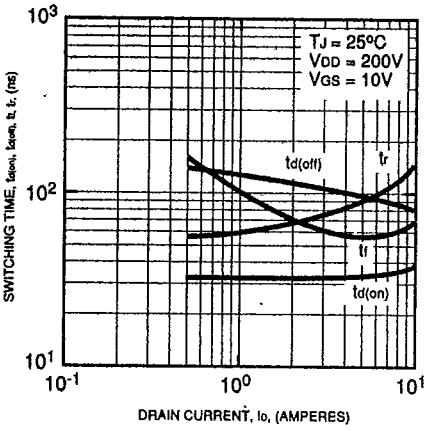


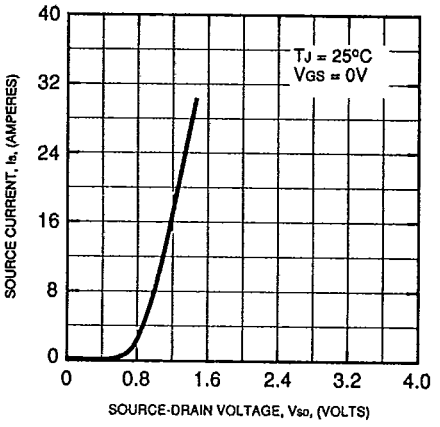
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL) J988



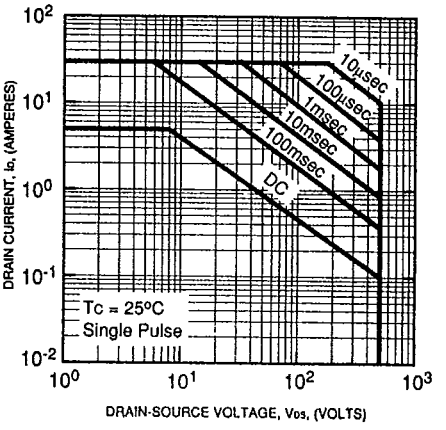
SWITCHING CHARACTERISTICS (TYPICAL) J988



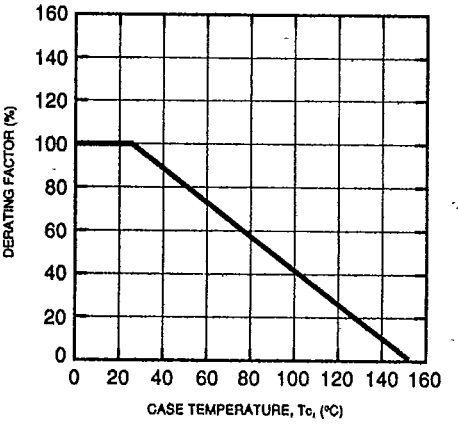
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL) J988



FORWARD BIAS SAFE OPERATING AREA (S.O.A.) J988



TEMPERATURE DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.) J988



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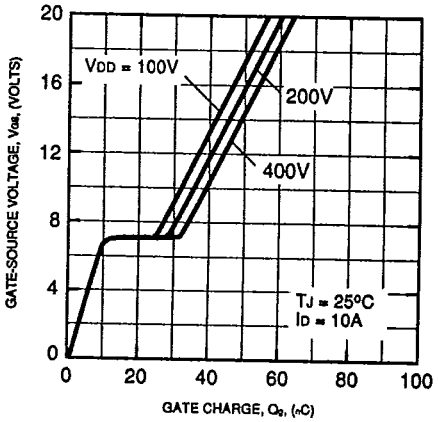
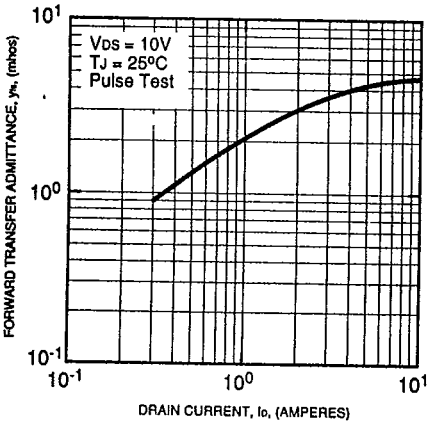
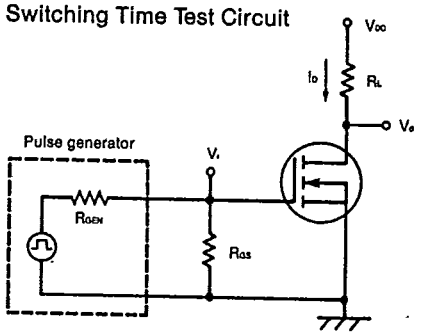
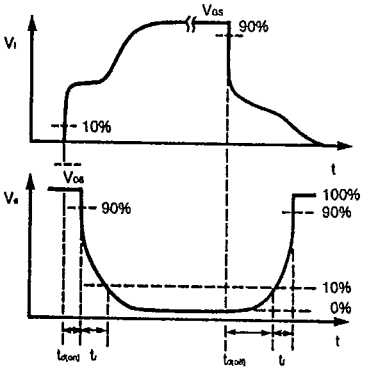


FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)
J988



Switching Time Test Circuit





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