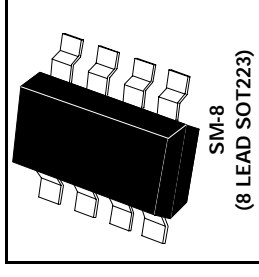
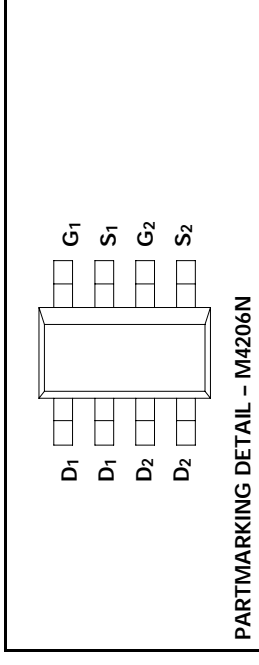


SM-8 DUAL N-CHANNEL ENHANCEMENT MODE AVALANCHE RATED MOSFET

ISSUE 1 - NOVEMBER 1995

ZDM4206N



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	60	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	I_D	1	A
Pulsed Drain Current	I_{DM}	8	A
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Body Diode Current at $T_{amb}=25^{\circ}C$	I_{SD}	1	A
Avalanche Current - Repetitive	I_{AR}	600	mA
Avalanche Energy - Repetitive	E_{AR}	15	mJ
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to +150	$^{\circ}C$

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	UNIT
Total Power Dissipation at $T_{amb} = 25^{\circ}C$ * Any single die "on" Both die "on" equally	P_{tot}	2.25 2.75	W W
Derate above $25^{\circ}C$ * Any single die "on" Both die "on" equally		18 22	mW/ $^{\circ}C$ mW/ $^{\circ}C$
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		55.6 45.5	$^{\circ}C/W$ $^{\circ}C/W$

* The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 2 inches square.

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

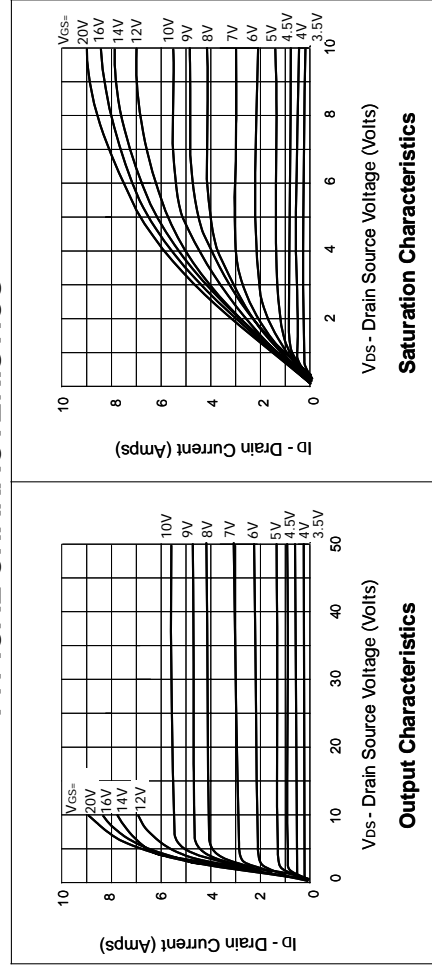
PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	60		V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.3	3	V	$I_D=1mA, V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}		100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}		10 100	μA	$V_{DS}=60V, V_{GS}=0$ $V_{DS}=48V, V_{GS}=0V, T=125^{\circ}C(2)$
On-State Drain Current(1)	$I_{D(on)}$	3		A	$V_{DS}=25V, V_{GS}=10V$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$	1 1.5		Ω	$V_{GS}=10V, I_D=1.5A$ $V_{GS}=5V, I_D=0.5A$
Forward Transconductance(1)(2)	g_{fs}	300		mS	$V_{DS}=25V, I_D=1.5A$
Input Capacitance (2)	C_{iss}		100	pF	
Common Source Output Capacitance (2)	C_{oss}		60	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Reverse Transfer Capacitance (2)	C_{rss}		20	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		8	ns	
Rise Time (2)(3)	t_r		12	ns	$V_{DD} \approx 25V, I_D=1.5A, V_{GEN}=10V$
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		12	ns	
Fall Time (2)(3)	t_f		15	ns	

(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$

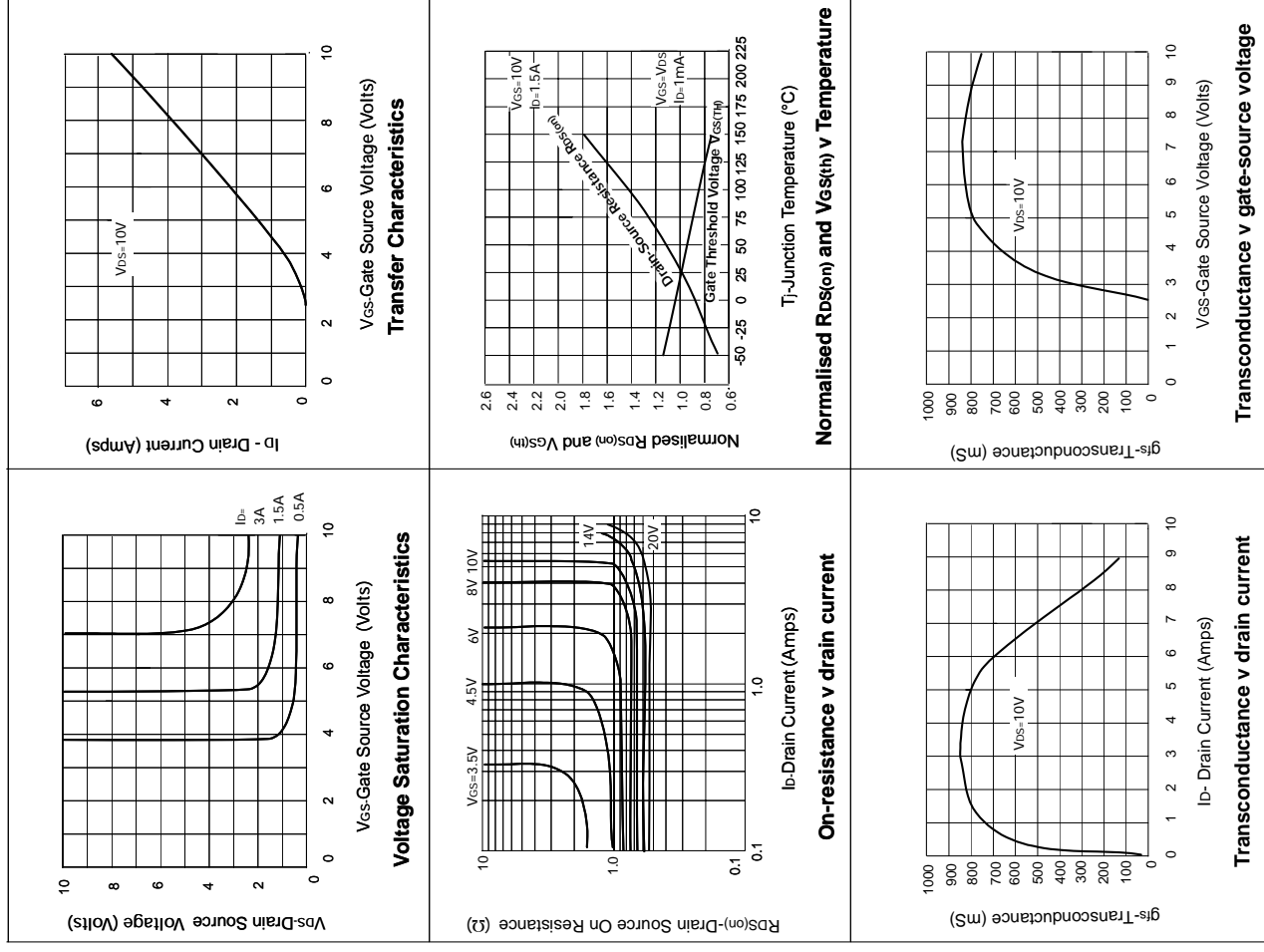
(2) Sample test.

(3) Switching times measured with 50 Ω source impedance and <5ns rise time on a pulse generator

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

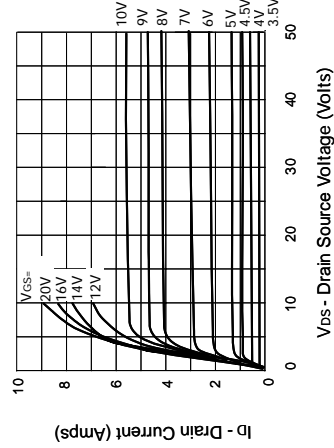
PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	60		V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.3	3	V	$I_D=1mA, V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}		100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
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Input Capacitance (2)	C_{iss}		100	pF	
Common Source Output Capacitance (2)	C_{oss}		60	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Reverse Transfer Capacitance (2)	C_{rss}		20	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		8	ns	
Rise Time (2)(3)	t_r		12	ns	$V_{DD} \approx 25V, I_D=1.5A, V_{GEN}=10V$
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		12	ns	
Fall Time (2)(3)	t_f		15	ns	

(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$

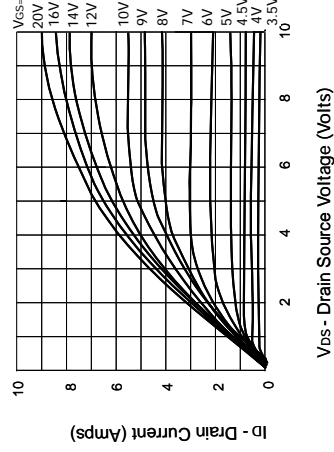
(2) Sample test.

(3) Switching times measured with 50 Ω source impedance and <5ns rise time on a pulse generator

TYPICAL CHARACTERISTICS

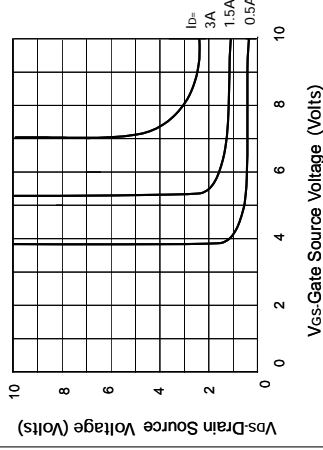


Output Characteristics

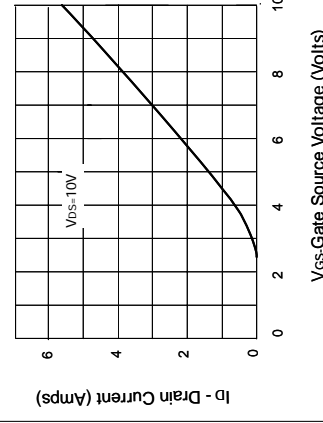


Saturation Characteristics

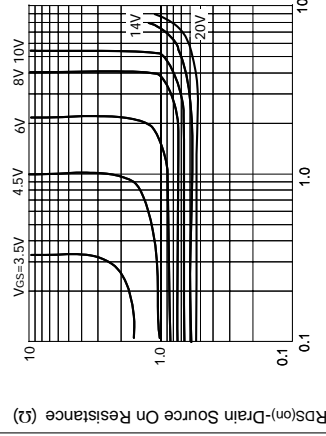
TYPICAL CHARACTERISTICS



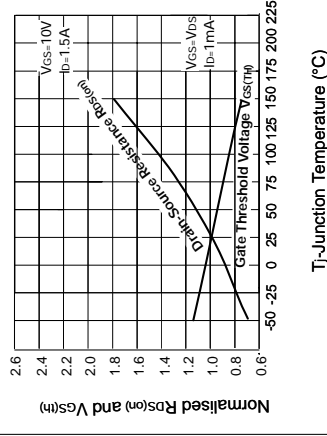
Voltage Saturation Characteristics



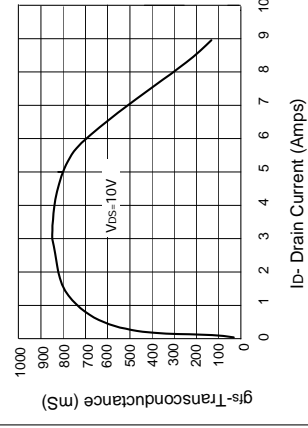
Transfer Characteristics



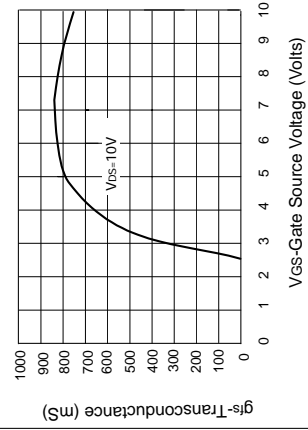
On-resistance v drain current



Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature



Transconductance v drain current



Transconductance v gate-source voltage