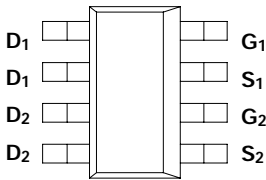


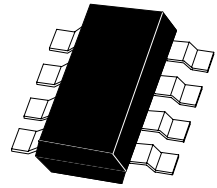
# SM-8 DUAL N-CANNEL ENHANCEMENT MODE MOSFETS

ISSUE 1 - NOVEMBER 1995

## ZDM4306N



PARTMARKING DETAIL - M4306N



SM-8  
(8 LEAD SOT223)

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	60	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	$I_D$	2	A
Pulsed Drain Current	$I_{DM}$	15	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
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	$P_{tot}$	2.5 3.0	W W
Derate above $25^{\circ}C^*$ Any single die "on" Both die "on" equally		20 24	mW/ $^{\circ}C$ mW/ $^{\circ}C$
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		50.0 41.6	$^{\circ}C/W$ $^{\circ}C/W$

\* 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.

### Note:

This data is derived from development material and does not necessarily mean that the device will go into production

# ZDM4306N

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

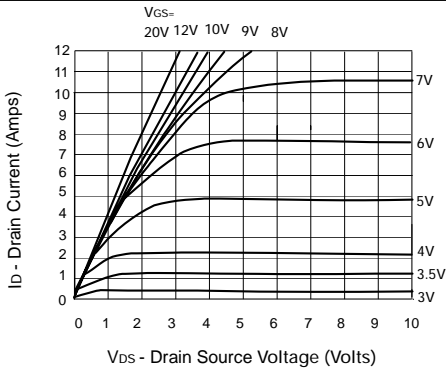
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$V_{DSS}$	60			V	$I_D=1\text{mA}, V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.3		3	V	$I_D=1\text{mA}, V_{DS}=V_{GS}$
Gate-Body Leakage	$I_{GSS}$			100	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$			10 100	$\mu\text{A}$ $\mu\text{A}$	$V_{DS}=60\text{V}, V_{GS}=0$ $V_{DS}=48\text{V}, V_{GS}=0\text{V}, T=125^{\circ}\text{C}(2)$
On-State Drain Current(1)	$I_{D(on)}$	12			A	$V_{DS}=10\text{V}, V_{GS}=10\text{V}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		0.22 0.32	0.33 0.45	$\Omega$ $\Omega$	$V_{GS}=10\text{V}, I_D=3\text{A}$ $V_{GS}=5\text{V}, I_D=1.5\text{A}$
Forward Transconductance (1)(2)	$g_{fs}$	700			mS	$V_{DS}=25\text{V}, I_D=3\text{A}$
Input Capacitance (2)	$C_{iss}$			350	pF	
Common Source Output Capacitance (2)	$C_{oss}$			140	pF	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$
Reverse Transfer Capacitance (2)	$C_{rss}$			30	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$			8	ns	$V_{DD}\approx 25\text{V}, V_{GEN}=10\text{V}, I_D=3\text{A}$
Rise Time (2)(3)	$t_r$			25	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$			30	ns	
Fall Time (2)(3)	$t_f$			16	ns	

1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

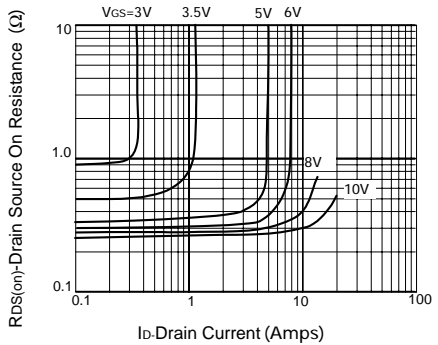
(2) Sample test.

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

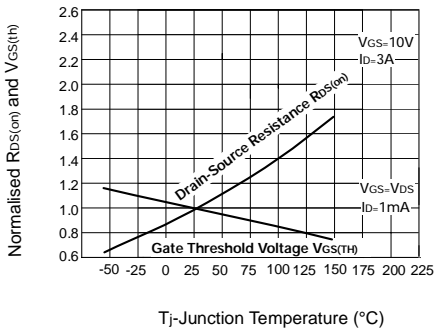
## TYPICAL CHARACTERISTICS



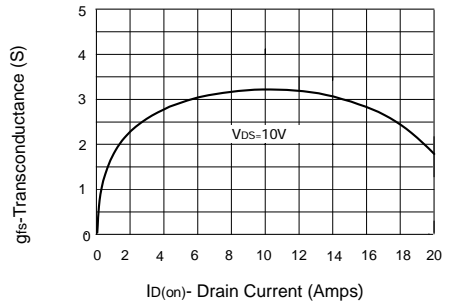
**Saturation Characteristics**



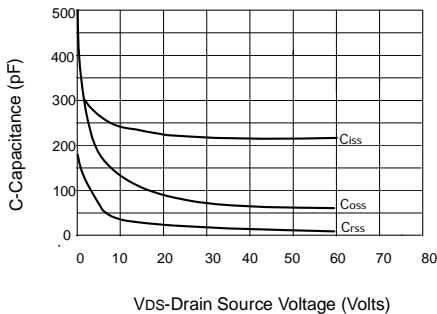
**On-resistance v drain current**



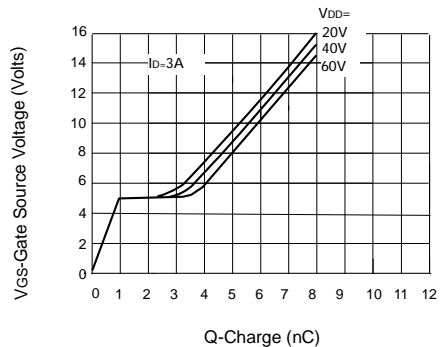
**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  v Temperature**



**Transconductance v drain current**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**