



# TSM9926D

## 20V Dual N-Channel Enhancement Mode MOSFET

SOP-8



Pin assignment:

1. Source
2. Gate
3. Source
4. Gate
- 5, 6, 7, 8. Drain

$V_{DS} = 20V$

$R_{DS(on)}, V_{GS} @ 4.5V, I_{DS} @ 6A = 30m\Omega$

$R_{DS(on)}, V_{GS} @ 2.5V, I_{DS} @ 5.2A = 40m\Omega$

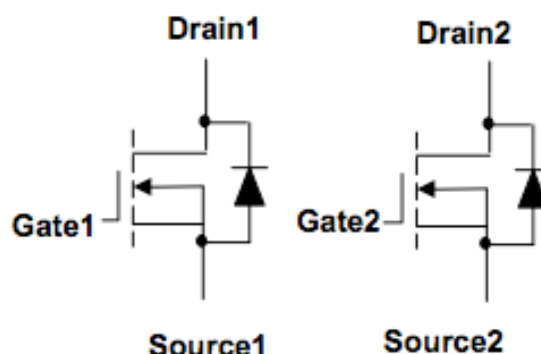
### Features

- ◇ Advanced trench process technology
- ◇ High density cell design for ultra low on-resistance
- ◇ Excellent thermal and electrical capabilities
- ◇ Surface mount
- ◇ Fast switching

### Ordering Information

Part No.	Packing	Package
TSM9926DCS	Tape & Reel	SOP-8

### Block Diagram



### Absolute Maximum Rating (Ta = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V	
Continuous Drain Current, $V_{GS} @ 4.5V$ .	$I_D$	6	A	
Pulsed Drain Current, $V_{GS} @ 4.5V$	$I_{DM}$	30	A	
Maximum Power Dissipation	$P_D$	Ta = 25 °C	1.3	W
		Ta = 25 °C (Peak)	2	W
Operating Junction Temperature	$T_J$	+150	°C	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to +150	°C	

### Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta ja}$	100	°C/W

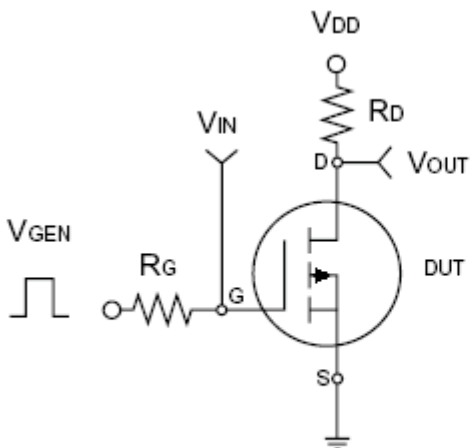
Note: Surface mounted on FR4 board  $t \leq 5sec$ .

### Electrical Characteristics (per channel)

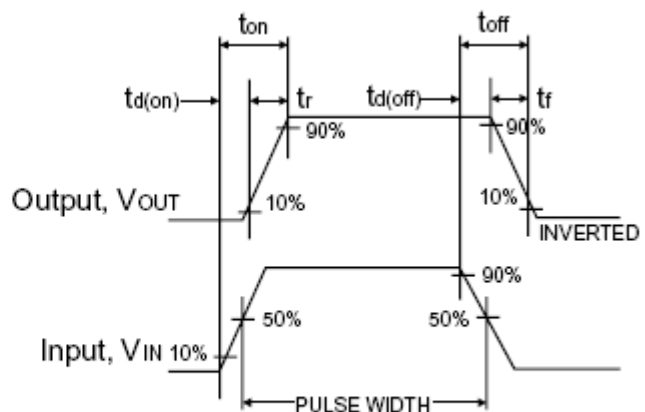
Ta = 25 °C unless otherwise noted

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	$BV_{DSS}$	20	--	--	V
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 6A$	$R_{DS(ON)}$	--	21	30	mΩ
Drain-Source On-State Resistance	$V_{GS} = 2.5V, I_D = 5.2A$	$R_{DS(ON)}$	--	30	40	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	0.6	--	--	V
Zero Gate Voltage Drain Current	$V_{DS} = 20V, V_{GS} = 0V$	$I_{DSS}$	--	--	1.0	μA
Gate Body Leakage	$V_{GS} = \pm 12V, V_{DS} = 0V$	$I_{GSS}$	--	--	±100	nA
Forward Transconductance	$V_{DS} = 10V, I_D = 6A$	$g_{fs}$	7	13	--	S
<b>Dynamic</b>						
Total Gate Charge	$V_{DS} = 10V, I_D = 6A,$ $V_{GS} = 4.5V$	$Q_g$	--	7.1	--	nC
Gate-Source Charge		$Q_{gs}$	--	1.96	--	
Gate-Drain Charge		$Q_{gd}$	--	2.94	--	
Turn-On Delay Time	$V_{DD} = 10V, R_L = 10\Omega,$ $I_D = 1A, V_{GEN} = 4.5V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	4.9	--	nS
Turn-On Rise Time		$t_r$	--	2.6	--	
Turn-Off Delay Time		$t_{d(off)}$	--	15.7	--	
Turn-Off Fall Time		$t_f$	--	14	--	
Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$	$C_{iss}$	--	620	--	pF
Output Capacitance		$C_{oss}$	--	124	--	
Reverse Transfer Capacitance		$C_{rss}$	--	95	--	
<b>Source-Drain Diode</b>						
Max. Diode Forward Current		$I_S$	--	--	1.7	A
Diode Forward Voltage	$I_S = 1.7A, V_{GS} = 0V$	$V_{SD}$	--	--	1.2	V

Note : pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

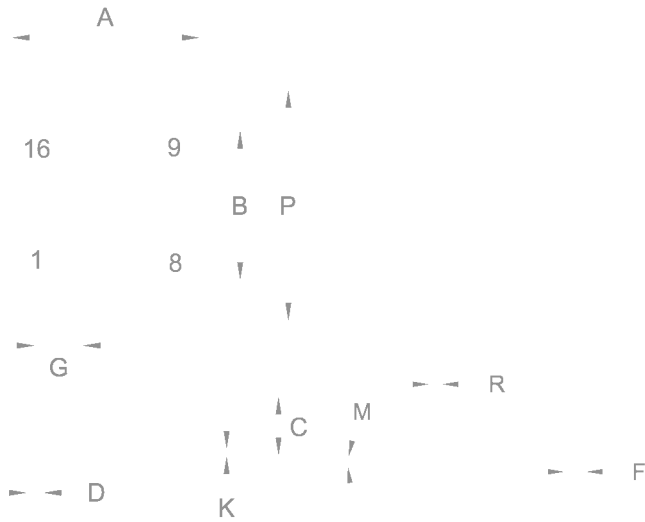


Switching Test Circuit



Switchin Waveforms

## SOP-8 Mechanical Drawing



SOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 (typ)		0.05 (typ)	
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019