



TSM9926D

20V Dual N-Channel Enhancement Mode MOSFET

SOT-26



Pin assignment:

1. Gate 1
2. Drain
3. Gate 2
4. Source 2
5. Drain
6. Source 1

$V_{DS} = 20V$

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

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

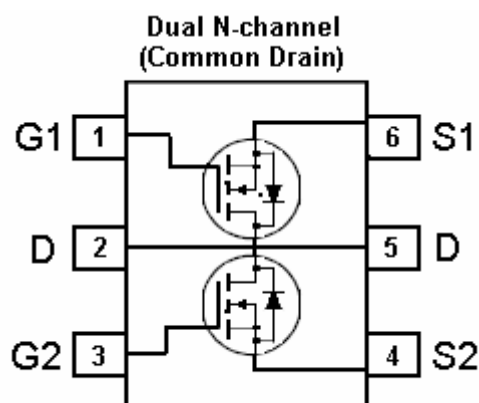
Features

- ◇ 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 |
|-------------|-------------|---------|
| TSM9926DCX6 | Tape & Reel | SOT-26 |

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} | ± 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 | 1.25 | 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

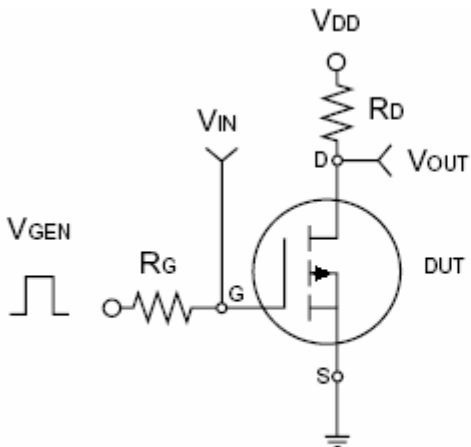
| Parameter | Symbol | Limit | Unit |
|--|-----------------|-------|------|
| Junction to Ambient Thermal Resistance (PCB mounted) | $R_{\theta ja}$ | 100 | °C/W |

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

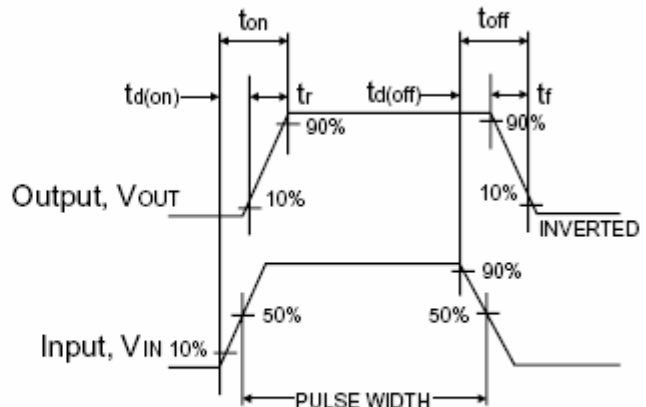


| Electrical Characteristics (per channel) | | | | | | |
|--|---|--------------|-----|------|-------|------|
| Ta = 25 °C unless otherwise noted | | | | | | |
| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{GS} = 0V, I_D = 250\mu A$ | 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 |
| Dynamic | | | | | | |
| 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 | -- | |
| Source-Drain Diode | | | | | | |
| 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 $\leq 2\%$

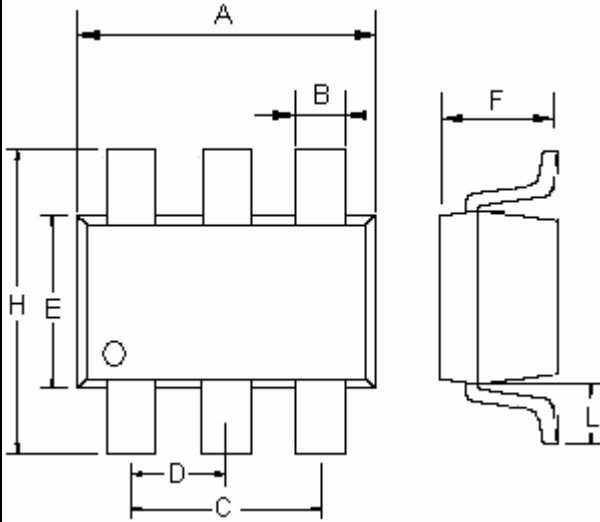


Switching Test Circuit



Switchin Waveforms

SOT-26 Mechanical Drawing



| SOT-26 DIMENSION | | | | |
|------------------|-------------|------|------------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 2.70 | 3.00 | 0.106 | 0.118 |
| B | 0.25 | 0.50 | 0.010 | 0.020 |
| C | 1.90(typ) | | 0.075(typ) | |
| D | 0.95(typ) | | 0.037(typ) | |
| E | 1.50 | 1.70 | 0.059 | 0.067 |
| F | 1.05 | 1.35 | 0.041 | 0.053 |
| H | 2.60 | 3.00 | 0.102 | 0.118 |
| L | 0.60(typ) | | 0.024(typ) | |