

SOP-8



Pin Definition:

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

PRODUCT SUMMARY

| V_{DS} (V) | $R_{DS(on)}$ (m Ω) | I_D (A) |
|--------------|----------------------------|-----------|
| -30 | 25 @ $V_{GS} = -10V$ | -7.1 |
| | 41 @ $V_{GS} = -4.5V$ | -5.5 |

Features

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

Application

- Load Switches
- Notebook PCs
- Desktop PCs

Ordering Information

| Part No. | Package | Packing |
|---------------|---------|--------------------|
| TSM4925DCS RL | SOP-8 | 2.5Kpcs / 13" Reel |

Block Diagram



Dual P-Channel MOSFET

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

| Parameter | Symbol | Limit | Unit |
|-------------------------------------------------------------|----------------|--------------|------|
| Drain-Source Voltage | V_{DS} | -30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | -7.1 | A |
| Pulsed Drain Current | I_{DM} | -40 | A |
| Continuous Source Current (Diode Conduction) ^{a,b} | I_S | -1.7 | A |
| Maximum Power Dissipation | P_D | Ta = 25°C | 2.0 |
| | | Ta = 75°C | 1.3 |
| 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 Case Thermal Resistance | $R_{\theta JC}$ | 30 | °C/W |
| Junction to Ambient Thermal Resistance (PCB mounted) | $R_{\theta JA}$ | 50 | °C/W |

Notes:

- Pulse width limited by the Maximum junction temperature
- Surface Mounted on FR4 Board, $t \leq 10$ sec.

Electrical Specifications (Ta = 25°C unless otherwise noted)

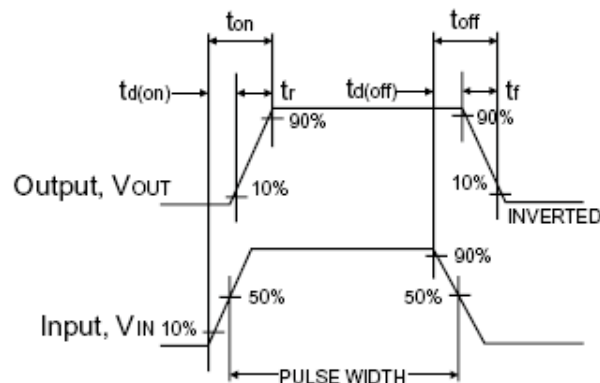
| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|-----------------------------------------------|---------------------------------------------------------------------------|--------------|-----|------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{GS} = 0V, I_D = -250\mu A$ | BV_{DSS} | -30 | -- | -- | V |
| Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = -250\mu A$ | $V_{GS(TH)}$ | -1 | -- | -3 | V |
| Gate Body Leakage | $V_{GS} = \pm 20V, V_{DS} = 0V$ | I_{GSS} | -- | -- | ± 100 | nA |
| Zero Gate Voltage Drain Current | $V_{DS} = -30V, V_{GS} = 0V$ | I_{DSS} | -- | -- | -1.0 | μA |
| On-State Drain Current ^a | $V_{DS} = -5V, V_{GS} = -10V$ | $I_{D(ON)}$ | -40 | -- | -- | A |
| Drain-Source On-State Resistance ^a | $V_{GS} = -10V, I_D = -7.1A$ | $R_{DS(ON)}$ | -- | 20 | 25 | m Ω |
| | $V_{GS} = -4.5V, I_D = -5.5A$ | | -- | 33 | 41 | |
| Forward Transconductance ^a | $V_{DS} = -10V, I_D = -7.1A$ | g_{fs} | -- | 24 | -- | S |
| Diode Forward Voltage | $I_S = -1.7A, V_{GS} = 0V$ | V_{SD} | -- | -0.8 | -1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | $V_{DS} = -15V, I_D = -7.1A, V_{GS} = -10V$ | Q_g | -- | 33 | 70 | nC |
| Gate-Source Charge | | Q_{gs} | -- | 5.8 | -- | |
| Gate-Drain Charge | | Q_{gd} | -- | 8.6 | -- | |
| Input Capacitance | $V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz$ | C_{iss} | -- | 1573 | 1900 | pF |
| Output Capacitance | | C_{oss} | -- | 319 | -- | |
| Reverse Transfer Capacitance | | C_{rss} | -- | 211 | 295 | |
| Switching^c | | | | | | |
| Turn-On Delay Time | $V_{DD} = -15V, R_L = 15\Omega, I_D = -1A, V_{GEN} = -10V, R_G = 6\Omega$ | $t_{d(on)}$ | -- | 10 | 15 | nS |
| Turn-On Rise Time | | t_r | -- | 15 | 25 | |
| Turn-Off Delay Time | | $t_{d(off)}$ | -- | 110 | 170 | |
| Turn-Off Fall Time | | t_f | -- | 70 | 110 | |

Notes:

- a. pulse test: PW $\leq 300\mu s$, duty cycle $\leq 2\%$
- b. For DESIGN AID ONLY, not subject to production testing.
- b. Switching time is essentially independent of operating temperature.



Switching Test Circuit



Switchin Waveforms

Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

Output Characteristics



Transfer Characteristics



On-Resistance vs. Drain Current



Gate Charge



On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

On-Resistance vs. Gate-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



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 | 1.27BSC | | 0.05BSC | |
| 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 |

Marking Diagram



- Y** = Year Code
- M** = Month Code
(A=Jan, B=Feb, C=Mar, D=Apl, E=May, F=Jun, G=Jul, H=Aug, I=Sep, J=Oct, K=Nov, L=Dec)
- L** = Lot Code

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