

### SOT-26



#### Pin Definition:

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

### PRODUCT SUMMARY

| $V_{DS}$ (V) | $R_{DS(on)}$ (m $\Omega$ ) | $I_D$ (A) |
|--------------|----------------------------|-----------|
| -30          | 100 @ $V_{GS} = -10V$      | -3.5      |
|              | 170 @ $V_{GS} = -4.5V$     | -2.7      |

### Features

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

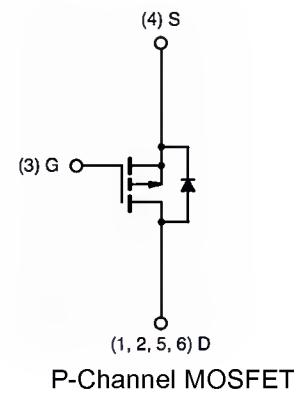
### Application

- Load Switch
- PA Switch

### Ordering Information

| Part No.      | Package | Packing         |
|---------------|---------|-----------------|
| TSM3455CX6 RF | SOT-26  | 3Kpcs / 7" Reel |

### Block Diagram



### Absolute Maximum Rating ( $T_a = 25^\circ C$ unless otherwise noted)

| Parameter   | Symbol         | Limit              | Unit       |
|---|----------------|--------------------|------------|
| Drain-Source Voltage  | $V_{DS}$       | -30                | V          |
| Gate-Source Voltage   | $V_{GS}$       | $\pm 20$           | V          |
| Continuous Drain Current                                    | $I_D$          | -3.5               | A          |
| Pulsed Drain Current  | $I_{DM}$       | -20                | A          |
| Continuous Source Current (Diode Conduction) <sup>a,b</sup> | $I_S$          | -1.7               | A          |
| Maximum Power Dissipation                                   | $P_D$          | $T_a = 25^\circ C$ | 2.0        |
|   |                | $T_a = 75^\circ C$ | 1.3        |
| Operating Junction Temperature                              | $T_J$          | +150               | $^\circ C$ |
| Operating Junction and Storage Temperature Range            | $T_J, T_{STG}$ | - 55 to +150       | $^\circ C$ |

### Thermal Performance

| Parameter  | Symbol            | Limit | Unit         |
|--|-------------------|-------|--------------|
| Junction to Case Thermal Resistance                  | $R_{\theta_{JF}}$ | 62.5  | $^\circ C/W$ |
| Junction to Ambient Thermal Resistance (PCB mounted) | $R_{\theta_{JA}}$ | 110   | $^\circ C/W$ |

#### Notes:

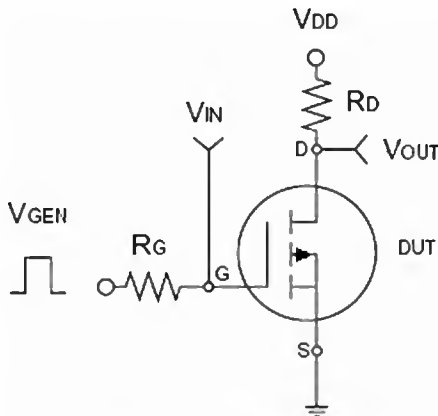
- a. Pulse width limited by the Maximum junction temperature
- b. Surface Mounted on FR4 Board,  $t \leq 5$  sec.

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

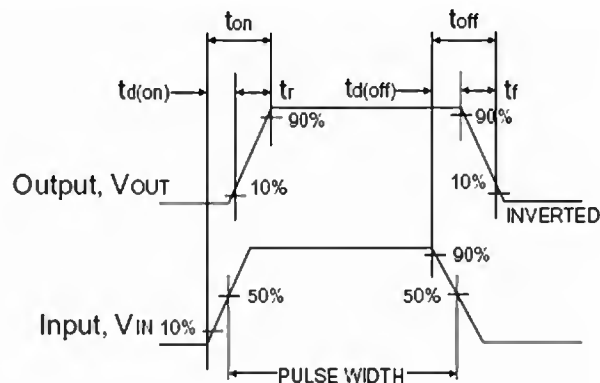
| Parameter                                     | Conditions  | Symbol       | Min | Typ | Max       | Unit       |
|---|---|--------------|-----|-----|-----------|------------|
| <b>Static</b>                                 |   |              |     |     |           |            |
| Drain-Source Breakdown Voltage                | $V_{GS} = 0V, I_D = -250\mu A$  | $BV_{DSS}$   | -30 | --  | --        | V          |
| Gate Threshold Voltage                        | $V_{DS} = V_{GS}, I_D = -250\mu A$  | $V_{GS(TH)}$ | -1  | --  | -3        | V          |
| Gate Body Leakage                             | $V_{GS} = \pm 20V, V_{DS} = 0V$   | $I_{GSS}$    | --  | --  | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current               | $V_{DS} = -30V, V_{GS} = 0V$  | $I_{DSS}$    | --  | --  | -1.0      | $\mu A$    |
| On-State Drain Current <sup>a</sup>           | $V_{DS} \leq -5V, V_{GS} = -10V$  | $I_{D(ON)}$  | -6  | --  | --        | A          |
| Drain-Source On-State Resistance <sup>a</sup> | $V_{GS} = -10V, I_D = -3.5A$  | $R_{DS(ON)}$ | --  | 80  | 100       | m $\Omega$ |
|   | $V_{GS} = -4.5V, I_D = -2.7A$   |              | --  | 140 | 170       |            |
| Forward Transconductance <sup>a</sup>         | $V_{DS} = -15V, I_D = -3.5A$  | $g_{fs}$     | --  | 6   | --        | S          |
| Diode Forward Voltage                         | $I_S = -1.7A, V_{GS} = 0V$  | $V_{SD}$     | --  | --  | -1.2      | V          |
| <b>Dynamic<sup>b</sup></b>                    |   |              |     |     |           |            |
| Total Gate Charge                             | $V_{DS} = -15V, I_D = -3.5A, V_{GS} = -10V$                               | $Q_g$        | --  | 10  | 15        | nC         |
| Gate-Source Charge                            |   | $Q_{gs}$     | --  | 1.9 | --        |            |
| Gate-Drain Charge                             |   | $Q_{gd}$     | --  | 2   | --        |            |
| Input Capacitance                             | $V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz$                                  | $C_{iss}$    | --  | 565 | --        | pF         |
| Output Capacitance                            |   | $C_{oss}$    | --  | 126 | --        |            |
| Reverse Transfer Capacitance                  |   | $C_{rss}$    | --  | 75  | --        |            |
| <b>Switching<sup>c</sup></b>                  |   |              |     |     |           |            |
| 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  | 20        | nS         |
| Turn-On Rise Time                             |   | $t_r$        | --  | 9   | 20        |            |
| Turn-Off Delay Time                           |   | $t_{d(off)}$ | --  | 27  | 50        |            |
| Turn-Off Fall Time                            |   | $t_f$        | --  | 7   | 16        |            |

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.

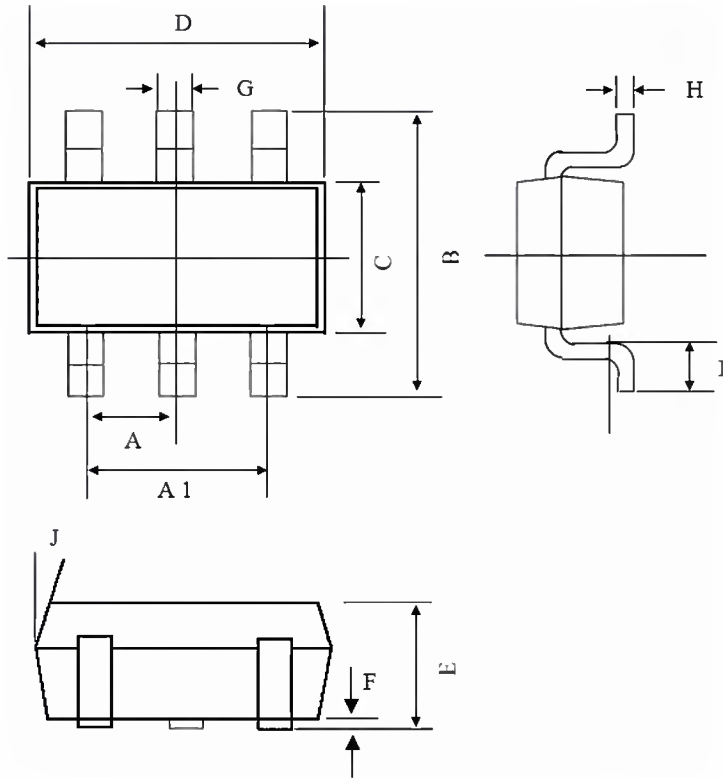


Switching Test Circuit



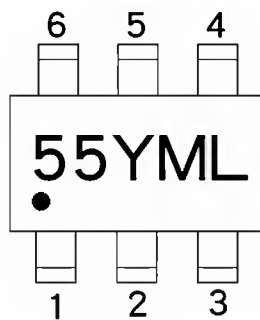
Switchin Waveforms

**SOT-26 Mechanical Drawing**



| SOT-26 DIMENSION |             |      |      |            |        |        |
|------------------|-------------|------|------|------------|--------|--------|
| DIM              | MILLIMETERS |      |      | INCHES     |        |        |
|                  | MIN         | TYP  | MAX  | MIN        | TYP    | MAX    |
| A                | 0.95 BSC    |      |      | 0.0374 BSC |        |        |
| A1               | 1.9 BSC     |      |      | 0.0748 BSC |        |        |
| B                | 2.60        | 2.80 | 3.00 | 0.1024     | 0.1102 | 0.1181 |
| C                | 1.40        | 1.50 | 1.70 | 0.0551     | 0.0591 | 0.0669 |
| D                | 2.80        | 2.90 | 3.10 | 0.1101     | 0.1142 | 0.1220 |
| E                | 1.00        | 1.10 | 1.20 | 0.0394     | 0.0433 | 0.0472 |
| F                | 0.00        | --   | 0.10 | 0.00       |        | 0.0039 |
| G                | 0.35        | 0.40 | 0.50 | 0.0138     | 0.0157 | 0.0197 |
| H                | 0.10        | 0.15 | 0.20 | 0.0039     | 0.0059 | 0.0079 |
| I                | 0.30        | --   | 0.60 | 0.0118     | --     | 0.0236 |
| J                | 5°          | --   | 10°  | 5°         | --     | 10°    |

**Marking Diagram**



- 55** = Device Code
- 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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