



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 Ω) | I_D (A) |
|--------------|----------------------------|-----------|
| 20 | 70 @ $V_{GS} = 4.5V$ | 4 |
| | 90 @ $V_{GS} = 2.5V$ | 3.5 |

Features

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

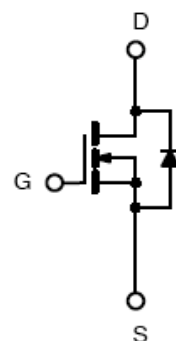
Application

- Load Switch
- PA Switch

Ordering Information

| Part No. | Package | Packing |
|---------------|---------|-----------------|
| TSM3442CX6 RF | SOT-26 | 3Kpcs / 7" Reel |

Block Diagram



N-Channel MOSFET

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} | ± 8 | V |
| Continuous Drain Current | I_D | 4 | A |
| Pulsed Drain Current | I_{DM} | 8 | A |
| Continuous Source Current (Diode Conduction) ^{a,b} | I_S | 1.6 | A |
| Maximum Power Dissipation | P_D | Ta = 25°C | 1.25 |
| | | Ta = 75°C | 0.8 |
| 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 | $R_{\theta_{JF}}$ | 30 | °C/W |
| Junction to Ambient Thermal Resistance (PCB mounted) | $R_{\theta_{JA}}$ | 80 | °C/W |

Notes:

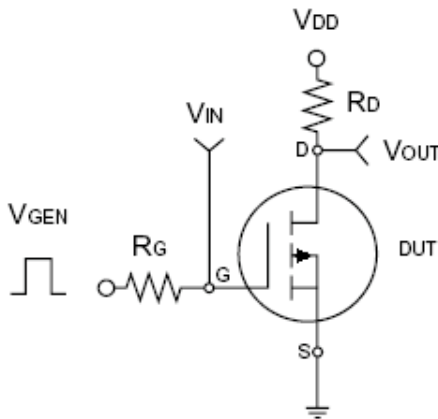
- a. Pulse width limited by the Maximum junction temperature
- b. Surface Mounted on FR4 Board, $t \leq 5$ sec.

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

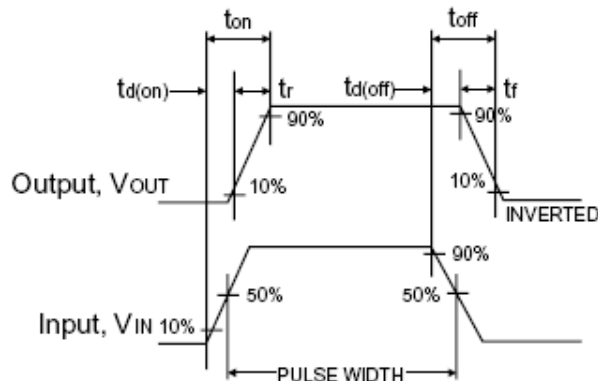
| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|----------------------------------|--|--------------|------|------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{GS} = 0V, I_D = 250\mu A$ | BV_{DSS} | 20 | -- | -- | V |
| Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = 250\mu A$ | $V_{GS(TH)}$ | 0.65 | 0.95 | 1.2 | V |
| Gate Body Leakage | $V_{GS} = \pm 8V, V_{DS} = 0V$ | I_{GSS} | -- | -- | ± 100 | nA |
| Zero Gate Voltage Drain Current | $V_{DS} = 16V, V_{GS} = 0V$ | I_{DSS} | -- | -- | 1.0 | μA |
| On-State Drain Current | $V_{DS} = 5V, V_{GS} = 4.5V$ | $I_{D(ON)}$ | 6 | -- | -- | A |
| Drain-Source On-State Resistance | $V_{GS} = 4.5V, I_D = 4A$ | $R_{DS(ON)}$ | -- | 50 | 70 | m Ω |
| | $V_{GS} = 2.5V, I_D = 3.5A$ | | -- | 60 | 90 | |
| Forward Transconductance | $V_{DS} = 5V, I_D = 2.8A$ | g_{fs} | -- | 10 | -- | S |
| Diode Forward Voltage | $I_S = 1.6A, V_{GS} = 0V$ | V_{SD} | -- | 0.76 | 1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | $V_{DS} = 10V, I_D = 4A, V_{GS} = 4.5V$ | Q_g | -- | 5.4 | 10 | nC |
| Gate-Source Charge | | Q_{gs} | -- | 0.65 | -- | |
| Gate-Drain Charge | | Q_{gd} | -- | 1.4 | -- | |
| Input Capacitance | $V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz$ | C_{iss} | -- | 340 | -- | pF |
| Output Capacitance | | C_{oss} | -- | 115 | -- | |
| Reverse Transfer Capacitance | | C_{rss} | -- | 33 | -- | |
| Switching^c | | | | | | |
| Turn-On Delay Time | $V_{DD} = 6V, R_L = 10\Omega, I_D = 1A, V_{GEN} = 4.5V, R_G = 6\Omega$ | $t_{d(on)}$ | -- | 12 | 25 | nS |
| Turn-On Rise Time | | t_r | -- | 36 | 60 | |
| Turn-Off Delay Time | | $t_{d(off)}$ | -- | 34 | 60 | |
| Turn-Off Fall Time | | t_f | -- | 10 | 25 | |

Notes:

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



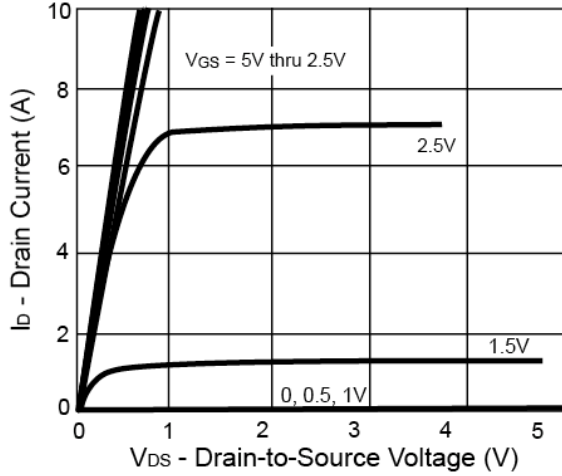
Switching Test Circuit



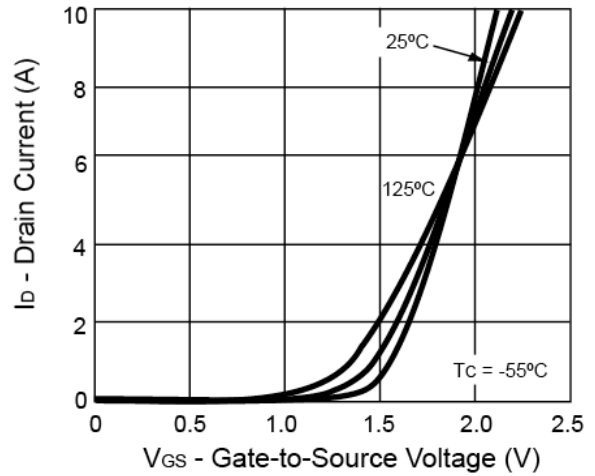
Switchin Waveforms

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

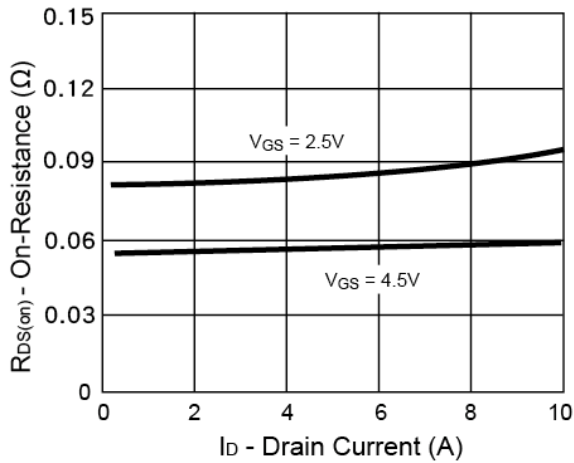
Output Characteristics



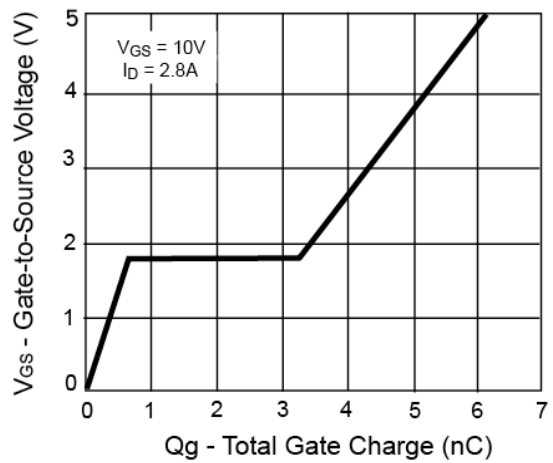
Transfer Characteristics



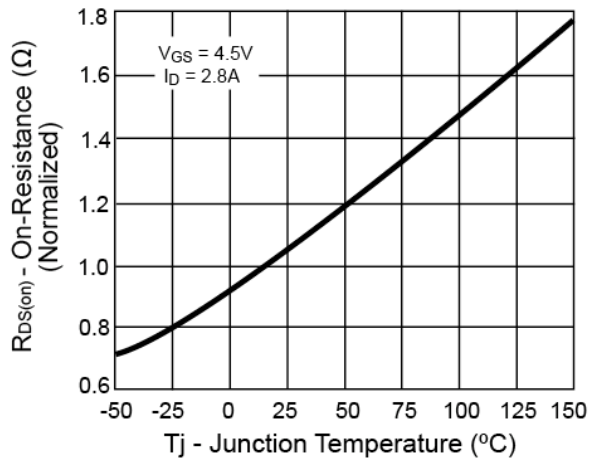
On-Resistance vs. Drain Current



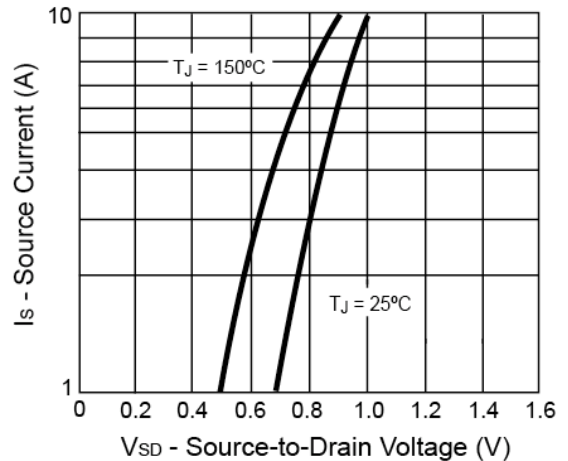
Gate Charge



On-Resistance vs. Junction Temperature

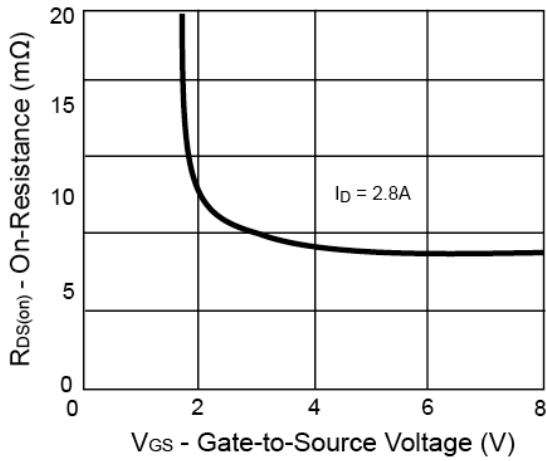


Source-Drain Diode Forward Voltage

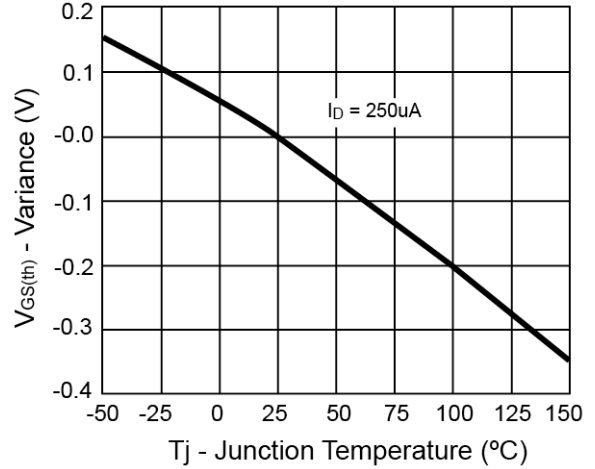


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

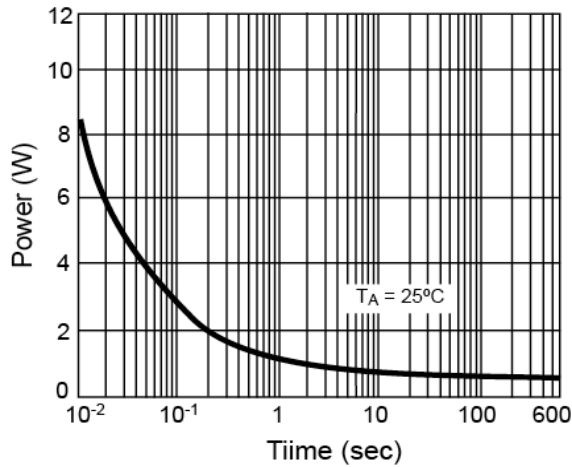
On-Resistance vs. Gate-Source Voltage



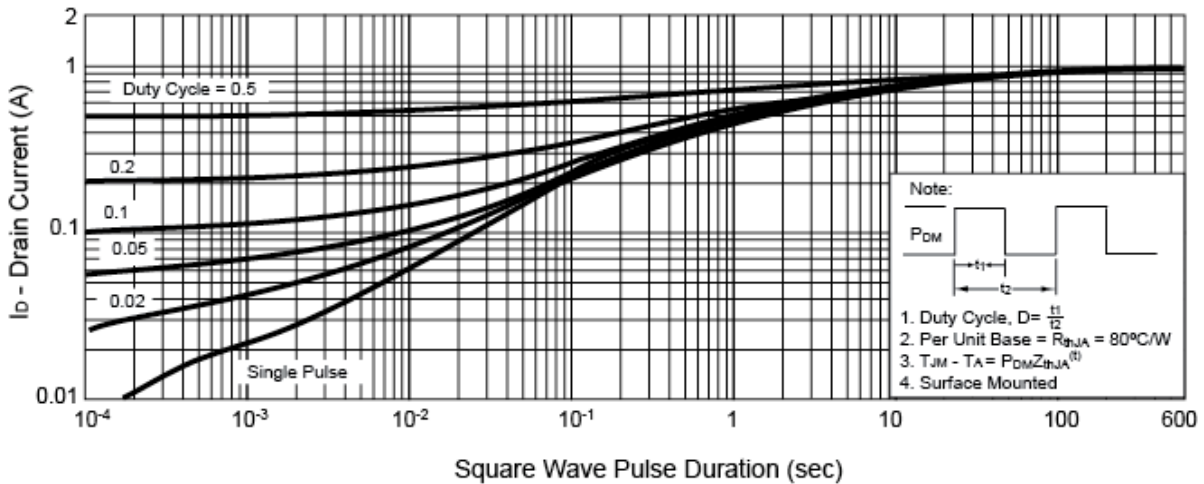
Threshold Voltage



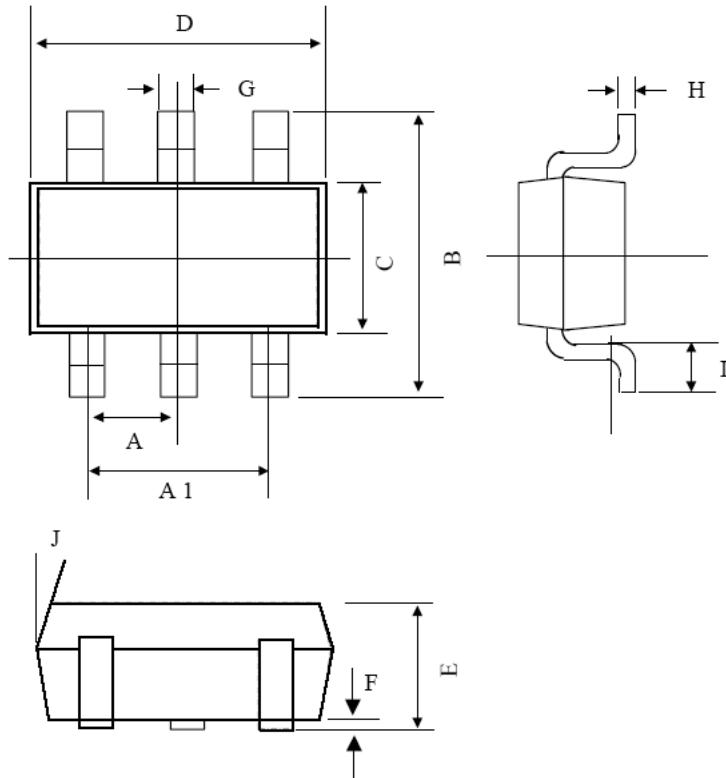
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

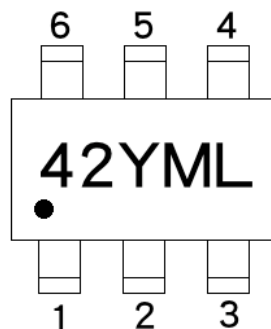


SOT-26 Mechanical Drawing



| 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



42 = 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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