

350V P-Channel Enhancement Mode MOSFET

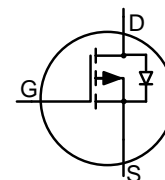
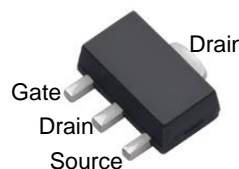
General Features

- Proprietary Advanced Planar Technology
- Rugged Polysilicon Gate Cell Structure
- Fast Switching Speed
- RoHS Compliant
- Halogen-free available

| | | |
|-------------------------|----------------------------------|----------------------|
| BV_{DSS} | R_{DS(ON)} (Max.) | I_D |
| -350V | 30 Ω | -200mA |

Applications

- High Efficiency SMPS
- Adaptor/Charger
- Active PFC

SOT-89


Ordering Information

| Part Number | Package | Marking | Remark |
|-------------|---------|---------|--------------|
| FTX30P35G | SOT-89 | P35 | Halogen Free |

Absolute Maximum Ratings

 $T_A=25^{\circ}\text{C}$ unless otherwise specified

| Symbol | Parameter | FTX30P35G | Unit |
|-------------------------------------|---|------------|------|
| V _{DSS} | Drain-to-Source Voltage ^[1] | -350 | V |
| I _D | Continuous Drain Current | -0.2 | A |
| I _{DM} | Pulsed Drain Current ^[2] | -0.6 | |
| P _D | Power Dissipation | 1.0 | W |
| V _{GS} | Gate-to-Source Voltage | ±20 | V |
| T _L | Soldering Temperature Distance of 1.6mm from case for 10 seconds | 300 | °C |
| T _J and T _{STG} | Operating and Storage Temperature Range | -55 to 150 | |

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

| Symbol | Parameter | FTX30P35G | Unit |
|------------------|---|-----------|------|
| R _{θJA} | Thermal Resistance, Junction-to-Ambient | 125 | K/W |

Electrical Characteristics

OFF Characteristics

 $T_A = 25^\circ\text{C}$ unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions |
|------------------------------|---|------|-------|------|---------|--|
| BV_{DSS} | Drain-to-Source Breakdown Voltage | -350 | -- | -- | V | $V_{GS}=0V, I_D=-250\mu A$ |
| $\Delta BV_{DSS}/\Delta T_J$ | Breakdown Voltage Temperature Coefficient | -- | -0.35 | -- | V/°C | Reference to 25°C, $I_D=-250\mu A$ |
| I_{DSS} | Drain-to-Source Leakage Current | -- | -- | -1 | μA | $V_{DS}=-350V, V_{GS}=0V$ |
| | | -- | -- | -100 | μA | $V_{DS}=-350V, V_{GS}=0V$ $T_J=125^\circ C$ |
| I_{GSS} | Gate-to-Source Leakage Current | -- | -- | 20 | μA | $V_{GS}=+20V, V_{DS}=0V$ |
| | | -- | -- | -20 | | $V_{GS}=-20V, V_{DS}=0V$ |

ON Characteristics

 $T_A = 25^\circ\text{C}$ unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions |
|--------------|--------------------------------------|------|------|------|----------|-------------------------------|
| $R_{DS(ON)}$ | Static Drain-to-Source On-Resistance | -- | 18 | 30 | Ω | $V_{GS}=-10V, I_D=-200mA$ [3] |
| $V_{GS(TH)}$ | Gate Threshold Voltage | -1 | -- | -3 | V | $V_{GD}=0V, I_D=-250\mu A$ |

Dynamic Characteristics

Essentially independent of operating temperature

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions |
|--------------|------------------------------|------|-------|------|------|---|
| C_{ISS} | Input Capacitance | -- | 43.39 | -- | pF | $V_{GS}=0V$ $V_{DS}=-25V$ $f=1.0MHz$ |
| C_{OSS} | Output Capacitance | -- | 6.94 | -- | | |
| C_{RSS} | Reverse Transfer Capacitance | -- | 0.84 | -- | | |
| $t_{d(ON)}$ | Turn-on Delay Time | -- | 12 | -- | ns | $V_{GS} = -10V \sim 0V$ $V_{DD} = -25V, I_D = -80mA$ $R_G = 25\Omega$ |
| t_{rise} | Rise Time | -- | 60 | -- | | |
| $t_{d(OFF)}$ | Turn-off Delay Time | -- | 136 | -- | | |
| t_{fall} | Fall Time | -- | 320 | -- | | |

Source-Drain Diode Characteristics

 $T_A = 25^\circ\text{C}$ unless otherwise specified

| Symbol | Parameter | Min | Typ. | Max. | Units | Test Conditions |
|----------|-----------------------|-----|------|------|-------|----------------------------------|
| V_{SD} | Diode Forward Voltage | -- | -- | -1.8 | V | $I_{SD} = -200 mA, V_{GS} = 0 V$ |

NOTE:

 [1] $T_J = +25^\circ\text{C}$ to $+150^\circ\text{C}$

[2] Repetitive rating, pulse width limited by maximum junction temperature.

 [3] Pulse width $\leq 380\mu s$; duty cycle $\leq 2\%$.

Typical Characteristics

Figure 1. Maximum Power Dissipation vs. Case Temperature

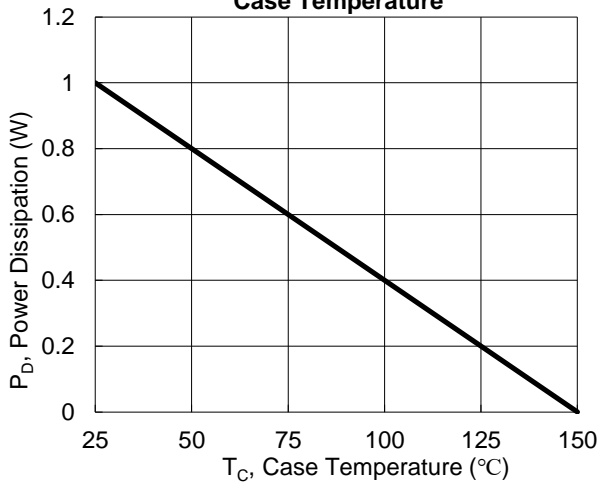


Figure 2. Maximum Continuous Drain Current vs Case Temperature

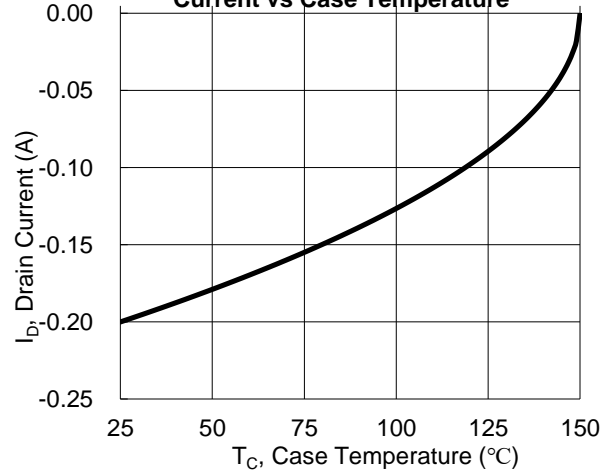
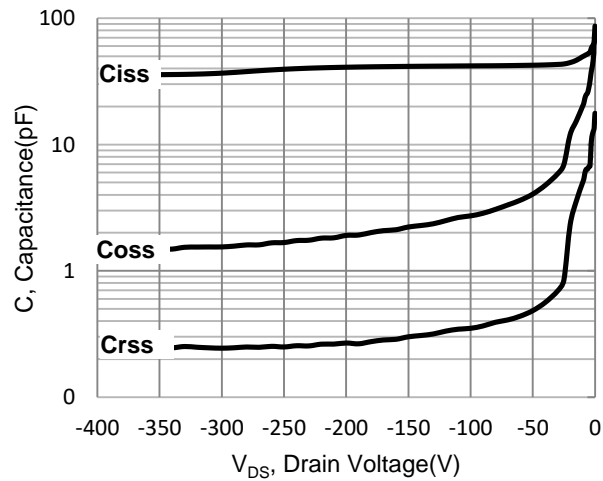


Figure 3. Typical Capacitance vs. Drain-to-Source Voltage



Switching Waveforms and Test Circuit

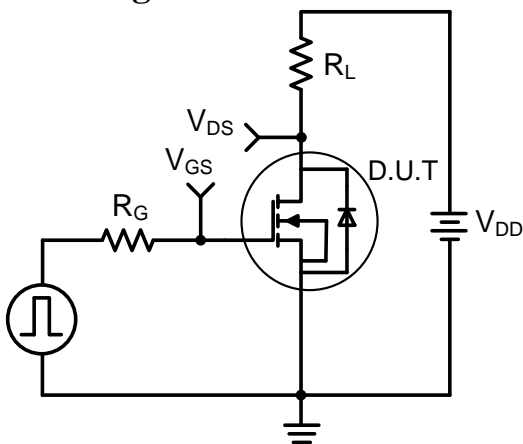


Figure 4. Resistive Switching Test Circuit

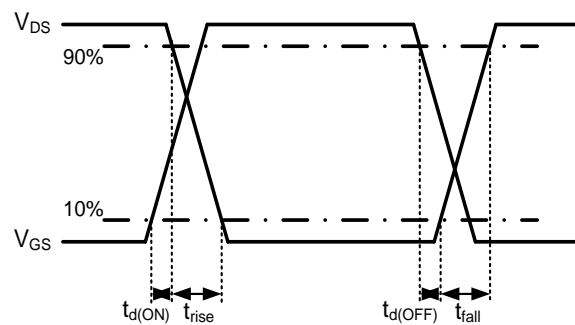
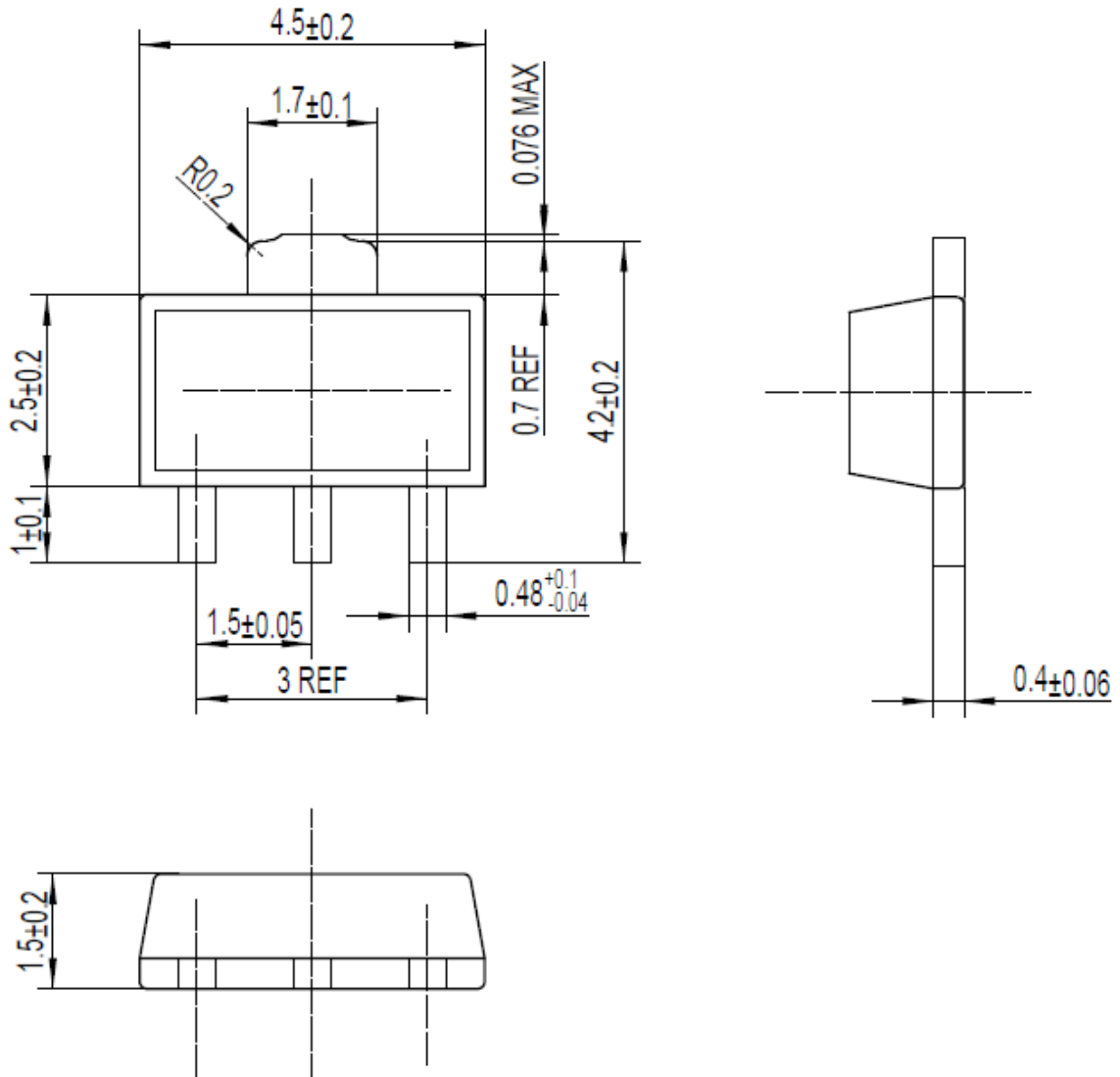


Figure 5. Resistive Switching Waveforms

Package Dimensions

SOT-89





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