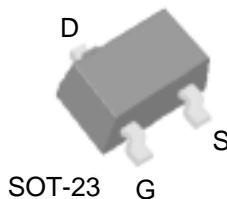


P-CHANNEL ENHANCEMENT-MODE POWER MOSFET

Simple drive requirement

Small package outline

Surface-mount device



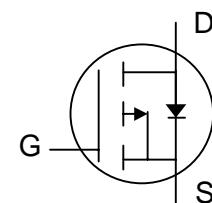
BV_{DSS} -30V

$R_{DS(ON)}$ 240mΩ

I_D - 1.7A

Description

Power MOSFETs from Silicon Standard provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.



Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|------------------------|---------------------------------------|------------|-------|
| V_{DS} | Drain-Source Voltage | - 30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D @ T_A=25^\circ C$ | Continuous Drain Current ³ | -1.7 | A |
| $I_D @ T_A=70^\circ C$ | Continuous Drain Current ³ | -1.4 | A |
| I_{DM} | Pulsed Drain Current ^{1,2} | -10 | A |
| $P_D @ T_A=25^\circ C$ | Total Power Dissipation | 1.25 | W |
| | Linear Derating Factor | 0.01 | W/°C |
| T_{STG} | Storage Temperature Range | -55 to 150 | °C |
| T_J | Operating Junction Temperature Range | -55 to 150 | °C |

Thermal Data

| Symbol | Parameter | Value | Unit |
|---------------|--|----------|------|
| $R_{thj-amb}$ | Thermal Resistance Junction-ambient ³ | Max. 100 | °C/W |

Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|--|---|--|------|-------|-----------|---------------------------|
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{\text{GS}}=0\text{V}$, $I_{\text{D}}=-250\mu\text{A}$ | -30 | - | - | V |
| $\Delta \text{BV}_{\text{DSS}}/\Delta T_j$ | Breakdown Voltage Temperature Coefficient | Reference to 25°C , $I_{\text{D}}=-1\text{mA}$ | - | -0.1 | - | $\text{V}/^\circ\text{C}$ |
| $R_{\text{DS(ON)}}$ | Static Drain-Source On-Resistance | $V_{\text{GS}}=-10\text{V}$, $I_{\text{D}}=-1.7\text{A}$ | - | - | 240 | $\text{m}\Omega$ |
| | | $V_{\text{GS}}=-4.5\text{V}$, $I_{\text{D}}=-1.3\text{A}$ | - | - | 460 | $\text{m}\Omega$ |
| $V_{\text{GS(th)}}$ | Gate Threshold Voltage | $V_{\text{DS}}=V_{\text{GS}}$, $I_{\text{D}}=-250\mu\text{A}$ | -1 | - | - | V |
| g_{fs} | Forward Transconductance | $V_{\text{DS}}=-10\text{V}$, $I_{\text{D}}=-1.7\text{A}$ | - | 2 | - | S |
| I_{DSS} | Drain-Source Leakage Current ($T_j=25^\circ\text{C}$) | $V_{\text{DS}}=-30\text{V}$, $V_{\text{GS}}=0\text{V}$ | - | - | -1 | uA |
| | Drain-Source Leakage Current ($T_j=55^\circ\text{C}$) | $V_{\text{DS}}=-30\text{V}$, $V_{\text{GS}}=0\text{V}$ | - | - | -10 | uA |
| I_{GSS} | Gate-Source Leakage | $V_{\text{GS}}= \pm 20\text{V}$ | - | - | ± 100 | nA |
| Q_g | Total Gate Charge ² | $I_{\text{D}}=-1.7\text{A}$ | - | 6.2 | - | nC |
| Q_{gs} | Gate-Source Charge | $V_{\text{DS}}=-15\text{V}$ | - | 1.4 | - | nC |
| Q_{gd} | Gate-Drain ("Miller") Charge | $V_{\text{GS}}=-10\text{V}$ | - | 0.3 | - | nC |
| $t_{\text{d(on)}}$ | Turn-on Delay Time ² | $V_{\text{DS}}=-15\text{V}$ | - | 20 | - | ns |
| t_r | Rise Time | $I_{\text{D}}=-1\text{A}$ | - | 20 | - | ns |
| $t_{\text{d(off)}}$ | Turn-off Delay Time | $R_G=6\Omega$, $V_{\text{GS}}=-10\text{V}$ | - | 35 | - | ns |
| t_f | Fall Time | $R_D=6\Omega$ | - | 20 | - | ns |
| C_{iss} | Input Capacitance | $V_{\text{GS}}=0\text{V}$ | - | 230 | - | pF |
| C_{oss} | Output Capacitance | $V_{\text{DS}}=-15\text{V}$ | - | 130.4 | - | pF |
| C_{rss} | Reverse Transfer Capacitance | f=1.0MHz | - | 40 | - | pF |

Source-Drain Diode

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------|---|---|------|------|-------|-------|
| I_s | Continuous Source Current (Body Diode) | $V_D=V_G=0\text{V}$, $V_S=-1.2\text{V}$ | - | - | -1.25 | A |
| I_{SM} | Pulsed Source Current (Body Diode) ¹ | | - | - | -10 | A |
| V_{SD} | Forward On Voltage ² | $I_s=-1.25\text{A}$, $V_{\text{GS}}=0\text{V}$ | - | - | -1.2 | V |

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width $\leq 300\text{us}$, duty cycle $\leq 2\%$.
- 3.Surface mounted on FR4 board, $t \leq 5$ sec.

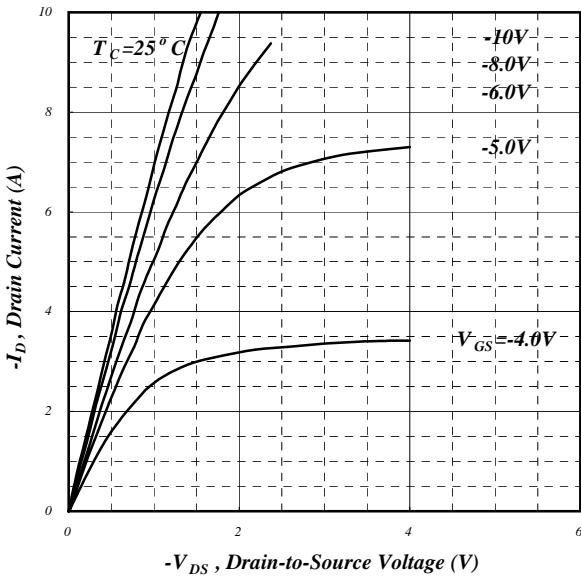


Fig 1. Typical Output Characteristics

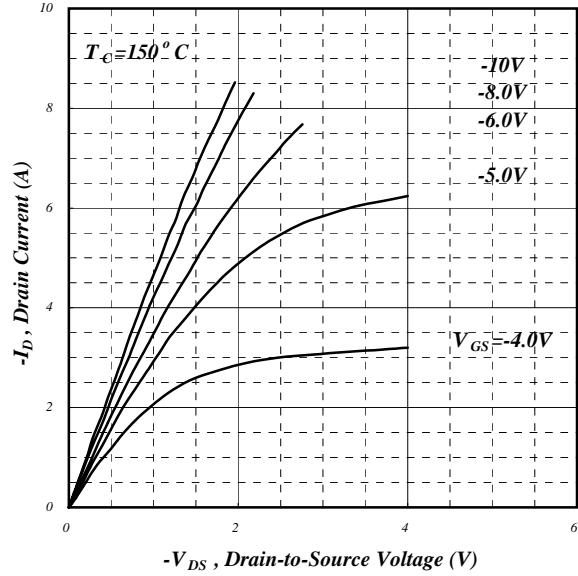


Fig 2. Typical Output Characteristics

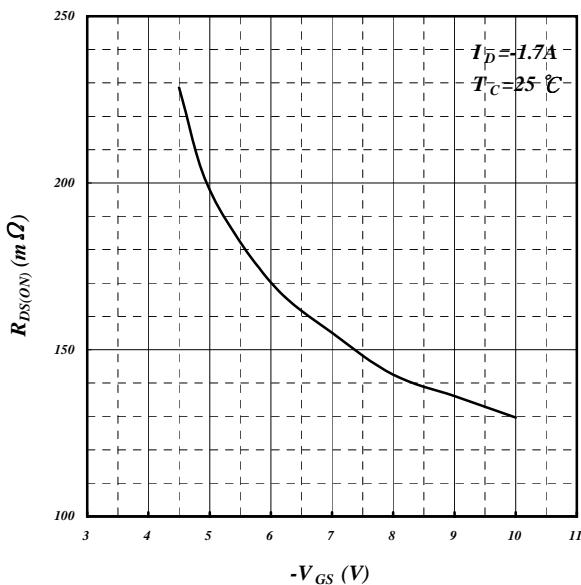


Fig 3. On-Resistance vs. Gate Voltage

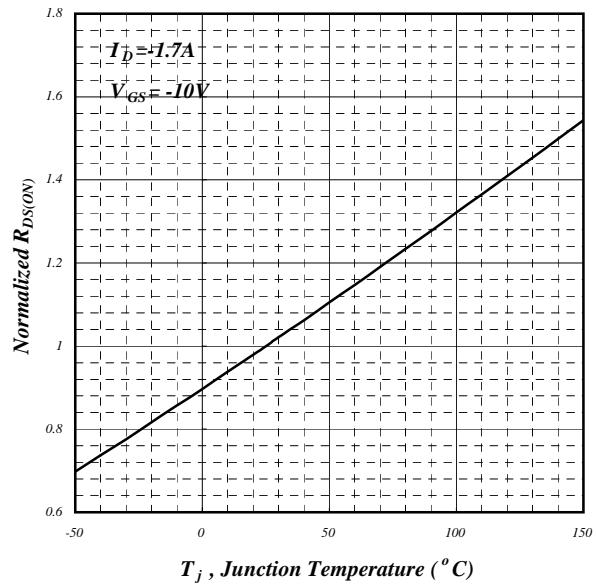


Fig 4. Normalized On-Resistance vs. Junction Temperature

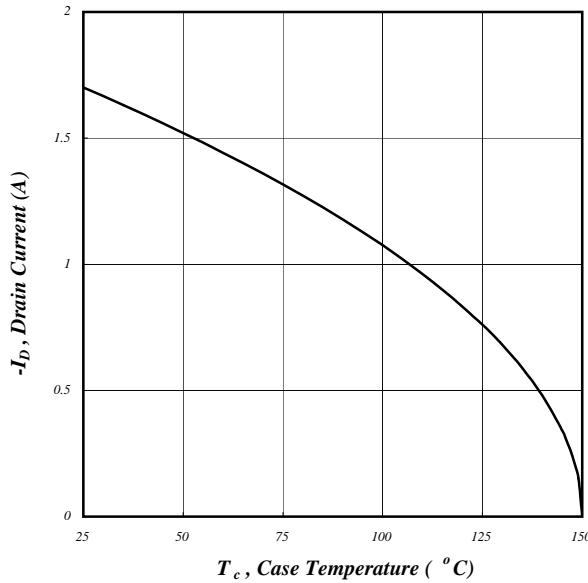


Fig 5. Maximum Drain Current vs.
Case Temperature

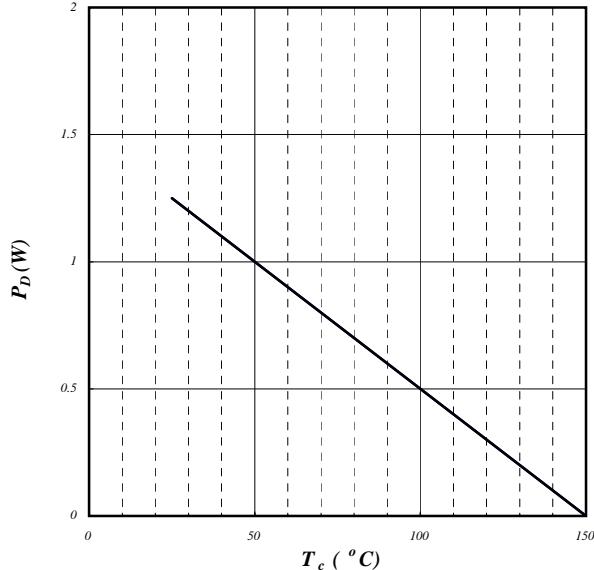


Fig 6. Typical Power Dissipation

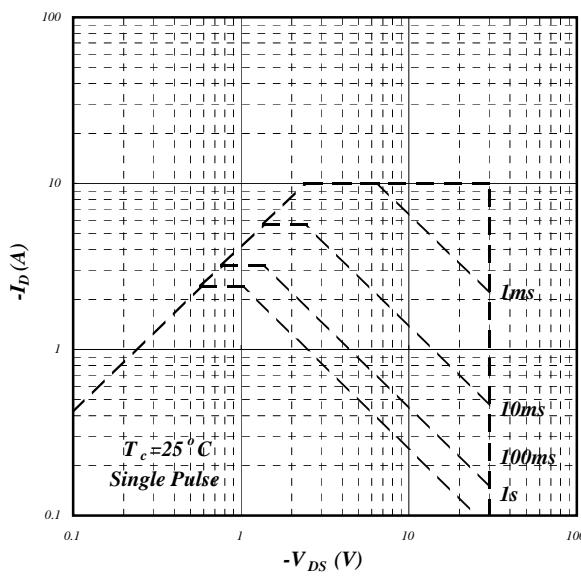


Fig 7. Maximum Safe Operating Area

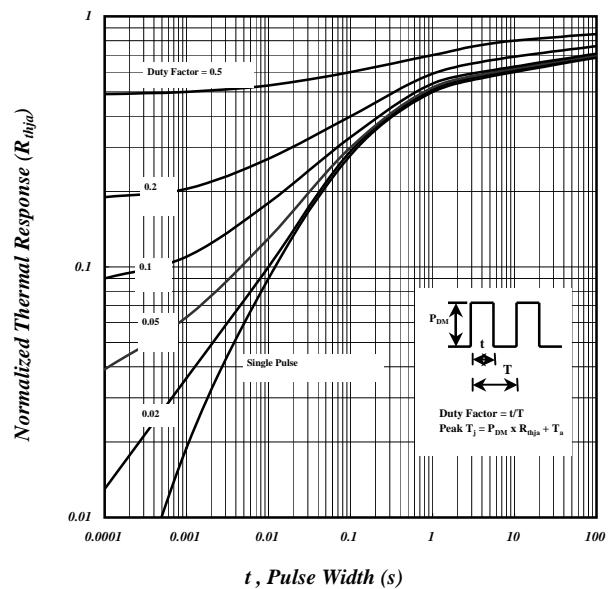


Fig 8. Effective Transient Thermal Impedance

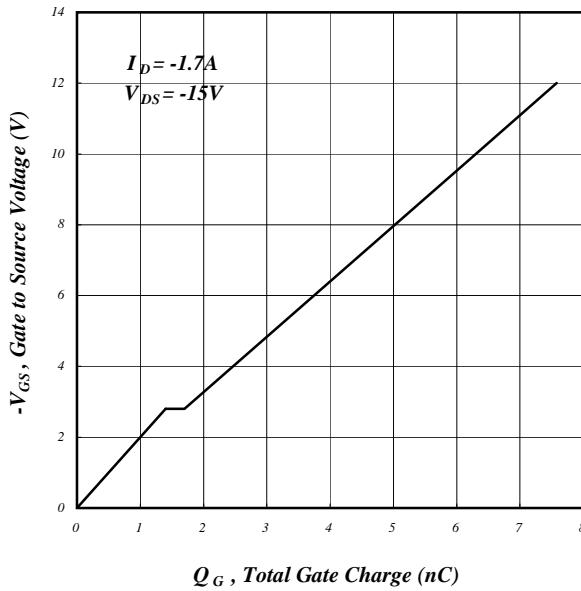


Fig 9. Gate Charge Characteristics

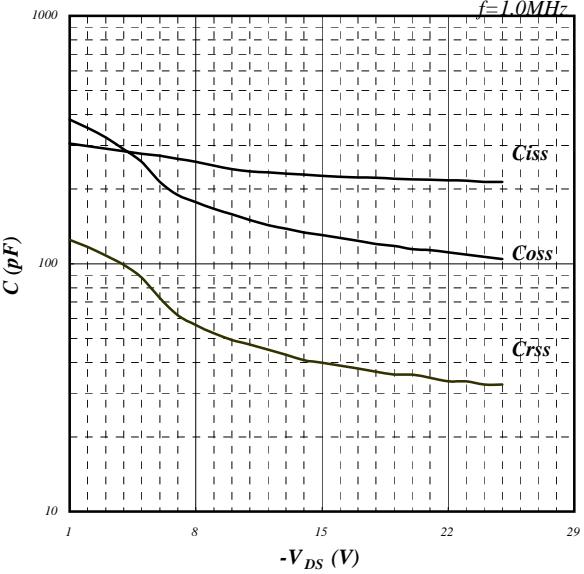


Fig 10. Typical Capacitance Characteristics

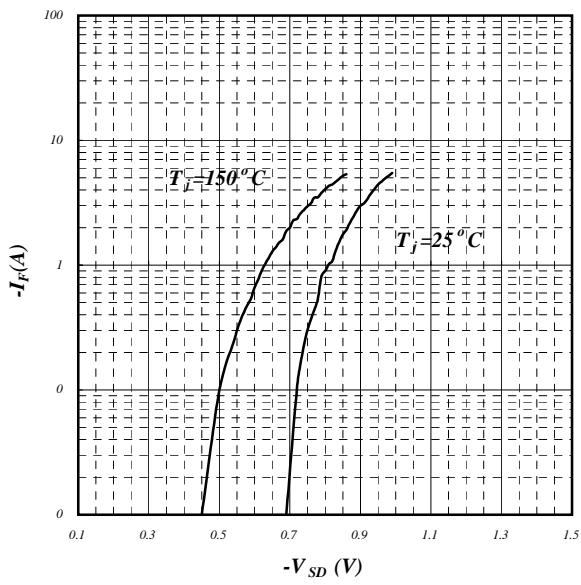


Fig 11. Forward Characteristic of Reverse Diode

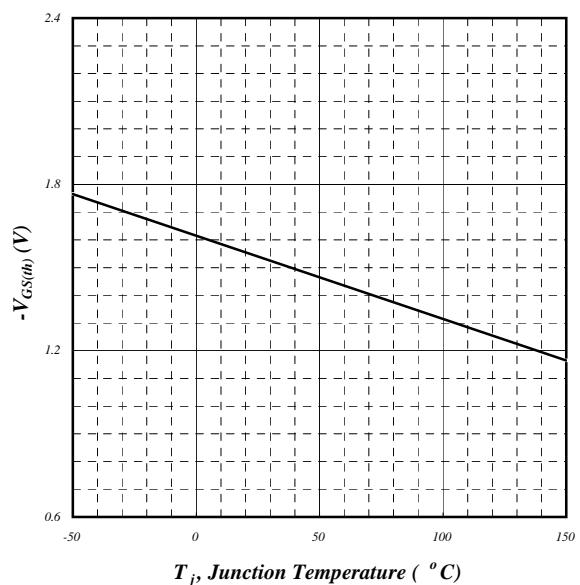
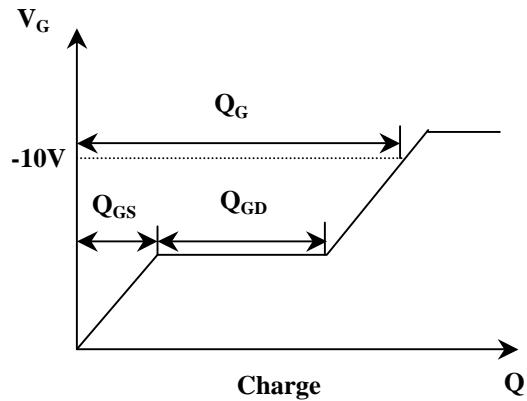
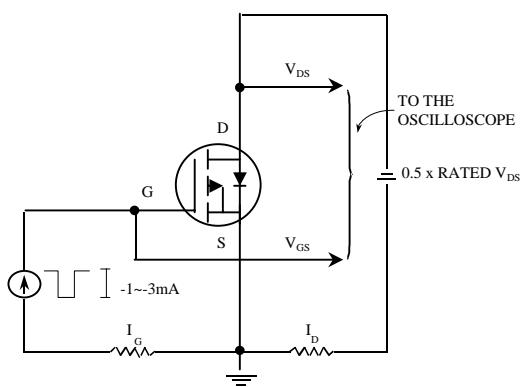
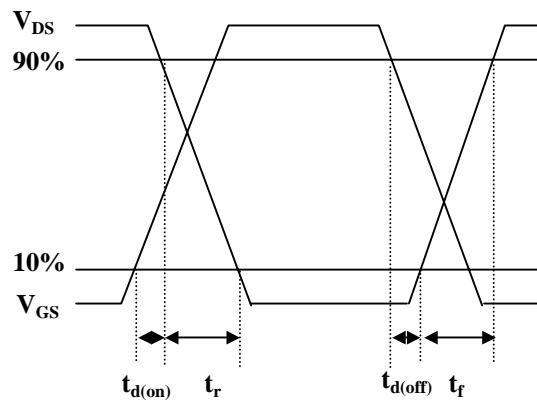
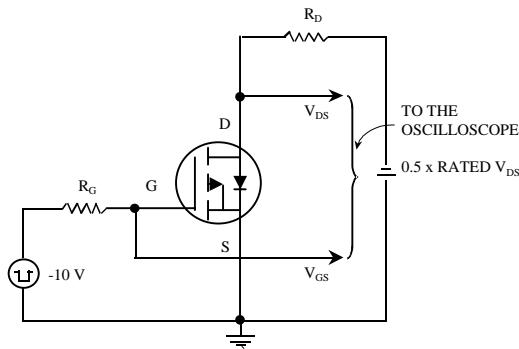


Fig 12. Gate Threshold Voltage vs. Junction Temperature



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