

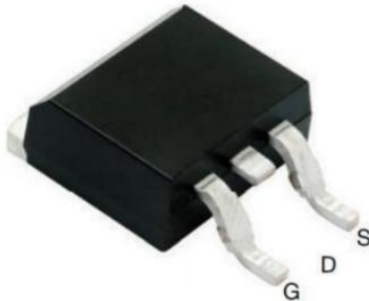
Product Summary

- V_{DS} -100 V
- I_{DS} -30A
- $R_{DS(ON)}$ (at $V_{GS} = -10V$) <60m Ω

Application

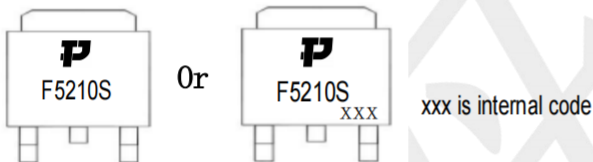
- DC/DC Converter
- Portable equipment and battery
- Power Switch

Package and Pin Configuration

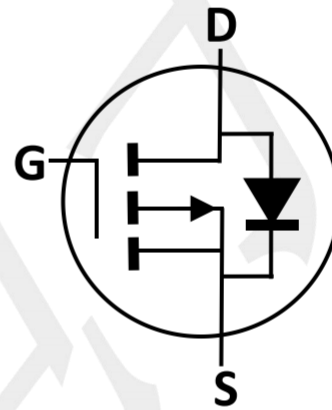


TO-263

Marking



Circuit diagram



Equivalent Circuit

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNIT |
|--------------------------------------|-----------|-------------|------|
| Drain-Source Voltage | V_{DS} | -100 | V |
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current | I_D | -30 | A |
| Pulsed Drain Current (note1) | I_{DM} | -88 | A |
| Maximum Power Dissipation | P_D | 79 | W |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |
| Storage Temperature Range | T_{stg} | -55 to +150 | °C |

Thermal Characteristic

| PARAMETER | Symbol | Value | Unit |
|--|-------------------|-------|------|
| Thermal Resistance from Junction to Ambient(t≤10s) | $R_{\theta JA}$ | 50 | °C/W |
| | PCB Mount (note2) | | |

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | MIN | TYP | MAX | UNIT |
|--|---|---------------------|------|-------|------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =-250μA | BV _{DSS} | -100 | -- | -- | V |
| Gate-Source Threshold Voltage | V _{DS} =V _{GS} , I _D = -250μA | V _{GS(th)} | -2 | -3 | -4 | V |
| Gate-Source Leakage | V _{DS} =0V, V _{GS} = ±20V | I _{GSS} | -- | -- | ±100 | nA |
| Zero Gate Voltage Drain Current | V _{DS} = -80V, V _{GS} =0V | I _{DSS} | -- | -0.1 | -1 | μA |
| | V _{DS} = -80V, T _J =125°C | | -- | -10 | -100 | μA |
| Drain-Source On-State Resistance (Note 1) | V _{GS} = -10V, I _D = -1A | R _{DS(on)} | -- | 60 | 70 | mΩ |
| | V _{GS} = -4.5V, I _D = -1A | | -- | 70 | 80 | |
| Forward Transconductance (Note 2) | V _{DS} = -5V, I _D = -20A | g _{fs} | -- | 24 | -- | S |
| Dynamic (Note 2) | | | | | | |
| Total Gate Charge (Note 3) | V _{DS} = -50V, I _D = -20A, V _{GS} = -10V | Q _g | -- | 41 | -- | nC |
| Gate-Source Charge (Note 3) | | Q _{gs} | -- | 7.8 | -- | |
| Gate-Drain Charge (Note 3) | | Q _{gd} | -- | 8.5 | -- | |
| Input Capacitance | V _{DS} = -50V, V _{GS} = 0V, F = 1.0MHz | C _{iss} | -- | 1900 | -- | pF |
| Output Capacitance | | C _{oss} | -- | 151 | -- | |
| Reverse Transfer Capacitance | | C _{rss} | -- | 20 | -- | |
| Switching | | | | | | |
| Turn-On Delay Time (Note 3) | V _{DD} = -50V, I _D = -20A, V _{GS} = -10V, R _{GEN} = 6Ω | t _{d(on)} | -- | 14 | -- | nS |
| Rise Time (Note 3) | | t _r | -- | 38 | -- | |
| Turn-Off Delay Time (Note 3) | | t _{d(off)} | -- | 100 | -- | |
| Fall Time (Note 3) | | t _f | -- | 106 | -- | |
| Source-Drain Diode Ratings and Characteristics (Note 2) | | | | | | |
| Forward Voltage | V _{GS} = 0V, I _{S D} = -20A | V _{SD} | -- | -0.76 | -1.2 | V |
| Continuous Source Current | Integral reverse diode in the MOSFET | I _S | -- | -- | -30 | A |
| Pulsed Current (Note 1) | | I _{SM} | -- | -- | -88 | A |

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Figure 1. Output Characteristics

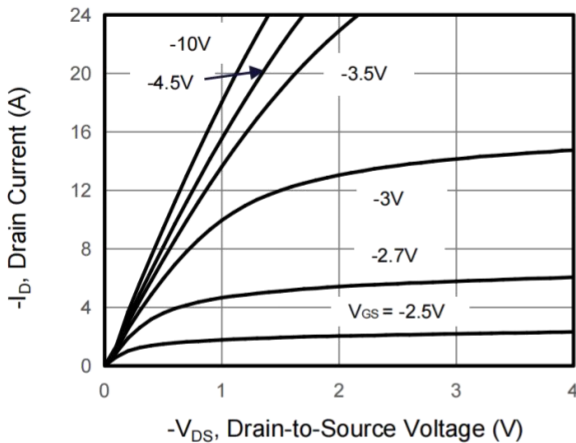


Figure 2. Transfer Characteristics

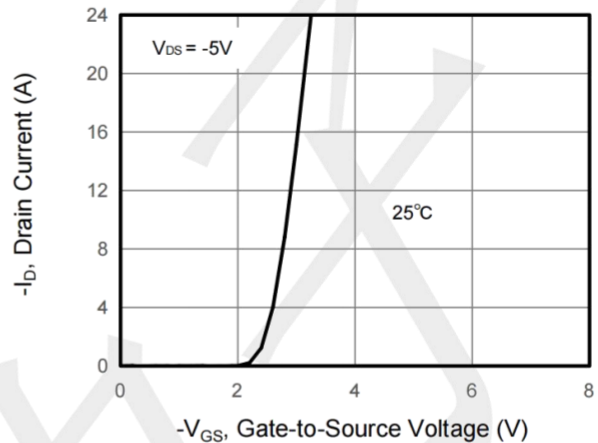


Figure 3. Drain Source On Resistance

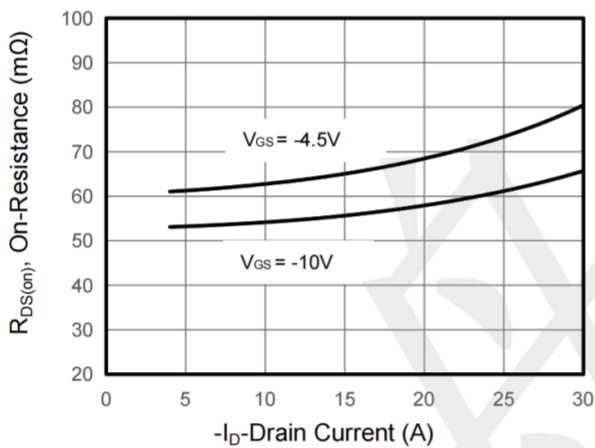


Figure 4. Gate Charge

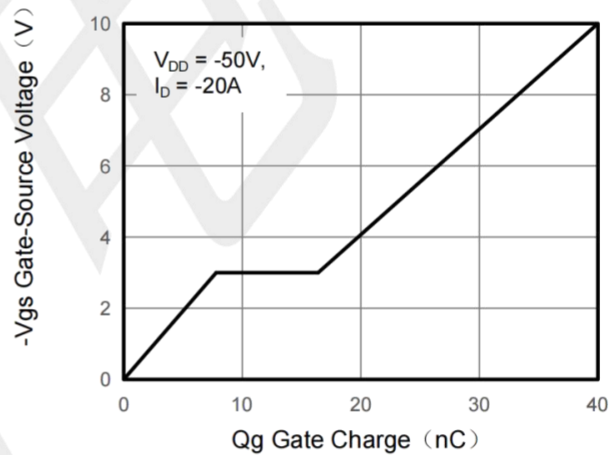


Figure 5. Capacitance

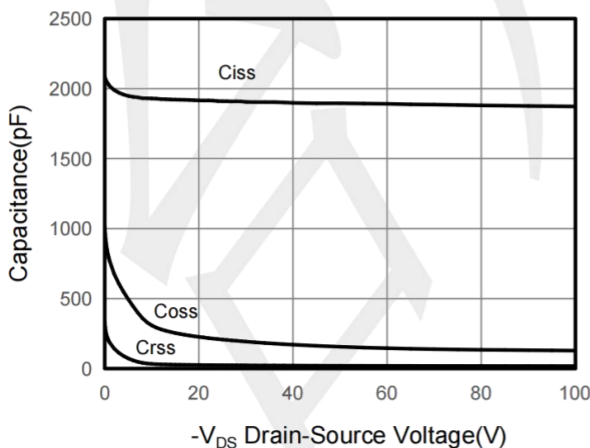
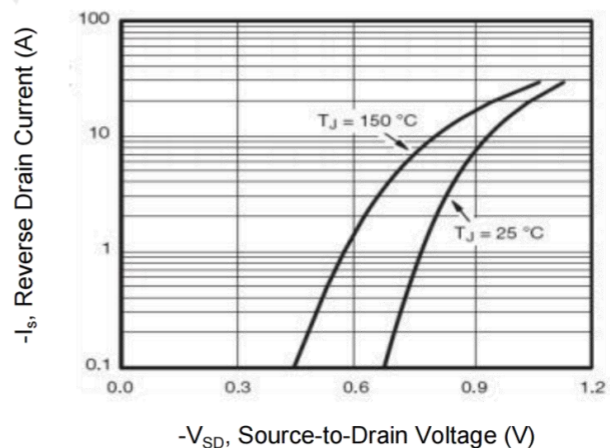
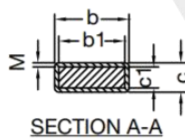
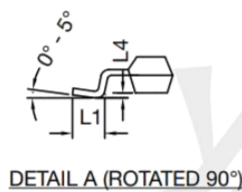
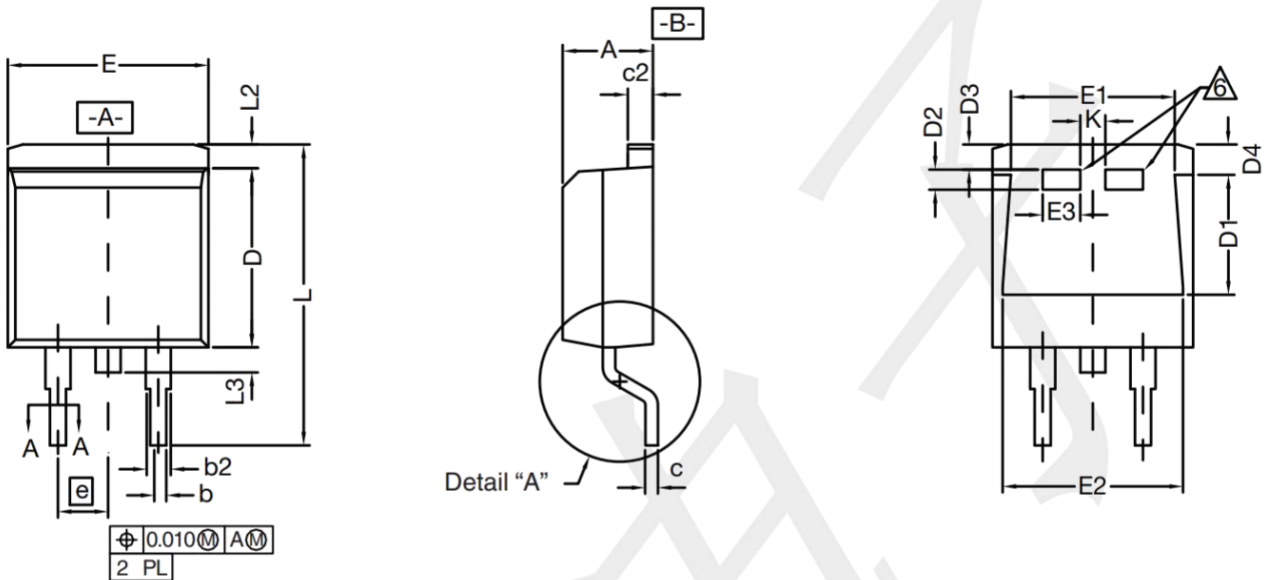


Figure 6. Source-Drain Diode Forward



Package Information TO-263



| DIM. | INCHES | | MILLIMETERS | | |
|---------------------------------|------------|-------|-------------|--------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| A | 0.160 | 0.190 | 4.064 | 4.826 | |
| b | 0.020 | 0.039 | 0.508 | 0.990 | |
| b1 | 0.020 | 0.035 | 0.508 | 0.889 | |
| b2 | 0.045 | 0.055 | 1.143 | 1.397 | |
| c* | Thin lead | 0.013 | 0.018 | 0.330 | 0.457 |
| | Thick lead | 0.023 | 0.028 | 0.584 | 0.711 |
| c1 | Thin lead | 0.013 | 0.017 | 0.330 | 0.431 |
| | Thick lead | 0.023 | 0.027 | 0.584 | 0.685 |
| c2 | 0.045 | 0.055 | 1.143 | 1.397 | |
| D | 0.340 | 0.380 | 8.636 | 9.652 | |
| D1 | 0.220 | 0.240 | 5.588 | 6.096 | |
| D2 | 0.038 | 0.042 | 0.965 | 1.067 | |
| D3 | 0.045 | 0.055 | 1.143 | 1.397 | |
| D4 | 0.044 | 0.052 | 1.118 | 1.321 | |
| E | 0.380 | 0.410 | 9.652 | 10.414 | |
| E1 | 0.245 | - | 6.223 | - | |
| E2 | 0.355 | 0.375 | 9.017 | 9.525 | |
| E3 | 0.072 | 0.078 | 1.829 | 1.981 | |
| e | 0.100 BSC | | 2.54 BSC | | |
| K | 0.045 | 0.055 | 1.143 | 1.397 | |
| L | 0.575 | 0.625 | 14.605 | 15.875 | |
| L1 | 0.090 | 0.110 | 2.286 | 2.794 | |
| L2 | 0.040 | 0.055 | 1.016 | 1.397 | |
| L3 | 0.050 | 0.070 | 1.270 | 1.778 | |
| L4 | 0.010 BSC | | 0.254 BSC | | |
| M | - | 0.002 | - | 0.050 | |
| ECN: T13-0707-Rev. K, 30-Sep-13 | | | | | |
| DWG: 5843 | | | | | |

Notes

- Plane B includes maximum features of heat sink tab and plastic.
- No more than 25 % of L1 can fall above seating plane by max. 8 mils.
- Pin-to-pin coplanarity max. 4 mils.
- *: Thin lead is for SUB, SYB.
Thick lead is for SUM, SYM, SQM.
- Use inches as the primary measurement.
- △ This feature is for thick lead.

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