

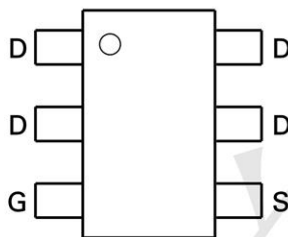
Product Summary

- 60V/-3A
 $R_{DS(ON)} = 88m\Omega$ (Typ) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 111m\Omega$ (Typ) @ $V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

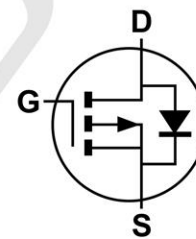
Application

- DC-DC Converters.
- Load Switch.
- Power Management.

Package and Pin Configuration



Circuit diagram



Equivalent Circuit

Marking: 564P

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

| Characteristic | | Symbol | Value | Unit | |
|--|-----------------|------------------------------|----------|-------|---|
| Drain-Source Voltage | | V_{DSS} | -60 | V | |
| Gate-Source Voltage | | V_{GS} | ± 20 | V | |
| Continuous Drain Current | $V_{GS} = -10V$ | (Note 6) | -3 | A | |
| | | $T_A = +70^\circ C$ (Note 6) | -2.4 | | |
| | | (Note 5) | -2.3 | | |
| Pulsed Drain Current | $V_{GS} = -10V$ | (Note 7) | I_{DM} | -13.6 | A |
| Continuous Source Current (Body Diode) | | (Note 6) | I_S | -2.5 | A |
| Pulsed Source Current (Body Diode) | | (Note 7) | I_{SM} | -13.6 | A |

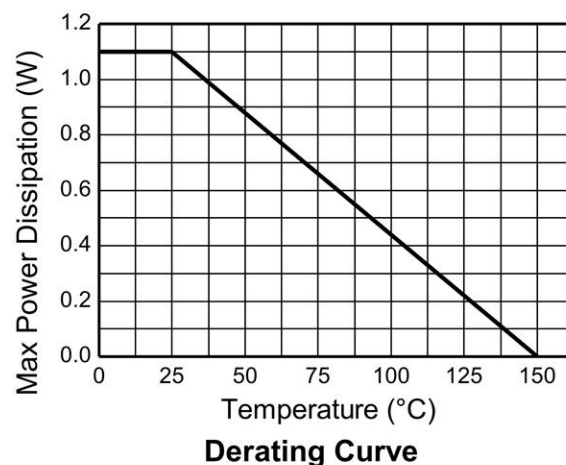
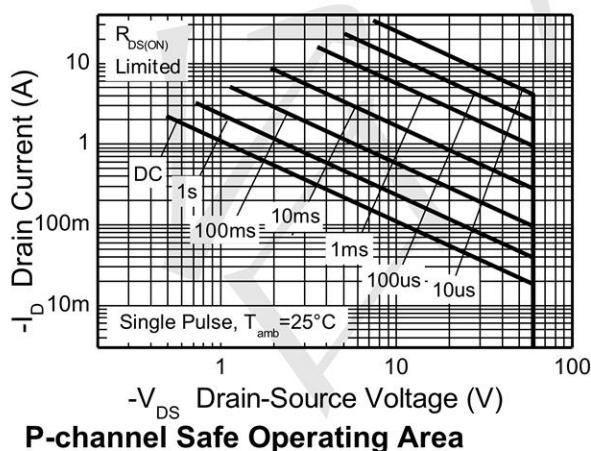
Thermal Characteristics (@ $T_A = +25^\circ C$, unless otherwise specified.)

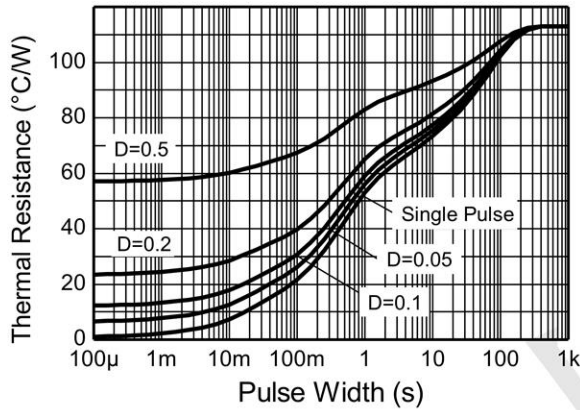
| Characteristic | | Symbol | Value | Unit |
|---|----------|-----------------|--------------|--------------|
| Power Dissipation Linear Derating Factor | (Note 5) | P_D | 1.1 | W |
| | (Note 6) | | 8.8 | |
| | (Note 6) | | 1.92 15.4 | |
| Thermal Resistance, Junction to Ambient | (Note 5) | $R_{\theta JA}$ | 113 | $^\circ C/W$ |
| | (Note 6) | | 65 | |
| Operating and Storage Temperature Range | | T_J, T_{STG} | -55 to +150 | $^\circ C$ |

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

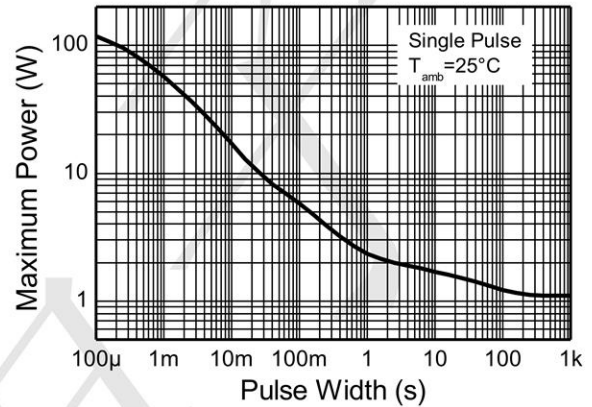
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--------------|-----|-------|-----------|---------------|---|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | -60 | — | — | V | $I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | — | — | -1 | μA | $V_{DS} = -48\text{V}$, $V_{GS} = 0\text{V}$ |
| Gate-Source Leakage | I_{GSS} | — | — | ± 100 | nA | $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$ |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | -1 | -1.5 | -3 | V | $I_D = -250\mu\text{A}$, $V_{DS} = V_{GS}$ |
| Static Drain-Source On-Resistance (Note 8) | $R_{DS(on)}$ | — | 88 | 100 | m Ω | $V_{GS} = -10\text{V}$, $I_D = -3\text{A}$ |
| | | | 111 | 140 | | $V_{GS} = -4.5\text{V}$, $I_D = -1.9\text{A}$ |
| Forward Transconductance (Notes 8 & 9) | g_{fs} | — | 4.7 | — | S | $V_{DS} = -15\text{V}$, $I_D = -2.3\text{A}$ |
| Diode Forward Voltage (Note 8) | V_{SD} | — | -0.85 | -0.95 | V | $I_S = -2\text{A}$, $V_{GS} = 0\text{V}$ |
| Reverse Recovery Time (Note 9) | t_{rr} | — | 25.1 | — | ns | $I_F = -1.7\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$ |
| Reverse Recovery Charge (Note 9) | Q_{rr} | — | 27.2 | — | nC | |
| DYNAMIC CHARACTERISTICS (Note 9) | | | | | | |
| Input Capacitance | C_{iss} | — | 637 | — | pF | $V_{DS} = -30\text{V}$, $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$ |
| Output Capacitance | C_{oss} | — | 70 | — | pF | |
| Reverse Transfer Capacitance | C_{rss} | — | 53 | — | pF | $V_{GS} = -5\text{V}$ |
| Total Gate Charge (Note 10) | Q_g | — | 9.8 | — | nC | |
| Total Gate Charge (Note 10) | Q_g | — | 17.7 | — | nC | $V_{GS} = -10\text{V}$ |
| Gate-Source Charge (Note 10) | Q_{gs} | — | 1.6 | — | nC | |
| Gate-Drain Charge (Note 10) | Q_{gd} | — | 4.4 | — | nC | $V_{DS} = -30\text{V}$ $I_D = -2.3\text{A}$ |
| Turn-On Delay Time (Note 10) | $t_{D(on)}$ | — | 2.6 | — | ns | |
| Turn-On Rise Time (Note 10) | t_r | — | 3.4 | — | ns | $V_{DD} = -30\text{V}$, $V_{GS} = -10\text{V}$ $I_D = -1\text{A}$, $R_G \approx 6\Omega$ |
| Turn-Off Delay Time (Note 10) | $t_{D(off)}$ | — | 26.2 | — | ns | |
| Turn-Off Fall Time (Note 10) | t_f | — | 11.3 | — | ns | |

Typical Performance Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise Specified)

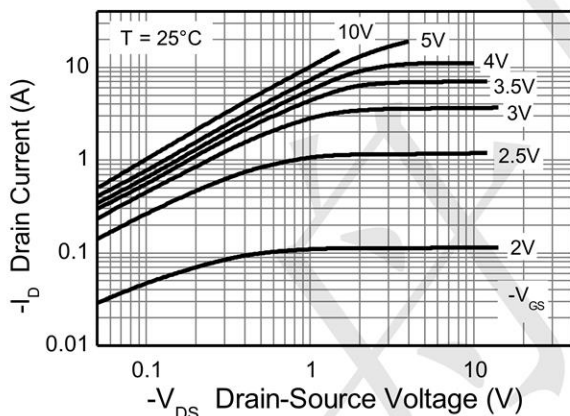




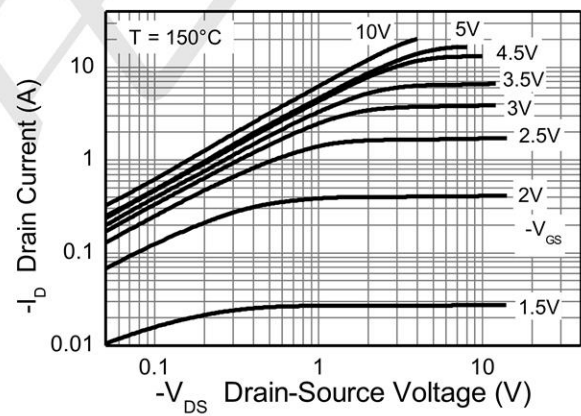
Transient Thermal Impedance



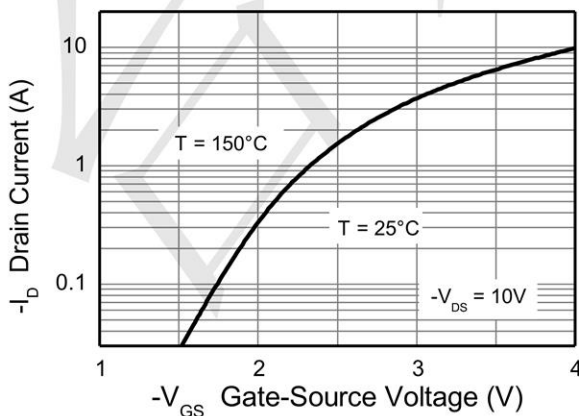
Pulse Power Dissipation



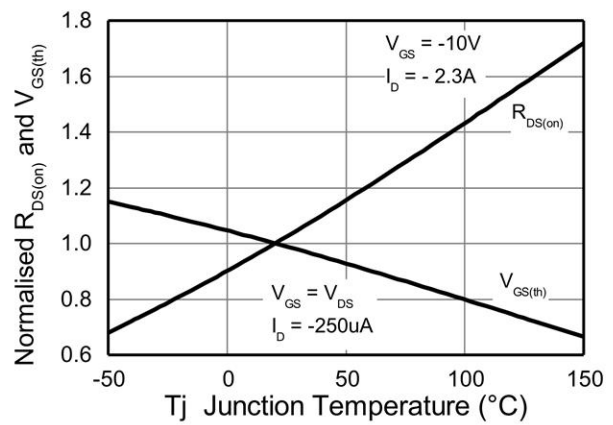
Output Characteristics



Output Characteristics



Typical Transfer Characteristics



Normalised Curves v Temperature



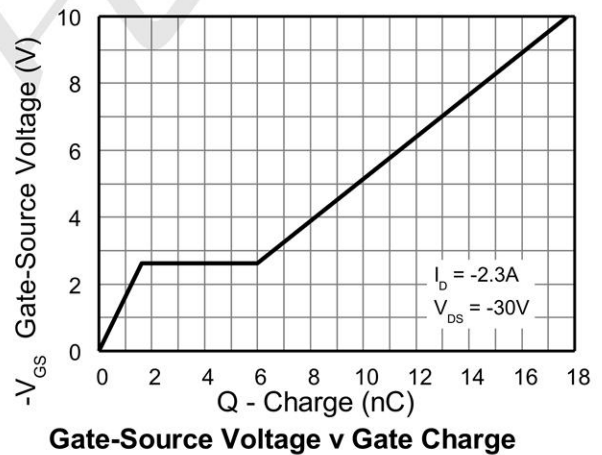
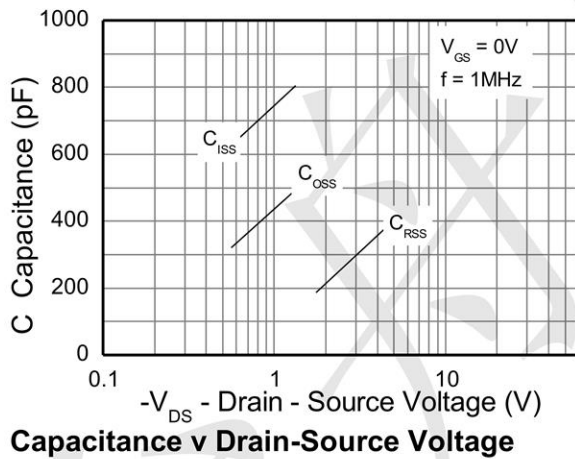
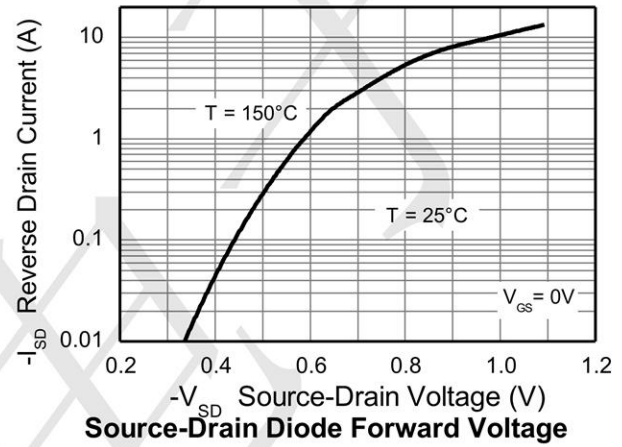
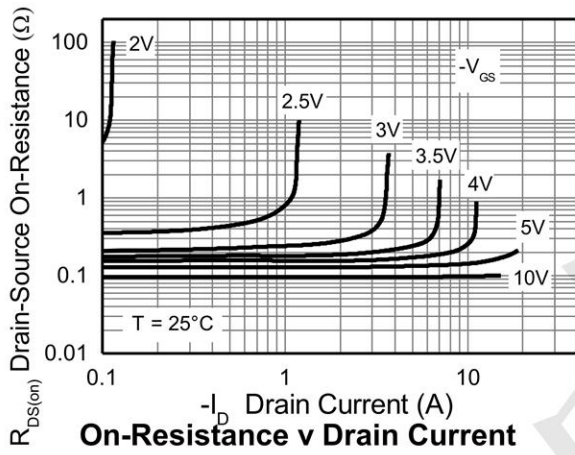
TECH PUBLIC

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FDC5614P

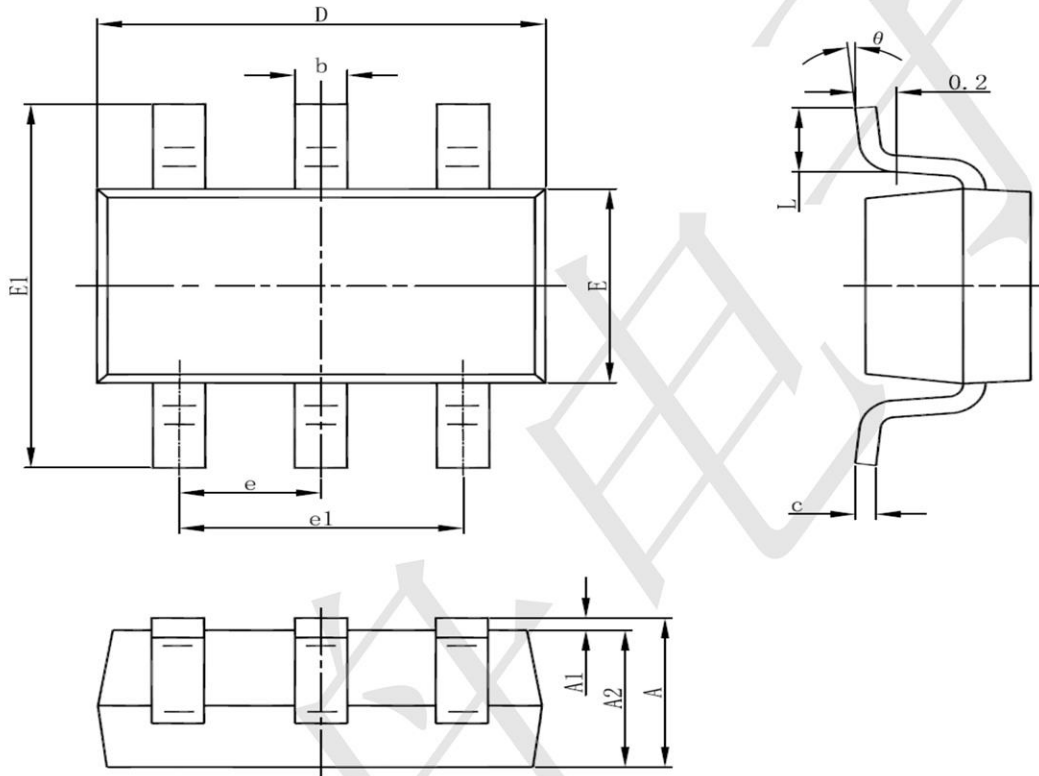
60V P-CHANNEL ENHANCEMENT MODE MOSFET

www.sot23.com.tw





SOT23-6 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |