


**STP4407**  Lead-free

P Channel Enhancement Mode MOSFET  
- 10A

---

**DESCRIPTION**

The STP4407 is the P-Channel logic enhancement mode power field effect transistor is

**ABSOLUTE MAXIMUM RATINGS** (Ta = 25°C Unless otherwise noted )

| Parameter                                    | Symbol | Typical        | Unit |
|--|--------|----------------|------|
| Drain-Source Voltage                         | VDSS   | -30            | V    |
| Gate-Source Voltage                          | VGSS   | ±20            | V    |
| Continuous Drain Current<br>(TJ=150°C)       | ID     | TA=25°C<br>-10 | A    |
|  |        | TA=70°C<br>-6  |      |
| Pulsed Drain Current                         | IDM    | -50            | A    |
| Continuous Source Current (Diode Conduction) | IS     | -20            | A    |
| Power Dissipation                            | PD     | TA=25°C<br>2.5 | W    |
|  |        | TA=70°C<br>2.0 |      |
| Operation Junction Temperature               | TJ     | -55/150        | °C   |
| Storage Temperature Range                    | TSTG   | -55/150        | °C   |
| Thermal Resistance-Junction to Ambient       | RθJA   | 50             | °C/W |

**ELECTRICAL CHARACTERISTICS** ( Ta = 25°C Unless otherwise noted )

| Parameter                       | Symbol                        | Condition                      | Min  | Typ | Max       | Unit |
|---------------------------------|-------------------------------|--------------------------------|------|-----|-----------|------|
| <b>Static</b>                   |                               |                                |      |     |           |      |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$                 | $V_{GS}=0V, I_D=-250\mu A$     | -30  |     |           | V    |
| Gate Threshold Voltage          | $V_{GS(th)}$                  | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1.0 |     | -2.5      | V    |
| Gate Leakage Current            | $I_{GSS}$                     | $V_{DS}=0V, V_{GS}=\pm 20V$    |      |     | $\pm 100$ | nA   |
| Zero Gate Voltage Drain Current | $I_{DSS}$<br>$T_J=55^\circ C$ | $V_{DS}=-30V, V_{GS}=0V$       |      |     | -1        | uA   |
|                                 |                               | $V_{DS}=-30V, V_{GS}=0V$       |      |     | -5        |      |
| Drain-source On-Resistance      | $R_{DS(on)}$                  | $V_{GS}=-10V, I_D=-10A$        |      | 15  | 20        | mΩ   |
|                                 |                               | $V_{GS}=-4.5V, I_D=-6.0A$      |      | 24  | 32        |      |
| Forward Transconductance        | gfs                           | $V_{DS}=-5V, I_D=-10A$         |      | 26  |           | S    |
| Diode Forward Voltage           | $V_{SD}$                      | $I_S=-1$                       |      |     |           |      |

**TYPICAL CHARACTERISTICS**

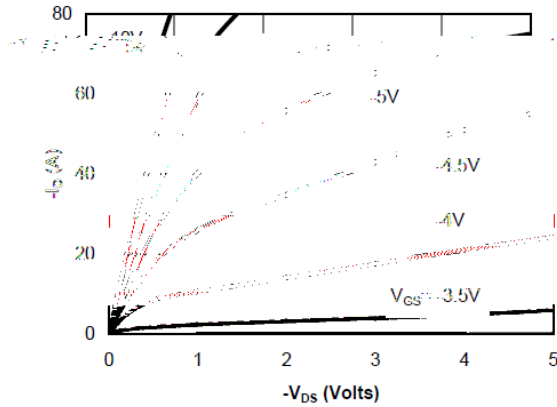


Figure 1: On-Region Characteristics

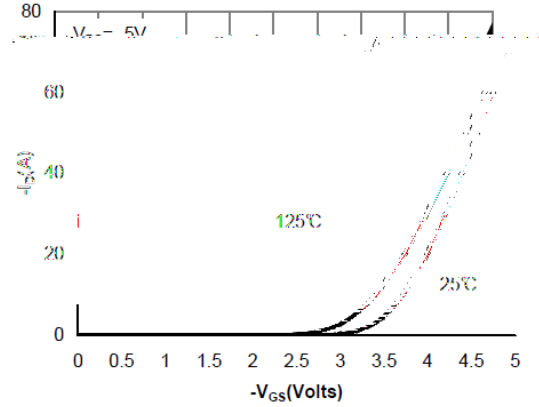


Figure 2: Transfer Characteristics

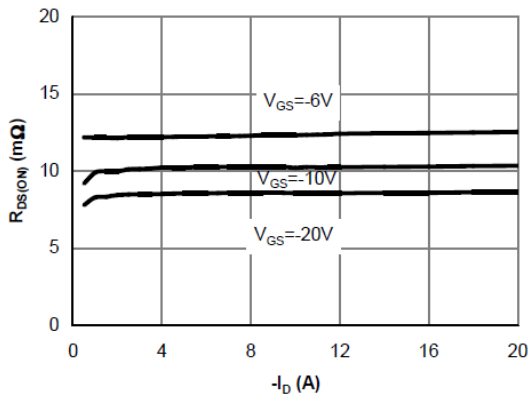


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

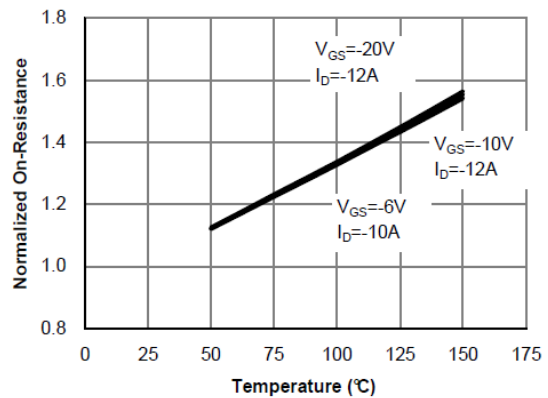


Figure 4: On-Resistance vs. Junction Temperature

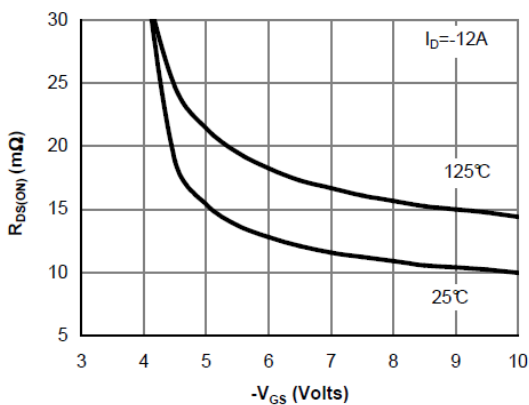


Figure 5: On-Resistance vs. Gate-Source Voltage

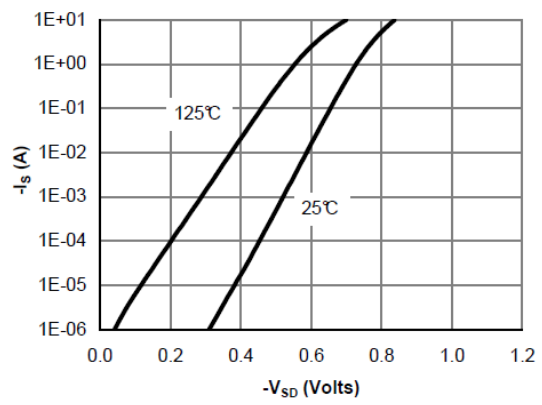


Figure 6: On-Resistance vs. Drain-Source Voltage

**TYPICAL CHARACTERISTICS**

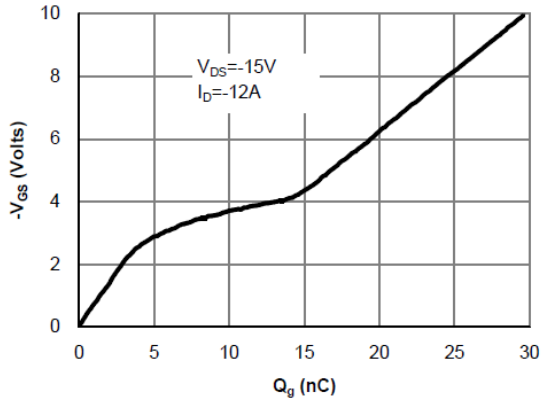


Figure 7: Gate-Charge Characteristics

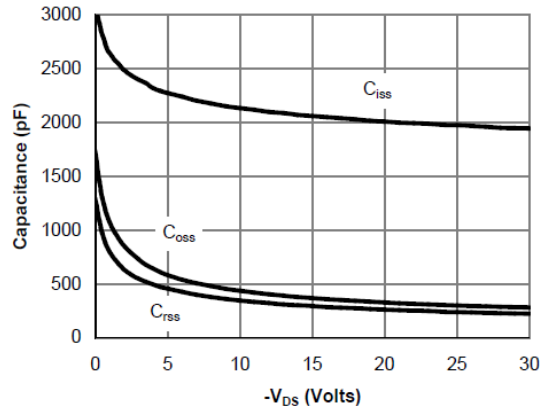


Figure 8: Capacitance Characteristics

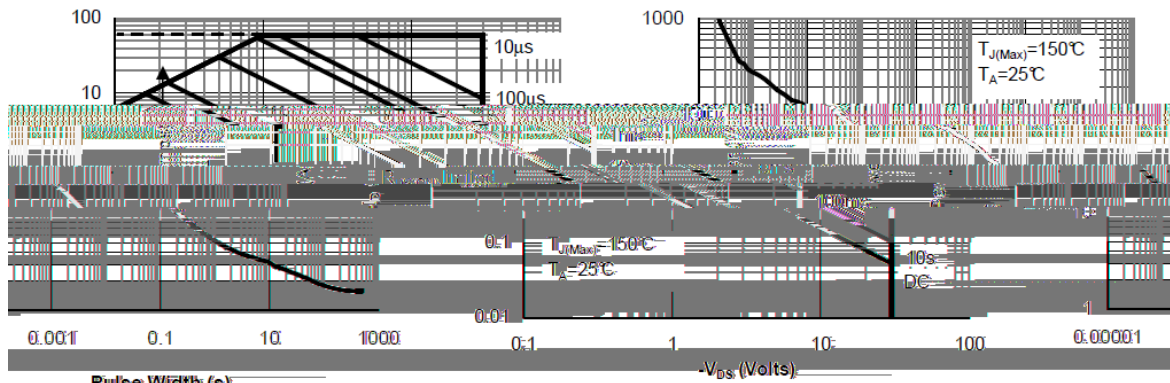


Figure 9: Maximum Forward-Biased-Safe Operating Area (Note E)

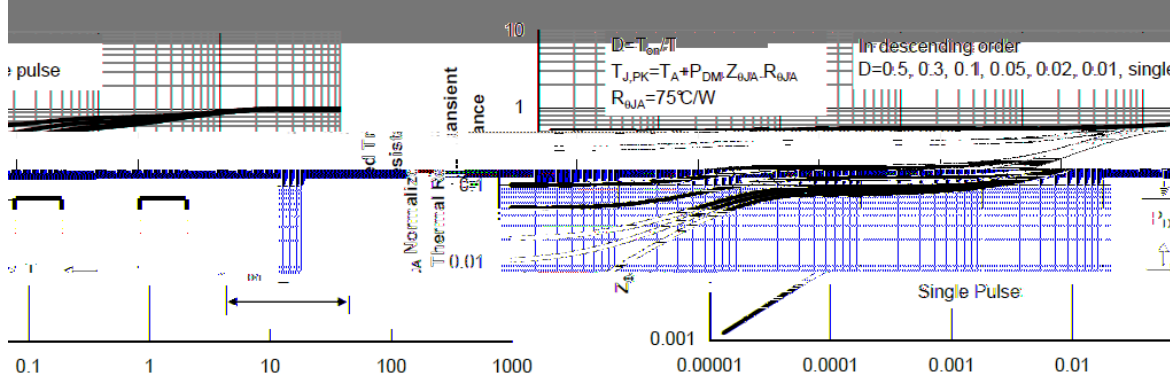
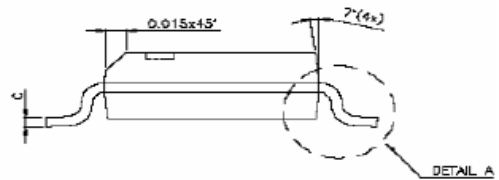
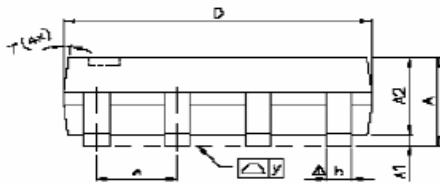
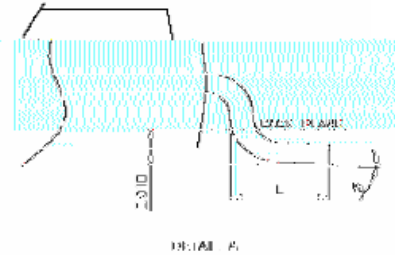
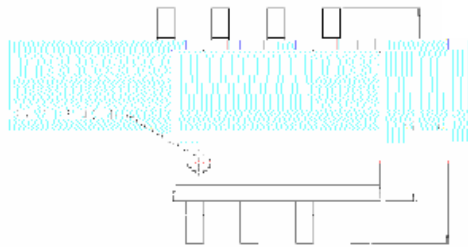


Figure 11: Normalized Maximum Transient Thermal Impedance (Note E)

**PACKAGE OUTLINE SOP-8P**



| SYMBOLS    | DIMENSIONS IN MILLIMETERS |        |      | DIMENSIONS IN INCHES |       |        |
|------------|---------------------------|--------|------|----------------------|-------|--------|
|            | MIN                       | NOM    | MAX  | MIN                  | NOM   | MAX    |
| A          | 1.17                      | 1.50   | 1.73 | 0.058                | 0.063 | 0.069  |
| A1         | 0.15                      | 0.15   | 0.15 | 0.006                | 0.006 | 0.006  |
| A2         | —                         | —      | —    | —                    | —     | —      |
| b          | 0.020                     | —      | 0.33 | 0.41                 | 0.51  | 0.013  |
| c          | 0.008                     | 0.0095 | 0.19 | 0.20                 | 0.25  | 0.0075 |
| D          | 0.191                     | 0.195  | 4.80 | 4.85                 | 4.95  | 0.189  |
| E          | 0.23                      | 0.24   | 5.80 | 0.22                 | 0.22  | 0.22   |
| E1         | 0.154                     | 0.157  | 3.85 | 3.30                 | 4.30  | 0.150  |
| *          | 0.050                     | —      | —    | —                    | 1.27  | —      |
| L          | 0.028                     | 0.030  | 0.38 | 0.71                 | 1.27  | 0.015  |
| $\Delta$ y | —                         | 0.003  | —    | —                    | 0.076 | —      |
| $\theta$   | —                         | 8°     | 0°   | —                    | 8°    | 0°     |