# AS15P03AS

P-Channel Enhancement Mode MOSFET

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---|---|---|
| -30V | 10mΩ@-10V | -15A |
| | 15mΩ@-4.5V | |

## Feature

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

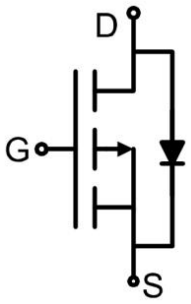
## Application

- PWM applications
- Load switch
- Uninterruptible power supply

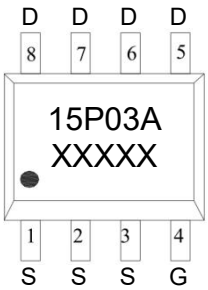
## Package

SOP-8

## Circuit diagram




## Marking



# AS15P03AS

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## Absolute maximum ratings ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -30 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ | -15 | A |
| Pulsed Drain Current[1] | $I_{DM}$ | -60 | A |
| Avalanche energy[5] | $E_{AS}$ | 420 | mJ |
| Power Dissipation | $P_D$ | 3.1 | W |
| Thermal Resistance,Junction-to-Ambient[2] | $R_{\theta JA}$ | 40 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | ℃ |

## Electrical characteristics ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=-250μA | -30 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$=-30V,$V_{GS}$=0V | | | -1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | | | ±100 | nA |
| Gate threshold voltage[3] | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250μA | -1.0 | -1.5 | -2.2 | V |
| Drain-source on-resistance[3] | $R_{DS(on)}$ | $V_{GS}$=-10V, $I_D$=-15A | | 8.5 | 10 | mΩ |
| | | $V_{GS}$=-4.5V, $I_D$=-10A | | 11.5 | 15 | |
| **Dynamic characteristics[4]** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=-15V,$V_{GS}$=0V,f=1MHz | | 2900 | | pF |
| Output Capacitance | $C_{oss}$ | | | 410 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 280 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-15V,$V_{GS}$=-10V,$I_D$=-10A | | 48 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 12 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 14 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=-15V,$V_{GS}$=-10V, $I_D$=-10A,$R_{GEN}$=3Ω | | 15 | | nS |
| Turn-on rise time | $t_r$ | | | 11 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 44 | | |
| Turn-off fall time | $t_f$ | | | 21 | | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward voltage[3] | $V_{SD}$ | $V_{GS}$=0V, $I_S$=-2A | | | -1.2 | V |

Notes:

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

2) Surface Mounted on FR4 Board, t ≤ 10 sec. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4) Guaranteed by design, not subject to production.

5) EAS condition: $T_j$=25℃,$V_{DD}$=-15V,$V_G$=-10V,L=0.5mH,$R_g$=25Ω.

## Typical Characteristics

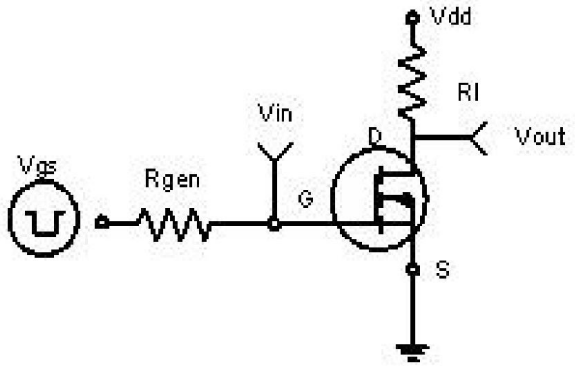



**Figure 1 Switching Test Circuit**

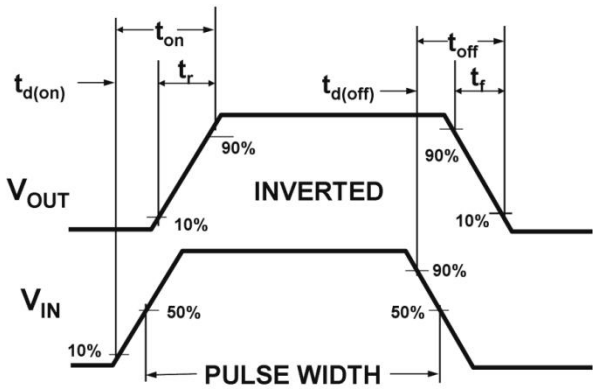



**Figure 2 Switching Waveforms**

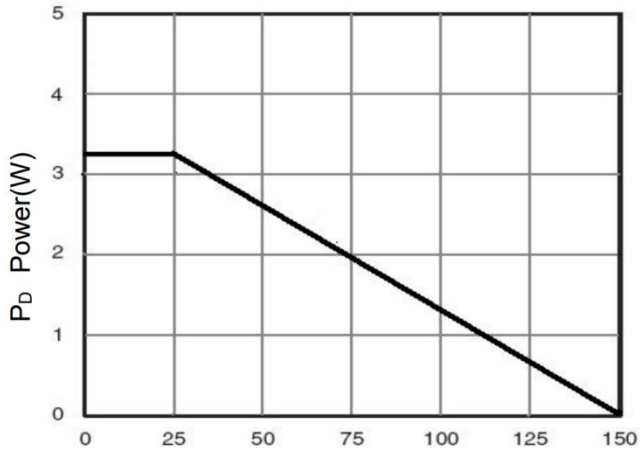



**Figure 3 Power Dissipation**

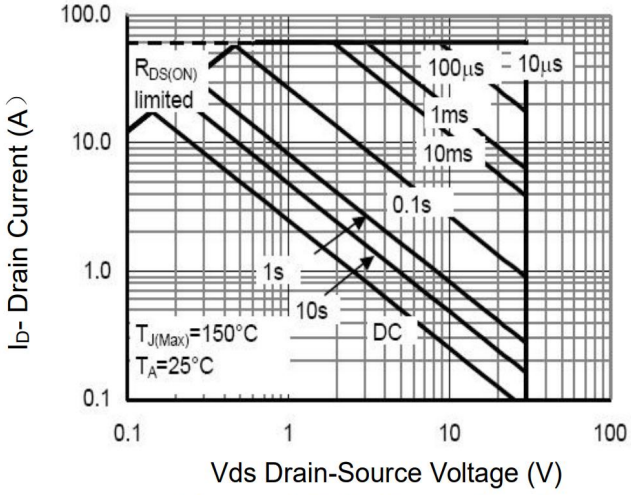



**Figure 4 Safe Operation Area**

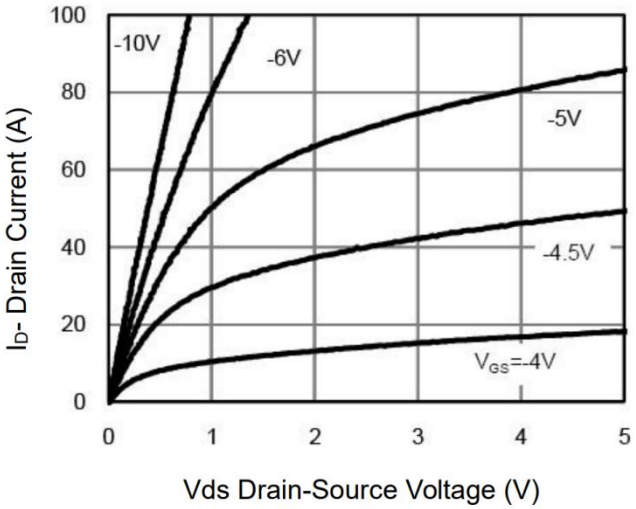



**Figure 5 Output Characteristics**

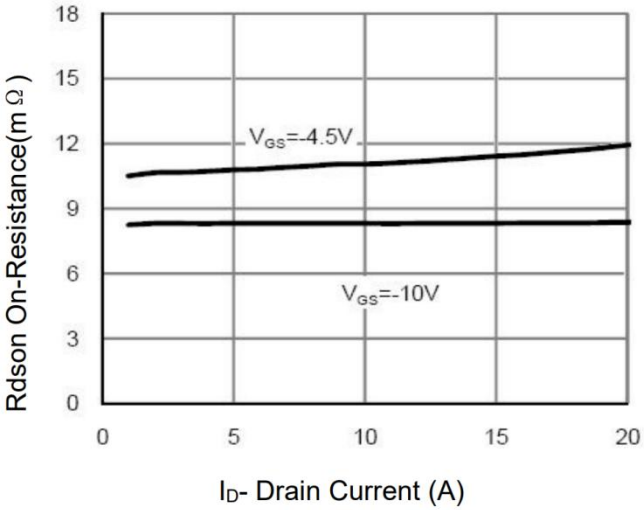



**Figure 6 Drain-Source On-Resistance**

## Typical Characteristics

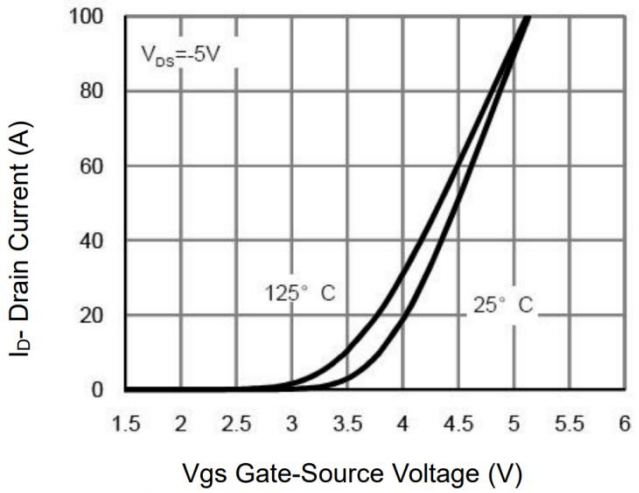



**Figure 7 Transfer Characteristics**

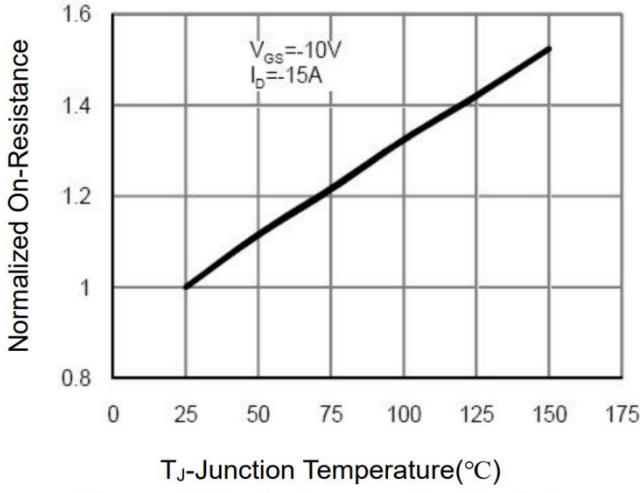



**Figure 8 Drain-Source On-Resistance**

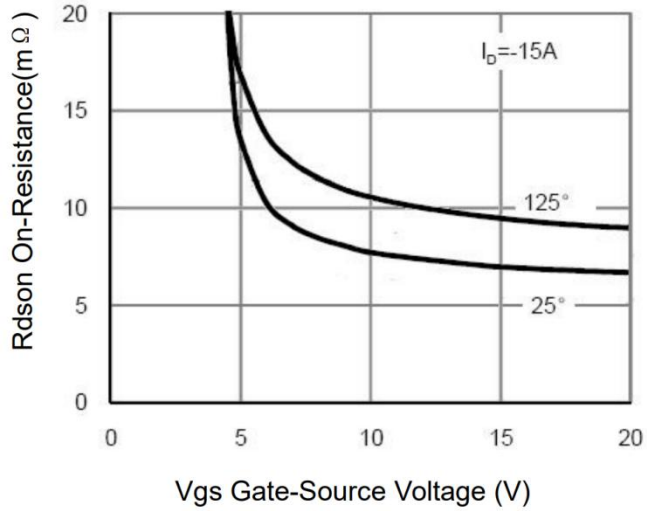



**Figure 9 Rdson vs Vgs**

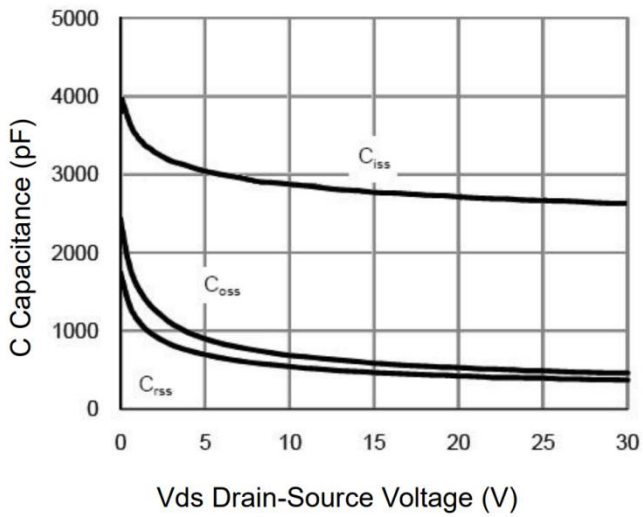



**Figure 10 Capacitance vs Vds**

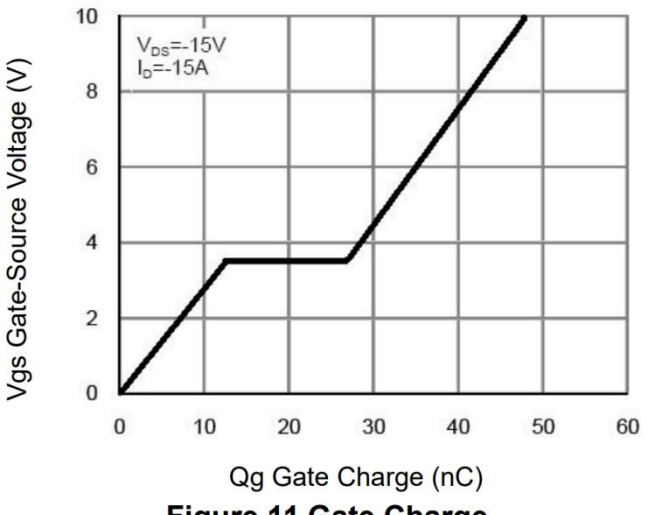



**Figure 11 Gate Charge**

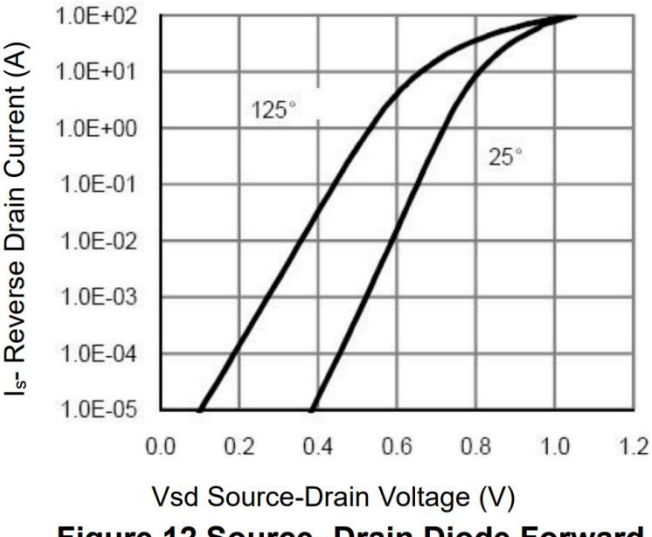



**Figure 12 Source- Drain Diode Forward**

## Typical Characteristics

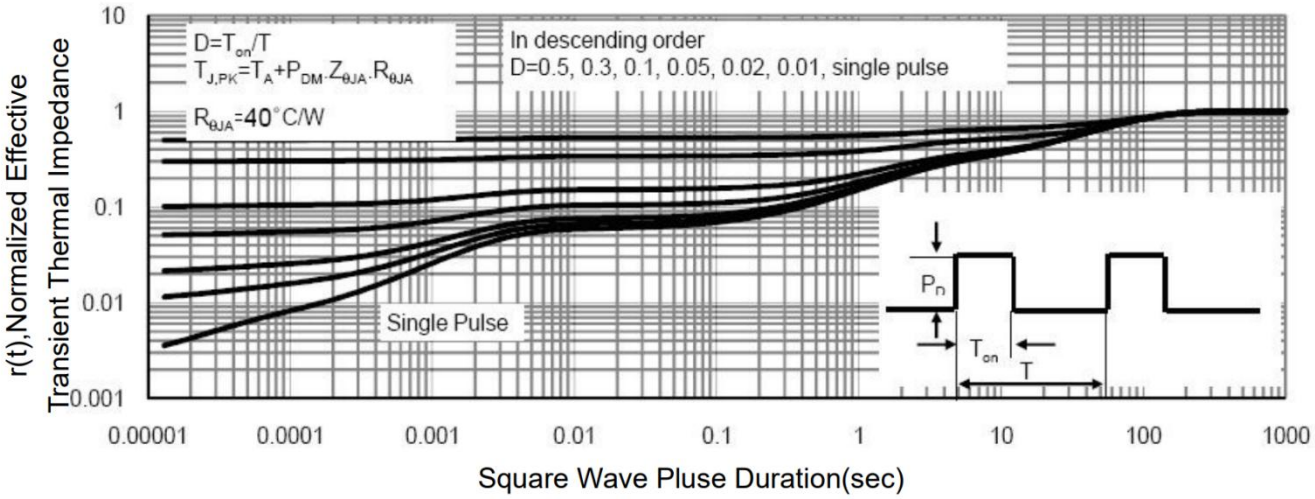
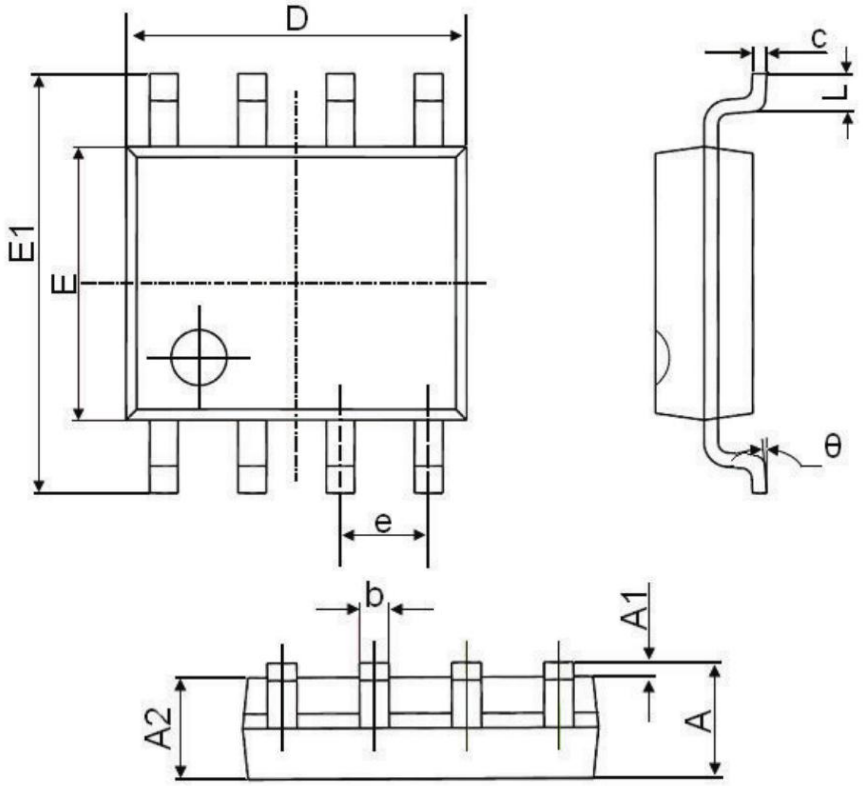



**Figure 13 Normalized Maximum Transient Thermal Impedance**

## SOP-8 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.250 | 1.650 | 0.049 | 0.065 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.007 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |