

RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

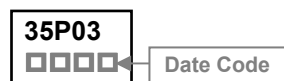
The SSD35P03 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSD35P03 meet the RoHS and Green Product with Function reliability approved.

FEATURES

- Advanced high Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available
- TO-252 Package

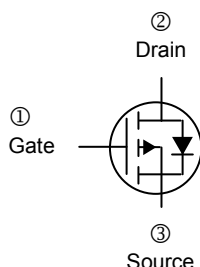
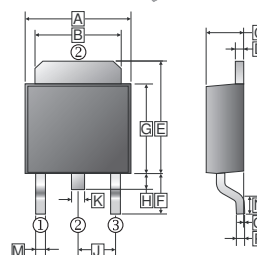
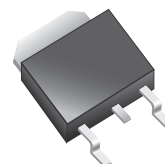
MARKING



PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|------|-------------|
| TO-252 | 2.5K | 13 inch |

TO-252(D-Pack)



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 6.35 | 6.90 | J | 2.336 REF. | |
| B | 4.95 | 5.53 | K | 0.89 REF. | |
| C | 2.10 | 2.50 | M | 0.45 | 1.14 |
| D | 0.665 Typ. | | N | 1.55 Typ. | |
| E | 6.0 | 7.5 | O | 0 | 0.13 |
| F | 2.90 REF. | | P | 0.58 REF. | |
| G | 5.40 | 6.40 | | | |
| H | 0.60 | 1.20 | | | |

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Ratings | Unit |
|--|-----------------|-------------------------|-----------------------------|
| Drain-Source Voltage | V_{DS} | -30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current, @ $V_{GS}=10\text{V}$ ¹ | I_D | $T_C=25^\circ\text{C}$ | -35 |
| | | $T_C=100^\circ\text{C}$ | -22 |
| Pulsed Drain Current ² | I_{DM} | -80 | A |
| Power Dissipation | P_D | 50 | W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 ~ 150 | $^\circ\text{C}$ |
| Thermal Resistance Ratings | | | |
| Maximum Thermal Resistance Junction-Ambient ¹ | $R_{\theta JA}$ | 62.5 | $^\circ\text{C} / \text{W}$ |
| Maximum Thermal Resistance Junction-Case ¹ | $R_{\theta JC}$ | 2.5 | |

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions | |
|--|--------------|------------------------|------|-----------|------------|---|---------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | -30 | - | - | V | $V_{GS}=0, I_D = -250\mu\text{A}$ | |
| Gate Threshold Voltage | $V_{GS(th)}$ | -1 | - | -2.5 | V | $V_{DS}=V_{GS}, I_D = -250\mu\text{A}$ | |
| Forward Transfer conductance | g_{fs} | - | 20 | - | S | $V_{DS} = -5V, I_D = -18A$ | |
| Gate-Source Leakage Current | I_{GSS} | - | - | ± 100 | nA | $V_{GS} = \pm 20V$ | |
| Drain-Source Leakage Current | I_{DSS} | $T_J=25^\circ\text{C}$ | - | - | -1 | μA | $V_{DS} = -24V, V_{GS}=0$ |
| | | $T_J=55^\circ\text{C}$ | - | - | -5 | | |
| Static Drain-Source On-Resistance ³ | $R_{DS(ON)}$ | - | - | 28 | m Ω | $V_{GS} = -10V, I_D = -18A$ | |
| | | - | - | 40 | | $V_{GS} = -4.5V, I_D = -10A$ | |
| Total Gate Charge | Q_g | - | 18 | - | nC | $I_D = -18A$ $V_{DS} = -15V$ $V_{GS} = -10V$ | |
| Gate-Source Charge | Q_{gs} | - | 3.3 | - | | | |
| Gate-Drain Charge | Q_{gd} | - | 4.9 | - | | | |
| Turn-on Delay Time | $T_{d(on)}$ | - | 7 | - | nS | $V_{DD} = -15V$ $I_D = -18A$ $V_{GS} = -10V$ $R_G = 3\Omega$ | |
| Rise Time | T_r | - | 11 | - | | | |
| Turn-off Delay Time | $T_{d(off)}$ | - | 27 | - | | | |
| Fall Time | T_f | - | 8 | - | | | |
| Input Capacitance | C_{iss} | - | 1345 | - | pF | $V_{GS}=0$ $V_{DS} = -15V$ $f=1.0\text{MHz}$ | |
| Output Capacitance | C_{oss} | - | 194 | - | | | |
| Reverse Transfer Capacitance | C_{rss} | - | 158 | - | | | |
| Source-Drain Diode | | | | | | | |
| Forward On Voltage ³ | V_{SD} | - | - | -1.2 | V | $I_S = -1A, V_{GS}=0$ | |
| Reverse Recovery Time | T_{rr} | - | 24 | - | nS | $I_F = -18A, di/dt=100A/\mu\text{s}$ | |
| Reverse Recovery Charge | Q_{rr} | - | 14 | - | nC | $T_J=25^\circ\text{C}$ | |

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. The power dissipation is limited by 150°C junction temperature.
3. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS CURVE

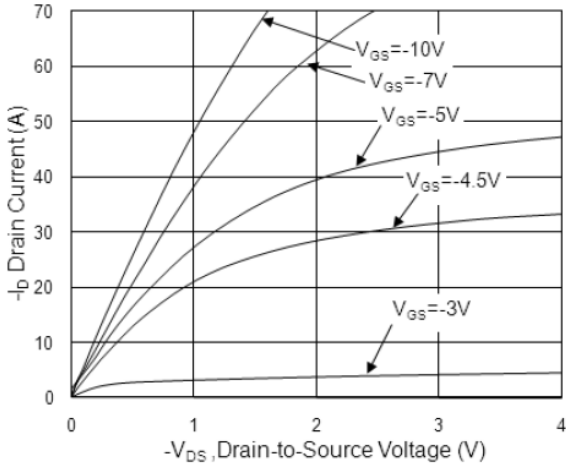


Fig.1 Typical Output Characteristics

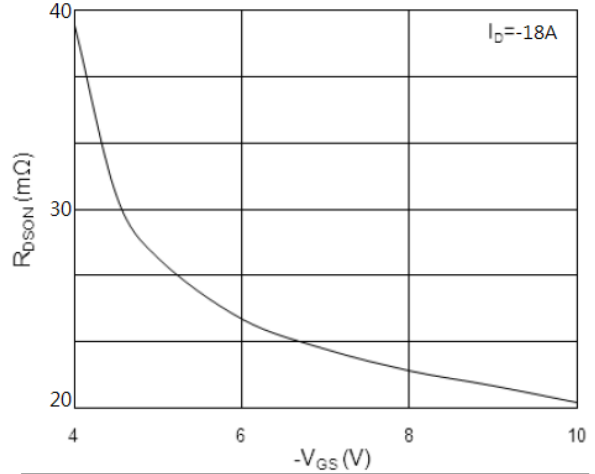


Fig.2 On-Resistance v.s Gate-Source

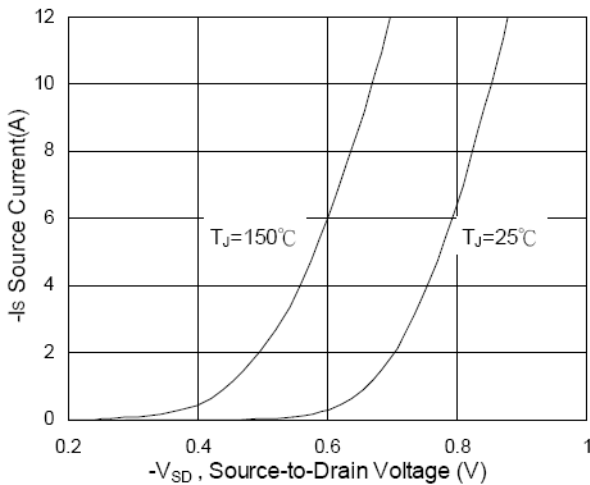


Fig.3 Forward Characteristics of Reverse

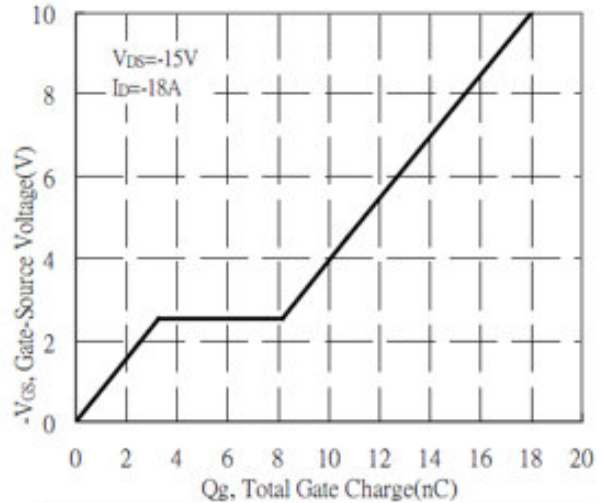


Fig.4 Gate-Charge Characteristics

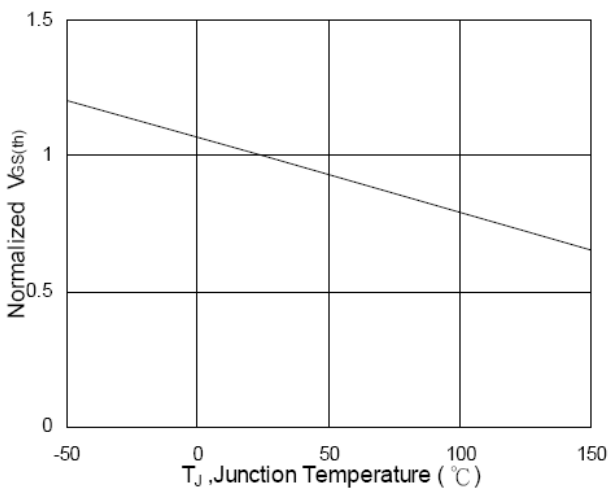


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

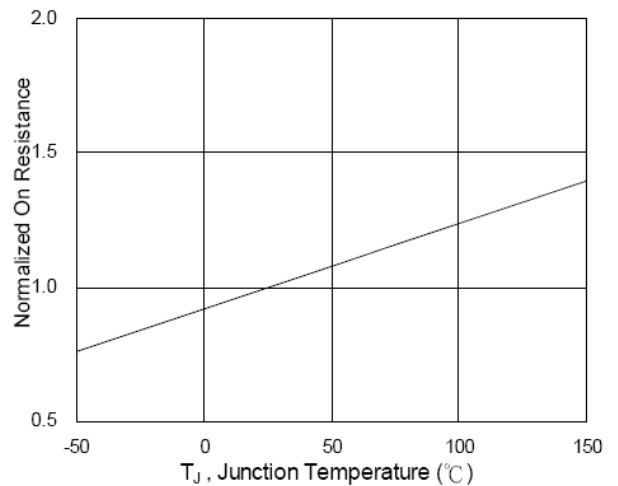


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

TYPICAL CHARACTERISTICS CURVE

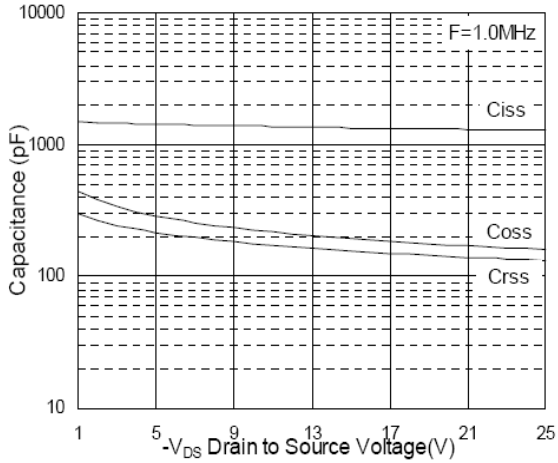


Fig.7 Capacitance

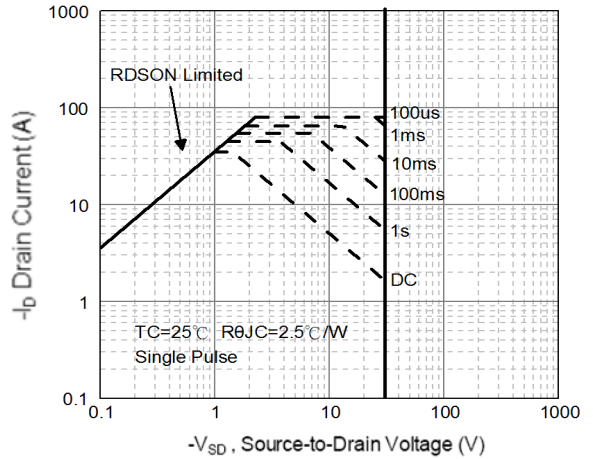


Fig.8 Safe Operating Area

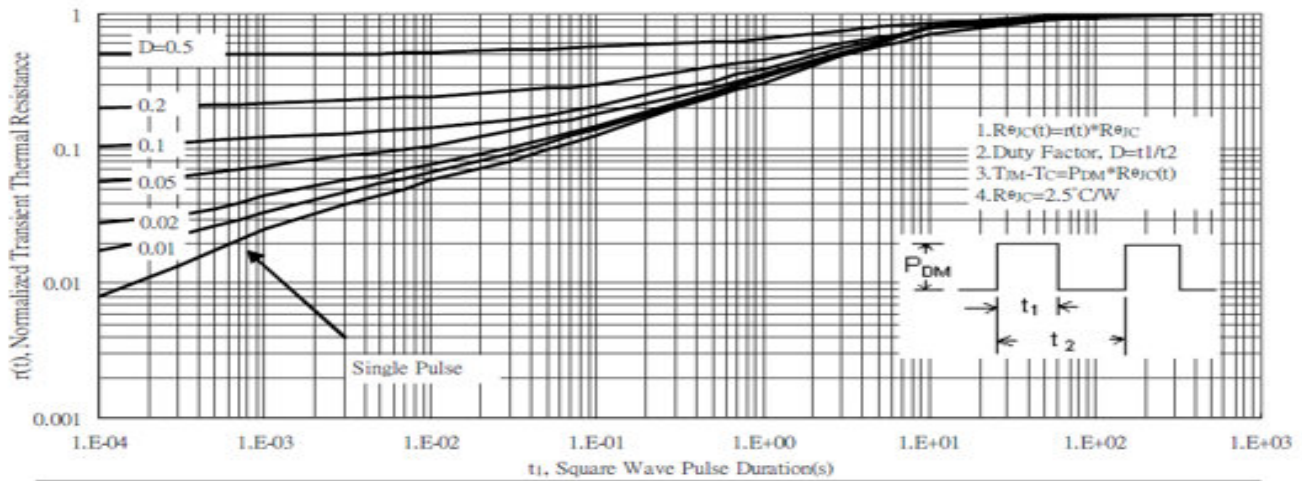


Fig.9 Normalized Maximum Transient Thermal Impedance

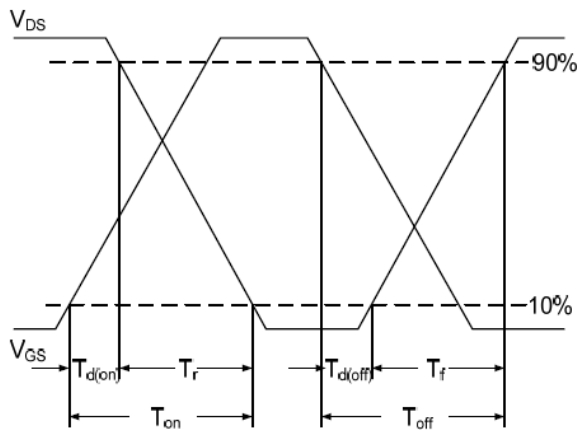


Fig.10 Switching Time Waveform

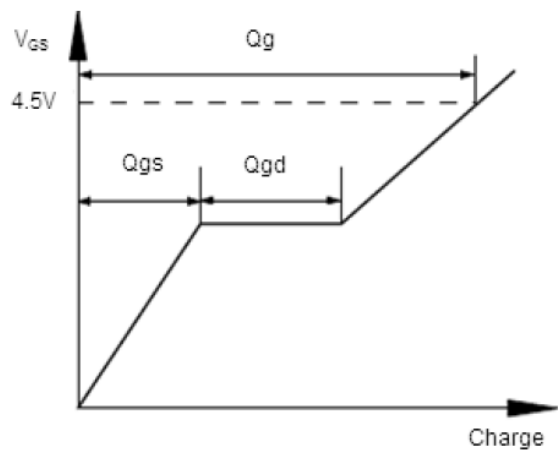


Fig.11 Gate Charge Waveform