Ordering number : ENN8154

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

# 3LP03M — General-Purpose Switching Device Applications

## Features

- Low ON-resistance.
- High-speed switching.
- 2.5V drive.
- High ESD Voltage (TYP 300V)
  [Built-in one side diode for protection between Gate-to-Source].

## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | –30 | V |
| Gate-to-Source Voltage (*1) | $V_{GSS}$ | | –10 | V |
| Drain Current (DC) | $I_D$ | | –0.25 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | –1 | A |
| Allowable Power Dissipation | $P_D$ | | 0.15 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | –55 to +150 | °C |

(*1) : Note, when designing a circuit using this product, that it has a gate (oxide film) protection diode connected only between its gate and source.

### Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$= –1mA, $V_{GS}$=0 | –30 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$= –30V, $V_{GS}$=0 | | | –1 | μA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$= –8V, $V_{DS}$=0 | | | –1 | μA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$= –10V, $I_D$= –100μA | –0.4 | | –1.4 | V |
| Forward Transfer Admittance | \|yfs\| | $V_{DS}$= –10V, $I_D$= –120mA | 0.24 | 0.4 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$= –120mA, $V_{GS}$= –4V | | 1.5 | 1.9 | Ω |
| | $R_{DS}$(on)2 | $I_D$= –60mA, $V_{GS}$= –2.5V | | 2.0 | 2.8 | Ω |
| | $R_{DS}$(on)3 | $I_D$= –10mA, $V_{GS}$= –1.5V | | 4.0 | 8.0 | Ω |
| Input Capacitance | Ciss | $V_{DS}$= –10V, f=1MHz | | 40 | | pF |
| Output Capacitance | Coss | $V_{DS}$= –10V, f=1MHz | | 8 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$= –10V, f=1MHz | | 4.5 | | pF |

Marking : XG

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SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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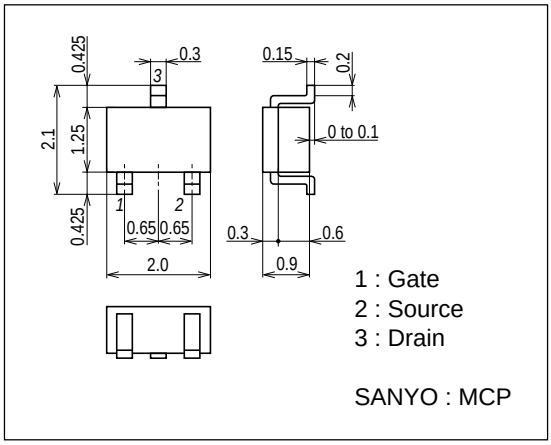
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 9.5 | | ns |
| Rise Time | $t_r$ | See specified Test Circuit. | | 5 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit. | | 15 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit. | | 13 | | ns |
| Total Gate Charge | Qg | $V_{DS}$= –10V, $V_{GS}$= –4V, $I_D$= –250mA | | 0.8 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}$= –10V, $V_{GS}$= –4V, $I_D$= –250mA | | 0.3 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | $V_{DS}$= –10V, $V_{GS}$= –4V, $I_D$= –250mA | | 0.2 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$= –250mA, $V_{GS}$=0 | | –0.9 | –1.2 | V |

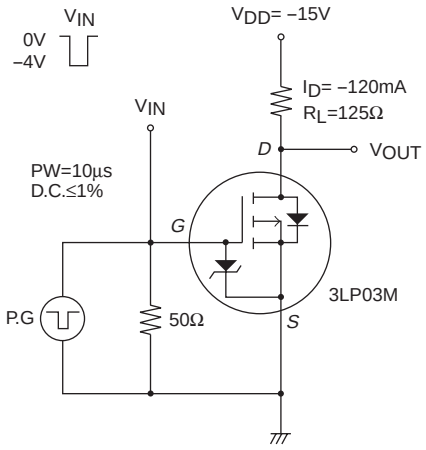
## Package Dimensions

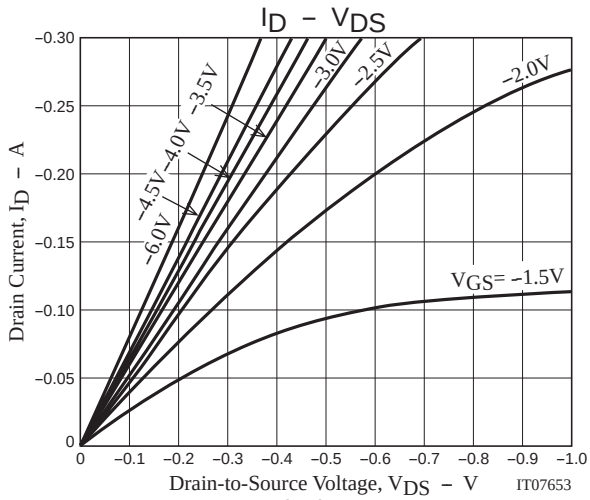
unit : mm

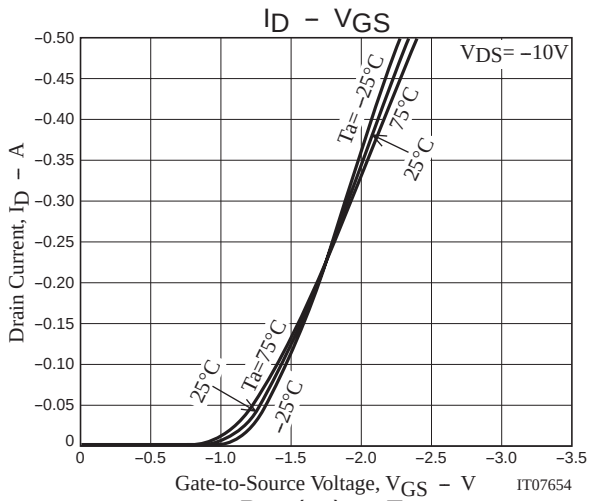
2158A

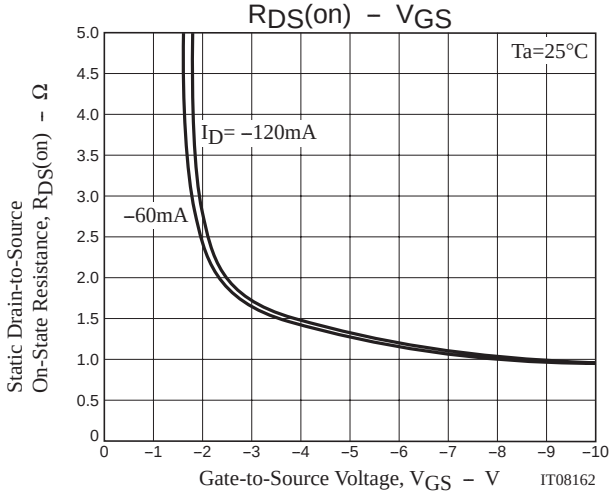


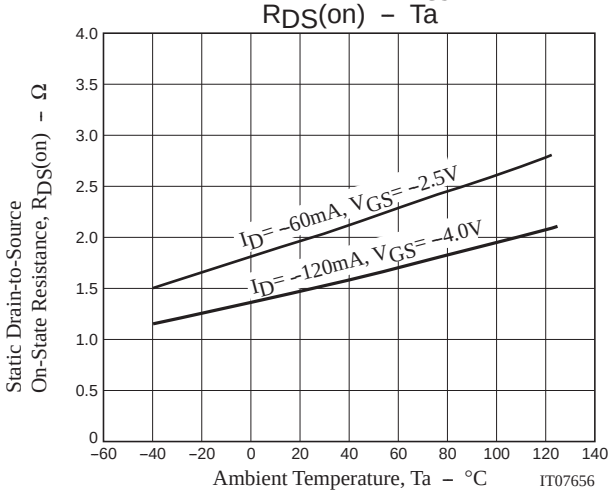

## Switching Time Test Circuit

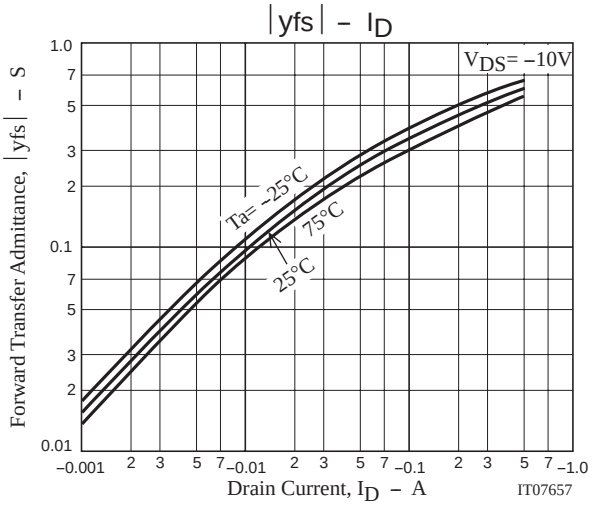


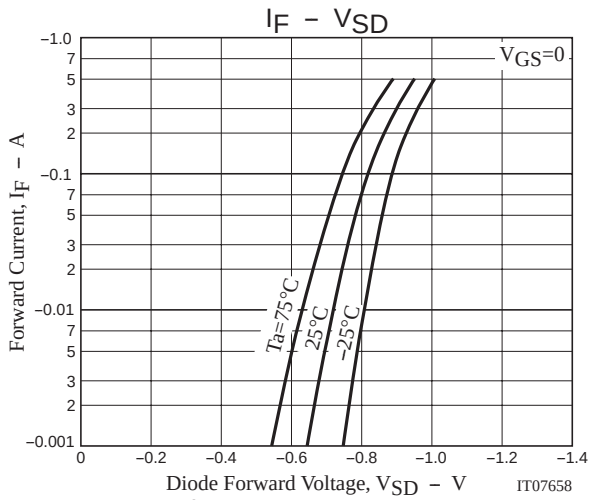



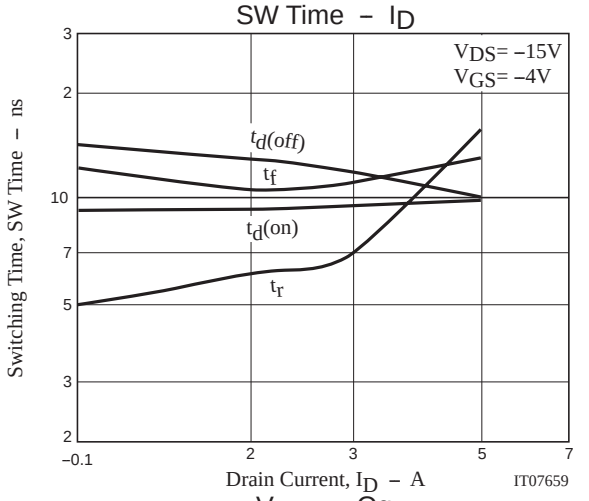



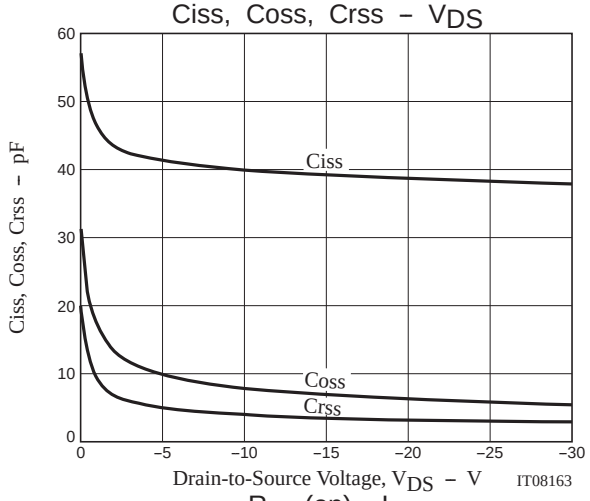



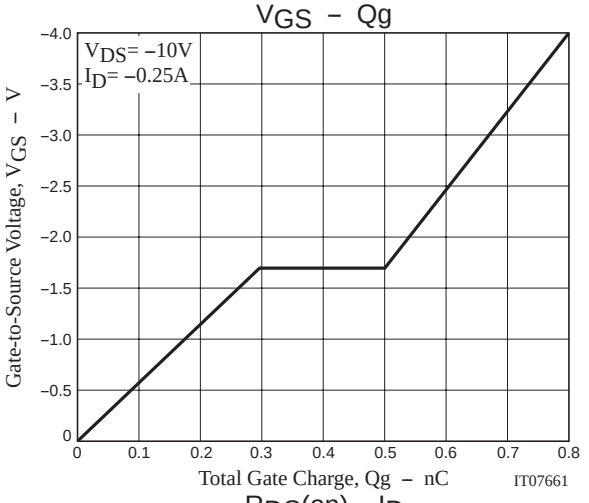



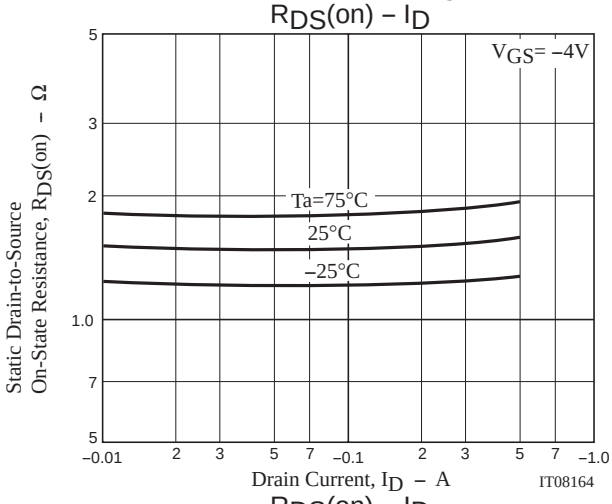


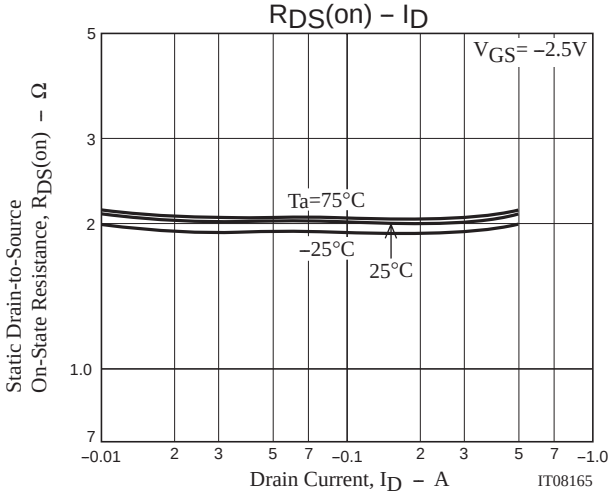



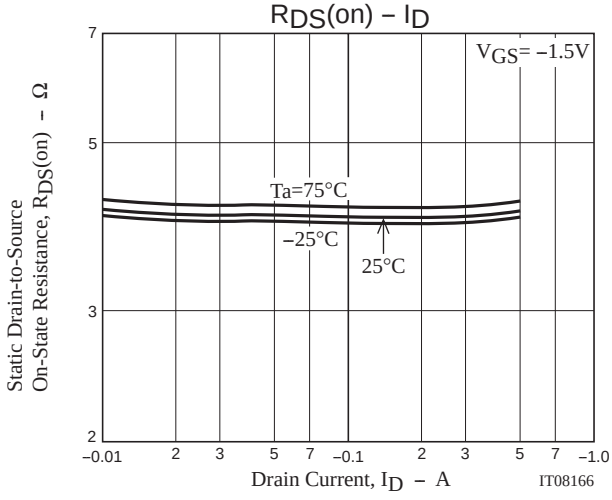



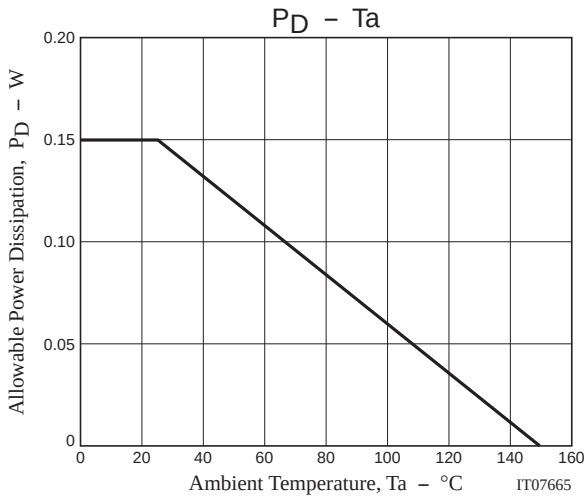






Note on usage : Since the 3LP03M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.